U.S. Fish & Wildlife Service

Fire Management Plan for the Rocky Mountain Arsenal National Wildlife Refuge Complex (revised 2013)

The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.

The mission of the National Wildlife Refuge System 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.

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FIRE MANAGEMENT PLAN

ROCKY MOUNTAIN ARSENAL NATIONAL WILDLIFE REFUGE
TWO PONDS NATIONAL WILDLIFE REFUGE
ROCKY FLATS NATIONAL WILDLIFE REFUGE

2013

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Executive Summary

The Rocky Mountain Arsenal National Wildlife Refuge Complex (RMANWRC) encompasses three urban national wildlife refuges totaling 21,565 acres within the Denver metropolitan area. The State of Colorado experienced a 16.9% growth increase from 2000 to 2010, and the population of the Denver-Metro area (Denver, Adams, Jefferson, Douglas, Arapahoe, Boulder, and Broomfield counties) was 2,543,482 people according to the 2010 census (U.S. Census Bureau 2012).

The U.S. Fish and Wildlife Service's intent for the fire management program on these three national wildlife refuges will be:

- Safety is our #1 priority.
- All three national wildlife refuges are bordered by urban development. In cooperation with local fire protection districts, all unwanted fire will be actively suppressed.
- Prescribed burning will be primarily used only for habitat management and improvement purposes, but also to reduce hazardous fuels to reduce the risk of wildfire. Fuels reduction projects along the urban interface will generally be completed by mechanical means (thinning, mowing, herbicide, etc.)
- Due to funding shortages, there are currently no fire-funded employees stationed at the Rocky Mountain Arsenal NWR Complex. Station personnel will maintain qualifications to support initial attack, but outside resources will almost always be necessary for suppression.

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1.0 Introduction

1.1 Purpose of the Fire Management Plan (FMP)

This plan is written to meet Department of the Interior (DOI) and U.S Fish and Wildlife Service (FWS) requirements that every area with burnable vegetation must have an approved Fire Management Plan (FMP) (U.S. Department of the Interior 1998, U.S. Fish and Wildlife Service 2012). Fire management plans are strategic plans that define a program to manage wildland fires based on the area's approved land management plans. A Fire Management Plan must provide for firefighter and public safety, include fire management strategies, tactics and alternatives; address values to be protected and public health issues; and be consistent with resource management objectives, activities of the area, and environmental laws and regulations. In order for a FMP to continue to meet these requirements, a FMP must also be periodically reviewed. Information regarding compliance for required FMP revisions and/or updates is located in chapter 5.

The National Wildlife Refuge System Administration Act of 1966, as amended, clearly establishes that wildlife conservation is the singular National Wildlife Refuge System mission (U.S. Fish and Wildlife Service 2006). The National Wildlife Refuge System Act of 1997 states '…the fundamental mission of our System is wildlife conservation: wildlife and wildlife conservation must come first." 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" (U.S. Fish and Wildlife Service 2006). The overarching goal of the National Wildlife Refuge System is to "conserve a diversity of fish, wildlife, and plants and their habitats, including species which are endangered or threatened with becoming endangered"(U.S. Fish and Wildlife Service 2001).

The most recent FMP completed for Rocky Mountain Arsenal NWR was approved in 1999 and revised in 2001. Two Ponds NWR's most recent FMP was completed in 2002. A FMP has never been developed for the Rocky Flats NWR. This FMP, once approved, will replace all previous FMPs completed at the stations.

This FMP integrates all wildland fire management and related activities within the context of an approved Comprehensive Management Plans (CMP) (U.S. Fish and Wildlife Service 1996a;1997) and Comprehensive Conservation Plans (CCP) (U.S. Fish and Wildlife Service 2005a). The Refuge CMP/CCP provides limited if any detailed information on the fire management programs. This Fire Management Plan (FMP) is written to help achieve resource management and hazardous fuels reduction objectives by integrating fire into the management of land and resources as established in the CMP for each of the refuges. The FMP provides

direction and continuity and establishes operational procedures to guide all wildland fire program activities.

The area encompassed by this FMP has three Fire Management Units (FMU) (Rocky Mountain Arsenal NWR FMU, Two Ponds NWR FMU, and Rocky Flats NWR) which will address potential wildland fire occurrences, prescribed burning, and other hazardous fuels reduction treatments. A FMU is a land management areas definable by objectives, management constraints, topographic features, access, values to protect, political boundaries, fuel types, major fire regime groups, etc., that set it apart from the characteristics of an adjacent FMU. A FMU may have dominant management objectives and pre-selected strategies assigned to accomplish these objectives. The development of FMUs allows agency administrators and fire management personnel to more effectively address land management objectives, constraints, and strategies identified in land management plans (Comprehensive Conservation Plans (CCPs), Habitat Management Plans (HMPs), Wilderness Plans, etc.) and environmental compliance documents. FMUs are developed in coordination with FWS resource professionals, cooperators, and adjoining agencies to ensure consistency with approved land management plans. FMUs are described in greater detail in Section 3.

The Rocky Mountain Arsenal National Wildlife Refuge Complex (RMANWRC) provides habitat for large concentrations of birds, including migratory waterfowl, upland wildlife, and threatened and endangered species. The plan is written as an operational guide for managing the wildland fire program. It defines levels of protection needed to (1) ensure safety of employees, visitors, and adjacent landowners and (2) protect resources, given current understanding of the refuges' relationships in natural ecosystems.

1.2 General Description of the Area in the FMP

The Rocky Mountain Arsenal NWR Complex (RMANWRC) administers three (3) NWRs within the Denver metropolitan area - Rocky Mountain Arsenal NWR, Rocky Flats NWR, and Two Ponds NWRs.

The Rocky Mountain Arsenal NWR is located in Commerce City, Colorado and was originally managed by the Department of Defense to produce and store munitions for World War II and the Korean Conflict. Two Ponds NWR is located in Arvada, Colorado and is completely surrounded by streets and commercial and residential development. The Rocky Flats NWR is located outside of Golden, Colorado and was the site of nuclear weapons manufacturing plant.

Table 1. Management Units in the Fire Management Plan

Unit	Total Acquisition Area (acres)	Total Fee Title (acres)	Burnable Fee Title (acres)	Non-agency w/in Acquisition Boundary (acres)
Rocky Mountain Arsenal NWR	15,988	14,899	15,820*	1084
Two Ponds NWR	88	70	69	0
Rocky Flats NWR	5,489	4,566	4,566	924
TOTAL				

**1,084 acres of Army land is managed as part of RMANWR.*

Map of Rocky Mountain Arsenal NWR Complex

(also see Appendix B)

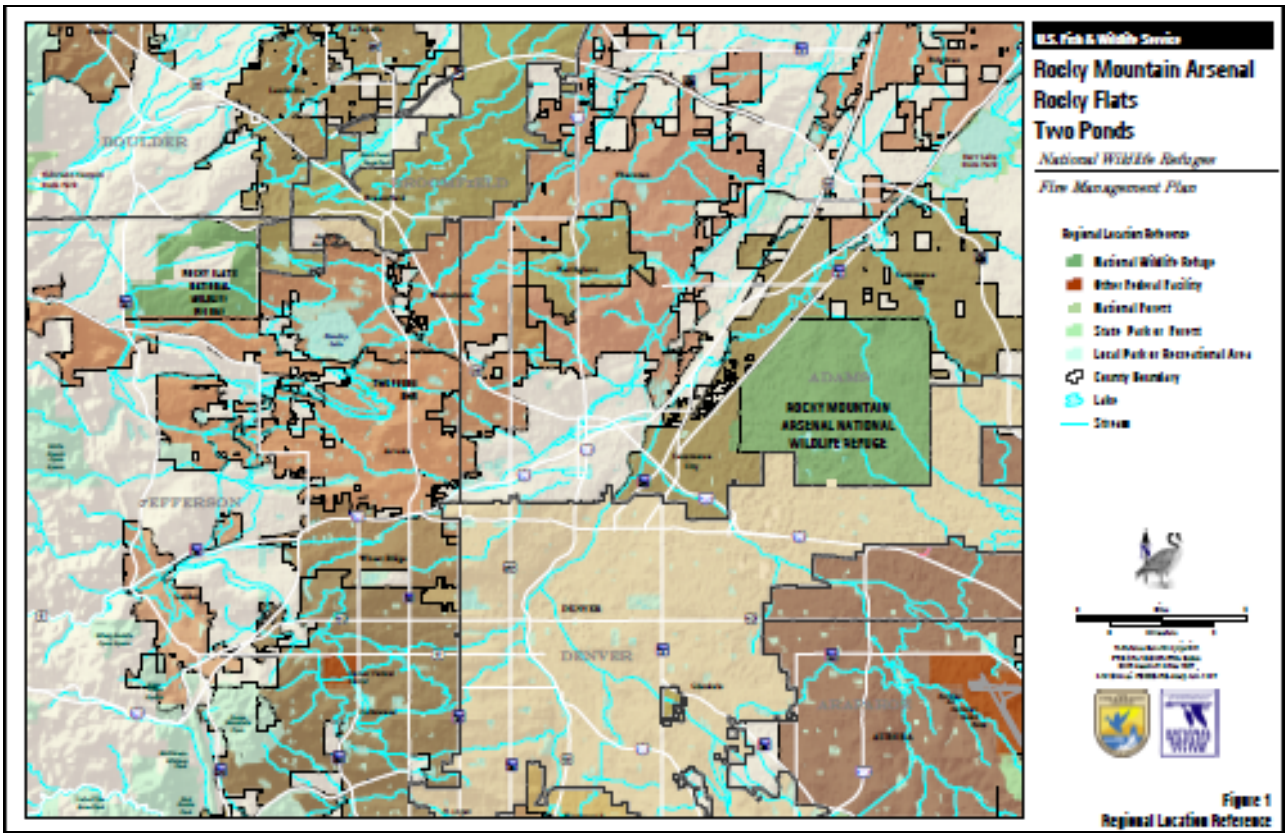

Table 2. Location of Each Unit

Unit	County	Location
Rocky Mountain Arsenal NWR	Adams	Commerce City, Colorado
Two Ponds NWR	Jefferson	Arvada, Colorado
Rocky Flats NWR	Boulder, Jefferson	Golden, Colorado

Table 3. Establishment Date, Legislation, and Purpose of Each Refuge within the RMANWRC

Unit	Year Established	Establishment Legislation	Refuge Purpose(s)
Rocky Mountain Arsenal NWR	1992	Rocky Mountain Arsenal National Wildlife Refuge Act of 1992	• Conserve and enhance populations of fish, wildlife, and plants…. • Conserve species listed as threatened and endangered…most notably the Bald Eagle. • Provide maximum fish and wildlife oriented public uses… • Provide opportunities for scientific research • Provide for environmental and land use education. • Conserve and enhance the land and water of the Refuge… • Protect and enhance the quality of aquatic habitat… • Fulfill international treaty obligations with respect to fish and wildlife habitats.
Two Ponds NWR	1986	Emergency Wetland Resource Act of 1986	• Restore, enhance and preserve a diversity of upland and wetland habitats… • Provide opportunities for environmental education… • Provide interpretive facilities and opportunities related to wildlife such as viewing, study and photography.
Rocky Flats NWR	2003	Rock Flats National Wildlife Refuge Act of 2001	• Restoring and preserving native ecosystems • Providing habitat for, and population management of, native plants and migratory and resident wildlife • Conserving threatened and endangered species • Providing opportunities for compatible scientific research.

1.3 Significant Values to Protect

<u>Rocky Mountain Arsenal NWR</u>

- Refuge infrastructure
- Maintenance and protection of restored short and mixed-grass prairies.
- Habitat for a wintering and nesting populations of bald eagles (*Haliaeetus leucocephalus*).

- Water quality within and leaving the refuge, most notably due to contaminated sites within the refuge.
- Smoke management is critical due to impacts on the neighboring Denver International Airport and Denver metropolitan area.

Two Ponds NWR

- Refuge infrastructure
- Maintenance and protection of critical wildlife habitats.
- Impacts of wildfire from being in close proximity to the wildland urban interface.

Rocky Flats NWR

- Refuge infrastructure
- Maintenance and habitat for the threatened Preble's meadow jumping mouse (*Zapus hudsonius preblei*).
- Maintenance and protection of rare xeric tallgrass prairie habitats.

2.0 Policy, Land Management Planning, & Partnerships

This chapter will establish the linkage between higher level planning documents, legislation and policies, and the actions described in the FMP.

2.1 Fire Policy

2.1.1 Federal Wildland Fire Policy

This FMP meets the Federal Wildland Fire Management Policy (Wildland Fire Leadership Council 2009) by implementing the following guiding principles:

- Firefighter and public safety is the first priority in every fire management activity.
- The role of wildland fire as an essential ecological process and natural change agent has been incorporated into the planning process. Federal agency land and resource management plan set the objectives for the use and desired future condition of the various public lands.
- Fire management plans, programs, and activities support land and resource management plans and their implementation.
- Sound risk management programs and activities are economically viable, based upon values to be protected, costs, and land and resource management objectives.
- Fire management plans and activities are based upon the best available science.
- Fire management plans and activities incorporate public health and environmental quality considerations.
- Federal, State, tribal, local, interagency, and international coordination and cooperation are essential.
- Standardization of policies and procedures among federal agencies is an ongoing objective.

The following guidelines will be used to provide consistent implementation of Federal Wildland Fire Policy. Further guidance is provided in the Federal Wildland Fire Management Fire Policy section of the *Guidance for Implementation of Federal Wildland Fire Management Policy* Table 1 (Wildland Fire Leadership Council 2009).

- Wildland fire management agencies will use common standards for all aspects of their fire management programs to facilitate effective collaboration among cooperating agencies.
- Agencies and bureaus will review, update, and develop agreements that clarify the jurisdictional inter-relationships and define the roles and responsibilities among local, State, tribal, and Federal fire protection entities.
- Response to wildland fire will be coordinated across levels of government regardless of the jurisdiction at the ignition source.

- Fire management planning will be intergovernmental in scope and developed on a landscape scale.
- Wildland fire is a general term describing any non-structure fire that occurs in the wildland. Wildland fires are categorized into two distinct types:
    - Wildfires – Unplanned ignitions or prescribed fires that are declared wildfires.
    - Prescribed fires – Planned ignitions.
- A wildland fire may be concurrently managed for one or more objectives, and objectives can change as the fire spreads across the landscape. Objectives are affected by changes in the fuels, weather, topography, varying social understanding and tolerance, and involvement of other governmental jurisdictions having different missions and objectives.
- Management response to a wildland fire on federal land is based on objectives established in the applicable Land/Resource Management Plan and/or the Fire Management Plan.
- Initial action on human-caused wildfire will be to suppress the fire at the lowest cost with the fewest negative consequences with respect to firefighter and public safety.
- Managers will use a decision support process to guide and document wildfire management decisions (Wildland Fire Decision Support System (WFDSS)). The process will provide situational assessment, analyze hazards and risk, define implementation actions, and document decisions and rationale for those decisions.

Federal Wildland Fire Cost Effectiveness Policy

Maximizing the cost effectiveness of any fire operation is the responsibility of all involved, including those who authorize, direct, or implement operations. Cost effectiveness is the most economical use of resources necessary to accomplish project/incident objectives. Accomplishing the objectives safely and efficiently will not be sacrificed for the sole purpose of "cost-saving." Appropriate oversight will ensure that expenditures are commensurate with values to be protected. Other factors besides those in the biophysical environment may influence decisions, including those from the social, political, and economic realms (FWS *Fire Management Handbook* (U.S. Fish and Wildlife Service 2013b)). The Wildland Fire Decision Support System (WFDSS) or other required wildfire decision support tool will be used for analysis of integrated risk and cost management.

2.1.2 National Fire Plan

This FMP meets the policy and direction in the National Fire Plan because it emphasizes the following primary goals of the *10 Year Comprehensive Strategy (U.S. Department of Agriculture et al. 2001)* and *Cohesive Strategy for Protecting People and Sustaining Natural Resources* (Wildland Fire Leadership Council 2012):

- Improving fire prevention and suppression,
- Reducing hazardous fuels,

- Restoring fire-adapted ecosystems, and
- Promoting community assistance.

2.1.3 National Cohesive Wildland Fire Management Strategy

In response to requirements of the Federal Land Assistance, Management, and Enhancement (FLAME) Act of 2009, the Wildland Fire Leadership Council directed the development of the National Cohesive Wildland Fire Management Strategy. This FMP meets the intent the vision of this document which is to "Safely and effectively extinguish fire, when needed; use fire where allowable; manage our natural resources; and as a Nation, live with wildland fire." (Wildland Fire Leadership Council 2011).

2.1.4 Department of the Interior (DOI) Policy

This FMP meets Department of the Interior policy(U.S. Department of the Interior 1998) by giving full consideration to use of wildland fire as a natural process and tool during the land management planning process and by providing for the following:

- Wildland fires, whether on or adjacent to lands administered by the Department, which threaten life, improvements, or are determined to be a threat to natural and cultural resources or improvements under the Department's jurisdiction, will be considered emergencies and their suppression given priority over other Departmental programs.
- Bureaus shall cooperate in the development of interagency preparedness plans to ensure timely recognition of approaching critical wildland fire situations; to establish processes for analyzing situations and establishing priorities, and for implementing appropriate management responses to these situations.
- Bureaus will enforce rules and regulations concerning the unauthorized ignition of wildland fires, and aggressively pursue violations.

2.1.5 U.S. Fish and Wildlife Service Policy

By addressing the range of potential wildland fires and considering a full spectrum of tactical options (from monitoring to intensive management actions) for response to wildland fire in order to meet Fire Management Unit (FMU) objectives, this FMP meets USFWS wildland fire policy, and is consistent with the USFWS *Fire Management Handbook* and the supplemental policy identified in the *Interagency Standards for Fire and Fire Aviation Operations* (National Wildfire Coordinating Group 2013). This plan affirms these key elements of FWS fire policy (U.S. Fish and Wildlife Service 2012):

- Firefighter and public safety is the first priority of the wildland fire management and with the possible exception of instances where the life of another is in jeopardy, we will not purposely expose an employee, contractor, or cooperator to life-threatening conditions or situations,
- Only trained and qualified leaders and agency administrators will be responsible for, and conduct, wildland fire management duties and operations,
- Trained and certified employees will participate in the wildland fire management program as the situation requires, and non-certified employees will provide needed support as necessary,
- Fire management planning, preparedness, wildfire and prescribed fire operations, monitoring, and research will be conducted on an interagency basis with involvement by all partners to the extent practicable,
- The responsible agency administrator has coordinated, reviewed, and approved this FMP to ensure consistency with approved land management plans, values to protect, and natural and cultural resource management plans, and that it addresses public health issues related to smoke and air quality,
- Fire, as an ecological process, has been integrated into resource management plans and activities on a landscape scale, across agency boundaries, based upon the best available science,
- Wildland fire is used to meet identified resource management objectives and benefits when appropriate,
- Prescribed fire and other treatments will be employed whenever they are the appropriate tool to reduce hazard fuels and the associated risk of wildfire to human life, property, and cultural and natural resources and to manage our lands for habitats as mandated by statute, treaty, and other authorities,
- Management response to wildland fires will consider firefighter and public safety, cost effectiveness, values to protect, and natural and cultural resource objectives,
- Staff members will work with local cooperators and the public to prevent unauthorized ignition of wildfires on our lands.

2.1.6 Regional and Refuge Specific Policies

Regional Policies

Fish and Wildlife Service Region 6 Debris Burning Policy

Fire may be used to dispose of wildland fuels generated from maintenance activities (such as grass or brush mowing or clippings) or during construction activities. These materials must be deemed infeasible or impractical to mechanically remove and must be in a non-wildland fuel environment (parking lot, bone yard bare soil, gravel pit, etc.). Where permitted specifically by

local regulations, discarded building and administrative materials can also be burned (U.S. Fish and Wildlife Service 2007).

Fish and Wildlife Service Region 6 Prescribed Burn Plan Preparation / Review Process
In addition to the policies and procedures identified in the most current *Interagency Prescribed Fire Planning and Implementation Procedures Reference Guide (IPFPG)* (National Wildfire Coordination Group 2008), Region 6 of the FWS has additional policies for burn plan preparation and review. These additional regional policies are located in Appendix E-2.

Unit Specific Policies

Currently, there are not any unit specific policies related to fire management at the refuges.

2.2 Land and Resource Management Planning

2.2.1 Rocky Mountain Arsenal National Wildlife Refuges Complex Comprehensive Conservation Plans

Each of the refuges within the Rocky Mountain National Wildlife Refuges Complex (RMANWRC) has their own Comprehensive Management or Comprehensive Conservation Plans (CMP/CCP) (U.S. Fish and Wildlife Service 1996a). These are the primary documents which guide the direction in this FMP. Though only noted in the Rocky Flats CCP, this FMP is considered a "step-down" management plan for all of the refuges in the complex. The CMP/CCPs have established goals, objectives, and strategies intended to move the refuge complex to a desired future condition.

Other step-down management plans referenced in the CMP/CCPs that have an impact on fire management include:

- Individual *Wildland Fuels Assessments* for Two Ponds (7/04) , Rocky Mountain Arsenal (7/04) and Rocky Flats (6/04).
- *Habitat Management Plan* for Rocky Mountain Arsenal (in draft, April, 2013).
- *Station Safety Plan*

These step-down plans and others can be found in the Refuge Headquarters office in Commerce City, Colorado.

2.2.2 Environmental Compliance Documents

2.2.2.1 National Environmental Policy Act (NEPA)

This plan meets the requirements established by the National Environmental Protection Act (NEPA) of 1973.

Rocky Mountain Arsenal NWR: The use of prescribed fire on the Rocky Mountain Arsenal NWR was described in the CMP and its environmental impact statement (EIS) (U.S. Fish and Wildlife Service 1996b). However, further NEPA documentation was accomplished by completion of an environmental assessment (EA) and signing of Finding of No Significant Impact (FONSI) in September 1999. This EA was completed for the 1999 FMP and is attached in Appendix C-1.

Two Ponds NWR: The CMP for Two Ponds NWR does not allow the use of prescribed fire at the refuge. If prescribed fires are to be conducted, appropriate NEPA documentation will be completed prior to conducting prescribed burns.

Rocky Flats NWR: NEPA documentation was accomplished for the use of prescribed fire on Rocky Flats NWR as a part of the CCP which was analyzed in an environmental impact statement (U.S. Fish and Wildlife Service 2004). The Environmental Protection Agency and Colorado Department of Public Health and the Environment have stated that Rocky Flats NWR is suitable for all uses, including the use of prescribed fire (Federal Register 1997).

Categorical Exclusions

The Code of Federal Regulations (43 CFR 46.210) and Department of the Interior policy (516 DM 8.5(B)(5)) identifies Categorical Exclusions (CX) pursuant to 43 CFR 46.205 for fire and fuels management actions. Categorical exclusions are classes of actions which do not individually or cumulatively have a significant effect on the human environment. Categorical exclusions are not the equivalent of statutory exemptions. If exceptions to categorical exclusions apply, under 46 CFR 43.215 categorical exclusions cannot be used. A list of categorical exclusions that may apply to fire management activities is found in Appendix C-2a.

When using CX(s) for planned fire management activities (including prescribed fires, non-fire hazardous fuels treatments, and Burned Area Emergency Response (BAER)/Burned Area Rehabilitation (BAR), Refuge staff will follow guidance identified in Code of Federal Regulations, Department of the Interior policy, FWS policy, and regional guidance for the application and documentation of the appropriate categorical exclusion(s). Per regional guidance, the refuge staff will also document the use of categorical exclusions. Form(s) for documenting the use of CX(s) are located in Appendix C-2b. Documentation of use of CX(s) will be kept in the project (for fuels treatment) or incident history (wildfire) file.

2.2.2.2 National Historical Preservation Act of 1966 (NHPA) and Archeological Resources Protection of 1979

Fire management activities within the Rocky Mountain Arsenal NWRC will be implemented in accordance with the regulations concerning cultural resources outlined in Section 106 of the National Historic Preservation Act of 1966, as amended. The Refuge will also comply with procedures identified in the Archeological Resources Protection Act of 1979 and the Archeological and Historical Preservation Act of 1974.

A listing of actions that will be taken to ensure compliance with Section 106 of NHPA for wildfires is found in 4.1.10; fuels treatments 4.2.3; and Burned Area Emergency Response / Burned Area Rehabilitation in 4.3.6.

2.2.2.3 Endangered Species Act of 1973 (ESA)

Section 7 of the ESA of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884) directs all federal agencies to use their existing authorities to conserve threatened and endangered species and, in consultation with the FWS and the National Marine Fisheries Service, to ensure that their actions do not jeopardize listed species or destroy or adversely modify proposed critical habitat. Section 7(a)-(d) applies to situations involving acts of God, disasters, casualties, national defense or security emergencies, etc., and allows the regulations implementing this section to accommodate the need for Federal agencies to respond immediately to emergencies. Results of Section 7 consultations as well as other information regarding T&E species is found in Appendix C-1.

Further information regarding Section 7 consultations can be found in the Endangered Species Consultation Handbook.

The RMANWRC will implement its fire management program within the restraints of the Endangered Species Act of 1973, as amended, and will take appropriate action to identify and protect from adverse impacts any rare, threatened, or endangered species and its habitats located within the Refuges.

On federal lands, State-listed threatened and endangered species have the same protection as federal-listed species. Colorado Division of Parks and Wildlife (CPW) is delegated certain responsibilities for threatened and endangered species via Colorado Statutes 33-2-101-108 (Nongame, Threatened and Endangered Species Act [ESA]). The CPW maintains lists of threatened, endangered and species of special concern. FWS staff will consult with State officials for fire management activities which may affect species or their habitats that are identified on these lists.

In consultation with their staff, the agency administrator will determine on an annual basis: 1) whether any new ESA listings or designations of critical habitat have occurred for species in the

vicinity; 2) whether any new T&E surveys have revealed species locations in or near proposed projects; and 3) whether the projects conducted the previous year had the intended effects on T&E species and habitat.

The process for complying with Section 7 of ESA is determined based on the fire management activity that is occurring – namely if the activity is an emergency (wildfire or burned area emergency response) or planned (fuels treatments or burned area rehabilitation). Information regarding Section 7 compliance for wildfire is found in section 4.1.10; for fuels treatments see section 4.2.3; and BAER/BAR see 4.3.6.

Rocky Mountain Arsenal NWR: During the development of the Refuge's CMP, a biological opinion was completed for management activities occurring on the Rocky Mountain Arsenal NWR (including prescribed fire) (U.S. Fish and Wildlife Service 1996b).

Two Ponds NWR: The CMP does not allow the use of prescribed fire at the Refuge; however, other fuel treatment methods maybe allowed (such as mowing for fuel reduction, etc). As needed, Section 7 consultation will be initiated to evaluate the potential impacts of fire management activities on T&E species and/or their habitats.

Rocky Flats NWR: During the development of the Refuge's CCP, a biological opinion was completed for management activities occurring on the Rocky Flats NWR (including prescribed fire). In 2010, a total of 1,108 acres of critical habitat was designated for the threatened Preble's meadow jumping mouse. In 2012, a total of 12 acres of this critical habitat were removed from the Refuge to facilitate transportation improvements along the easternmost boundary of the Refuge.

2.2.2.4 Clean Air Act (CAA)

Fire management activities which result in the discharge of pollutants (Carbon monoxide (CO), particulate matter (PM), and other pollutants from fires are subject to and must comply with all applicable federal, State, and local air pollution control requirements as specified in Section 118 of the Clean Air Act of 1963, as amended. Air quality is regulated by the Colorado Department of Public Health and Environment. RMANWRC will meet Clean Air Act emission standards by adhering to the Colorado State Implementation Plan during all prescribed fire events which typically includes timing and duration of ignitions to avoid poor air quality.

The area is designated as "Attainment" for the six Criteria Pollutants (ozone, Carbon monoxide (CO), Nitrogen dioxide (NO_2), Sulfur dioxide (SO_2), Particulate Matter 10 (PM_{10}), Particulate Matter 2.5 ($PM_{2.5}$), and Lead (Pb) by the Environmental Protection Agency (EPA). Information regarding compliance with the national air quality standards can be found at

http://www.epa.gov/airquality/greenbook/. The management of smoke is incorporated into the planning of prescribed fires, and to the extent possible, in suppression of wildfires. Sensitive areas will be identified and precautions taken to safeguard visitors and local residents.

2.2.2.5 Clean Water Act (CWA)

Fire Management activities which result in the discharge of pollutants into watersheds must comply with all applicable federal, State and local water pollution control requirements as specified in Sections 301-320 of the Federal Water Pollution Control Amendments of 1972, as amended (also known as the Clean Water Act). The greatest threat to the hydrological areas is the use of foam, retardants and fuel oils from pumps and engines. The use of foam and retardant must be 300 feet away from water sources and fuel containment barriers will be utilized.

2.2.2.6 The Wilderness Act of 1964

The Rocky Mountain Arsenal NWR, Two Ponds NWR, and Rocky Flats NWR do not contain any areas that meet wilderness criteria. As the refuges have been heavily impacted by human activities, future designations are not anticipated.

2.3 Partnerships

2.3.1 Internal Partnerships

The RMANWRC will also consult and coordinate with the appropriate Zone Fire Management Officer, the Regional Prescribed Fire Specialist, the Regional Fire Management Coordinator, local interagency dispatch centers, and the National Interagency Fire Center (NIFC).

This final version of the Fire Management Plan will be prepared after comments are received from the public and appropriate parties, and informal consultations are conducted with refuge staff, Regional staff, and cooperators. Appendix G includes a list of public places where the FMP was made available for comment, a list of appropriate parties that received a copy of the plan, and copies of comments received during the review process. The FWS *Fire Management Handbook* format and guidelines have been followed in the preparation of this plan. Final review and approval is required by the refuge project leader, the Regional Fire Management Coordinator, and the Regional Director, Region 6. Copies of the approved FMP will be provided to the RMA Program Manager, the Regional Fire Management Coordinator, the RMA Branch of Fire Management, and other interested parties.

2.3.2 External Partnerships

All fire management program activities will be implemented in cooperation and coordination with the Colorado Department of Public Health and Environment Air Pollution Control Division, the U.S. Army at Rocky Mountain Arsenal NWR, the Department of Energy at Rocky Flats NWR, and local fire protection cooperators. Due to the urban location of the RMANWRC, communication will also be necessary with local schools and emergency management organizations. Press releases and other social media will be used to facilitate communication.

Fire Program Analysis (FPA) is an interagency budgetary program. The refuges are partners along with Bureau of Land Management (BLM), US Forest Service (USFS), and National Park Service (NPS) within FPA. The refuges are within the Northern Front Range Fire Planning Unit (RM_CO_007).

2.4 Climate Change

The Department of the Interior has directed that federal agencies under its direction that have land management responsibilities to consider potential climate change effects as part of long-range planning endeavors (U.S. Department of the Interior 2001;2009).

Climate change has begun to influence the severity, frequency and magnitude of wildfires in many regions of the United States. Records of wildfire show increasing area burned in Canada (Stocks et al. 2002, Gillett et al. 2004, Kasischke and Turetsky 2006), Alaska (Kasischke and Turetsky 2006), and the western United States (Westerling et al. 2006) over the past few decades. In the western United States the annual area burned by large forest wildfires (>400 ha) during 1987 to 2003 was more than 6 times that during 1970 to 1986 (Westerling et al. 2006). Wildfire behavior is modified by climate, forest management, and fire suppression (Allen et al. 2002, Noss et al. 2006), and understanding the reasons for changing wildfire is further complicated by changes in fire reporting over the period of record. However, recent changes in climate were likely the main drivers for increases in area burned both in the western United States (Westerling et al. 2006) and Canada (Gillett et al. 2004, Kasischke and Turetsky 2006, Girardin 2007).

The Mountain Prairie Refuges Fire Management Program will follow National and Regional FWS guidance on Climate Change (U.S. Fish and Wildlife Service 2013a). Adaptive management will increasingly be more important to assess climate change effects on management activity outcomes. Due to climate change, fire management treatments must be designed to anticipate where the biota will be in the future with or without the treatments. There is no reasonable expectation that communities of species will remain intact with changes in their environment due to changes in climatic conditions. Historical conditions and treatments must be considered but only after considering where the future species composition is anticipated to be. Monitoring of fire management treatments and scientific investigation must be part of

management to assess the need to adapt or maintain treatments that are currently being used. Fire management must be agile and adept to anticipate and respond to changes in conditions as changes in climate occur.

Prescribed fire releases CO_2 directly to the atmosphere from the biomass consumed during combustion. However, there is no net loss of carbon because new vegetation quickly germinates to replace the burned-up biomass. This vegetation sequesters an approximately equal amount of carbon as was lost to the air (Dai et al. 2001).

3.0 Fire Management Unit (FMU) Characteristics

For the remainder of this document the three refuges of Rocky Mountain Arsenal NWR, Rocky Flats NWR, and Two Ponds NWR, unless specifically noted otherwise, will be combined and discussed as the Rocky Mountain Arsenal NWR Complex (RMANWRC).

Fire management on RMANWRC is guided by two primary sources. First is Federal Wildland Fire Policy (Wildland Fire Leadership Council 2009) as discussed in section 2.1. All of the actions in this plan will consider the policy and is interspersed through the remainder of this document. Second, are the goals and objectives provided by the CMP/CCPs for the three refuges in the complex. This unit is intended to take all of the direction and translate it to fire management specific objectives and strategies.

3.1 Area Wide Management Considerations

3.1.1 Management Goals, Objectives, and Constraints in CMP/CCPs

Fire management goals and objectives are used in the planning process to guide management to determine what fire management responses and activities are necessary to achieve NFP and land management goals and objectives. The FMP will provide direction to safely accomplish objectives during wildfire suppression and fuels treatment activities. Fire operations on RMANWRC will follow these guiding principles.

Specific goals related to each Refuge (each FMU) are identified in sections 3.2 and 3.3. The following goals common to all FMUs within the FMP are listed below.

1. Protect life, property and other resources from unwanted fire.
    a. Manage fire suppression to minimize risks to firefighter and public safety.
    b. Assist local fire protection districts (the South Adams County Fire Protection District, City of Arvada Fire Department, and Rocky Mountain Fire Protection District) in safely suppressing all wildfires using strategies and tactics appropriate to safety considerations specific to the cleanup areas.
    c. Utilize prescribed fire and other treatments to reduce and maintain hazardous fuels in wildland urban interface (WUI) areas at non-hazardous levels to provide for public and firefighter health and safety.
    d. Utilize prescribed fire and other treatments to reduce and maintain hazardous fuels in non-WUI areas to non-hazardous levels to provide for firefighter health and safety and to protect habitats critical to endangered species, migratory birds, and ecosystem integrity.
    e. Integrate local fire departments into prescribed fire activities at the refuges.

    f. Protect critical habitat for threatened and endangered species.
    g. Place a high-priority on protection of riparian habitats.
    h. Consider noxious weed encroachment in all fire management activities.
2. Restore and maintain fire as a viable ecological process.
    a. Maintain habitat diversity in fire-maintained ecosystems through the use of prescribed fire.
    b. Develop partnerships with other federal, state, local and private organizations to further the role of prescribed fire in maintaining and enhancing ecosystem diversity.
3. Use prescribed fire to accomplish resource management objectives.
    a. Use fire in the restoration of habitat for local species of concern.
    b. Use other treatment types to reduce hazardous fuels where prescribed fire is not appropriate.
4. Develop and implement procedures to adequately monitor and analyze data on fire effects and apply this knowledge to the management of the refuge's resources.
    a. Monitor upland responses to fire and other management practices using Photo Monitoring Plots.
5. Fire suppression tactics and strategies will be planned to minimize impacts.
    a. Aerial retardants and foams will not be used within 300 feet of any waterway.
    b. Ground disturbed by suppression activities will be rehabilitated.
    c. Heavy equipment use will be closely monitored in designated areas to minimize impacts on cultural resources.

3.1.2 Management Goals, Objectives, and Constraints from other sources

The RMANWRC wildland fire management program is based on the Departmental Manual, (620 DM 1-2); the FWS Manual (parts 240-244, 054, and 621); the FWS *Fire Management Handbook*; and the *Interagency Standards for Fire and Fire Aviation Operations*. The management response to wildfires can range from intensive management to monitoring. The NWRs in this FMP will utilize this strategy incorporating all pertinent aspects of this fire management plan to establish individual suppression guidelines for each wildfire occurrence on FWS lands. RMANWRC will utilize this wildfire response strategy incorporating all pertinent aspects of this fire management plan to establish individual suppression guidelines for each wildfire occurrence on FWS lands. Structural fire suppression is the responsibility of local governments. We may assist with exterior structural protection activities under formal Fire Protection Agreements that specify mutual responsibilities, including funding. (*Red Book* 01-3)

The following operational standards are found in FWS Manual Part 621:

- Every wildfire on FWS lands requires a management response;

    - The management response to wildfires is based on the likely consequences to firefighter and public safety and welfare; the ecological, social, and legal consequences of the fire; the circumstances under with the fire occurs; and cost effectiveness.
    - Wildfires can be managed wholly or in part to benefit resource objectives if these strategies are addressed in the FMP and associated land management plans.
    - Managing fires on non-Federal land is allowable only if covered under an agreement.
- If a FWS employee, volunteer, or contractor discovers a wildfire, the individual must report it to the appropriate authority. The person(s) must not try to suppress the fire unless they hold a current Incident Qualification Card. If fire poses an imminent threat to human life, the person(s) may take action to protect life, but must not engage in other fire control activities.
- Structural firefighting, including vehicle fires, is not part of wildland fire management program. Regardless of training or qualifications, wildland fire personnel must not engage in structural or vehicle firefighting while on duty.
    - Wildland fire personnel may only participate in protecting vegetation around a structure/vehicle or protecting a structure's exterior from approaching fire when it can be done safely.
    - Agreements must not commit FWS wildland fire personnel to structural or vehicle firefighting.
    - Emergency medical response is not a primary function of wildland fire management program. Wildland fire personnel may provide emergency medical care for employees and the public only within the scope of their training and licensure.
- Fire staff may only use emergency lighting and sirens en route to incidents if the Region has an approved Regional policy and the unit has an approved Refuge/Unit Emergency Lighting and Siren Plan.
- Every wildfire will be investigated to determine cause.

In addition to the standards and guidance above, the following guidance, standards or considerations pertain to fire management activities within the FMP area. Additional limits, constraints, or special considerations that apply to specific FMU or specific areas within a FMU are identified within the specific FMU.

Special Management Considerations

The following considerations influenced the development of the RMANWRC fire management goals and objectives. This information is considered throughout this plan and future individual prescribed burn plans. Specific limits, constraints, or special considerations that apply to Rocky Mountain Arsenal FMU are identified in section 3.2.1.6; Two Ponds NWR FMU in section 3.2.3.6; and Rocky Flats NWR FMU in section 3.2.2.6. The following limits, constraints, and special considerations apply to fire management activities within the entire RMANWRC:

- All fires occurring on the refuges will be staffed or monitored until declared out.
- Use of heavy equipment must be approved prior to use by the project leader except in cases of immediate threat to life and safety of firefighters, members of the public, or infrastructure and homes when the project leader cannot be reached by the Incident Commander (IC), Fire Management Officer (FMO), fire officer, or dispatch office.
- The fire management program will coordinate with appropriate fire protection districts on all suppression actions (South Adams County Fire Protection District for the Rocky Mountain Arsenal NWR, City of Arvada Fire Department for Two Ponds NWR, and Rocky Mountain Fire Protection District for Rocky Flats NWR).
- Public awareness and acceptance of a prescribed burn program for habitat restoration would address negative perceptions of smoke coming from the Refuge during environmental cleanup.
- Fire is an essential part of the refuge's native biotic communities.
- Uncontrolled wildfire has the potential for negative impacts on and off the Refuge.
- Large wildfires could adversely affect the refuge deer population and small fires in specific areas could negatively impact bald eagle roosting and other raptor nesting trees.
- Use of the "minimum impact" concept to minimize environmental damage is important to Service prescribed burn activities

3.1.3 Common Characteristics of Fire Management Units

Fire management units (FMU) on the RMANWRC were designated by an interdisciplinary team of fire and resource specialists. The FMU's individual characteristics will be explained later in the chapter. Of primary importance in their individual designation was geographic separation of the refuges. Also considered was variation in potential impact from smoke and threat to WUI or structures along the refuge boundary.

This FMP conforms to newer standards and definitions for designation of FMUs but also encompasses previously designated project areas that have been designated in the *Wildland Fuels Assessment* for each of the refuges. These project areas were designated for managing prescribed burns and other vegetation management plans.

Table 4: Fire Management Unit Designations

FMU Name	Land Compartments	Acres	Burnable Acres
#1 Rocky Mountain Arsenal	RMA-WUI 01,02,03,04,05	15988	15820
#2 Rocky Flats	RFR-WUI 01,02,03,04	5489	4566
#3 Two Ponds	TPR –WUI 01,02,03	70	69

Maps of the project areas can be found in Appendix B.

Due to the relative small size of the refuges within the complex, and flat terrain, all of the FMU's will have similar climatic impacts. Fuel moistures will stay relatively constant across the complex, varying only depending on species of plant or tree.

A very complete description of climate, vegetation, and wildlife habitats can be found in both the *CMP/CCPs* and *Wildland Fuels Assessments* for all three refuges. This FMP will only include summary information significant to fire management.

3.1.3.1 Climate

A moderate, sunny, semi-arid climate dominates the area with uncommon prolonged periods of very cold/hot weather (Morrison-Knudsen Environmental Services Inc. 1989). The region averages 30 days with high temperatures above 90°F (32°C) and 150 days with low temperatures below 32°F (0°C). Low humidity, moderate temperatures, and moderate winds dominate the 180 day average growing season. Mean maximum and minimum winter temperatures are 41°F (5°C) and 12°F (-11°C) for January, and 85°F (29°C) and 55°F (13°C) for July.

Average yearly precipitation ranges from 12 to 16 inches with 80 percent occurring between the growing season months of April and September. Precipitation is generally in the form of wet snow or rain that occurs primarily during the spring. Precipitation gradually declines throughout the summer when usually brief but intense thunderstorms produce some rain, with overall precipitation decreasing further during fall and winter. Winters are relatively dry with occasional high intensity "chinook" winds typically from the southwest to west. Rocky Flats NWR is especially prone to these winds which may exceed 100 mph on the refuge. The Chinook winds tend to decrease in intensity as distance from the foothills increases. Relative humidity is generally low throughout the year, with numerous days below 10 percent.

The RMANWRC experiences poor air quality and visibility due to its proximity to the Denver metropolitan area. Temperature inversions that prevent atmospheric mixing are common in winter months and open/wood burning bans are usually in affect from November through February. Burn ban periods are obviously important to prescribed burn planning on the Refuges.

3.1.3.2 Wildlife

Rocky Mountain Arsenal NWR: The Rocky Mountain Arsenal NWR is home to numerous species of raptors, grassland birds and big game species. These species and their habitats are discussed in the *Rocky Mountain Arsenal National Wildlife Refuge CMP* (U.S. Fish and Wildlife Service 1996a;b). The bald eagle is an important species on the refuge because numerous birds roost here in the winter and it actively breeds on the refuge.

Two Ponds NWR: The wetland and upland habitats support a variety of wildlife. Over 100 species of birds have been observed on the refuge, mostly during the spring, summer, and fall. Ten of these species, including Swainson's hawks and western meadowlarks, nest on the refuge. Other migrants such as geese and mallards forage and rest on all three refuge ponds. Muskrat, beaver, and raccoon use the irrigation canals and ponds. Great blue herons and black-crowned night herons are frequent visitors during the spring, summer, and fall).

Mule deer are often seen along the ponds and canals, as are several species of small mammals. The red fox is frequently observed at the refuge; there are several fox dens located throughout the site. Leopard frogs, bullfrogs, and painted and snapping turtles sun themselves on logs in the ponds during the warmer months of the year. Largemouth bass, bluegill, sunfish, and minnows are the main fish in the refuge ponds. These species and their habitats are discussed in the *Two Ponds National Wildlife Refuge CMP* (U.S. Fish and Wildlife Service 1997).

Rocky Flats NWR: Due to its proximity to the foothills west of Denver and general historical lack of public use, Rocky Flats NWR contains habitat for numerous big game and upland wildlife species. These include a large population of black-tailed prairie dogs, deer, elk, coyotes, etc. The Preble's meadow jumping mouse, a federally threatened species is also present on the Refuge.

Numerous species of song birds and hawks can also be found on the refuge. These species and their habitats are discussed in the *Rocky Flats National Wildlife Refuge CCP* (U.S. Fish and Wildlife Service 2004;2005a).

3.1.3.3 Vegetation

Rocky Mountain Arsenal NWR and Rocky Flats NWR contain large disturbed areas (11,000+ acres and 900+ acres respectively) where extension reclamation activities have occurred. Restoration is ongoing and ultimately they will return to short and mixed-grass prairie species.

Those portions that are not disturbed contain native prairies. Rocky Flats NWR also contains a xeric tallgrass grassland and tall upland shrubland which are considered rare in the region (see map in appendix B-4).

The Two Ponds area was originally cultivated to produce grass and alfalfa hay and currently is dominated by smooth brome grassland. A small portion of the area has been reclaimed with native shortgrass prairie species.

All three Refuges are dissected by riparian areas containing cottonwood, willows, and there are Russian olives at Two Ponds. Small areas at all three refuges contain some planted trees in the upland areas.

Refer to the CMP/CCPs for the three refuges in the complex for a very complete description of the Refuge's physical/geographical setting and history.

Noxious Weeds

Noxious weed species have the potential to degrade native plant communities and are difficult to control. Some of these noxious weed species include diffuse knapweed, musk thistle, Dalmatian toadflax, Canada thistle, and St. Johnswort. Diffuse knapweed is currently given the highest control priority. Canada thistle is common in and around most of the wetlands, musk thistle is sparse but widespread across mesic grasslands, and Dalmatian toadflax is common in xeric grasslands and other areas (Colorado Department of Agriculture 2013). Weed control measures currently used include biological, mechanical, and chemical controls.

3.1.3.4 Archeological, Cultural and Historic Resources

Inventories on the complex have identified numerous prehistoric and historic resources. Most are nonflammable projectile points, pottery shards, and hammer and grinding stones. These sites have likely been impacted by numerous fires over time. Damage to these sites is more likely to occur from fire suppression activities.

There are a few historic sites created by pre war cattle ranching activities and also related to Cold War weapons production. These sites are noted in CMP/CCPs for the complex and could be negatively affected by wildfire.

3.1.3.5 Improvements

A list of capital improvements and their value can be found in Appendix G-4. Complex budgets are based solely on building square footage and infrastructure values. Wildfire damage to improvements on and off the Refuge is a primary concern. While developments can generally be protected from fire damage, dispersed improvements, such as fences, kiosks, signs, monitoring wells, and other public use and environmental cleanup infrastructure are likely to be damaged by severe or large fires.

3.1.3.6 Recreation and Public Use

Currently both Rocky Mountain Arsenal NWR and Two Ponds NWR are open to recreational use that includes hiking and some limited fishing. The Rocky Mountain Arsenal NWR includes

areas that are closed to the public due to remediation activities. Currently, there is no public access to Rocky Flats NWR.

Future plans for all three refuges include significant improvements to the recreation user infrastructure. As these improvements are completed there may be potential for increase of human caused fires within the refuges. Also, public safety during a wildfire will have to be considered.

Employee and Firefighter Safety Considerations

Safety of personnel involved in fire management activities is the highest priority. Only trained and qualified employees will be assigned to fire management duties. The refuges will adhere to qualification requirements listed in *PMS 310-1*, the *NWCG Wildland Fire Qualifications Guide*, and those agency specific qualifications guidelines outlined in the FWS *Fire Management Handbook*, and Department of the Interior policy (*620 DM 1-2*). All fire management personnel will be issued appropriate personal protective equipment (PPE) and will be trained in its proper use. No FWS employee, contractor or cooperator will be purposely exposed to life threatening conditions or situations except when necessary to save the life of another person. Staff members utilized in wildland fire operations are required to pass a fitness test at a level appropriate for their qualifications. All staff members used in wildland fire operations will attend an annual fire refresher course.

The primary threat to firefighter safety is from fast moving, wind-driven wildfires in light, flashy fuels that can quickly over-take and trap firefighters. Due to terrain, Rocky Flats NWR is often broken by series of moderately to deeply incised drainages and ridges, vehicle access is limited and terrain may make it difficult for an engine to out-run a fast moving fire.

It is important that firefighters be aware of their situation by following the principles of Lookouts, Communication, Escape Routes, and Safety Zones (LCES). Spot weather forecasts should be requested early-on during initial attack to gain insight into the possibility of shifting winds from thunderstorms, approaching fronts, and other weather related phenomena.

Smoke from wildland fires is a recognized health concern for firefighters. Incident Commanders and prescribed burn bosses must plan to minimize exposure to heavy smoke by incorporation the recommendations outlined in the publications *Health Hazards of Smoke (*Sharkey 1997) and *Smoke Management Guide for Prescribed and Wildland Fire* (NWCG 2001).

As noted above, the SACFPD is responsible for fire suppression within Rocky Mountain Arsenal NWR. This is due in part to special safety considerations required when responding to fires within the cleanup areas.

Public Safety
Smoke from an FWS fire could impair visibility on roads and become a hazard. During wildfires, the Incident Commander is responsible for managing traffic hazards from smoke (Refer to the *Uniform Traffic Control Manual* (Federal Highway Administration 2013)). Management of smoke from prescribed fire is included in the prescribed burn plan and is the responsibility of the burn boss. Actions to manage smoke included: use of road guards and pilot car, signing, altering ignition techniques and sequence, halting ignition, suppressing the fire, and use of local law enforcement as traffic control.

Wildfires which might escape FWS land, and spread to inhabited private, state or federal property are also a concern. The Incident Commander is responsible to ensure the appropriate officials having jurisdiction are contacted so they can warn and evacuate the public from potentially dangerous situations. Additionally, the refuges will use prescribed fire and other management techniques to manage hazard fuels in high risk areas.

Flaming fire fronts in grass fuels spread rapidly and are dangerous. As is common in the West, refuge neighbors show up to help fight fire. Entrapments have real potential in these situations. Refuge staff will attempt to keep the fire scene clear of people except for agency firefighters and members of cooperating fire departments.

3.1.4 Common Characteristics of the Fire Environment and Fire Behavior

Predominant Fire Environment
Topography is generally level to gently rolling. Vegetation is predominantly short to mid-grass prairie with scattered brush and trees. Vegetation is continuous within sections with few two-track roads or man-made fuel breaks. However, future refuge planning will eliminate or reduce maintenance levels on some refuge roads. Fires can be moderately intense with extreme rates of spread within sections with few fire breaks, but usually can be controlled once flame fronts reach section-line roads.

Fire Season and Normal Fire Year
The fire season for prescribed burns begins when open burning air quality restrictions are lifted in early March and ends in late October 30 when these restrictions are reinstated, usually on November 1. However, due to the close proximity of neighboring communities, wildfires have historically occurred at any time of year, most often during the summer months. Summaries of fires can be found in section 3.2.

Highest fire occurrence is exhibited during the lightning season which generally starts in April and runs through August. Almost all lightning started fires are accompanied by winds, and suppression may or may not be assisted by rain. In general, dry lightning fire responses appear to

be more common in drought years. More human caused wildfires occur during the summer months along refuge borders from discarded cigarettes and firecrackers set off in late June and early July. Fires occurring outside the lightning season occur with less frequency but have tended to be larger (>50 acres) with a high potential for escape and threat to life, property, and resources. This is primarily due to the seasonal curing of fuels and high average wind speeds in some winter months.

Fire History and its Effect on Refuge Goals and Objectives

Wildfire is a natural component of the shortgrass prairie environment (Brockway et al. 2002). Fire created and sustained the native prairie by helping to prevent the invasion of trees and other woody species. Historic records describe huge prairie fires started by lightning or humans. Fires often burned millions of acres because there were few natural fuel breaks and no suppression. As with southern mixed-grass prairie, slow litter accumulation on short and mixed grass systems probably prevented fires from occurring more frequently than every 5 - 10 years (Bragg and Steuter 1995). Other studies indicate that a longer frequency of 10 - 30 years may be more accurate.

Fire was an essential part of the natural shortgrass and sand prairie ecosystems found in the eastern Colorado, Central Great Plains region. It is an essential tool available to resource managers involved with restoring and maintaining natural grassland habitats

While short term damage from a wildfire on the RMANWRC resources could be serious and costly, the long term effect would most likely be negligible or positive. This would not, however, be true for refuge neighbors where an escaping fire could pose considerable risks to public safety and cause negative economic and political implications. Therefore, the RMANWRC will suppress and/or control wildfires to minimize damage, but will initialize prescribed burning strategies to maximize hazardous fuels reduction and habitat management benefits.

Fire Effects on Flora

Fire effects on flora depend on seasonality and intensity of the fire. Short and mixed-grass prairies ecosystems were maintained in part by fire. The Fire Effects Information System (FEIS) available on-line at http://www.fs.fed.us/database/feis/ is an excellent source of fire effects on specific species. Another source of information is *Wildland Fire in Ecosystems: Effects of Fire on Flora* (Brown et al. 2000) and *Wildland Fire in Ecosystems: Fire and Nonnative Invasive Plants* (Zouhar and Ainsworth 2008).

Fire Effects on Fauna

Fire effects on fauna generally depend on fire intensity as well as seasonality. Many species of fauna evolved with fire as one of the disturbance factors in the ecosystem. The Fire Effects Information System (FEIS) available on-line at http://www.fs.fed.us/database/feis/ is an excellent

source of fire effects on specific species. Another source of information is *Wildland Fire in Ecosystems: Effects of Fire on Fauna* (Smith et al. 2000).

Fire Behavior and Fuel Models

There is little documentation or research on fire behavior in the shortgrass prairie, but some generalizations can be made. Fine fuels, mostly grasses, are the primary fuel in most cases. Larger diameter fuels typically only become a factor during periods of drought. The fineness of most fuels combined with well drained sandy soils, high average winds, and low humidities can produce high fire danger situations despite recent precipitation or season. Under normal daytime conditions, fires can exhibit high rates of spread and flame lengths in excess of 4 feet. Conversely, diurnal temperature and humidity changes, particularly during the winter, spring, and fall, produce low fire activity at night, and may completely extinguish a fire. Most fuels exhibit rapid burnout with very little smoldering.

Fires in shrub and timbered areas generally exhibit low to moderate fire intensity during normal seasons. However, summer drought makes most fuels available and produces crowning and extreme fire behavior. An increase in live and dead fuel loadings due to fire suppression has served to increase fire intensity in these areas over the years. There are areas surrounding refuge lakes where intense stand replacement fires with torching or crowning activity is likely under climate conditions which would have historically resulted in a moderately intense surface fire.

The Great Plains are known for large, fast moving grass fires which defy suppression (Hart and Hart 1997). Large fires are becoming less common due to manmade fuel breaks and suppression, but do occur several times yearly. Although large fires may occur at anytime, they generally occur when 1 or more excellent growing seasons are followed by a dry, open winter and/or drought

Fire Behavior System Fuel Models

Fuel models provide a set of descriptive parameters of the fuel complex within a particular site. From those parameters a selected fuel model will provide a set of predictions for how a particular fire will behave given a set of climatic conditions. The RMANWRC has used the standard 13 fuel models from the Fire Behavior Prediction System (FBPS), (Rothermel, 1983) and (Anderson, 1982). The system was noted to have some shortcomings primarily due to the static nature of the modeling. This did not allow for change over time of fuel moistures in the fuels and also predicted worst case conditions. Scott and Burgan wrote (2005) "*A Comprehensive Set of Standard Fire Behavior Fuel Models for use with Rothermel's Surface Fire Spread Model"* providing the framework for fuel models used. This FMP will indicate what the probable new fuel models are likely to be, but field testing using the new models will need to be confirmed.

The FBPS fuel models found in the complex include 1, 2, 3, and very small areas of 6, and are described as follows:

1. FBPS Model 1; Probable *new fuel model, GR1 or GR2*; Low growing perennial or annual grasses and forbs are the primary fuel. Some brush and shrubs can be present but do not significantly contribute to fire behavior. In the absence of extreme conditions, fire suppression is relatively simple in this fuel type and resistance to control is low to moderate depending on fuel loadings and wind speed.
2. FBPS Model 2; Probable *new fuel model, GR4 or GS1*; This model traditionally exists as low to moderate loads of grass growing under brush or trees. Grass is the primary carrier of the fire but overstory brush and some trees can contribute to higher intensities and produce embers which contribute to spot fires. In the absence of extreme conditions, fire suppression is relatively simple in this fuel type and resistance to control is low to moderate depending on fuel loadings and wind speed. As noted above, this model is more likely to produce spot fires than areas where no overstory exists.
3. FBPS Model 3; Probable *new fuel model, GR7*; This is primarily taller grass species found at Two Ponds and the xeric tallgrass prairie at Rocky Flats. Areas in and around wetlands and lakes can fall into this fuel model. Fuel loads are generally directly proportional to moisture availability. The heaviest loads are found in marshes and sub irrigated meadows. These fuels can exhibit extreme rates of spread and flame lengths with average winds and minimal drying. Resistance to control is very high to extreme but limited to relatively small continuous fuel load areas.
4. FBPS Fuel Model 6*;* Probable *new fuel model, GS2 or SH2*; The model contains sand sagebrush, rubber rabbitbrush, riparian and riverine cottonwood/willow overstory with a grass understory. These areas are usually associated with wetter riparian areas. Portions of RMANWR are more of an upland site and contain some significant brushy areas. Fires in this fuel type are generally carried in the surface fuels and are not intense because the foliage contains little dead material. Willow does not burn readily, except under extremely dry conditions. In the case of sagebrush and rabbitbrush, grass is not the primary fire carrier. Fire is carried primarily in the shrub layer, but usually requires high winds to push the fire between plants.

Relationship to Fire Management Objectives

From a fire ecology standpoint, native grasslands are dependent on periodic low to moderate intensity fires. If large amounts of dead fuel are allowed to build, fires will be more intense and could cause damage to root systems. More intense fires along with more frequent fires combine to enhance conditions for cheatgrass to invade.

The same fire intensities are important for the riparian areas. Frequent low intensity fires will help reduce heavy fuel buildup without damaging cottonwoods and other important riparian

vegetation. During drought fire managers should consider mitigation along riparian areas to reduce potential for intense fires.

3.2 Rocky Mountain Arsenal NWR Complex Fire Management Units

There are three Fire Management Units (FMU) on RMANWRC. Due to their geographic separation, each of the refuges in the Complex is considered to stand alone as individual FMU's.

3.2.1 Rocky Mountain Arsenal NWR Fire Management Unit Characteristics

Table 5.1. Rocky Mountain Arsenal NWR Fire Management Unit Summary

FMU Name	Wildfire Management Strategy	Fuels Management Strategy	Total Acres	Burnable Acres	Fuel Models Present
Rocky Mountain Arsenal NWR FMU	Protection	Prescribed fire; mechanical; chemical; biological	15988	15820	1,2,3,5,6

3.2.1.1 Location

The Rocky Mountain Arsenal NWR FMU is located 10 miles northeast of downtown Denver in Commerce City, Adams County, Colorado. The FMU encompasses all lands within the boundary of the Refuge. This FMU contains project area numbers RMA-WUI 01, 02, 03, 04, and 05.

The HMP has the refuge divided into two management zones. One zone is used primarily by visitor services in their education efforts with some restoration efforts being conducted. The remaining zone occupies approximately 12,500 acres, or 80% of the Refuge, where extensive restoration work is underway.

3.2.1.2 Soils and Topography

<u>Soils</u>

The Refuge is located in a north-south fold in the regional geology extending along the Front Range from Colorado Springs to Cheyenne, Wyoming, called the Denver Basin. Surface geologic deposits consist primarily of alluvium (unconsolidated river sediments) deposited by the South Platte River which are partially covered by eolian (wind-blown) sediments. Most of the alluvial deposits are fine-textured, except for remnants of cobble alluvium which occur on Rattlesnake and Henderson Hills, and in the North Plants area. These are the oldest recognizable soil features on the Refuge, deposited about 600,000 years ago (Morrison-Knudsen Environmental Services Inc. 1989).

Most of the soils in the northern zone were developed from water-deposited material and vary in texture from clay to loam. The soils in the southern half of the Refuge were developed primarily from wind-deposited materials and are typically sandy in texture. Most of the sand prairie on the Refuge is found in the southern zone, while most of the shortgrass prairie yet to be established will be in the northern and eastern zones (James P. Walsh & Associates Inc. 1991).

Breuer is the most common soil series on the Refuge. These soils occur on sandy wind deposited plains in the southwestern and southern portions of the Refuge. Bresser soils are deep and well drained with medium to coarse textures.

Weld series soils also occur extensively in the northeastern portion of the Refuge. These soils are formed from alluvial and wind deposited material and hove fine to medium textures. Ascalon soils are found on old alluvial terraces, escarpments and eolian plains in the central and northern areas of the Refuge. Satanta soils are similar to Ascalon but are finer textured. The well-drained Nunn soils are found in moderate distribution over the north and east portions of the Refuge. The coarse sandy textured Truckton soils are found to a limited extent in the south and west portions of the Refuge; they are highly susceptible to wind erosion. Aquic Hoplustolls are deep, poorly drained soils occurring primarily along First Creek (James P. Walsh & Associates Inc. 1991).

Refuge soils are subject to wind and water erosion. The Nunn and Satanta soils are the most susceptible to water erosion. Truckton, Bresser, and Ascalon soils have the greatest potential for wind erosion when vegetation is removed.

Topography

The land surface of the Arsenal has been shaped largely as a result of erosion and deposition associated with the South Platte River and its tributaries. These processes resulted in a landscape dominated by nearly level to gently sloping terraces, with some steeper sloped terrace escarpments. Slopes generally vary from 0-3%, with up to 10% on terrace escarpments. The local slope of the land surface is generally to the northwest.

Rattlesnake Hill, located in the center of the Refuge, and Henderson Hill, located in the northeast portion of the Refuge, are the two highest hill points on the Refuge. Elevation ranges from 5,138’ msl along the northwest boundary to 5,250’ msl along the southeast boundary.

3.2.1.3 Jurisdictional Boundaries

The majority of lands within the FMU are owned by FWS (the U.S. Army still owns lands within the center of the Refuge). The FMU is bordered by the urban communities of Commerce City to

the west/northwest and Montbello to the south. Denver International Airport is located east of the FMU and new housing developments and agricultural land exist along the northern border.

3.2.1.4 Special Areas

The Rocky Mountain Arsenal NWR includes one bald eagle management zone.

3.2.1.5 Access

The primary access to this FMU is from Quebec Street in Commerce City, Colorado. This FMU is easily accessible by paved roads surrounding it and a combination of paved and improved dirt roads within.

3.2.1.6 Fire and Fuels Treatment History

Average Wildfire Occurrence: Since 1995 the Arsenal has had 56 wildfires, averaging 3.3 wildfires a year. Over 80% of these fires are less than 10 acres in size. (Appendix D-10)

Communities at Risk (CAR) / Communities of Interest (COI): The Rocky Mountain Arsenal NWR is surrounded by residential housing developments on all sides except east of the FMU. East of the FMU is the Denver International Airport. As a result fires that threaten leaving the FMU on all sides must be suppressed.

Rocky Mountain Arsenal NWR FMU is currently located in the South Adams County Fire Protection District.

Five Year Average Fuel Treatments: The refuge averages about 550 acres per year of prescribed fire. Mowing of about 100 acres of grass is done annually at the perimeter of the refuge and interior two tracks.

Fire Management Strategies
Assist local fire protection districts in safely suppressing all wildfires using strategies and tactics appropriate to safety considerations and the values at risk.

Based on the Goals and Objectives for fire management found in part 3.1, fire suppression managers will aggressively pursue fires that threaten WUI areas.

In the remainder of the FMU fires will be confined to project area boundaries. The amount and kind of response to fires will be based on fire fighter safety and documented through direction in the Step-Up plan (Appendix D-2).

Public and Fire Fighter Safety Considerations
As noted above, the SACFPD is responsible for fire suppression within the FMU. There may be some, but unlikely, potential to encounter unexploded ordinance or hazardous waste.

3.2.2 Rocky Flats Fire Management Unit (FMU #2)

Table 5.2. Rocky Flats NWR Fire Management Unit Summary

FMU Name	Wildfire Management Strategy	Fuels Management Strategy	Total Acres	Burnable Acres	Fuel Models Present
Rocky Flats NWR FMU	Protection	Prescribed fire; mechanical; chemical; biological	4566	4566	1,2,3,5

3.2.2.1 Location

The Rocky Flats NWR FMU is located 4 miles northeast of Golden, Colorado in Jefferson and Boulder Counties. The FMU encompasses all lands with the boundary of the refuge.

3.2.2.2 Soils and Topography

The Rocky Flats NWR sits at the interface of the Great Plains and Rocky Mountains, about 2 miles east of the foothill escarpment in Jefferson County, Colorado. The elevation of the refuge ranges from 5,500 feet in the southeastern corner to 6,250 feet on the western edge of the property (U.S. Fish and Wildlife Service 2011).

Geological units at the Rocky Flats site range from unconsolidated surficial deposits to various bedrock layers. Surficial deposits in the western portions of the site are characterized by Rocky Flats Alluvium, clayey and sandy gravels up to 100 feet thick. The steeper slopes below the Rocky Flats Alluvium in the central portion of the site generally consist of landslide deposits. Surficial deposits in the eastern portion of the refuge consist of colluvium 3 to 15 feet thick and terrace alluvium 10 to 20 feet thick (Shroba and Carrara 1996).

3.2.2.3 Jurisdictional Boundaries

The majority of lands within the FMU are owned by FWS (the U.S. Department of Energy still owns lands within the center of the Refuge). The FMU is bordered by municipal open space to the north and east. There is light commercial and an active aggregate mine to the west. The Candeles development borders the Refuge to the south.

3.2.2.4 Special Areas

The Rocky Flats NWR includes 1,096 acres of designated critical habitat for the threatened Preble's meadow jumping mouse.

3.2.2.5 Access

The primary access to this FMU is from Highway 93 north of Golden, Colorado, but there is also access along Indiana Street. This FMU has a paved entrance on Highway 93, but interior roads are rough and often inaccessible. Areas within the Department of Energy lands are restricted from entry.

3.2.2.6 Fire and Fuels Treatment History

Average Wildfire Occurrence: Several wildfires have been documented on the site since 1993. In 1994, the Spring Grassland fire burned 70 acres between SH 128 on the north boundary and the north access road. In 1996, the 104-acre Labor Day Grassland Fire burned much of an area penned in by access roads in the southern portion of the site. In February 2002, a 27-acre fire burned through portions of the Rock Creek drainage on the south side of SH 128. A 48-acre prescribed burn was conducted on April 6, 2000. The prescribed burn took place in the same area as the 1996 wildfire. A fire caused by a faulty power line burned 852 acres on the refuge and another 140 acres outside of Federal ownership. In 2011, a fire burned between 10-15 acres along Indiana Street. In early 2013, a fire burned under 1 acre.(Appendix D-10)

Communities at Risk (CAR) / Communities of Interest (COI): The Rocky Flats NWR is generally surrounded by municipal open space, but new residential development is occurring on the southern boundary.

The Rocky Mountain Fire Protection District has an MOU for fire protection in this FMU (see Appendix H-3).

Five Year Average Fuel Treatments: There have been no fuel treatments in the past five years.

Fire Management Strategies

Assist local fire protection districts in safely suppressing all wildland fires using strategies and tactics appropriate to safety considerations and the values at risk.

Based on the Goals and Objectives for fire management found in part 3.1, fire suppression managers will aggressively pursue fires that threaten WUI areas.

In the remainder of the FMU fires will be confined to project area boundaries. The amount and kind of response to fires will be based on fire fighter safety and documented through direction in the Step-Up plan (Appendix D-2).

Public and Fire Fighter Safety Considerations
As noted above, the Rocky Mountain Fire Protection District is responsible for fire suppression within the FMU. Fire managers should coordinate entry and suppression tactics with the Department of Energy. There is potential for increased publicity due to past activities occurring on the Rocky Flats site.

3.2.3 Two Ponds NWR Fire Management Unit (FMU #3)

Table 5.3. Two Ponds NWR Fire Management Unit Summary

FMU Name	Wildfire Management Strategy	Fuels Management Strategy	Total Acres	Burnable Acres	Fuel Models Present
Two Ponds NWR FMU	Protection	Mechanical; chemical; biological	70	69	1,3,6

3.2.3.1 Location

Two Ponds NWR is situated in the heart of an urban area. Located within the City of Arvada, a suburb of Denver, Colorado, the FMU is an oasis in residential area and commercial development. This FMU contains project area numbers TPR –WUI 01, 02, and 03.

3.2.3.2 Jurisdictional Boundaries

The FMU currently is within the City of Arvada, Colorado. Primary access is from 80th Avenue approximately ½ mile east of Kipling.

3.2.3.4 Special Areas

There are urban trails that the local residents utilize.

3.2.3.5 Access

The FMU is easily accessible by paved city streets, i.e., Simms Avenue on the west side and 80th Street on the north boundary that surround it.

3.2.3.6 Fire and Fuels Treatment History

Average Wildfire Occurrence: There are no long term records for the FMU since it originally was in private ownership and used for agricultural purposes.

Communities at Risk (CAR) / Communities of Interest (COI): The entire area surrounding this FMU is residential housing. These housing areas can be threatened by fires originating within the FMU and unplanned ignitions can occur from fireworks and other sources coming from the housing areas.

This FMU resides in the Arvada Fire Protection District.

Historical and Planned Fuels Treatments: Due to proximity of residential housing, no prescribed fire is planned for this FMU. All planned treatments to reduce hazardous fuel will be done mechanically. Note the *Wildland Fuels Assessment for Two Ponds NWR* (July, 2004).

Fire Management Strategies

Based on the Goals and Objectives for fire management found in part 3.1, fire suppression managers will aggressively pursue all fires.

Public and Fire Fighter Safety Considerations

This refuge has heavy public use with many internal trails. A large canal also runs though the refuge which limits access.

4.0 Wildland Fire Operational Guidance

4.1 Management of Unplanned Ignitions

All wildland fires will be managed in accordance with the procedures and requirements outlined in the *Guidance for Implementation of Federal Wildland Fire Management Policy* (Wildland Fire Leadership Council 2009). All unplanned ignitions will be suppressed. In addition, the response strategies and tactics used to manage a wildfire will be based on objectives identified in CCPs and/or Fire Management Plan.

Response to wildfire (unplanned ignition) encompasses all of the response actions necessary to manage a wildfire event for the duration of the event. The refuges with the Rocky Mountain Arsenal NWRC will safely suppress all wildfires (U.S. Fish and Wildlife Service 1996a;1997;2005a). All wildfires will receive a suppression response that may run the full range from aggressive initial attack to a combination of tactics to achieve confinement. In implementing response to wildfire, the full spectrum of tactical options, from monitoring a fire at a distance to intensive suppression actions are available to the fire manager. Beginning with the initial response to any wildfire, decisions will reflect the goal of using available firefighting resources to manage the fire for the most effective, most efficient, and safest means available. Several factors include:

- All wildfires will receive a management response. The management response will be developed based on firefighter and public safety considerations, resource and cultural values at risk, and circumstances unique to the incident while providing for cost-effective management. Potential benefits will not be considered when determining strategy and tactics for wildfire suppression.
- All wildfires will be supervised by a qualified Incident Commander (IC) (see section 4.1.5.4 for IC responsibilities):
- FWS policy requires the utilization of the Incident Command System (ICS):
- All resources, including mutual aid resources, will report to the IC (in person or by radio) and receive an assignment prior to tactical deployment;
- All fire management activities will be conducted in a manner consistent with applicable laws, policies, and regulations;
- Generally complexity of most wildfires is low requiring an ICT5 or ICT4 with few resources needed.
- A statewide agreement (Colorado Department of Public Safety 2013) (Appendix H-1) is in place that includes RMANWRC. This agreement defines procedures and acceptable practices for extended attack incidents.
- A wide range of acceptable tactics are available to be used at the discretion of the incident commander. Safety of firefighters and the public will be the primary consideration used to

select appropriate tactic. Direct attack and indirect attack will be the most common tactics utilized. Use of man-made and natural boundaries is common and recommended.

Structural firefighting, including vehicle fires, is not within the scope of the wildland fire management program. Regardless of training and qualifications gained through local or volunteer fire department duties, no personnel funded through Preparedness or Hazard Fuel accounts will engage in structural firefighting while on duty. Wildland fire personnel may assist in protecting vegetation around a structure or protecting the structure's exterior from approaching fire when it has been determined structure protection can be safely accomplished. Supervisors will not knowingly place employees in a position where exposure to noxious gases, chemicals, or other situations which require the use of self-contained breathing apparatus. Cooperative agreements will not commit FWS firefighters to structural firefighting.

The decision matrix outlined in the following table is intended to provide the Incident Commander (IC) guidance when selecting the appropriate management response. The FMP is intended to provide guidance and set limits, but is the responsibility of the IC to make the final determination.

Table 6. Range of Options for Management Response

Potential Situation		Potential Strategy		Potential Tactics
Unplanned ignition on Refuge lands which does not threaten life, natural or cultural resources or property values.		Identify area where fire might be expected to remain with limited or partial perimeter control.	1	Monitor fire spread and intensity.
			2	Identify management action points and tactical actions at those points. Prepare to respond as needed.
			3	Public information.
			4	Patrol and surveillance.
Wildfire burning onto Service lands with no immediate threat to human life and no high value resources to protect.		Suppression strategy with effective cost management in line with values to protect. Protect values as needed by point protection or partial perimeter control.	1	Monitor fire spread and intensity.
			2	Use natural and constructed barriers to keep fire within a planned boundary. As needed, construct, burnout, and hold direct and indirect line.
			3	Assess need for mop-up inside fire edge.
			4	Patrol and surveillance.
1	Wildfire that threatens life, property or sensitive resources.	Protect values threatened. Where safe, attack full fire perimeter aggressively to keep fire small.	1	Continually monitor advance of fire edge as possible.
			2	Deploy forces to protect values.
2	Extreme fire behavior observed or expected.		3	Use air and ground attack where safe and effective.
			4	Plan for extended attack.

4.1.1 General Management Considerations and Guidance

The following considerations and guidance pertain to wildfire suppression activities:

<u>Minimum Impact Suppression Tactics (MIST)</u>

FWS policy requires the fire manager and firefighter to select a wildfire response commensurate with the fire's potential or existing behavior, with minimal environmental impact. Utilizing minimum impact fire suppression tactics is a desirable goal of the FWS if resource objectives can be achieved. The minimum impact tactics concept is defined as the aggressive application of those strategies and tactics which effectively meet management objectives with the least cultural and environmental impact. Minimum impact operations require that both short and long-term

values at risk be evaluated and compared to suppression costs. This can be a difficult task and is often subjective.

Minimum impact operations emphasize the need to manage a wildfire while maintaining a high standard of caring for the land. The IC must consider what is necessary to manage fire spread and ensure it is contained within the fireline or designated perimeter boundary. Actual fire conditions and good judgment will dictate the actions to be taken. At no time should minimum impact tactics be used if suppression objectives cannot be accomplished. Further MIST information is in Appendix D-3.

All wildfires will be supervised by a qualified incident commander (IC) responsible to:

- Assess the fire situation and make a report to dispatch as soon as possible.
- Use guidance in this FMP or a Delegation of Authority to determine and implement an AMR.
- Determine organization, resource needs, strategy, and tactics.
- Brief incoming and assigned resources on the organization, strategy and tactics, weather and fire behavior, LCES, seasonal and historic ERC's or other dryness indicators, and radio frequencies.
- Advise dispatch of resources needed for the AMR.
- Manage the incident until relieved or the fire is suppressed.

4.1.2 Interagency Operations

Along with other land management agencies, the FWS has adopted the National Interagency Incident Management System (NIIMS) *Wildland Fire Qualification System Guide* (PMS 310-1) to identify minimum qualification standards for interagency wildfire 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 wildfire suppression. Under that authority, local wildfire suppression forces will meet the standards established for their agency or department. For prescribed fire, State, local cooperators, and contractors working on federal agency prescribed fires must meet NWCG 310-1 standards unless local agreements and/or contracts specify otherwise.

Cooperators will:

- Provide assistance in suppression of wildfires, as defined in cooperative agreements and memorandums of understanding.
- Assist, as needed, in the investigation of suspicious fires.

Mutual aid resources responding from fire departments to FWS fires will not be required to meet NWCG fire qualification standards during initial attack; but, they must meet the standards set by their own department. Mutual aid resources will report to the Incident Commander (IC) (in

person or by radio) and receive their assignment. Mutual aid resources will be the first priority for release from the incident. Occasionally, individuals that are not members of a fire department will arrive at a fire scene. These individuals are not to be used as firefighters. If additional firefighters are needed, appropriate procedures will be used to acquire qualified/trained firefighters.

Every effort will be made to provide assistance to local or federal cooperators under the 'closest resources' and 'total mobility' principles in accordance with FWS policy.

All fire management program activities will be implemented in cooperation and coordination with the Colorado Division of Fire Prevention and Control, and local fire protection cooperators. RMANWRC will also consult and coordinate with the FWS Regional and National personnel as needed.

For suppression activities, RMANWRC currently maintains agreements with Jefferson County through Annual Operating Plans (AOP).Coordinated by the Colorado Division of Fire Prevention and Control. These and other agreements will be maintained to assist in limiting wildfire impacts on and off the RMANWRC.

- The primary agency responsible for suppression on Rocky Mountain Arsenal NWR is the South Adams County Fire Protection District (SACFPD).
- The primary agency responsible for suppression on Rocky Flats NWR is the Rocky Mountain Fire Protection District (RMFPD).
- The primary agency responsible for suppression on Two Ponds NWR is the Arvada Fire Protection District (AFPD).

These primary cooperators will generally use an aggressive initial direct attack strategy with engines on the flaming front. Indirect attack may be used to protect values-at-risk and/or if engines are unable to suppress the head of the fire directly because of extreme rates of spread. FWS personnel and/or equipment may be called upon to assist with wildfire suppression in areas inaccessible to large engines.

Limits

Complexwide (RMANWRC): The Service will assist the South Adams County Fire Protection District (SACFPD), Arvada Fire Protection District (AFPD), Rocky Mountain Protection District (RMPD) Jefferson County Open Space (JCOS), Boulder County Open Space (BCOS) and encourage them to use minimal impact suppression tactics.

- Limits to strategies employed by the FWS when wildfire suppression responsibilities will include such tactics as limiting the use of aerial retardant, foam, and heavy equipment on

sensitive habitats, limiting hazard fuel reduction fires to fire adapted communities, and excluding the use of wildfire for resource benefit.

- Cost effectiveness of current prescribed fire and future fire suppression strategies will be considered prior to conducting activities. In some cases, cost could be a limiting factor that might be reduced if fire was combined with another treatment such as mowing, etc.
- All fires occurring on the RMANWRC will be staffed or monitored until declared out.
- Heavy equipment (dozers, discs, plows, and graders) will not be used for fire suppression except in life threatening situations without the express approval of the project leader or his/her designee.
- Aerial Retardants and foams will not be used within 300 feet of any waterway as described in the *Policy for Aerial Delivery of Wildland Fire Chemicals near Waterways* (U.S. Forest Service et al. 2000;2009).
- Structural fire suppression is the responsibility of local governments. We may assist with exterior structural protection activities under formal Fire Protection Agreements that specify mutual responsibilities, including funding.

Rocky Mountain Arsenal NWR:

- Environmental limitations on fire strategies may be imposed by land use controls on-site by "covers and caps" and on landfills. Additional issues discussed in this plan that may limit fire strategies include endangered or threatened species, air quality concerns, and firefighter and public health and safety.

Two Ponds NWR:

- None

Rocky Flats NWR:

- No FWS personnel will take suppression or any other action on Department of Energy lands without prior coordination.

Annual Operating Plans:

Refuge staff in coordination with the Fire Management Officer will organize and manage an Annual Operating Plan (AOP) process to ensure coordination and cooperation between the various cooperators that might respond to wildland fires in the RMANWRC. Each refuge AOP will identify cooperators, jurisdictions and authorities, detection and notification procedures, incident command procedures, fire suppression resources, personnel qualifications, communications considerations, and suppression procedures.

In January of each year, AOP participants will review and approve the AOP detailing cooperation and coordination agreements for the impending season. AOPs relevant to

RMANWRC are in Appendix H. The project leader will present a Delegation of Authority Letter to the Fire Chief(s) under whose jurisdiction the refuge lies. This letter will provide the Chief with specific direction to protect firefighter and public safety along with refuge natural resource values. A sample delegation of authority letter prepared in conjunction with the refuge staff and Zone FMO is attached as Appendix D-5.

4.1.3 Preparedness

Chapter 10 of the *Interagency Standards for Fire and Aviation Operations* will be used as the primary direction for preparedness on RMANWRC. The following is a quote from that direction: *"Preparedness is the result of activities that are planned and implemented prior to wildland fire ignitions. Preparedness is a continuous process that includes developing and maintaining unit, state/regional, and national level firefighting infrastructure, predicting fire activity, hiring, training, equipping, and deploying firefighters, evaluating performance, correcting deficiencies, and improving overall operations. The preparedness process includes routine preseason actions as well as incremental in-season actions conducted in response to increasing fire danger."*

4.1.3.1 FWS Personnel

FWS personnel utilized in wildfire suppression activities must meet either:

- The fitness, training and qualifications identified in NWCG *Wildland Fire Qualifications System Guide* (PMS 310-1);
- Agency specific qualifications (such as qualifications identified in *Fire Management Handbook*).

The Refuge complex is supported by a Fire Management Officer (FMO) and is available to provide guidance and participate as time and circumstances allow.

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 Refuge Manager 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 FWS has adopted the training and fitness standards established in NWCG 310-1. All firefighters must meet these and other FWS standards to participate in fire management activities.

The project leader is responsible for the occupational health and safety of their employees performing wildland fire activities, and may require employees to take a medical examination at any time.

Only red-carded employees meeting the fitness and training requirements for their assigned position will directly participate in wildfire suppression operations. The FMO or his designee will be responsible for assuring that qualified employees are red-carded. Other personnel may assist in support capacities, but will not be permitted on the fireline. The FWS *Fire Management Handbook* and *Wildland Qualification Subsystem Guide* (PMS 310-1) should be referred to for specific policy guidance and qualifications. Employees may be qualified and hold one or more positions.

FWS policy sets training, qualifications and fitness requirements for all wildland fire and prescribed fire positions (collateral and fire) (National Wildfire Coordinating Group 2013). All firefighters will be provided with the training required to meet FWS job qualification standards for jobs they are expected to perform. Interagency training opportunities will be utilized whenever possible. Requirements for annual firefighter refresher training, physical fitness testing, and medical requirements are found in Chapter 13 of the *Interagency Standards for Fire and Fire Aviation Operations*.

The Incident Qualifications and Certification System (IQCS) is the fire qualifications and certification record keeping system. The Responder Master Record report provided by the IQCS meets the agency requirement for maintaining fire qualification records. The Fire Management Officer is responsible for maintaining the fire qualification, certification, experience and training records for all employees who participate in fire management activities. The Incident Qualification and Certification System will be updated with individual records as soon as possible once completion of task books has taken place; but employee's experience records may not be updated until the end of the calendar year.

Personnel will be statused in ROSS by the FMO or the designated acting duty officer. Personnel will only be statused and made available for out of area assignments upon review of local fire danger and a recommendation to and approval of the Project Leader or Manager. Statusing of personnel in ROSS will be done per guidance and policy established by Fort Collins Interagency Dispatch Center. Currently all personnel are stationed at Rocky Mountain Arsenal NWR. If personnel are stationed at Rocky Flats NWR or Two Ponds NWR, these personnel would be dispatched through Pueblo Interagency Dispatch Center.

4.1.3.2 Annual Preparedness Review

The table in Appendix D-1 lists monthly fire management preparedness activities. Refuge staff conducts only those activities applicable to current Service fire management responsibilities.

A preparedness review will be complete each spring by the FMO (or by personnel delegated by the FMO) using established fire policies and procedures as outlined in the most current

Interagency Standards for Fire and Fire Aviation's Operations. This review will identify organizational, operational, procedural, personnel or equipment deficiencies and the recommended corrective action. It is recommended that every third year an outside review be conducted by another FMO for fresh / new perspectives of the units preparedness.

All findings will be documented and shared with the project leader by May 1 annually and kept on file.

Those elements of the Preparedness Review Functional Checklist applicable to the fire management program at the RMANWRC will be used during the review. Checklists that are used will follow approved format (either Regional, Agency, or Interagency).

4.1.3.3 Equipment and Supply Readiness

To ensure that fire equipment is maintained in a state of readiness, inspections of all major fire equipment, such as engines, dozers and transports, along with the ancillary equipment including pumps, hand tools and radios are conducted.

All fire personnel are required to keep their issued Personal Protective Equipment (PPE) in operable condition. The FMO is responsible for providing pertinent equipment and tool safety information, replacing outdated equipment, and coordinating general maintenance on all fire equipment.

4.1.3.4 Normal Unit Strength

The Rocky Mountain Arsenal NWR is the only station within the complex that has a fire cache. The fire cache inventories are kept in the Fire Equipment Log (Appendix G-2). Fire cache equipment is inventoried by the refuge FCO, who arranges for any needed rehabilitation or replacement. All fire caches will be inventoried as needed each year prior to the start of the fire season. Due to the close proximity of the Rocky Mountain Arsenal NWR to a national transportation hub, it may also be used as a Regional cache for FWS for emergency management responses. Replacement equipment is ordered as necessary. Additional equipment and personnel can be ordered through Fort Collins interagency dispatch.

4.1.3.5 Seasonal Risk Analysis

A seasonal risk analysis will be completed during the early spring (preferably by May 1) and throughout the year as condition warrant. Continuous monitoring of the daily weather and periodic monitoring of the predictive services unit seasonal outlooks including the drought

monitor will be included with the risk analysis. This is the responsibility of the FMO and fire staff as assigned.

This seasonal risk analysis will require a review of current and predicted weather and fuels information comparing this information with historic weather and fuels records, and attempt to predict the upcoming fire season's severity and duration. Following is a general list of indicators that may be used when preparing and updating this seasonal risk analysis:

- NFDRS index values, specifically BI, ERC and KBDI
- Temperature levels
- Precipitation levels
- Relative Humidity levels
- US Drought Monitor
- 1000 hour fuel moistures
- Live Herbaceous Fuel Moistures
- Unusual weather events (ie late frost, ice storms or tornados)
- Wildfires to date

4.1.3.6 Pocket Cards

Pocket cards are used by wildland firefighters to communicate fire danger. The pocket card provides a visual reference of local burning conditions and how these conditions compare to previous fire seasons. As some of the RAWS stations may not have 10 or more years of data, RAWS weather data will be supplemented as needed with North American Regional Reanalysis (NARR) data to produce the pocket card. Pocket cards will be completed and updated by district fire management staff prior to the start of the spring prescribed fire season, around April 15th, and updated as needed throughout the year. The pocket cards will be produced according to NWCG policy and forwarded to Fort Collins and/or Pueblo IADC. Guidelines to produce a pocket card can be found at this following website: **http://fam.nwcg.gov/fam-web/pocketcards/guidelines.htm**. The most recent pocket card is attached in Appendix D-9.

4.1.3.7 Climatic Breakpoints, Adjective Class, & Determination Guide

A table showing the planning levels, break points and adjective class ratings for the RMANWRC will be updated annually and can be found in Appendix D-2.

Climatic Breakpoints

Climatological breakpoints and fire business thresholds are established to provide NFDRS-based decision points for all appropriate management responses in a fire danger rating area.

Climatological break points are points on the cumulative distribution of one fire weather/danger index computed from climatology without regard for associated fire occurrence/business. For example, the value of the 90th percentile ERC is the climatological breakpoint at which only 10 percent of the ERC values are greater in value. The percentiles for climatological breakpoints used by the FWS are the 90th and 97th percentiles.

Other federal land management agencies in the vicinity of the Refuge Complex include the U.S. Forest Service (USFS) and Bureau of Land Management (BLM). The USFS uses the 90th and 97th percentile values and the BLM uses 80th and 95th percentiles.

Adjective Class

Adjective Fire Danger Rating (low, moderate, high, very high, extreme) is based on the NFDRS index or component used to compute staffing level and the ignition component. It is a general description of fire danger for the purpose of informing the public. Adjective ratings are computed automatically in the Weather Information Management System based on NFDRS parameters.

Determination Guide

A determination guide is used by fire managers to assist in determining staffing levels. When multiple weather and fuel indices are utilized, not all the indices may fall within previously established breakpoints. The guide provides guidance to the manager in determining appropriate staffing level when some of the indexes are in different levels of preparedness. The determination guide is part of Step-up plan in Appendix D-2.

4.1.3.8 Step – Up Plan

The RMANWRC step up plan can be found in Appendix D-2.

4.1.3.9 Severity Funding

The FWS utilizes two types of severity funding: 1) Short – Term Severity; and 2) Severity Funding. Requests for the use of the two severity types will be done in compliance with departmental, agency, and regional guidance. Guidance for the implementation and appropriate use of Severity is found in the FWS *Fire Management Handbook*, the *Interagency Standards for Fire & Aviation Operations*, *Fire Business Reference Guide*, FWS Instruction Memorandum (2009-1) and the respective Step-up Plan.

Except for one engine located at Rocky Mountain Arsenal NWR, all suppression services for RMANWRC are provided by local fire departments and the Colorado State Forest Service (CSFS). In the event that a significantly dry period occurs, local services are likely to increase staffing necessary to respond to the conditions. When the FMO realizes there is an increase in fire occurrence associated with drought he/she will request for additional staffing assistance through triggers set in the "Step-Up Plan" attached as Appendix D-2.

Historically severe conditions for RMANWRC have been considered when Energy Release Component (ERC) for Fuel Model G reaches the 90th percentile. Severity funding may be requested if a severe drought is indicated by a ERC above 90th percentile and a long-range forecast calling for below average precipitation and/or above average temperatures.

4.1.3.10 Fire Management Officer Delegation of Authority

FMO Delegation of Authority can be found in Appendix D-6 and will be updated at a minimum annually.

The project leader will present a Delegation of Authority Letter to the Fire Chief(s) under whose jurisdiction the refuge lies. This letter will provide the Chief with specific direction to protect firefighter and public safety along with refuge natural resource values**.** A sample delegation of authority letter prepared in conjunction with the refuge staff and Zone FMO is attached as Appendix D-5.

4.1.3.11 Pre – Attack Plan

Pre-attack planning continues to be compiled by Refuge and fire staff. Once finished, pre-attack plans will be included in Appendix D-8, and copies placed in each vehicle. Final pre-attack plans will include:

- Response Maps:
  - Roads, gates, and fences
  - Fire stations/Caches
  - Airports
  - Helispots
  - Water sources (type and flow)
  - Mutual aid zones/fire cooperator districts
- Hazard/Risk Map:
  - High potential fire occurrence zones
  - Potential values at risk zones (high, medium and low)
  - Hazard Potential zones (high, medium and low)
- Natural Resource Map:

Structure Assessments

- Closure/Evacuation Procedures

4.1.3.12 Preparedness Level Effects on Refuge Preparedness Activities

As indicated previously, periods of drought can greatly impact fire behavior and resistance to suppression. For that reason, drought indices (such as Palmer Drought Index; Keetch-Byram Drought Index; or Drought Monitor) will be monitored at a minimum on a weekly basis throughout the year. All are available on the internet. 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 fires or wildfire suppression activities because the closest available resources may be assigned to fire suppression duties. 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.

4.1.4 Fire Detection

Fire on RMANWRC relies on neighbors, visitors, staff, and cooperators to detect and report fires. RMANWRC resources will not normally be used for detection purposes, except during periods of frequent fire activity.

In all likelihood, wildland fires will be reported to the local fire authority through the 911 system and the appropriate Fire Protection District will respond and notify Refuge personnel.

There may be occasions when unqualified FWS personnel discover a wildfire. If a FWS employee, volunteer, or contractor discovers a wildfire, the individual must report it to the appropriate authority (varies depending on the site). They must not try to suppress the fire unless they hold a current Incident Qualification Card. If the fire poses an imminent threat to human life, the employee may take action to protect life, but he/she may not engage in any other fire control activities (FWS Manual 621 FW1 1.14 B).

4.1.5 Dispatch, Initial Response, & Initial Attack

4.1.5.1 Initial Reporting and Dispatching

Initial attack will be handled by cooperators on all three refuges. Initial notifications will be made to respective 911 dispatch centers. At Rocky Mountain Arsenal NWR, fire personnel may also participate in initial attack.

Cooperator ICs are expected to relay his size up observations to the FMO and/or dispatcher and/or their designated representative.

For the purposes of initial attack, the first IC on scene, qualified at any level, will assume the duties of initial attack incident commander. The initial attack IC will assume the duties and responsibility(ies) for all suppression efforts on the incident up to their level of qualification until relieved by an IC, qualified at a level commensurate with incident complexity, arrives on scene, or replacement order has been filled through the dispatch center system. All resources will report to the IC (either in person or by radio) prior to deploying the fire, and upon arrival to the fire.

All wildfire responses on and off the refuge will be reported to the Project Leader/Refuge Manager.

Per agreements in Annual Operating Plans, ICs may order additional resources through their respective 911 dispatch center. The center may need to forward some orders through Fort Collins or Pueblo dispatch, and in coordination with the Colorado State Forest Service, for specific wildland fire resource needs.

4.1.5.2 Resource Prioritization

If the refuge complex should have multiple ongoing fires within the complex, the FMO in consultation with the project Leader and in coordination interagency cooperators will be responsible for prioritization of resources. Emerging initial attack fires will receive the highest priority. When prioritizing resources the number one priority will be firefighter and public safety.

Prioritization of resources will follow those listed in the *Interagency Fire and Fire Aviation Operations Guide* and are listed here:

- Protect human life, property, and natural/cultural resources both within and adjacent to the refuges
- Protect refuge infrastructure
- Protect privately owned property

4.1.5.3 Multi – Agency Groups (MAC)

MAC groups are part of the National Interagency Incident Management System and are an expansion of the off-site coordination and support team. Further information pertaining to MAC groups can be found in Chapter 8 of the *Interagency Standards for Fire and Fire Aviation Operations*.

The District Fire Management Officer will be delegated responsibility and authority to represent the RMANWRC on both Fort Collins and Pueblo IADCs MAC groups. Other more local MAC Groups may be established as needed.

Local MAC responsibilities include:

- Establish priorities for the local area.
- Acquire, allocate, and reallocate resources.
- Issue coordinated and collective situation status reports.

4.1.5.4 Incident Commander Responsibilities

All fires, regardless of complexity, will have an Incident Commander. If a qualified IC is not available, one will be ordered through the local dispatch center.

For the purposes of initial attack, the first IC on scene, qualified at any level, will assume the duties of initial attack incident commander. The initial attack IC will assume the duties and responsibility for all suppression efforts on the incident up to their level of qualification until relieved by an IC, qualified at a level commensurate with incident complexity, arrives on scene. All resources will report to the IC (either in person or by radio) prior to deploying the fire, and upon arrival to the fire.

All resources will report to the IC (either in person or by radio) prior to deploying the fire, and upon arrival to the fire.

The IC is a single individual responsible to the Agency Administrator for all incident activities, including the development of tactics and the ordering, deployment, and release of resources. The IC will receive general suppressions strategy from the FMP and the delegation of authority, but appropriate tactics used to suppress the fire will be up to the IC to implement within the limits described for the FMU, including when and where to use minimum impact suppression tactics (MIST). The IC is responsible to:

- Provide a size-up to dispatch as soon as possible upon arrival at the scene. Size-up information is found in the *Incident Response Pocket Guide* (National Wildfire Coordinatinon Group 2010).
- Assess potential of using suppression and/or use of wildfire for the incident and contacting the agency administrator with recommendations;
- Use guidance in this FMP and/or a Delegation of Authority to implement selected response(s) and to manage an organization to implement effective strategies and tactics;
- Minimize suppression impacts where possible without reducing the effectiveness of the actions being undertaken;
- Determine resource needs and order additional resources as needed through Pueblo IADC;
- Ensure that all resources currently on the fire as well as all incoming resources receive a briefing. Operational briefings will be documented. Refer to the Briefing Checklist in the *Incident Response Pocket Guide*.
- Continually re-assess the complexity of the incident using the checklist in the *Incident Response Pocket Guide*. When a more qualified IC is needed, inform Fort Collins or Pueblo IADC and Agency administrator, and place order for a higher level IC;
- Manage smoke to protect public and firefighter health (see 4.1.5.7 below);
- Ensure point of origin is protected for potential fire investigation (see 4.1.5.6 below);
- Requesting Spot Weather Forecast(s) as needed through the servicing National Weather Service office. The spot weather forecast can be requested at: http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=gid. Not every wildfire will require a spot weather forecast. Any forecasts received will be kept with the incident history file.

Depending on complexity of incident, additional responsibilities may apply to the IC. The *Fireline Handbook* (National Wildfire Coordination Group 2004) provides a more detailed description of IC responsibilities.

Engines are the primary initial attack resources on the refuges, because of the predominance of fine fuels, and access of roads. Refer to Appendix G-3 for Normal Unit Strength-Equipment.

All wildfires occurring on the Refuges will be staffed or monitored until declared out.

Utilization of heavy equipment (dozers, discs, plows, and graders) will be allowed only with the approval of the project leader or designee.

Engines will remain on roads and trails to the fullest extent possible.

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* (Appendix D-4) and available at http://www.fws.gov/southeast/es/RETARDANT%20USE%20PLAN.pdf.

Minimum Impact Suppression Tactics (MIST) will be used whenever possible to minimize impacts to natural and cultural resources (Appendix D-3).

The FMP and a delegation of authority can provide a general strategy to an IC, who has discretion to select and implement appropriate tactics within the limits described for the FMU(s), including when and where to use minimum impact suppression tactics (MIST) unless otherwise specified. All resources, including mutual aid resources, will report to the IC (in person or by radio) and received an assignment/incident briefing prior to tactical deployment.

Handline construction which causes soil disturbance is to be kept to a minimum.

Old growth cottonwoods that are damaged by fire will not be felled unless dictated by safety considerations. If possible, trees that are determined to be hazardous will be flagged and suppression forces removed from the area.

4.1.5.5 Fire Cause Determination

Agency policy requires any wildfire to be investigated to determine cause, and if negligence and/or criminal intent were factors. If the IC suspects the fire cause is of suspicious origin, a qualified wildland fire investigator will be ordered locally. The point of origin must be protected for the fire investigation to occur. The investigator must arrive on the fire scene and complete the investigation as soon as possible.

Chapter 10 of the FWS *Fire Management Handbook* provides detailed descriptions of roles and responsibilities for wildfire fire investigation.

4.1.5.6 Smoke Management

During wildfires, the IC is responsible for identifying and coordinating with local governments on traffic hazards from smoke (Refer to the *Uniform Traffic Control Manual* (Federal Highway Administration 2013)). Actions to manage smoke include: use of road guards and pilot car, signing, and use of local law enforcement as traffic control. Smoke from wildland fires is a recognized health concern for firefighters. Incident Commanders and prescribed burn bosses must plan to minimize exposure to heavy smoke by incorporation the recommendations outlined in the publication *Health Hazards of Smoke* (Sharkey 1997).

Rocky Mountain Arsenal NWR: The Service currently monitors weather for prescribed burn purposes. Fire weather forecasts and drought information (e.g., Palmer Drought Index (PDI)) are obtained from the National Weather Service Denver Office located approximately 2 miles south

of the Refuge. Fire weather information will be used in the future to determine energy release components (ERC), burning indices (BI), and staffing class breakpoints when the Service assumes suppression responsibilities. The Service will also consider procuring Weather Information Management System (WIMS) compatible software when applicable.

The RMANWR has a Rain-Wise weather station that continually collects wind direction, wind speed, barometer, inside/outside temperatures, humidity, rainfall, and wind chill. This information is primarily used for spot weather information during suppression activities. The Service also has an Automated Weather Station with software to track Refuge weather for future habitat restoration and fire applications. The FMO will be responsible for monitoring and maintaining fire weather reports and coordinating future preparedness activities when applicable.

Two Ponds NWR and Rocky Flats NWR do not have any FWS personnel available for firefighting. All preparedness activities are completed by cooperators.

NFDRS and Remote Automatic Weather Stations: Fire danger ratings for RMANWRC are based on the Sugarloaf RAWS station located approximately 3 miles west of Boulder, Colorado at an elevation of 6733 feet.

4.1.5.6 Fire Equipment:

As this equipment is likely to change or be modified overtime a complete list of fire related equipment may be found in Appendix G-2 and it will be updated as necessary.

4.1.6 Extended Attack and Large Fire Management

4.1.6.1 Extended Attack and Large Fire Potential

In the past five years, most of the refuge's fire has been contained within the first burning period.

In the event the Refuge does experience an extended attack or large fire incident, the IC will take appropriate, proactive actions to ensure additional resources are ordered. The IC will notify his/her dispatcher and the project leader whenever it appears a wildfire will escape initial attack efforts, escape FWS lands, or when fire complexity will exceed the capabilities of command or operational forces, and will notify the Regional Fire Management Coordinator of the situation. Additional resources will be ordered in accordance with local interagency agreements.

In the past five years, most of the refuge's fire has been contained within the first burning period. However, with the fuels and weather conditions that can develop at RMANWRC, it is very possible that fires could go into the extended attack phase or become large fires (fire greater than 300 acres in grass or 100 acres in timber). In this case, a wildfire complexity analysis (see

appendices F & G in the *Interagency Standards for Fire and Fire Aviation Operations)* and a Wildland Fire Decision Support System (WFDSS) will be done. It will be the responsibility of the FMO and the Project Leader to ensure that these tasks are completed and that the IC has followed directions to do the "*Appropriate Wildfire Response.*" Decisions to call for additional resources will be based on the outcome of these appraisals.

The project leader will notify the Zone FMO who will provide assistance, as available, with the implementation of the extended attack operations including:

- Assisting the agency administrator and delegated fire and refuge staff in completion of the Wildland Fire Decision Support System (WFDSS) analysis; and
- If necessary, assisting the agency administrator in completion of delegation of authority (example of this form is in Appendix D-5).

4.1.6.2 Wildland Fire Decision Support Analysis

The Wildland Fire Decision Support System (WFDSS) is a decision making process that evaluates alternative wildfire suppression strategies against selected environmental, social, political, and economic criteria and provides a record of those decisions. FWS policy requires, at a minimum, the use of this tool to document decisions for extended attack wildfires, multiple objective wildfires, and escaped prescribed fires. At the discretion of the unit, WFDSS can be used on all wildfires. WFDSS is used by the project leader or representative to describe the wildfire situation, compare several strategic wildfire management alternatives, evaluate the expected effects of the alternatives, establish objectives and constraints for the management of the fire, select the preferred alternative, and document the decision. Multi-jurisdictional incidents will require all affected agencies to collaborate, sign, and approve the decision analysis.

Information on WFDSS is found at: **http://wfdss.usgs.gov/wfdss/WFDSS_Home.shtml**

4.1.6.3 Incident Management Teams (IMT)

Orders for incident management teams will be placed by either the Fort Collins or Pueblo interagency dispatch centers.

4.1.6.4 Incident Management Team Delegation of Authority

A delegation of authority will be implemented to any Type 3 or higher IMT requested to manage an incident at RMANWRC. The agency administrator is responsible for providing an initial briefing, Delegation of Authority to the team, and team performance appraisal (see Chapter 11 of the *Interagency Standards for Fire and Fire Aviation Operations*). The *Interagency Standards*

for Fire and Fire Aviation Operations also provides direction for "Agency Administrator Representative" and "Resource Advisor" responsibilities.

Public safety will require coordination between all refuge staff and the IC. Notices should be posted to warn visitors, trails may be closed; traffic control will be necessary where smoke crosses roads, etc. Where wildfires cross roads, the burned area adjacent to the road should be mopped up and dangerous snags felled. Every attempt will be made to utilize natural and constructed barriers, including changing fuel complexes, in the confinement of wildlfires.

Should a wildfire within the Refuge become an extended attack incident (Type III) where interagency personnel are requested through the mobilization system, NWCG wildland fire qualified personnel will be used. No exceptions from "Arduous" fitness levels are allowed for personnel hired as primary firefighters.

Personnel used for multi-jurisdictional fires that include the refuge and other ownerships, will consider and allow for qualification requirements from neighboring jurisdictions.

4.1.7 Aviation Management

All fire-related aviation operations will follow applicable guidelines of the DOI National Business Center - Aviation Management Directorate (AMD). Aircraft may be used in all phases of fire management operations. As in all fire management activities, safety is a primary concern. The RMANWRC will use only AMD certified rotary and fixed wing aircraft for wildland fire operations. Qualified aviation personnel will be assigned to all flights. All helicopter operations will follow the *Interagency Helicopter Operations Guide* (IHOG) (National Interagency Aviation Council 2009).

Refer to Chapter 16 of the *Interagency Standards for Fire and Fire Aviation Operations* for further guidance regarding aviation management.

4.1.8 Reviews and Investigations

Reviews and investigations are used by wildland fire and aviation managers to assess and improve the effectiveness and safety of organizational operations. Brief descriptions of various reviews and associated procedures and requirements, including those for serious wildland fire accidents and entrapments are listed in the corresponding sections of the *Interagency Standards for Fire and Fire Aviation Operations*.

Incident Commanders and Single Resource Bosses will ensure AARs take place in a timely manner and that any significant issues are brought to the attention of the FMO or Project Leader. The format for an AAR is found in the *Incident Response Pocket Guide*.

4.1.9 Wildfire Reports and Records Requirements

Individual Fire Report

An Individual Fire Report is required to be completed and entered into a fire reporting database (currently Fire Management Information System (FMIS)) within 15 days of fire being declared out. It is the responsibility of the Incident Commander to provide the information necessary to complete the fire reports, and the Fire Management Officer's job to ensure they are entered into the system.

The refuge staff will contact FMO, who will complete and file an Individual Fire Report for the following types of fires within 15 days of a fire being declared out:

- All wildfires on FWS and FWS-protected lands.
- Wildfires threatening FWS lands on which we take action.
- All prescribed fires that have been converted to wildfires. When a prescribed fire exceeds prescription, the incident must be converted to a wildfire, and a separate new report filed to report acres burned by the wildfire from the time of declaration to the time of being declared out.
- All false alarms responded to by field office staff.

Fire reports are required regardless of who takes action, e.g., FWS engine, cooperator, or contractor. When FWS participates in initial attack on non-FWS lands, the agency with jurisdiction where the fire occurs will file a report. FWS will file a limited report to document our response and to support potential billing to non-federal entities.

The IC is responsible for providing, at a minimum, the following documentation to the FMO:

- Collecting documentation of fire events (such as ICS-214 Unit Log) from assigned personnel.
- Ensuring completion of Crew Time Reports.
- Documenting any lost and/or damaged equipment for replacement.
- Providing a list of personnel assigned to fire and position filled.
- If necessary, completing DI-1202 form for data entry into Fire Management Information System (FMIS).

The FMO is responsible to enter the fire report information into FMIS within 15 days of fire being declared out. The FMO is also responsible for ensuring project codes are activated with the Federal payroll system. With the approval of the agency administrator, the FMO will inform the

timekeeper of all fire time; premium pay to be charged to the fire; and that expended supplies are replaced.

Personnel Time

Emergency Firefighter Timesheet (OF-288) or Crew Time Reports (SF-261) will be used to report all personnel fire time, including hazard and premium pay charged against the suppression account.

Incident Status Summary (ICS-209)

When a wildfire is 100 acres or more in timber or 300 acres or more in grass fuels, an Incident Status Summary (ICS-209) is required to be completed daily until the incident is contained. A final ICS-209 needs to be completed once the incident is completed. This form is completed by the IC usually in conjunction with the FMO. The Incident Commander will be responsible for completion of the ICS 209 everyday of an extended attack incident. A copy of the 209 will be provided to the FMO. The ICS-209 is also required anytime a Type 1 or 2 Incident Management Team is assigned; however, generally the Situation Unit for the team will ensure the form is completed. The ICS-209 form can also be utilized for other significant events (such as search and rescue, natural disasters, etc.) that occur on lands under federal protection or ownership.

Incident History File

Wildfire incidents on Federal lands require the creation of an Incident History File (IHF) to document significant events, actions taken, lessons learned, and other information with long term value for managing natural resources. IHF contents, instructions, and tools for creating the IHF are found at **http:///www.nifc.gov/**.

The IHF will be kept at the station headquarters. At a minimum, the following information will be included:

- Hardcopy of Fire Management Information System (FMIS) data entry
- Narrative
- Crew Time Reports
- Unit Logs (ICS-214)
- Fire Perimeter Map
- Total cost summary

Depending on the fire situation, additional information maybe needed as part of the IHF. Following are examples of other documents that may need to be included:

- Wildland Fire Decision Support Analysis(s)

- Incident Action Plan(s)
- Daily weather forecasts and spot weather forecasts
- Cumulative fire map showing acreage increase by day (Fire Progression Map)
- Monitoring data (Wildland Fire Observation Records)

4.1.10 Wildfire Environmental Compliance

National Environmental Policy Act

NEPA analysis cannot be conducted on wildfires as they are an unplanned event. Suppression activities are Cat X from NEPA (516 DM 8.5(5)). See categorical exclusions in Appendix C-2a.

National Historical Preservation Act

Files, records, and maps of cultural resources should be consulted by the staff when developing pre-attack plans, conducting wildfire suppression operations, and performing other preparedness actions. The potential for adverse impacts to cultural resources will be evaluated in the selection of fire suppression strategies during wildfires. All attempts will be made to minimize damage to cultural resource sites by suppression actions. The following actions will be taken to protect archeological and cultural resources during fire suppression operations:

- Files and records of cultural resources will be consulted by the staff when evaluating fire suppression strategies.
- MIST (cold-trailing, use of form/wet-water/water, use of natural and manmade barriers, change in vegetation, etc.) will be used to the fullest extent possible.
- The use of mechanized equipment within the refuge must be approved by the project leader on a fire-by-fire basis. When the use of heavy equipment is authorized, its use will be monitored.
- The location of sites discovered as the result of suppression activities will be reported by the Project Leader to the Regional Archeologist.

Endangered Species Act

There is no need to consult on the wildfire itself. Fire can and often does destroy endangered species and alters critical habitat. Fire itself is considered a disaster or an act of God in the sense of 50 CFR 402.05.

Consultation is conducted on the agency response to wildfires for those actions under control of the consulting agency. However, these consultations are in a special category, Emergency Consultations, and are handled in a very expeditious manner.

Planning for emergency response should occur prior to the emergency occurring. District fire personnel and/or refuge staff should consult with the Colorado Ecological Services Field Office and the during the development of the fire management plan or a pre-attack plan to ensure potential issues regarding Threatened and Endangered (T&E) Species are addressed.

In the event an emergency occurs that may affect T&E species or their habitats, Ecological Services will be notified at earliest possible convenience. Ecological Services personnel may provide recommendations to minimize and avoid adverse impacts to T&E species. These recommendations should be brought to attention of the Incident Commander or other appropriate emergency response line officer by the relevant staff/resource advisor for consideration in the planning process. Incident Management Team personnel managing the emergency should consider the recommendations of ES in light of other factors such as firefighter and public safety, available resources, and planning forecasts.

As soon after the emergency as is practical, there is a need to close consultation with written documentation. Documentation should include a description of the emergency (fire), rationale for the expedited consultation, and an evaluation of the impacts of the fire, with a discussion of how any ecological services recommendations were implemented and their results. It is highly recommended to contact the Colorado Ecological Services Field Office prior to submitting information so that any other issues or information needs can be addressed immediately and will not delay consultation. The documentation will kept as part of the incident history file.

Clean Air Act

Smoke emissions from wildfires are generally exempted from air quality regulations, but Refuge staff will contact the State's Division of Air Quality as a courtesy.

There is high probability that smoke produced during a wildfire will impact local roadways, isolated homes, or small communities. Any impacted receptors will be evaluated by the Incident Commander to determine risk to firefighter and public safety. Actions to mitigate that risk will be taken.

Area roadways may be closed or monitored using Refuge, local Law Enforcement Officers and/or local community or state Department of Transportation or Law Enforcement personnel. Use of firefighters may be needed until relieved by non-fire personnel for traffic control on impacted local roadways if threat to safety of firefighters and/or public is perceived.

4.1.11 Wildfire Suppression Damage Repair

Damage as a result of wildfire suppression activities (such as repairing cut fences, rehabilitating containment lines, etc.) is the responsibility of the Incident Commander and funded by the

wildfire suppression account. This work should be completed by the incident management team prior to final demobilization of the suppression forces whenever practical. However, it may be more cost-effective and practical to delay some repairs to improve the chance of success. It is the responsibility of the agency administrator to ensure suppression activity damage repair is completed.

Other activities (such as mapping perimeter or containment lines, assessing to determine if BAR or BAER is needed, etc.) may also be completed as part of the wildfire suppression account. Further information on use and/or restrictions is found in the *Fire Business Reference Guide* (U.S. Fish and Wildlife Service 2009).

4.1.12 Mop-up Standards and Rehabilitation

The IC will be responsible for mop-up and rehabilitation actions on refuge fires. Rehabilitation of suppression actions will take place prior to firefighters being released from the fire. Items that will be done include:

- All trash will be removed.
- Firelines will be refilled and water-bars added as needed.
- Disked firelines should be compacted as soon as possible to preserve the living root stock of native grasses.
- Overturned sod resulting from plowing must be rolled back with a grader or by hand, and compacted to preserve native grass root stock.

4.2 Hazardous Fuels Management

4.2.1 Prescribed Fire

The prescribed fire program on RMANWRC supports the mission of the overall fire management program, which, in turn, supports the objectives. These goals have been defined in detail previously in this plan and fall into two categories: protection from unwanted fire, and using fire as a tool in resource management.

Prescribed fire, as a fuel treatment or as a method of attaining other management objectives, can reduce costs but there also exists a level of risk that must be accepted, based on the probability and the consequences of a fire exceeding its prescription parameters. It is fully recognized that escapes may occur from time to time, but proper planning and execution should keep these escapes a rarity.

Fire, lightning and/or human caused, was a major natural process in refuge ecosystems prior to European settlement and subsequent fire suppression. Prescribed fires offers a powerful tool for

managing refuge resources. FWS foresees using prescribed fire as a tool in three management areas: mitigation and habitat restoration, resource management, and hazard fuels reduction.

Mitigation and Habitat Restoration

Mitigation and habitat restoration prescribed fire is used to restore and/or maintain native plant species for the purpose of establishing and perpetuating native plant communities. These prescribed fires are included as methods and/or maintenance recommendations in habitat restoration plans mitigating for wildlife habitat lost through environmental cleanup activities. Uses of prescribed fire are:

- Removal of all plant material prior to seeding
- Reduction/control of weedy grasses, forbs, and woody species
- Rejuvenation of native grasses, forbs, and shrubs
- Maintenance of restored native plant communities
- Control of exotic or invasive native species

Future habitat restoration plans will identify prescribed fire as an applicable method prior to seeding a site and/or for native plant community maintenance after establishment. The FMO or other prescribed burn planner will propose prescribed burns for pre-existing habitat restoration sites depending on site-specific vegetation monitoring, and will prioritize these sites according to need. Burning frequency will vary from 1 to 15 years depending upon management objectives, historic fire frequency, and funding.

Resource Management

Resource management prescribed fire is used to restore and/or maintain a specific plant community to achieve the management objectives of the site. In most cases, the maintenance of a native plant community will be desired. Resource management prescribed fire will be used in areas not undergoing extensive habitat restoration to:

- Maintain/preserve the native plant community
- Reduce/control invading weedy grasses, forbs, and woody species
- Periodically reduce dense cattail (*Typha* spp.) growth in wetland sites
- Rejuvenate/maintain quality wildlife habitat appropriate to managed species (e.g. nesting cover for waterfowl, shortgrass prairie for burrowing owls)
- Rejuvenate/maintain quality forage for native and re-introduced herbivores
- Encourage and stimulate reproduction of endangered, threatened, or sensitive species (e.g. western prairie fringed orchid, *Plantanthera praeclara*).

Resource management burns will be proposed by biologists or the FMO to achieve specific management objectives for the site. Burning frequencies will vary from 1 to 15 years depending upon objectives, historic fire frequency, wildlife considerations, and funding.

Hazard Fuels Reduction

The FWS may use hazard fuel reduction techniques (mechanical removal or prescribed fire) within or near refuge development zones, sensitive natural resources, and boundary areas to reduce the risk from wildfire damage. To the greatest extent possible, hazard fuel burns will consider mitigation and habitat restoration and/or resource management objectives. Hazard fuels reduction burns may be used to:

- Maintain low fuel loadings around buildings and/or cleanup infrastructure
- Clear waterways of vegetative obstructions and/or trash

Most hazard fuel reduction treatments will be planned to compliment habitat restoration or resource management burns whenever possible. Refuge biologists and/or the FMO will propose and time these burns appropriately. Burning frequency will be determined by fuel loading and habitat restoration and resource management considerations.

4.2.1.1 Prescribed Fire Objectives

Refuge biologists are responsible for identifying areas in need of treatment, and for developing objectives for those areas based on refuge habitat restoration and/or resource management objectives. The FMO is responsible for determining if prescribed fire can be utilized to meet the treatment objectives. The project leader will select the treatment type based upon input from the biologist, FMO, and other staff. Prescribed fire is one of a combination of tools (e.g. fire, mowing, plowing, spraying, rest, water level manipulation) which will be considered. Burnable acreage and annual average targets will vary depending on funding, and mitigation projects planned each year. This information will become part of RMANWRC Annual Narratives, Accomplishment Reports, Management Plans, and Progress Reports.

4.2.1.2 Project Planning

Prescribed fire may be selected as the preferred treatment, alone or in some combination with other treatments, the FMO will assign a qualified prescribed Burn Boss who, with the assistance of the biologist, will develop a burn prescription and plan which will accomplish the desired objectives. For prescribed fire burn plan preparation and approval, the latest version of the *Interagency Prescribed Fire Planning and Implementation Procedures Reference Guide* (IPFPG) (National Wildfire Coordination Group 2008) will be utilized for the development of prescribed burn plans. Additional agency policy identified in the *FWS Fire Management*

Handbook (U.S. Fish and Wildlife Service 2013b), *Interagency Standards for Fire and Fire Aviation Operations* (National Wildfire Coordinating Group 2013), FWS Region 6 policy (Appendix E), and any local policy regarding burn plan development and/or approval will also be followed.

All burn plans will include monitoring for smoke impacts, and test fires will be used to assess smoke dispersal. Weather forecasts for the day of the burn and the next two periods must be obtained.

Long – Term Planning

The refuge's long-term prescribed burning program is complex. The prescribed fire program must overcome the results of past fire suppression policies that have resulted in changes in the natural vegetation matrix. It must manage fuels to reduce the hazard of wildfire to both natural and human-made resources of the refuge and the private sector. Prescribed burning must be carried out to ensure the continued existence of the fire-maintained ecosystems found at RMANWRC. Finally, it must do this without causing undo hardships to the surrounding socio-economic structure.

In accordance with regional and national guidelines, individual hazard fuel treatment projects must be identified in advance and entered into National Fire Plan Operating Reporting System (NFPORS) for funding in out-years. In order to meet that requirement, the Zone FMO will coordinate with Refuge management to identify and develop a list of projects spanning multiple years for input into NFPORS.

Historical and Expected Prescribed Fire Activity

Rocky Mountain Arsenal NWR: In the early 1980's, the RMA Fire Department conducted prescribed burns in grasslands to reduce hazard fuels. The FWS has begun to re-initiate prescribed fire in Refuge grasslands to achieve habitat management objectives. The first prescribed grassland burn in more than 10 years was accomplished by the Rocky Mountain Arsenal NWR fire crew and RMA Fire Department personnel in April 1996.

Two Ponds NWR: The Refuge is completely surrounded by streets and commercial and residential development. There have been no prescribed fires since the refuge was established in 1992. There are many potential sources for human-caused fires and moderate potential for wildland fire on the refuge, especially in early spring before green-up and during periods of drought in late summer and fall.

Rocky Flats NWR: The Refuge is currently unstaffed and there have been no prescribed fires since the refuge was established in 2003. There are many potential sources for human-caused

fires and moderate potential for wildland fire on the refuge, especially in early spring before green-up and during periods of drought in late summer and fall.

Prescribed Fire Complexity and Size

Prescribed fires on RMANWRC may vary from low to high complexity as determined by the National Wildfire Coordinating Group (NWCG) Complexity Analysis contained in the prescribed burn plan. Complexity is dependent upon fuels/vegetation, objectives, burn boundaries, and size. Most prescribed fires will be of low to average complexity. Higher complexity burns will only be undertaken once appropriate experience is gained and adequate resources are available.

Prescribed fire complexity and size will be determined following the *Prescribed Fire Complexity Rating System Guide* (PMS 424). It can be found on the web at: *http://www.nwcg.gov/pms/RxFire/complexity_analysis.pdf*

Use a low complexity debris burn plan for debris disposal projects. The FMO will review the complexity of planned projects to ensure use of the plan is consistent with its intent. The plan (Appendix E-1) will be reviewed annually and updated as needed.

4.2.1.3 Project Implementation

Prescribed fire implementation will follow the standards set forth in the FWS *Fire Management Handbook*, the *Interagency Standards for Fire and Fire Aviation Operations*, and the most recent version of the *Interagency Prescribed Fire Planning and Implementation Procedures Reference Guide.*

Annually the Mid-Plains zone fire staff will meet to discuss prescribed fire projects, mechanical treatments, and biological treatments; assign priorities for the completion of these projects; and discuss equipment and personnel needs. The Prescribed Fire Specialist will coordinate the scheduling and ensure that the burn plans are complete with archeological clearance.

Fire and maintenance staff will be responsible for preparing all fire equipment used for prescribed burning prior to burn season, and will also insure that weekly checks and daily checks prior to burns are completed.

The FMO and fire management crew will be responsible for prescribed fire preparations including equipment maintenance, fuel break mowing, and black lining. The deputy project leader and/or public information specialist will be responsible for assisting with public relations and education regarding the use of fire as a management tool. All burn unit preparation as outlined in the individual burn plan will be completed prior to implementation.

4.2.1.4 Prescribed Fire Operations

All FWS personnel participating in prescribed fire will meet minimum qualifications standards outlined in the FWS *Fire Management Handbook* and Chapter 13 of *Interagency Standards for Fire and Fire Aviation Operations*. The RMANWRC will encourage all prescribed fire personnel to meet arduous fitness requirements.

Cooperators, contractors, and casual hires, ADs may be used to implement prescribed fires. ADs must meet standards of the employing federal agency and positions held by ADs must be identified in the AD pay plan. State, local cooperators and contractors working on federal agency prescribed fires must meet NWCG 310-1 standards unless local agreements and/or contracts specify otherwise. Those who supervise FWS employees during prescribed fires must meet FWS standards.

Effects of Preparedness Levels on Prescribed Fire Activity

There can be certain situations at local, regional or national levels which can result in prescribed burning operations on the refuge being limited or curtailed.

The Rocky Mountain Area Coordination Center (RMCC) in consultation with agency fire coordinators determines regional preparedness levels. These levels are based on wildland fire activity within the Rocky Mountain Area and the need for fire suppression resources. The National (National Wildfire Coordinating Group 2012) and Rocky Mountain Area (Rocky Mountain Interagency Coordination Center 2012) mobilization guides are used to determine needs.

The National Interagency Coordination Center (NICC) establishes national preparedness levels to keep track of resource availability at a national level to ensure national preparedness. These levels may constrain prescribed fire activities in some Geographic Areas not experiencing significant activity to ensure sufficient resources are available for National needs.

- At refuge staffing Level 4 or higher, prescribed fires will not be ignited.
- At Regional or National Preparedness Level 4 or higher, prescribed fire application can be continued or be initiated if the proposed action is approved by regional office fire staff. This approval must be based on an assessment of risk, impacts of the proposed actions on Area resources and activities, and include feedback from the Geographic MAC (GMAC). The GMAC provides information or perspectives to agencies wishing to proceed with a prescribed fire application. The final decision to implement resides with the implementing agency

- At Regional or National Preparedness Level 5, the Regional Fire Management Coordinator, in coordination with the Geographic MAC, is responsible for reviewing and approving the implementation of prescribed fires – unless the prescribed fire requires resource support from outside the local area, or Incident Management Team (IMT). If resources outside the local area are to be used, or if an IMT is required, the proposed action must be presented to National MAC (NMAC) for review prior to implementation. Even if NMAC approval is not required, FWS Fire Management Branch requests written notification of all prescribed burns prior to implementation when at National PL V. The memo and request form are found in Appendix E-3.

Prescribed Fire Notifications

Prior to ignition of any prescribed burn, dispatch will contact all local cooperators in the burn area to inform them of the Complex's burning plans. Depending on burn location, either Fort Collins IADC (Rocky Mountain Arsenal NWR) or Pueblo IADC (Two Ponds NWR and Rocky Flats NWR) will be notified prior to burn initiation and at conclusion of prescribed burn. The local Sheriff's offices as well as appropriate organizations identified in the burn plan will also be notified. Signs will be posted along main roads to inform the public of smoke hazards.

The public will be informed of prescribed fires through news releases, interpretive messages, and educational programs. Individual prescribed fires will not be conducted without informing those members of the public likely to be impacted. Press releases will be issued in accordance with individual burn permit requirements, but typically include advanced notification as well as notification at the time of ignition.

4.2.1.5 Multiple Projects

With adequate staffing, multiple prescribed fires may be initiated at the same time within the RMANWRC. A qualified Prescribed Fire Manager will coordinate multiple burns. Depending on the complexity of the burns, the Prescribed Fire Manager need not be on scene but must be readily available by phone. The maximum number of simultaneous burns will depend upon the cumulative impacts of smoke on sensitive targets and the availability of the prescribed equipment and personnel.

4.2.1.6 Prescribed Burning on Private Land

The RMANWRC may also assist private land owners with prescribed burning to improve the value of their land as wildlife habitat. A Wildlife Extension Agreement with a written provision for the use of prescribed fire must be approved prior to implementing burns on private lands. Such assistance is subject to guidance provided within the FWS *Fire Management Handbook*, private lands program policies, and funding and staffing constraints.

Occasionally it may be beneficial to include privately owned land adjacent to FWS land in a prescribed fire treatment. This may be done to increase safety of firefighters by easing holding and accessibility. In these instances these private lands need to be included early in the planning process and approved by the project leader. An agreement between the U.S. Fish and Wildlife Service and the land owner(s) in question needs to be established prior to implementation. This agreement should include:

- Benefit(s) to both parties
- Liability
- Scope of project
- Site preparation tasks needed and who will complete them
- Project duration
- Anticipated project timing
- Responsibilities by both parties

4.2.1.7 Prescribed Fire Conversions and Reviews

Prescribed Fire Conversions

A prescribed fire must be converted to a wildfire by those identified in the burn plan when that person(s) determines that the contingency actions have failed or are likely to fail and cannot be mitigated by the end of the next burning period. A prescribed fire may also be declared a wildfire when the fire has spread outside the project boundary, or is likely to do so, and cannot be contained by the end of the next burning period. A prescribed fire can be converted to a wildfire for reasons other than an escape. A management response (suppression) will be made to such incidents; and a formal analysis using a required wildfire decision support tool (WFDSS) will be undertaken. The agency administrator will be notified of an escaped prescribed fire.

Criteria that specify for each burn the conditions when a prescribed fire will be declared a wildfire are found in the individual Prescribed Burn Plans.

All prescribed fires declared a wildfire will have an investigative review initiated by the agency administrator. The level and scope of the review will be determined by policy and procedures of the *Interagency Standards for Fire and Fire Aviation Operations* and the FWS *Fire Management Handbook*.

After Action Reviews

A written After Action Review (AAR) must be completed after all prescribed fires. Responsibility for completion will be included in the prescribed fire plan. This evaluation must document at a minimum: 1) the conditions under which the burn was conducted in order to evaluate how closely the fire conformed to planned fire behavior; 2) what unanticipated

difficulties were encountered during the action; and 3) how well the fire accomplished the desired results

4.2.1.8 Debris Burning

Debris burns may be implemented as per the regional policy (U.S. Fish and Wildlife Service 2007) referenced in section 2.1.5. Such projects do not need to meet all the requirements for prescribed fires (AppendixE-1).

4.2.2 Planning, Preparing, and Implementing Non-Fire Hazardous Fuels Treatments

4.2.2.1 Non – Fire Hazardous Fuels Treatment Goals / Objectives

The refuge maintains an aggressive program of treatments to reduce hazardous fuel and exotic species. This is done in combination with prescribed burning, and can include both mechanical and chemical applications.

Goals for treatment of hazardous fuel include:

- Disc and or mow fuels along compartment boundaries to minimize potential for escaped prescribed burns.

Goals in the Exotic Species Control Program include:

- Fire management activities will be managed to minimize the spread of exotic species.

4.2.2.2 Non – Fire Project Planning

All non-fire HFR funded treatments are required to have a plan that addresses management treatment objectives (U.S. Fish and Wildlife Service 2013b). Each plan will describe in clear, concise statements the specific measurable objectives for treatment implementation. For further information, see Chapter 17 of the FWS *Fire Management Handbook*.

All non-fire related activities will be approved by the project leader prior to implementation. The major limiting factor for mechanical projects would be complying with Migratory Bird Treaty Act and not cutting trees during bird nesting season.

Any use of chemicals would follow the Refuges' approved Integrated Pest Management Plan.

<u>Historical & Expected Non - Fire Treatments</u>

Mechanical Treatments – Mowing: Firelines associated with prescribed burn compartments must be maintained in order to minimize fire spread among compartments. Approximately

100acres of fireline are mowed annually at the refuge boundaries and interior two-tracks. Additional information about this activity may be found in the programmatic (CCP) plan for mechanical treatments for that particular refuge.
Chemical Treatments: There are no plans at this time to treat hazardous fuels with chemicals.

Biological: The refuges have not utilized biological treatments for fuels reduction in the past. At the current time, there are no plans in the future to utilize biological treatments.

4.2.3 Fuels Treatment Monitoring

The Burn Boss will review current and forecasted weather on the day prior to the planned burn and the morning of the burn. On the day of the burn, a spot weather forecast from the National Weather Service will be requested along with spot weather forecast(s) to cover a minimum of next two (2) days.

Burn day monitoring will document that the fire is within prescription. Weather variables typically monitored are dry bulb temperature, relative humidity, mid-flame wind speed and direction, and cloud cover. Measurements are taken immediately prior to test fire ignition and at intervals specified in the burn plan.

4.2.4 Fuels Treatment Reporting Requirements

4.2.4.1 Prescribed Fires

Burn Plans will specify information to be included in a project file. The Burn Boss will ensure this information is provided to the project leader/refuge manager and/or Zone FMO as specified. This includes documenting conditions and fire behavior during the prescribed fire to assess how well actual fire characteristics fit those predicted, documenting any unanticipated difficulties encountered during implementation, and assessing how well the fire accomplished the intended objectives.

The burn plan is a primary report for an individual prescribed fire. The burn plan where the Burn Boss will document fire and weather observations, actions and decisions, and assess attainment of project treatment objectives.

Dispatch Centers
Reporting of prescribed fire activities/accomplishments to dispatch center(s) will follow procedures established by local dispatch center.

Regional Office

The regional office will be periodically updated on prescribed fire accomplishments as well as non-fire hazardous fuels funded treatments. Generally, this is accomplished at the same time the local dispatch center is updated via the situation report.

Individual Fire Reports

An Individual Fire Report is required to be completed and entered into Fire Management Information System (FMIS) within 15 days of prescribed fire being declared out. The burn boss is responsible for providing the Fire Management Officer (FMO) with the information needed to complete the fire report within 3 days of fire being declared out. The burn boss is responsible for providing, at a minimum, the following documentation to the FMO:

- Documentation of fire events (such as ICS-214 Unit Log) from assigned personnel
- Crew Time Reports
- Documentation of any lost and/or damaged equipment for replacement
- Providing a list of personnel assigned to fire and position filled

The FMO is responsible to enter the information into FMIS within 15 days of fire being declared out.

Incident Status Summary (ICS-209)

For prescribed fires larger than 100 acres in timber or 300 acres in grass, if requested / required, the DFMO will complete an ICS-209 daily until the incident is declared out. The time that the ICS-209 is needed is established by the local interagency dispatch center. A final ICS-209 needs to be completed once the prescribed fire is completed.

National Fire Plan Operating Reporting System (NFPORS)

The FMO is responsible for entering prescribed fire accomplishments into NFPORS within 15 days of fire being declared out. National, agency, and regional policy will be followed for entry of accomplishments into NFPORS.

Personnel Time

Emergency Firefighter Timesheet (OF-288) and/or Crew Time Reports (SF-261) will be used to report all personnel fire time including premium pay charged against the account.

Project File

In accordance with the latest version of the Interagency Prescribed Fire Planning and Implementation Procedures Guide, a project file will be established for each treatment and kept at Refuge headquarters. The project file will include at a minimum:

- Prescribed Fire Plan
- NEPA documentation
- Monitoring data including weather, fire behavior, fire effects and smoke dispersal observations

- Weather forecasts
- Final Perimeter Map
- Notifications
- Documented prescribed fire organization(s)
- Any agreements related to implementation
- Multiple day GO/NO-GO checklist(s), if applicable
- Re-validation of the Agency Administrator Pre-Ignition Approval Checklist

Depending on the scope and complexity of the prescribed fire, optional information and/or further documentation that may be included in the Project File include:

- After Action Reviews (see Chapter 8 of the Interagency Prescribed Fire Planning and Implementation Procedures Reference Guide)
- Incident Action Plans, Unit Logs
- Press releases, etc.
- Implementation costs
- Actual ignition patterns and sequences used
- Smoke management information
- Detailed Post Burn Report
- Permits

4.2.4.2 Non – Fire Fuel Treatments

Regional Office
The regional office will be periodically updated of accomplishments for non-fire hazardous fuels funded treatments.

Fire Management Information System Data
Non-fire hazardous fuels reduction funded treatments will be entered into FMIS within 15 days of completion of the treatment. The FMO is responsible to enter the non-fire hazardous fuels treatment information into FMIS.

National Fire Plan Operating Reporting System (NFPORS)
The FMO is responsible for entering non-fire hazardous fuels accomplishments in NFPORS within 15 days of completion of the treatment. In addition, periodic update(s) of accomplishment is required within NFPORS at a minimum of monthly.

Project File
A project file will be maintained at station headquarters for non-fire hazardous fuels funded treatments. At a minimum, the project file will consist of:

- The fuels treatment plan
- Hardcopy of FMIS data entry
- NEPA documentation
- Final Perimeter Map
- Any agreements related to implementation

Depending on the scope and complexity of the non-fire treatment, optional information and/or further documentation that may be included in the Project File include:

- Press releases, etc.
- Implementation costs

4.2.5 Process(es) to Identify and Prioritize Planned Fuel Treatments

Fuels treatments are identified and prioritized by the Project leaders and their staff to determine the project of work for out-year planning. National, Agency, and Regional policy will be followed in identifying and prioritizing hazardous fuels funded treatments.

Overview of Program Objectives, Strategies, and Scope

Limits: For the most part, prescribed burns are limited to the period from March through October due to Denver's high pollution problems during winter months. Burning permits are required from the Colorado Department of Public Health and Environment Air Pollution Control Division. Prescribed burning may be limited during the summer due to ground nesting birds and other biological considerations. Other environmental factors such as severe drought may limit prescribed burning activities. Additionally, specific regional approval is needed when suppression forces are in high demand nationally and/or unavailable, i.e. when the Rocky Mountain Interagency Fire Coordination Area or the National Fire Danger Preparedness Level is 4 or 5.

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.

The use of prescribed fire to achieve management objectives must be conducted in a cost effective manner. At this time prescribed fire will not be utilized within Two Ponds NWR due to location to private property and the agreement with the District.

The RMANWRC has had a *Wildland Fuels Assessment* (2004) completed and are on file at RMANWRC headquarters. These assessments propose projects for vegetation treatment, some of which are prescribed burns.

Project Planning
The first step in planning a prescribed fire is defining the objectives of the burn. Prescribed Fire Plan (PFP) development and approval follows and will conform to the latest version of the *Interagency Prescribed Fire Planning and Implementation Procedures Guide,* the *FWS Fire Management Handbook,* Chapter 18, and *Interagency Standards for Fire and Aviation Operations, C*hapter 17. The PFP should not only address the environmental factors required to achieve the desired fire behavior, but also pre-burn preparation required, the size and makeup of the burning crew, smoke management screening, and monitoring of the burn itself.

The FWS Mountain-Prairie Region requires that the preparer of the PFP be qualified at or above the Complexity Level of the burn, and the PFP must be reviewed by the FMO and approved by the project leader/refuge manager prior to implementation. The Prescribed Burn Boss and the project leader/refuge manager's "Go-No Go" certifications in the PFP must be signed prior to implementation.

During prescribed fire planning and operations, all federal agencies will accept each other's standards for qualifications. The minimum qualification standard is the National Wildland Fire Coordinating Group (NWCG).

All prescribed fires must comply with NEPA requirements. The refuge prescribed fire program utilizes the categorical exclusions provided for habitat improvement and hazardous fuels reduction projects. Projects that involve exotic and invasive species are required to be addressed in an EA.

In accordance with regional and national guidelines, individual hazard fuel reduction treatments must be identified in advance and entered into National Fire Plan Operations and Reporting System (NFPORS) for funding in out-years. It is also recommended that resource management prescribed fires that have a secondary benefit of fuels reduction be input into Non-NFP portion of NFPORS. In order to meet that requirement, the district Fire Management Officer will coordinate with refuge management to identify and develop a listing of projects that project the refuges' fire program needs at least two years out. As the prescribed burn and hazard fuel reduction program evolves, the refuges will develop a fuels management program that identifies units to be treated up to 5 years in advance. This will allow the refuges to better establish priorities and complete projects.

Project Implementation
The operational side of the prescribed burning program includes planning, training, the burning operation itself, monitoring the burn and evaluation. All implementation activities must follow the instructions provided in an approved PFP. Modifications to actions prescribed in the plan cannot occur without an updated approval.

Chapter 17 of the *Interagency Standards for Fire and Aviation Operations* will be used as the primary direction for prescribed fire operations and implementation on RMANWRC.

Burn Crew and Configuration: During the development of the PFP, the size of the burning crew is determined. This can vary widely from only a few people for a small hand burning operation to most of the refuge staff on one of the more complex burns requiring law enforcement support. Modifications of the size or configuration of the crew may only be made by approved modification of the burn plan.

State and local cooperators and contractors working on federal agency prescribed fires must meet the NWCG PMS 310-1 standards unless local agreements specify otherwise. No less than the organization described in the approved Prescribed Fire Plan may be used for implementation. The complexity of each prescribed fire or phase of fire(s) determines the organization(s) needed to safely achieve the objectives specified in the Prescribed Fire Plan (Chapter 17 *Red Book*, page 17-3).

4.3 Burned Area Emergency Response and Burned Area Rehabilitation

Required repair of damage resulting wildfire suppression activities will be completed before crews and resources are released from assignment to the incident (see Section 4.1.11 – Wildfire Suppression Damage Repair).

Natural recovery is the preferred choice for vegetative recovery following a wildfire. However, when natural recovery is not a viable option, then Burned Area Emergency Response (BAER) and/or Burned Area Rehabilitation (BAR) treatments need to be initiated. Rehabilitation and restoration efforts will be undertaken to protect and sustain ecosystems, public health, safety, and to help communities protect infrastructure.

Burned Area Emergency Response and Burned Area Rehabilitation activities are an integral part of wildfire incidents, but are planned, programmed, and funded separately from each other. Briefly, BAER is an emergency appropriation and activities must be completed within 1 year of fire containment. BAR is not an emergency and agencies compete for funding. Burned Area Rehabilitation activities are allowed for up to 3 years post fire. Policy regarding BAER and BAR is found in the Departmental Manual (U.S. Department of the Interior 2004).

Appendix F provides extensive details of each of these activities.

Other emergency stabilization and emergency rehabilitation measures may be taken in accordance with Chapter 11 of the FWS *Fire Management Handbook*.

4.3.1 Post Fire Assessments and Planning

Burned Area Emergency Response (BAER) Plan

Burned Area Emergency Response is defined as "Planned actions to stabilize and prevent unacceptable degradation to natural and cultural resources, to minimize threats to life or property resulting from the effects of a fire, or to repair/replace/construct physical improvements necessary to prevent degradation of land or resources."

The BAER Plan (aka Emergency Stabilization (ES) Plan) is a document that specifies treatments approved to implement post-wildfire emergency stabilization policies on an individual incident. This plan will specify only emergency activities and treatments carried out within one year of wildfire containment. The plan must be completed within 7 calendar days after total wildfire containment and approved within 6 business days of receipt by the approving office. This plan is prepared by an interdisciplinary team of specialists during or immediately after the containment of a wildfire. Additional information can be found in the *Interagency Burned Area Emergency Response Guidebook* (Wildland Fire Leadership Council 2006).

The FWS memo, dated September 5, 2007, regarding Emergency Stabilization Cost Containment states that "all Emergency Stabilization planning must adhere to Department of the Interior policy (620 DM 3.6.B) requiring that standard treatments are to be used that have been validated by monitoring data from previous projects, or when there is documented research establishing the effectiveness of such actions." All BAER plans must "Justify proposed treatment(s) with existing research or monitoring documentation that demonstrates that the proposed treatment(s) are significantly more effective in achieving the emergency stabilization objective than natural recovery…" All BAER plans will be reviewed by national office.

Burned Area Rehabilitation (BAR) Plan

Burned Area Rehabilitation is defined as efforts (non-emergency) undertaken within three years of a wildfire to repair or improve fire-damaged lands which are unlikely to recover to management approved conditions; or to repair or replace minor facilities damaged by fire. Total "rehabilitation" of a burned area is not within the scope of the BAR funding. 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 Rehabilitation funding). Major facilities are repaired or replaced through supplemental appropriations from other funding sources.

The BAR plan is a document that specifies treatments required to implement post-fire rehabilitation policies. This plan may be programmatic (prepared in advance) and applicable to clearly defined types of incidents and situations, or prepared by an interdisciplinary team of

specialists during or immediately following the containment of a wildland fire. Additional information can be found in the *Interagency Burned Area Rehabilitation Guidebook* (Wildland Fire Leadership Council 2006).

4.3.2 Issues and Values to Protect

Wildfire damage to improvements is a concern. Developments are typically protected from fire damage, but dispersed improvements such as fences, public use facilities, and gates, are likely to be damaged by severe or large fires.

Burned Area Emergency Response

Future BAER treatments may occur based on the following allowable actions with the DOI Manual (620 DM3.7M) as well as the interpretation of Interior 620 DM 3 found in the *Interagency Burned Area Emergency Response Guidebook*:

- Replacing or repairing minor facilities essential to public health and safety when no other protection options are available.
- Installing protective fences or barriers to protect treated or recovering areas.
- Conducting assessments of critical habitat and significant heritage sites in those areas affected by emergency stabilization treatments.
- Seeding or planting to prevent permanent impairment of designated Critical Habitat for Federal and State listed, proposed or candidate threatened and endangered species.
- Stabilizing critical heritage resources.
- Patrolling, camouflaging, burying significant heritage sites to prevent looting.
- Seeding to prevent establishment of invasive plants, and direct treatment of invasive plants. Such actions will be specified in the emergency stabilization plan only when immediate action is required and when standard treatments are used that have been validated by monitoring data from previous projects, or when there is documented research establishing the effectiveness of such actions.
- Using integrated pest management techniques to minimize the establishment of non-native invasive species within the burned area. When there is an existing approved management plan that addresses non-native invasive species, emergency stabilization treatments may be used to stabilize the invasive species.
- Monitoring of treatments and activities for up to three years.

The RMANWRC has not utilized BAER treatments in the past. Due to the environmental characteristics of the units, it is not anticipated that Burned Area Emergency Response will be required. Under unique and special circumstances, consultation with local specialists and the regional Burned Area Emergency Stabilization & Rehabilitation coordinator will be conducted.

Burned Area Rehabilitation

The RMANWRC has not utilized BAR funding in the past. Future BAR treatments may occur based on the following allowable actions with the DOI Manual (620 DM3.8M) as well as the interpretation of Interior 620 DM 3 found in the *Interagency Burned Area Rehabilitation Guidebook*:

- Repair or improve lands unlikely to recover naturally from wildland fire damage by emulating historical or pre-fire ecosystem structure, function, diversity, and dynamics consistent with existing land management plans.
- Chemical, manual, and mechanical removal of invasive species, and planting of native and non-native species, consistent with 3.8F, restore or establish a healthy, stable ecosystem even if this ecosystem cannot fully emulate historical or pre-fire conditions.
- Repair or replace fire damage to minor operating facilities (e.g., campgrounds, interpretive signs and exhibits, shade shelters, fences, wildlife guzzlers, etc.). Rehabilitation may not include the planning or replacement of major infrastructure, such as visitor centers, residential structures, administration offices, work centers and similar facilities. Rehabilitation does not include the construction of new facilities that did not exist before the fire, except for temporary and minor facilities necessary to implement burned area rehabilitation efforts.

4.3.3 Ordering Burned Area Emergency Response Teams

It is highly unlikely that the refuge would ever need to order a BAER team. Ordering a BAER team would only be after consultation between the FMO and the local agency administrator. All ordering would be done through established channels.

4.3.4 Documentation, Reporting, and Records Requirements

Accomplishment Reports

A Burned Area Emergency Response and/or Burned Area Rehabilitation Plan Annual Accomplishment Report is required to receive continued funding in years two and three, and will document treatment and activity accomplishments, actual implementation costs, and treatment effectiveness. Accomplishment reports may require more detail information for local management and less detail information for national office or Departmental use. Summarized accomplishment information will be collected and archived at the appropriate field, regional and national office levels for use in program planning, review, and oversight as necessary.

Detailed Annual Accomplishment Reports are completed by the end of each fiscal year and will document actual accomplishments, costs and monitoring results and kept in field unit project

files. A copy of annual accomplishment report will be sent to Regional office. For national office use, annual accomplishments are summarized and reported on the NFPORS treatment/activity form.

In addition to Annual Accomplishment Reports, a Final Accomplishment is required to be completed within 60 days of project completion. A copy of Final Accomplishment Report will also be sent to the Regional office.

Further information on Accomplishment Reporting is found in the FWS *Fire Management Handbook*.

National Fire Plan Operating Reporting System (NFPORS)
Planned data entries into the NFPORS Rehabilitation and Restoration Module are the responsibility of the National Burned Area Emergency Response Coordinator. Accomplishment reporting within NFPORS is the responsibility of the field unit. Accomplishment updates in NFPORS are to be completed by the 23rd of every month and at the end of the fiscal year until the project is shown as completed.

4.3.5 Monitoring Protocols

Monitoring protocols will be included or referenced in the BAER or BAR plan and will follow DOI policy, Regional protocols, and will use demonstrated standards for similar physical and biological conditions and neighboring lands with similar values to protect.

4.3.6 Regulatory Compliance

National Environmental Policy Act Compliance

Burned Area Emergency Response
Burned Area Emergency Response is a planned event; therefore, NEPA analysis applies to these activities. The EA completed for the CCP does not address Burned Area Emergency Response. However, due to the emergency nature of BAER, these activities are generally categorically excluded from NEPA analysis. Depending on the situation, two (2) CXs may apply to Burned Area Emergency Response activities. The first is in the CFR (43 CFR 46.210(l)); and the second is a FWS CX (516 DM 8.5(5). When using CX(s) for BAER treatments, the refuge staff will follow guidance identified in Code of Federal Regulations, DOI Manual, agency policy (FWS *Fire Management Handbook*), and regional guidance for the application and documentation of the appropriate categorical exclusion(s). Form(s) for documenting the use of CX(s) are located in Appendix C-2. Documentation will be submitted with the BAER plan and also kept as part of IHF.

Burned Area Rehabilitation
Burned Area Rehabilitation is a planned event; therefore, NEPA analysis applies to these activities. Depending on the activity, the level of NEPA analysis can range from completion of the categorical exclusion analysis to an Environmental Impact Statement (EIS).

The EA completed for the CCP does not address Burned Area Rehabilitation activities. However, these activities are generally categorically excluded from NEPA analysis. Depending on the situation, two (2) CXs may apply to Burned Area Rehabilitation activities. The first is in the CFR (43 CFR 46.210(l)); and the second is a FWS CX (516 DM 8.5(5). When using CX(s) for BAR treatments, the refuge staff will follow guidance identified in Code of Federal Regulations, DOI Manual, agency policy (Fire Management Handbook), and regional guidance for the application and documentation of the appropriate categorical exclusion(s). Form(s) for documenting the use of CX(s) are located in Appendix C-2. Documentation will be submitted with the BAR plan and also kept as part of IHF.

National Historical Preservation Act Compliance

Burned Area Emergency Response
As BAER is an emergency response, if time and conditions permit and the project has the potential to impact cultural or archeological resources, the BAER plan should be shared with regional archeologist for review. To the greatest extent possible, recommendations of Regional archeologist and/or SHPO will be followed in implementing the project.

Burned Area Rehabilitation
BAR projects must comply with NHPA compliance. BAR plans will be submitted to regional archeologist for review and cultural / archeological clearance. To the greatest extent possible, recommendations of Regional archeologist and/or SHPO will be followed in implementing the project.

Endangered Species Act Compliance

Burned Area Emergency Response
Burned Area Emergency Response (BAER) is considered an emergency action under Section 7 of ESA. During the emergency, the BAER team(s) should be in contact with Ecological Services while developing BAER plans that may adversely affect listed and proposed species or their habitat. Ecological Services will provide suggestions on how to avoid or minimize these effects. It is not necessary for BAER plans to be sent to Colorado Ecological Services Field Office immediately upon completion. However, if time and conditions permit and a proposed BAER

project has potential to adversely affect listed or proposed species or designated or proposed critical habitat, the BAER plan should be shared with Ecological Services.

As soon after the emergency as is practical, there is a need to close consultation with written documentation. Documentation should include a description of the emergency (fire), rationale for the expedited consultation, and an evaluation of the impacts of the fire, with a discussion of how any ecological services recommendations were implemented and their results. It is highly recommended to contact Ecological Services prior to submitting information so that any other issues or information needs can be addressed immediately and will not delay consultation. The documentation will kept as part of the incident history file.

Burned Area Rehabilitation
As Burned Area Rehabilitation (BAR) is a planned activity, Section 7 consultation will be completed as necessary during the development of BAR plans which may adversely affect threatened and endangered species or their habitats. Recommendation(s) of Ecological Services will be incorporated into the planning and implementation of BAR projects. Results of consultations will be filed as part of the incident history file.

Clean Water Act

Both BAER and BAR projects that may affect water quality need to comply with provisions of CWA. Hydrologists should be consulted in plan development. Following recommendations of hydrologist, further consultation with EPA will be conducted as needed.

4.3.7 Burned Area Rehabilitation Public Information and Public Concerns

Because BAR is planned, a meeting to inform the public of activities planned, obtain input from local communities and neighbors, and identify issues needing further discussion and resolution should be held early in the BAR plan development process. Any public concern or issues should be incorporated into the BAR plan.

4.3.8 Burned Area Emergency Response and Burned Area Rehabilitation Contacts

A list of local, regional, and national contacts is found in Appendix F-3.

4.4 Prevention / Mitigation, Education, & Public Information

Since the inception of the National Fire Plan in 2002, the traditional fire prevention program has been expanded to include efforts to mitigate or manage the hazardous fuels that threaten values at risk, whether structures in the interface or critical habitat for the RMANWRC. The program includes actual treatment or mitigation of the hazardous fuel, and education of external and

internal stakeholders who should be collaboratively engaged to help participate in the treatment of the problem.

4.4.1 Prevention / Mitigation

4.4.1.1 Wildfire Occurrence

Fire prevention remains an important piece of the education program and is designed to reduce the amount of human caused fires. The number of starts varies from year to year.

Fire prevention is a constant and ever-present activity for the refuge staff. A large portion of fires that do occur are man induced. The fires caused by man seem to be sporadic and spontaneous. These fires occur along refuge roads that are used by various refuge visitors and local residents. Refuge use is often seasonal in nature, with more visits during the early spring and late fall-winter periods.

4.4.1.2 Wildfire Investigation and Trespass Policies

Agency policy requires any wildfire to be investigated to determine cause, origin, and responsibility. Wildland fire trespass refers to the occurrence of unwanted and unplanned wildland fire on FWS lands where the source of ignition is tied to some type of human activity. Fire trespass is a legal/law enforcement activity and the appropriate FWS and local law enforcement authorities should be contacted and standard criminal and/or civil investigative procedures and reports used. Investigations of all human-caused wildfires will occur at the earliest possible time. The investigation may range from a documented determination of cause by the initial attack crew to criminal investigation by a qualified arson investigator. Chapter 10 of the FWS *Fire Management Handbook* provides detailed information regarding investigation and trespass procedures.

4.4.1.3 Prevention / Mitigation Activities

<u>Prevention Goals & Priorities</u>

The goals of the RMANWRC prevention programs are:

- Reduce the likelihood of both human-caused and unwanted naturally-ignited wildfire ignitions that could result in unacceptable loss.
- Decrease the frequency of human-caused fires.
- Reduce emergency suppression costs.
- Reduce fire size and intensity by developing programs such as fuels reduction/modification.
- Establish cost-effective prevention programs at the national, regional, and refuge levels.
- Integrate and coordinate prevention programs with State foresters, nearby land management agencies, and wildland fire protection organizations.

- Promote the creation of incentives for building and maintaining fire-safe structures and fire-safe communities to reduce the unwanted consequences of fire.
- Minimize damage from unwanted wildland fire occurrence.
- Incorporate prevention programs into our fire management outreach programs.

The prevention priorities of the RMANWRC are to:

- Prevent catastrophic fires and human-caused wildfires (highest priority);
- Minimize losses from wildfire while considering resource management objectives;
- Collaborate through an interagency approach among all Federal, State, county, and municipal agencies/entities;
- Investigate all human-caused wildfires at the earliest possible time.

Mitigation Activities

The RMANWRC will accomplish the prevention goals and priorities identified above through the following efforts:

- During periods of high fire danger, local newspapers and broadcast media carry warnings, articles, and fire updates. Most of the press releases originate from the Division of Fire Safety.
- Integrate the prevention message into interpretive programs conducted or sponsored by the refuge.
- Make all staff aware of prevention efforts and be able to explain it to other interested parties and individuals calling the refuges.
- Fire prevention will be discussed at appropriate safety meetings, prior to fire season and during periods of high fire danger.
- When available, refuge employees will assist with local and regional Prevention Campaigns.
- Articles concerning fire prevention will be made available for statewide release.
- The refuge also informs the public that fires are not allowed on refuge lands through refuge brochures, pamphlets and signs placed in areas of high public use. If conditions warrant, the refuge may be closed to public access during periods of extreme fire danger.

4.4.2 Education

The FWS outreach goal is to enhance knowledge and understanding of wildland fire management policies and practices through internal and external communication and education.

In general, the local public and many visitors to the refuge are very aware of fire prevention and have an ingrained fear of starting range fires. Weekly contractor and FWS staff meetings remind field workers of fire dangers related to equipment use. The FWS will post special warnings/notices or close areas and increase patrols during periods of very high or extreme fire danger as part of its step-up preparations. Closures would be done in compliance with local, state, and geographic area fire restrictions. Equipment and/or public use restrictions may also be imposed when needed.

There are opportunities to utilize the Ready Reserve Program to cooperate with the adjoining communities to coordinate training with local fire departments.

4.4.3 Public Information

Informing the public is an important part of fire suppression, fire prevention, and the FWS mission. During wildfires occurring on FWS lands, the project leader is responsible for providing fire information to the press and the public. The project leader may delegate this task as needed.

There are two publics that must be informed about the refuge's fire program: adjacent landowners and members of surrounding communities. The approach to informing these groups must employ a combination of reactive and proactive activities.

Prescribed burning or wildfire suppression operations frequently elicit comments and questions from the public, and the refuge reacts to these inquiries in several ways. In the field, firefighters and overhead crew answer questions from the public so long as it does not interfere with operations. On fires where a large amount of general public and media interest is expected, a fire information officer is present on the scene. In other cases, designated staff at the refuge headquarters will handle any questions.

One of the primary goals of the refuge fire staff is to keep the general public informed. Attempts to keep the general public informed are made through media contacts, participation in fire information organizations and outreach programs. Over the past few years several feature articles have been written about the refuge fire program. Interest in fires elsewhere in the United States has prompted some of these, while fires on the refuge have prompted local inquires. The media is notified of burns in highly visible areas, and arrangements made to accommodate their presence.

5.0 Monitoring and Evaluation

The intent of this chapter is to document processes for determining whether the FMP is being implemented as planned and fire–related goals and objectives are being achieved. Information obtained from monitoring is used to update the FMP and land management plans.

5.1 Fire Management Plan Monitoring

5.1.1 Fire Management Plan Updates and Revisions

Updates and/or reviews to FMPs will follow national policy and guidance outlined in Chapter 9 of the FWS *Fire Management Handbook* as well as any regional specific policy or guidance.

Annual Updates

To maintain currency, fire management plans must be reviewed each year using the nationally established annual review process. Without a current FMP, prescribed fires cannot be conducted and response to unplanned ignitions can only consider suppression strategies. Preparedness and prevention activities can continue in the interim period as outlined in the expired plan.

A copy of signed amendment along with changes to FMP and appendices will be sent to Regional office for documentation and updating their copy of FMP.

The project leader and the FMO will meet in November to review and discuss all aspects of the fire management program during the prior fire season, and develop strategies for improving these operations in the future. A list of recommended actions, assigned responsibilities and time frames for implementation will be developed.

Revisions

FMPs can be revised at any time. However, revisions are required following the completion of a new or revised CCP or when significant changes occur. Revisions to FMPs will require the FMP be submitted to Regional Office for approval.

5.1.2 Fire Management Plan Terminology

Terms in the FMP are defined in the National Wildfire Coordinating Group, located at *http://www.nwcg.gov/pms/pubs/glossary*. Terms that are unique or significant to the RMANWRC are found in Appendix A-1.

5.2 Treatment Effectiveness Monitoring

RMANWRC will develop a Fuels and Fire Effects Monitoring Plan in order to capture the effects that fires have on the natural systems of the refuge. The monitoring plan is an umbrella description for all proposed fuel and fire effects monitoring activities for the refuge, and is required in order to authorize funding for monitoring and research activities.

The monitoring plan will be prepared in accordance with the FWS *Fire Management Handbook* and *Fuel and Fire Effects Monitoring Guide* (U.S. Fish and Wildlife Service 2005b). The purpose of this monitoring plan is to identify specific measures that will be used by the refuge to:

- Evaluate the fuels management program and treatment effectiveness
- Ensure that refuge resource management goals and objectives are not compromised by fuels management projects.
- Ensure the effective use of prescribed fire in meeting refuge goals and objectives.

The effects of wildland fires will be monitored on the refuge through various sampling techniques including: photo documentation, vegetation sampling, wildlife sampling, composite burn index sampling, and general observation.

This monitoring plan will provide for adaptive management "feedback", and conform to monitoring protocols established by the FWS Mountain-Prairie Region monitoring recommendations under the guidance of *Fulfilling the Promise* WH-10 (1) action item, the Service's Fuel and Fire Effects Monitoring (U.S. Fish and Wildlife Service 1999). During each prescribed fire, personnel are assigned to monitor weather and fire behavior. After the conclusion of prescribed fire, the section of the unit burn plan relative to monitoring is completed. Present long term monitoring consists of archiving pre and post burn photos. Personnel and budget constraints preclude other needed desirable efforts

Fire research and monitoring on the Complex can be divided into two categories: monitoring and evaluation of fire operations and long-term monitoring of fire effects. Although highly welcomed and certainly needed, there are no fire research projects currently being pursued on the Complex.

5.2.1 Fire Operations Monitoring and Evaluation

Monitoring of prescribed fires is intended to provide information for quantifying and predicting fire behavior and its ecological effects on refuge resources while building a historical record. Monitoring measures the parameters common to all fires: fuels, topography, weather and fire behavior. In addition, ecological changes such as species composition and structural changes

will be monitored after a fire. This information will be very useful in fine-tuning the prescribed burn program.

All fires may be monitored regardless of size. The FMO will establish specific fire information guidelines for each fire to update intelligence about the fire. Highest priority for monitoring will be assigned to large fires or fires which threaten to leave the refuge.

5.2.2 Long Term Monitoring

The only long-term monitoring currently available to the refuge consists of pre- and post-burn photos. Permanent photo points are being established in all new burn units. Personnel and budget constraints preclude other needed and desired monitoring efforts. No formal research has been or is currently being conducted on the refuge.

5.2.3 Research Needs

Areas of research that would benefit not only the refuge but other areas as well would be related to the effects of fire on wildlife. Of special importance would be the long-term effects on both federal and state listed species.

Funding and personnel are needed to monitor both short- and long-term effects of the refuge's diverse and varied burn program.

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