FIRE MANAGEMENT PLAN

FOR

ALAMOSA - MONTE VISTA

NATIONAL WILDLIFE REFUGES

Alamosa, Colorado

Recommended by:	_____	_____
	Project Leader, Alamosa-Monte Vista National Wildlife Refuges	Date
Reviewed by:	_____	_____
	Fire Management Specialist, Mountain-Prairie Region	Date
Concurred by:	_____	_____
	Regional Fire Management Coordinator, Mountain-Prairie Region	Date
Concurred by:	_____	_____
	Refuge Supervisor, Colorado/Kansas/Nebraska	Date
Concurred by:	_____	_____
	Regional Chief, National Wildlife Refuge System	Date
Approved by:	_____	_____
	Regional Director, Mountain-Prairie Region	Date

Appendices:

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I. INTRODUCTION

One of the primary objectives of the U.S. Fish and Wildlife Service (Service) in managing natural areas is the maintenance of ecosystems and their dynamic processes to ensure as nearly as possible a functional natural environment. As one of these processes, fire can constitute one of the greatest influences on an ecosystem.

U.S. Fish and Wildlife Service policy requires that an approved Fire Management Plan must be in place for all of Service lands with burnable vegetation. This plan meets that requirement.

II. REFUGE DESCRIPTION

A. Location and General Description

The Alamosa/Monte Vista National Wildlife Refuge Complex (Complex) is located in Southern Colorado near the towns of Alamosa and Monte Vista, Colorado (Map 1). The Complex consists of the Alamosa National Wildlife Refuge (Map 2) and the Monte Vista National Wildlife Refuge (Map 3). The Alamosa NWR boundaries encompasses approximately 12,425 acres along the Rio Grande River and the Monte Vista NWR boundary encompasses 14,189 acres of uplands within the San Luis Valley. Of the 26,614 acres within the Complex boundary, an estimated 24,884 acres contain burnable vegetation.

Table 1: Alamosa/Monte Vista NWR Complex

Unit	Number of Acres
Alamosa National Wildlife Refuge	12,425
Monte Vista National Wildlife Refuge	14,189

B. Topography & Soils

The Complex area is generally flat, with low bluffs along the lower reaches of the east side of the Rio Grande River. Elevations range from 7520-7600 feet above mean sea level. Soils are fine to coarse textured alkali and range from 20" to 60" deep. General soils maps are included in Appendix A.

C. Climate

The area is characterized as a cold desert biome with low precipitation and extreme temperature variations. Average annual precipitation is seven inches with most

Map 1: Vicinity Map

Map 2: Alamosa National Wildlife Refuge

Map 3: Monte Vista National Wildlife Refuge

occurring as winter snow and summer afternoon showers. Temperatures range from - 50E F. in the winter to + 90E F. during the summer. Approximately 80% of annual precipitation occurs from April to October with July and August receiving the greatest amounts. June is the driest month (USDA 1980).

D. Vegetation

Habitat types on the Complex are classified as: wetlands, uplands, riparian and agricultural (Table 2). Maps 4 & 5 display the distribution of the various types on the two refuges.

Table 2: Alamosa/Monte Vista NWR Habitat Types

Habitat Type	Acres
Wetlands	12,071
Uplands	10,132
Riparian	1,099
Agricultural	1,526
Water (Non-vegetative)	1,730
Administrative	56
TOTAL	26,614

1. Wetlands

Approximately 12,071 acres of wetland marsh habitat exists on the Complex. This includes both deepwater and shallow marshes. Hardstem bulrush (*Scirpus acutus)* and cattail (*Typha latifolia)* are the dominant plant species. This vegetative type exists in marsh units along the length of the Alamosa NWR adjacent to the Rio Grande River and behind impoundments within the Monte Vista NWR.

2. Uplands

Approximately 10,132 acres of uplands exist on the Complex. Dominant plant species in this type are greasewood (*Sarcobatus vermiculatus)*, rabbit brush (*Chrysothamnus* spp.), alkali sacaton (*Sporobolus airoides*), and saltgrass *(Distichlis spicata*).

Map 4: Vegetation Cover Types - Alamosa NWR

Map 5: Vegetation Cover Types - Monte Vista NWR

3 Riparian

This vegetation type includes the narrow ribbon of trees along the Rio Grande River on the Alamosa Refuge. Approximately 1,099 acres of riparian forest habitat exists on the Refuge. The dominant plant species are Fremont cottonwood (*Populus fremontii*) and several species of willow (*Salix* spp.).

4. Agricultural

The Complex manages 1,526 acres of cropland.

Noxious Weeds and Other Problem Species

There are 5 species of noxious weeds of concern that have been identified within the complex boundaries: perennial pepperweed (*Lepidium latifolium*), Canada thistle (*Cirsium arvense*), hoary cress (*Cardaria draba*), phragmites (*Phragmites australis*) and Russian knapweed (*Centaurea repens*).

E. Threatened, Endangered and Species of Conservation Concern

The Complex provides important habitat for four species of special concern: bald eagle *(Haliaeetus leucocephalus),* Southwest willow flycatcher (*Empidonax trailii extimus*), least tern (*Sterna antillarum*) and the whooping crane (*Grus americana*).

Bald eagles frequent the Complex's riparian areas during the spring, fall and winter. The eagles are drawn to the Complex in abundant numbers in the spring because of the large numbers of winter killed fish that become an available food source when marshes thaw. The highest concentration of the Southwest willow flycatcher have been identified along the Rio Grande River riparian corridor on the Alamosa Refuge. Least tern is a rare migrant that utilizes the wetlands of the Complex for foraging and roosting. Whooping cranes accompany their sandhill crane foster parents during both spring and fall migrations.

State of Colorado species of special concern that frequent the Complex are greater sandhill crane (*Grus canadensis tibida*), peregrine falcon (*Falco peregrinus anatum*), ferruginuous hawk (*Buteo regalis*), long billed curlew (*Numenius americanus*), American white pelican (*Pelecanus erythrorhynchos*) and the northern leopard frog (*Rana pipiens*).

F. Birds, Mammals, Fish, Reptiles, Amphibians and Invertebrates

One hundred ninety-eight species of birds have been identified on the Complex, seventy-seven of which are confirmed nesters. The Complex is most important as a migratory stop-over for migrating birds. Forty-nine mammal species have also been reported on the Complex.

Reptiles and amphibians that have been observed to utilize habitat on the Complex are tiger salamander, plains spadefoot frog, great plains toad, Woodhouse's toad, striped chorus frog, bullfrog, northern leopard frog. short-horned lizard, eastern fence lizard, many-lined skink, bullsnake, and western terrestrial garter snake. Many different fish species inhabit the Rio Grande River and the Complex's marshes and irrigation system. These include northern pike, white suckers, carp, and an occasional German brown trout.

G. Cultural/paleontological Resources

There is one cultural site identified on the Complex. The Becker Cemetery is located near the south end of the Alamosa NWR.

H. Improvements and Values at Risk

There is one area of improvement on each of the Refuges. Both administrative sites correspond to the respective Refuge headquarters. These sites include administrative offices, government residences, shops, and storage buildings. Replacement value of these structures is $4,170,000 (Appendix B).

Adjacent landownership is mainly private surrounding the Monte Vista NWR with only occasional Bureau of Land Management and State of Colorado Lands interspersed. Alamosa is generally surrounded by private ownership on the west and north and bordered by a combination of private, State of Colorado and Bureau of Land Management lands on the east. The Bureau of Land Management and State of Colorado lands are maintained for land management purposes and have no improved value. Numerous farms and homes dot the landscape surrounding both Refuges.

I. Socio-Political-Economic

The two refuges are located in the heart of the San Luis Valley where the economy is centered around farming and ranching. Although the Valley is considered by some to be economically depress, the local residents enjoy a certain quality of life that can only be found in an area where families have lived for generations.

Local area farmers use wildland fire to clear fields and irrigation ditches. It is not unusual, in the spring of the year, to observe several smoke columns as farmers burn weeds and other debris or ditches. Both refuges are in fairly close proximity

to the two major communities in the Valley. Alamosa is the home of Adams State College. The Valley is surrounded on three sides by federal lands. The USDA Forest Service's Supervisors Office is located in Monte Vista. In addition to the Forest Service, other federal land management agencies, the BLM and National Park Service also have a presence. Communities to the west are becoming home to retirees and others who moved into the area from out of state.

J. Fire Ecology

Historical fire information for the Complex area is generally lacking. Fire acts as a disturbance factor in the vegetal development of most plant communities and invokes secondary successional processes (Bunting 1984). Because of the historical prominence of humans in the area it is probable that fire was a disturbance factor in the development of vegetative communities on the Complex. Native American people utilized the valley for thousands of years prior to European settlement. Farming and ranching were instituted in the San Luis Valley in the early 1860's (USDA 1980), increased throughout the 19th century and continued into the 20th century. This use has disrupted the pre-European fire regime. The best approach to return fire into the San Luis Valley ecosystem is to determine a desired condition, develop fire strategies to achieve the condition and then to monitor the results of the action. Following is a brief summary of the fire ecology of the vegetative communities identified on the Complex:

1. Wetlands

There is little documentation on the historical fire ecology of this type. Fire would not have been necessary to maintain the species composition in these wetland systems. Hydrologic factors are more likely the force behind the development of this vegetative community. Prescribed fire can be used as an effective means of reducing vegetative biomass when it is beneficial to do so.

2. Uplands

Much of the upland area is dominated by greasewood communities. These communities are not prone to burn except in severe fire conditions (FEIS 2000).

3. Riparian

Fremont cottonwood is an indicator of this vegetative type and has a low tolerance to high or prolonged fire intensities (FEIS 2000). Low fire intensities will generally not top-kill Fremont cottonwoods. In related Populus species, top-killing of trees is generally followed by sprouting from the stump and root collars (FEIS 2000). The understory species in this vegetative type will generally respond favorably to fire.

4. Agricultural

There is no fire history on this parcel with the only possibility of fire being used for stubble removal. Currently stubble is tilled into the ground reducing the need for fire use.

K. Refuge Fire History

The Complex has a low occurrence of wildfire. In the time period 1960-1999 the Complex recorded only two wildfires. A human caused ignition in April of 1981 burned 780 acres and a lightning ignition in 1995 burned 0.2 acres. The numbers are so low as to have no statistical meaning, other than to indicate that there is little likelihood of wildfire occurrence; however, when one occurs there is a good possibility that the fire can grow to significant size.

Prescribed fire has been utilized in the past as a management tool on the Complex. In the period 1985-1989, 4,100 acres were burned under prescription yielding a yearly average of 820 acres. Prescribed fire was not used as a management tool on the Complex from 1990-1996. One twenty-acre burn was completed in 1997 and two burns totaling 1300 acres were completed in 1999.

III. POLICY COMPLIANCE-GOALS AND OBJECTIVES

A. Service Policy Compliance

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

Service policy allows for a wildland fire management program that offers a full range of activities and functions necessary for planning, preparedness, emergency

suppression operations, emergency rehabilitation, and prescribed fire operations, including non-activity fuels management to reduce risks to public safety and to restore and sustain ecosystem health.

B. National Environmental Policy Act Compliance

This plan meets the requirements of the National Environmental Protection Act (NEPA). Wildfire suppression is categorically excluded, as outlined in 516 DM 2 Appendix 1. The Complex will not be using prescribed fire to accomplish resource management objectives until the Comprehensive Conservation Plan (CCP) for the Complex is completed. As part of the CCP process, the use of fire will be addressed and the Service will involved the public throughout the planning process. Once the CCP has been completed, the Fire Management Plan will be revised to incorporate the goals and objectives identified in the CCP and what role wildland fire will play in achieving those objectives.

C. Authorities Citations

The statutes cited herein authorize and provide the means for fire management activities on lands under the jurisdiction of the Department of the Interior, or lands adjacent thereto.

1. Protection Act of 1922 (42 Stat. 857; 16 USC 594)

2. Economy Act of 1932 (47 Stat. 417; 31 USC 1535)

3. Taylor Grazing Act of 1934 (48 Stat. 1269; 43 USC 315)

4. Reciprocal Fire Protection Act of 1955 (69 Stat. 66; 42 USC 1856a)

5. National Wildlife Refuge System Administration Act of 1966 as amended (80 Stat. 927; 16 USC 668dd-668ee)

6. Federal Fire Prevention and Control Act of 1974 (88 Stat. 1535; 15 USC 2201)

7. Wildfire Suppression Assistance Act of 1989 (PL 100-428 as amended by PL 101-11)

8. Disaster Relief Act of May 22, 1974. (88 Stat. 143l 42 U.S.C. 5121)

9. Federal Grants and Cooperative Act of 1977 (Pub. L. 95-244, as amended

by Pub. L. 97-258, September 13, 1982. 96 Stat. 1003 31 USC 6301-6308)

10. Department of Interior Departmental Manual, Part 620 DM-1, Wildland Fire Management (April 10, 1998).

11. U.S. Fish and Wildlife Service Manual, 621 FW1-3 (February 7, 2000).

12. U.S. Fish and Wildlife Service Fire Management Handbook (December 28, 2000).

D. Other Regulatory Guidelines

Fire Management activities within the Complex will be implemented accordance with the following regulations and directions:

1. Departmental Manual Part 519 (519DM)

2. Code of Federal Regulations (36CFR 800)

3. The Archaeological Resources Protection Act of 1979

4. The Archaeology and Historical Preservation Act of 1974, as amended.

5. National Historic Preservation Act of 1966

6. The Endangered Species Act of 1973, as amended

7. The Provisions of the Clean Air Act, as amended 1990

E. Enabling Legislation

The enabling legislation for the Complex includes the Migratory Bird Conservation Act (16 USC 715d). The legal purposes of the Complex include:

"... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds," and

"... suitable for-(1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species

or threatened species..."

F. Overview of Planning Documents

This plan replaces the 1984 Fire Management Plan. Currently (2001), the Complex is developing a Comprehensive Conservation Plan (CCP) that will guide the management and development of the Complex for the next 15-20 years. The CCP is expected to be implemented in 2002. Once the CCP process has been completed, other management plans that tier off the CCP will be completed. This plan will be reviewed and revised as necessary to incorporate the goals and objectives identified in the CCP.

G. Refuge Management Objectives

Because this planning process is driven by land management objectives, fire management objectives must be identified and connected with a parcel of land. Therefore, the interaction of fire history and objectives is the basis for developing the fire management activity plan and requires a clear understanding of the Service's fire management policy.

The Refuge Management Plans for the Alamosa/Monte Vista NWR Complex establishes a number of management objectives and operational goals which directly relate to the Complex fire management policy.

1. To preserve, restore, and enhance in their natural ecosystems all species of animals and plants that are endangered or threatened.

2. To perpetuate the migratory bird resource.

3. To preserve a natural diversity and abundance of fauna and flora on refuge lands.

These goals are expected to be enhanced or may change entirely, based on the new CCP. For that reason, the use of management ignited prescribed fire will not be addressed in this Fire Management Plan.

IV. REFUGE FIRE MANAGEMENT OBJECTIVES

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

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

Table 3: Fire Management Goals and Objectives

GOAL	OBJECTIVES
Protect life, property, and other resources from wildland fire	a. Safely suppress all wildfires using strategies and tactics appropriate to safety considerations, values at risk, and in accordance with Service policy. b. Minimize the cost and impact of wildland fire suppression activities. c. Prevent human-caused wildfires. d. Take actions to reduce vulnerability of Complex resources to fire. e. Utilize mechanical treatment to reduce the concentration of fuels in areas where resources may be damaged by wildfire. f. Prevent the inappropriate application of fire where it may further degrade grasslands and promote weed infestation.

V. FIRE MANAGEMENT STRATEGIES

A. General

It is the intention of the U.S. Fish and Wildlife Service to continue to manage all wildland fires occurring within the Complex using the appropriate management

concept commensurate with values at risk. Strategies employing a range of suppression options may be considered by the Incident Commander. The primary suppression strategy employed will be direct attack. However, there may be occasions when direct attack on high intensity, rapidly spreading wildland fire would jeopardize firefighter safety and not be appropriate. In these cases indirect attack will be employed utilizing natural and human-made features as wildfire control points. Minimum impact suppression techniques (MIST) will be utilized, where appropriate. The matrix in Table 4 is intended to illustrate the various options available to the Incident Commander (IC). The Fire Management Plan and Delegations of Authority, as needed, will provide the IC with guidance, but it is the responsibility of the IC to select the appropriate strategy and tactics.

Table 4: Appropriate Management Response

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

All fire management activities will be conducted in a manner consistent with applicable laws, policies, and regulations.

B. Strategies

1. All wildfires occurring on the Complex will be suppressed. Aggressive initial attack will generally be the suppression strategy for the entire Complex. The use of natural or manmade barriers to contain the fire is also appropriate when increased safety or reduced cost over direct attack can be attained. Tactics will be unique to each incident dependent on safety considerations, weather conditions, cost of suppression, fuel conditions, availability of resources and location of the fire in relation to structures and cultural resource sites. Specific tactics will be determined by the Incident Commander on scene.

2. Mechanical treatment of natural fuels may be utilized to reduce potential for damage from wildfire. These treatments must be in compliance with resource management goals and objectives.

3. Wildland Fire Use for Resource Benefit (WFURB) and management ignited prescribed fire will not be utilized on the Complex.

C. Limits

1. Smoke management will be carefully considered for all fire management activities.

2. All fires occurring on the Complex will be staffed or monitored until declared out.

3. 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.

4. 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.

5. Fire management activities occurring within the Complex will be implemented in such a way as to provide the appropriate level of protection for species of special concern. Section 7 consultation will be initiated, as appropriate.

D. Rationale for Determining Fire Management Strategies

1. An aggressive initial attack option will provide the greatest protection to private land and associated improvements. While the presence of roads, irrigation and water control ditches and other fuel breaks provide the option to utilize indirect attack to suppress a wildfire is a safe, cost-efficient manner.

6. Wildland Fire Use for Resource Benefit (WFURB) was determined to not be a viable option at this time. This is primarily due to the small size of the Complex and the low occurrence of lightning ignited fires on the Complex. In addition, planning and implementing WFURB was deemed to more costly than the selected method. Finally, this option has not been through the NEPA Process.

3. Hazard fuel reduction on some areas of the Complex are not conducive to the use of prescribed fire due to potential damage to resource values. Prescribed fire would be an option for the maintenance of these areas after mechanical treatment of high fuel loading has been completed and a new Fire Management Plan permitting its use has been completed.

E. Impacts of Fire Management Program

Due to the limited number of wildfires that occur on the Complex, other than the smoke produced by a large wildfire, the program is expected to have little negative effect on the community. Properly selected mechanical fuel reduction projects are expected to reduce the risk of a wildfire leaving Service lands and threatening neighboring lands.

VI. FIRE MANAGEMENT RESPONSIBILITIES

The Project Leader is responsible for planning and implementing an effective fire management program at the Complex. This individual is the official ultimately responsible for all decisions concerning fire management. During the absence of the Project Leader, the Assistant Project Leader will be delegated the authority to make decisions concerning wildfire suppression on the Complex. There are no fire funded positions at this time. All fire suppression duties are collateral duty in nature.

A. Project Leader

1. Responsible for the overall management of the Complex, including the fire program.
2. Insures that Department, Service, and Refuge policies are followed and maintained.
3. Insures, within budget and staffing limitations, sufficient collateral duty firefighters meeting Service standards are available for initial attack.
4. Serves as a firefighter, as qualified
5. Prepares annual FIREBASE budget request, approves and tracks use of FIREBASE accounts.

B. Assistant Project Leader

1. Provide input to the resource management activities on the Complex including the selection of objectives and tools to be used in achieving objectives.
2. Serves as a firefighter, as qualified.
3. Responsible for planning, coordinating, and directing preparedness activities including:
    a. Fire training.
    b. Physical fitness testing and Interagency Fire Qualification System (IFQS) data entry.
    c. Fire cache and equipment inventory accountability, maintenance, and operation.
    d. Cooperation with cooperative agencies. Revises cooperative agreements as necessary.
    e. Insures step-up plan is followed.
4. Insures fire management policies are observed.
5. Maintains liaison with Regional Fire Management Coordinator and Fire Management Officer.
6. Updates the Fire Management Plan, maintains fire records, reviews fire reports (DI-1202) for accuracy.

7. Submits DI-1202 to Zone FMO within 10 days of fire declared out.

C. Seasonal and Collateral Duty Firefighters

1. Maintain assigned fire equipment in ready state and use required safety gear.
2. Responsible for their personal protective equipment and physical conditioning.
3. Qualify annually with the work capacity test before February 28, or within two weeks after reporting for duty.

D. Wildfire Incident Commander (as assigned)

1. The Incident Commander (IC) will be responsible for the safe and efficient suppression of the assigned fire.
2. Fulfill the duties described for the IC in the Fireline Handbook (PMS 410-1)
3. Notify dispatch and/or Project Leader of all resource needs and situation updates, including the need for an extended attack.
4. Ensure that personnel are qualified for the job they are performing.
5. Ensure that fire behavior is monitored, data collected and recorded and that firefighters are briefed on current and expected weather and fire behavior, escape routes, safety zones. Posts lookouts.
6. Identify and protect sensitive areas.
7. Utilize minimum impact strategies whenever possible.
8. Ensure that the fire site is fully rehabilitated or that the management of rehabilitation has been assigned.
9. Submit completed DI-1202 wildfire report, crew time sheets, and a listing of any other fire related expenditures or losses to Assistant Project Leader within 3 days of fire being declared out.

E. Cooperators and Fire Related Agreements:

The Complex is almost entirely surrounded by private land owned or land managed by the Canon City Field Office of the Bureau of Land Management. The Pueblo Interagency Dispatch Center Annual Operating Plan displays suppression responsibilities for the area as well as a list of Complex cooperators (Appendix C).

Along with other land management agencies, the Service has adopted the National

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VII. FIRE SEASON

In the time period 1960-1999 the Complex reported one human caused wildfire and one wildfire attributed to lightning. Fire occurrence information is contained in Appendix D.

The wildfire season determined by the Pueblo Interagency Dispatch Center for the Interagency Fire community is June 1 through September 30.

VIII. EQUIPMENT AND STAFFING NEEDS

E. Normal Unit Strength

Alamosa/Monte Vista NWR is authorized a ten-person fire cache. Recommended cache items and Type 6 Engine inventory are available in Appendix E.

F. Equipment

Engines are the primary initial attack resource on the Complex because of the predominance of fine fuels and a good system of access roads. Earth moving equipment is available, however it will only be used after approval of the Project Leader and when no other alternatives exist. Heavy equipment is not maintained specifically for fire use and will only be used on Complex fires only. Equipment available for fire management purposes is listed in Appendix E.

G. Personnel and Level of Qualification

The following table outlines the position needs of the Fire Management program at Alamosa/Monte Vista NWR Complex. A listing of current employee qualifications can be found in Appendix F.

Table 5: Minimum Staffing Requirements

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

IX. PREPAREDNESS

A. Readiness Activities

Table 6: Annual Complex Fire Management Activities.

ACTIVITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Review Fire Agreements for Currency	X											
Update Annual Fire Management Operating Plan	X											
Winterize Fire Management Equipment										X		

Pre-season Engine Preparation			X									
Inventory fire engine and cache equipment			X									
Weigh engines to determine GVW compliance			X									
Identify Complex Fire Management Training Needs								X				
Annual Refresher Training			X									
Annual Work Capacity Test		X										

Update Fire Management Plan		X										
Prepare pre-season risk analysis			X									
Live Fuel Moisture Sampling						X	X	X	X			

Annual preparedness actions that will be accomplished prior to the end of the month which is identified.

B. Training, Qualification and Fitness

1. Training

Complex shall complete and submit a **copy** of completed National Wildfire Coordinating Group Interagency Training Nomination form (Appendix G) either as a hard copy or electronically for each course to the Zone FMO. The Zone FMO will review the nomination and approve or deny the request. The Zone FMO will notify the Complex via E:mail of their decision and provide an account number to be used for travel and other costs associated with training.

2. Annual Refresher Training

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

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

3. Physical Fitness

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

Wildland fire fitness tests shall not be administered to anyone who has obvious physical conditions or known heart problems that would place them at risk. All individuals are required to complete a pre-test physical activity readiness questionnaire prior to taking a physical fitness test. They must read and sign the Par-Q health screening questionnaire, an informed consent form (Appendix H). If an employee cannot answer NO to all the questions in the PAR-Q health screening questionnaire, or is over 40 years of age, unaccustomed to vigorous exercise, and testing to achieve a Moderate or Light rating, the test administrator will recommend a physical examination. As noted below, all individuals over 40 years of age must receive an annual physical prior to physical testing.

4. Physical Examinations

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

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

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

Large scale fire suppression activities occurring in various parts of the country can have an impact on local fire management activities. For example, regional drought conditions may tie-up local resources that would normally be able to assist with Complex fire management activities. It may be necessary to go out of Region to get the resources needed to staff the Complex engine during periods of extreme drought or high fire danger.

D. Step-Up Plan

All preparedness activities will be in accordance with the Complex Step-up Plan (Appendix I).

E. Severity and Emergency Presuppression Funding

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

Emergency Presuppression and Severity funds will be requested in accordance with the guidance provided in the Service's Fire Management Planning Handbook. As a general guide, Severity funding will be requested if a severe drought is indicated by a Palmer Drought Index reading of -4.0 or less or a Keech-Byram Drought Index of 600 or greater and a long-range forecast calling for below average precipitation and/or above average temperatures. Drought Indices can be located at: http://www.boi.noaa.gov/fwxweb/fwoutlook.htm

X. WILDFIRE PROGRAM

A. Special Safety Concerns and Firefighter Safety

Safety of Service employees and cooperators involved in fire management activities is of primary concern. Only trained and qualified employees will be assigned to fire management duties. All fire management personnel will be issued appropriate personal protective equipment and will be trained in its proper use. No Service employee, contractor or cooperator will be purposely exposed to life threatening conditions or situations except when necessary to save the life of another person.

The primary threat to firefighter safety is from fast moving, wind-driven wildfires that can quickly over take and trap firefighters. Due to terrain, soil conditions, and the location of various wetlands and water courses, it may be difficult for an engine to out-run a fast moving fire. It is important that firefighter practice LCES **at all times**! 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 wildfires and prescribed fires are recognized health concerns for

firefighters. Wildfire incident commanders must plan to minimize exposure to heavy smoke by incorporating the recommendations outlined in the publication Health Hazards of Smoke (Sharkey 1997), which is available from PMS or the Missoula Technology and Development Center.

B. Prevention

With one human caused fire ignition from 1990-1999, an extensive fire prevention program is not warranted, however, the following will be followed to prevent human caused unplanned ignitions.

1. Public contact will be made with Complex visitors informing them of a fire ban when a fire ban is in effect.

2. Brush, grass and other flammable fuels at public use points will be treated to reduce the possibility of human caused ignitions.

C. Detection

There are no permanent detection facilities located on the Complex. Detection of wildland fire is dependent on individuals reporting fires to the Complex staff, the Pueblo Interagency Dispatch Center or the local Sheriff's Department.

D. Initial Reporting and Dispatching

Initial reporting and dispatching will be completed in according with the Pueblo Interagency Dispatch Center Annual Operating Plan (Appendix C).

E. Suppression

Service policy requires the Complex to utilize the ICS system and firefighters meeting NWCG and Service qualifications for wildfires occurring on Service property. All suppression efforts will be directed towards safeguarding life and property while protecting the Complex's resources and other values at risk from harm.

All wildfires will be suppressed. Minimum impact strategies and tactics will be used whenever possible. Aggressive attack using direct tactics will generally be the suppression strategy for the entire Complex. The use of natural or manmade barriers to contain the fire is also appropriate when increased safety or reduced cost as compared to direct attack can be attained. Tactics will be unique to each incident dependent on safety considerations, weather conditions, cost of suppression, fuel conditions, availability of resources and location of the fire in relation to structures and cultural resource sites. Specific tactics will be

determined by the Incident Commander on site.

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

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

Upon arriving at the scene, all resources, including mutual aid resources, will report to the IC (either in person or by radio) prior to deploying to the fire. Mutual aid forces will be first priority for release from the fire. Procedures outlined in the dispatch section and elsewhere in this plan will be used to acquire Service and Interagency fire personnel and resources.

F. Limitations on Suppression Activities

1. Heavy equipment use during high intensity fire events will be allowed only with the approval of the Project Leader or his/her designee.

2. The use of aerial retardant and foam will be allowed only in non-riparian areas.

G. Wildland Fire Situation Analysis (WFSA)

The IC will notify the Dispatcher or Project Leader, who will in turn will notify the Zone FMO, whenever it appears a fire will escape initial attack efforts, escape Service lands, or when fire complexity will exceed the capabilities of command or operational forces. A Wildland Fire Situation Analysis will be prepared by the Project Leader assisted by the Zone Fire Management Officer. Due to the size of the Complex and the adjacent land holdings it may be necessary to consult with the adjacent landowners in the preparation of the WFSA. A blank WFSA and draft Delegation of Authority are included in Appendix J.

H. Mop-up Standards and Emergency Stabilization and Rehabilitation

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

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

1. All trash will be removed.
2. Firelines will be refilled and waterbars added if needed
3. Hazardous trees and snags cut and the stumps cut flush.
4. Overturned sod resulting from plowing must be rolled back with a grader or by hand and compacted to preserve native grass root stock.

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

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

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

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

XI. FIRE MANAGEMENT UNITS (FMU)

A. Fire Management Units

The Complex will be managed as one FMU. Suppression of wildland fire using the appropriate management response will be the only fire management strategy used.

B. Fuels and Fire Behavior

Severe fire behavior may occur throughout the period from March through September. From March through the end of April, fine fuels are dead and dry and heavy winds from frequent frontal passages create the potential for extreme rates of spread and high spotting potential. Ignitions are rare on the Complex.

In the period from March through September, thunderstorms, low relative humidity and gusty wind are most severe. Generally prevailing winds are westerly to southwesterly but can occur from any direction when thunderstorms or a frontal passage move through the area. Wind speed can be expected to increase with these weather events. During this time period, vegetation in the upland and desert area is dry but sparse while vegetation in the riparian areas has a higher fuel moisture content due to water relations. With the above mentioned fuel characteristics, severe fire behavior would only occur in the few areas where low fuel moisture and ample fuel occur. Ignitions during this time period may either be lightning or human caused.

Live fuel moisture (LFM) is a good indicator of larger fuel conditions and how well they will burn. They are also a good indicator of long-term drying. Live fuel moisture for key species which will indicate that intense burning will occur if weather conditions are favorable are as follows:

Table 7: Live Fuel Moisture

SPECIES/HABITAT	LFM INDICATING SPECIES WILL BURN	LFM INDICATING INTENSE BURNING IS PROBABLE
Grass	<80%	<60%

Following are descriptions of fire behavior and their respective fuel models for the four vegetation types described in the vegetation section of this document.

Wetlands: This type occupies approximately 12,071 acres of Complex and is located primarily in river and stream corridors. The main vegetation is bulrush and cattail. Fire Behavior Fuel Model 3 and National Fire Danger Rating System (NFDRS) Fuel Model N represent this type. Fire in this fuel model is the most

intense of grass fuel models and displays high rates of spread under the influence of wind. Wind may drive fire into the upper heights of the grass and across standing water. Fuel loads consist of fine and course dead fuels averaging 3.0 tons/acre and a fuel bed depth of 2.5 feet.

Uplands: This type is a predominant vegetative type on the Complex occurring on approximately 10,132 acres. NFDRS Fuel Model T or Fire Behavior Fuel Model 2 is appropriate for this type. On the Complex, intensities in this type will vary depending on species composition. Most of the area in this type is composed of widely spaced black greasewood. When greasewood is involved and live fuel moisture is low, intense burning can occur. Rates of spread are highly dependent on fuel continuity and wind or slope gradient. Fire spread in this type is generally not a concern even under extreme fire weather conditions. Generally the extent of burning in this type is limited on the Complex by natural barriers and areas of discontinuous fuels. A rate of spread of 35 chains/hour could be expected with a flame length of 6 feet. Total live and dead fuel loading averages 3.0 tons/acre with a fuel bed depth of 2.5 feet. Due to the continuity and sparsity of fuels within this type on the Complex, fire intensity and rate of spread will be highly exaggerated by this fuel model.

Riparian: This type is composed of cottonwood stands with a grass understory. These areas are restricted to river and stream bottoms. This type is represented on 1,099 acres of the Complex. Several areas within this type have experienced higher fuel loading due to dead trees falling to the ground, thus creating a high fuel load. Generally fire is restricted to the grassy understory in this type, however when fuel jackpots are burned, intense heavy fuel burning on the forest floor can cause mortality in live cottonwoods. This type is characterized by Fire Behavior Fuel Model 2 and NFDRS Fuel Model C. Rates of spread average 35 chains/hour with flame lengths of 6 feet. Total fuel loading for both live and dead fuels is 4.0 tons/acre and fuel depths are approximately 1 foot.

Agricultural: This vegetative type is highly variable depending on the crop chosen. Fire behavior is expected to be low to non-existent.

C. Fire Effects

Fire effects for species of special concern will be characterized below. For a species specific listing of the effects of fire on species that occur on or within the geographic area around the Complex, see Appendix K.

Noxious weeds:

Perennial pepperweed: Dense stands of perennial pepperweed retard the spread of fire. When fire does penetrate a stand of perennial pepperweed, top-killing of the plant is accomplished. Perennial pepperweed resprouts from rhizomes following fire. Areas of severe disturbance within seeding distance of perennial pepperweed may be invaded and soon dominated by this plant.

Canada thistle: Spring burning may slow the spread of Canada thistle by reducing the number of mature plants and functional flower heads. Dormant season fire may favor native grass species which in turn may limit growth and reproduction of Canada thistle.

Russian knapweed: Russian knapweed is top-killed by fire, however it sprouts from rhizomes. There is no evidence that Russian knapweed will invade burned areas immediately after the burn.

Hoary cress: Hoary cress probably sprouts from rhizomes and would not be damaged by wildland fire. However, severe fires that temporarily reduce competition from native plants may favor hoary cress.

Phragmites: Spring burning removes stands of dead canes so only temporarily impacts the plant. Late summer burning kills roots and effects a longer term change. Spring burning is effective in creating openings in dense, unbroken stands of phragmites (Ward 1942).

Species of Special Concern:

Bald Eagle: The greatest effect to bald eagles on the Complex is through the loss of roosting habitat when cottonwood trees are killed by intense fire behavior. Eagles do not nest on the Complex so loss of nesting is not a consideration.

Southwest Willow Flycatcher: Fire management activities which greatly reduce the amount of Salix will potentially impact the willow flycatcher.

Whooping Crane: Whooping cranes use the Complex as a transition area during migration. Fire use will stimulate the growth of food plants utilized by the whooping crane.

Peregrine Falcon: Fire may create open areas for hunting and would be beneficial if a vegetative mosaic is created.

Least Tern: Fire use may create a mosaic of roosting and diverse foraging habitats.

Greater Sandhill Crane: Fire use will stimulate the growth of food plants utilized by the greater sandhill crane during migration.

Ferruginous Hawk: Prescribed fire may create habitat for prey species utilized as food for the ferruginous hawk.

Long-billed Curlew: Improved diversity in forage for the long-billed curlew may result with fire use.

American White Pelican: Foraging and loafing areas may be improved by using fire to create a mosaic of different age vegetative communities.

Northern Leopard Frog: No fire effects information found for this species.

Non-Biological Resources

Soils: Soils should be unaffected by fire in light fuels on the Complex. Fuels are generally flashy and will not provide for a fire that has a long enough residence time to cause significant soil damage due to heating. In heavier fuels such as would occur in cottonwood areas, soils have in the past and could in the future be damaged by smoldering, high fire intensity and lengthy fire residence time. Fire management activities that would occur in these heavy fuels should be limited to mechanical removal or burning when fuel moisture is such that prolonged burning or high fire intensity would not occur. Soil erosion caused by removing vegetation from the land is not likely since most areas that will burn on the Complex do not have a steep slope.

Air Quality: Any fire on the Complex will cause a temporary degradation in the local air quality. The air quality in the area around the Complex is very good and can absorb and buffer the effects of smoke from fire burning on Complex.

Cultural Resources/Complex Improvements: Fire may have a direct effect on the Becker Cemetery. Care will be taken during suppression activities or fireline construction to prevent damage to these sites.

D. Non-fire Hazard Fuel Reduction

A project work plan for this work must be submitted and approved by the Regional Fire Management Coordinator prior to expending fire management funds.

XII. ADDITIONAL OPERATIONAL ELEMENTS

A. Public Safety

Firefighter and public safety will always take precedence over property and resource protection during any fire management activity. The greatest threat to public safety from Complex wildfires is entrapment by fast moving fire fronts. The Complex's first priority during fire management activities will be to keep the area near the fire clear of bystanders. This priority will be reviewed as part of the annual fire fighter refresher.

Reduced visibility from smoke is another public safety concern. In the event of a wildfire or prescribed burn emitting heavy smoke impacting a primary roadway, top priority will be given to safeguarding the travelers using the roadway versus suppressing the fire. The local law enforcement authority having jurisdiction will be notified so that they can institute traffic control.

B. Public Information and Education

The public's perception of wildland fire is slowly changing. The beneficial effects of fire are being recognized by the general public, however views that all fire in the wildlands is bad persist. Public information and education are an important part of the fire management program on the Complex. Fire has in the past and will continue to shape landscape vegetation and animal behavior patterns on the landscape in the Alamosa/Monte Vista area. Efforts will be made to incorporate fire effects information into interpretation and environmental education projects on the Complex.

C. Fire Critiques and Annual Review

The Fire Management Plan will be reviewed annually for currency and applicability. The Complex's Fire Management program will be reviewed periodically in an effort to improve performance. Other reviews and the circumstances when they would occur are as follows:

1. **Refuge Level Review:** This review is conducted by the Project Leader or their designee to provide information to recognize commendable actions and to take needed corrective actions after an incident. An oral review is the required minimum action.

2. **Regional Level Review:** A regional level review will generally be conducted for any fire that:

   a. Crosses the Refuge's boundary into another jurisdiction without the approval of an interagency agreement.

   b. Results in adverse media attention.

   c. Involves a fatality, serious injury, or significant property damage.

   d. Results in controversy involving another agency.

3. **National Level Review:** A national level review will generally be conducted for any fire that involves Servicewide or national issues, including:

   a. Significant adverse media or political interest.

   b. Multi-regional resource response.

   c. A substantial loss of equipment of property.

   d. Multiple, serious fire-related injuries.

   e. Any other fire that the director wants reviewed.

Additional information on reviews can be found in the Fire Management Handbook, section 3.6, Reviews.

D. Records and Reports

The incident commander (IC) on a wildland fire will be responsible for the completion of a DI-1202 Fire Report as well as Crew Time Reports for all personnel assigned to an incident and return these reports to the Assistant Manager. The IC should include a list of all expenses and/or items lost on the fire and a list of personnel assignments on the DI-1202. The Assistant Project Leader will submit the DI-1202 to the Zone Fire Management Officer within 10 days of the fire declared out. The Zone FMO will then enter the information into the Fire Management Information System (FMIS). The Assistant Project Leader will also inform the timekeeper of all time and premium pay to be charged to the fire and ensure expended supplies are replaced.

E. Air Quality and Smoke Management

Smoke management is administered by the State of Colorado Air Quality Control Division. Appendix L contains the Memorandum of Understanding between the State of Colorado and Federal Agencies.

F. Cultural Resources

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

Although over 20 years of fire ecology research allows ecologists to predict impacts on biotic communities, the possible impacts of prescribed burning (and wildfires) on archeological resources are not well known. Research conducted in North Dakota indicated that fire-related impacts to buried artifacts are negligible, but effects on surface-exposed artifacts will be significant, depending on artifact type and size (Seabloom et al. 1991).

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

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

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

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

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

- Low impact wildfire suppression tactics (cold-trailing, use of foam/wet-water/water, use of natural and manmade barriers, change in vegetation, mowing, etc.) will be used to the fullest extent possible. Maps indicating the known location of significant cultural resources will be consulted prior to laying out burn units, and whenever possible, before constructing fireline to halt the spread of a wildfire.

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

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

- The use of mechanize equipment within the Complex must be approved by the Project Leader or his/her designee on a fire by fire basis, and the use these resources will be considered in the approval process for any planned management actions. When the use of heavy equipment is authorized, its use will be monitored.

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

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

G. Fire Research and Monitoring

The need for improved fire effects information on Complex plant and animal species is evident. Past monitoring and evaluation has not been thorough enough to improve prescription writing capabilities and improving the probability of successful prescribed fire prescriptions. This information will be important when the prescribed fire program is reinstituted.

XIII. CONSULTATION AND COORDINATION

Copies of this plan will be made available to the Rio Grande National Forest, Canon City Field Office of the BLM, Great Sand Dunes National Monument - NPS, and the Colorado State Forest Service.

The following individuals were consulted in the development of this plan:

Carl Douhan, Fire Management Planner, Contractor

Rhoda Lewis, Regional Archeologist, R6 USFWS

Mike Blenden, Project Leader, Alamosa/Monte Vista NWR

Ron Garcia, Refuge Wildlife Biologist, Alamosa/Monte Vista NWR

Phil Street, Regional Fire Management Coordinator, R6 USFWS

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APPENDIX A: SOILS

RESERVED

APPENDIX B: LISTING OF IMPROVEMENTS

Alamosa NWR

RPI# 37	Two-car garage for fire truck
RPI#143	Residence
RPI#145	Garage, not attached to residence
RPI#149	Parts storage building
RPI#157	Grain silos (2)
RPI#215	Refuge Office and Visitor Center
RPI#292	Oil storage shed
RPI#315	Six-stall garage, steel, 10' x 104'

Monte Vista NWR

RPI#560	Residence
RPI#17	Residence (quarters #1)
RPI#18	Refuge Office and Visitor Center
RPI#145	Wood barn
RPI#249	Residence (quarters #3)
RPI#250	Residence (quarters #2)
RPI#251	Seven-stall garage
RPI#253	Oil storage shed
RPI#367	Comfort station (park area #1)
RPI#368	Comfort station (park area #2)
RPI#369	Comfort station (park area #3)
RPI#370	Comfort station (park area #6)
RPI#631	Comfort stations (park area #4 & #5)
RPI#478	Storage barn with lean to
RPI#479	Main shop building
RPI#568	Mobile home A (near bunkhouse)
RPI#569	Mobile home B (near bunkhouse)
RPI#570	Bunkhouse
RPI#577	Center pivot irrigation (unit 13)
RPI#578	Center pivot irrigation (unit 14)
RPI#630	Prefab oil shed (near shop)

RPI#561 Center pivot irrigation (unit 22)

APPENDIX C: COOPERATIVE AGREEMENTS

APPENDIX D: FIRE OCCURRENCE

APPENDIX E: NORMAL UNIT STRENGTH

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

Table 1: Equipment

Item	Year Purchased	percent of Fire Funding	Have	GVW	Need	GVW
Engine Modules Heavy (500-1000 gallon) Medium (200-400 gallon) Light (50 - 150 gallon)						
Slip-on Unit(s)						
Water Tender(s)						

Portable Pump(s) Standard Flot-a-pump						
Power saw(s)						
Mower(s)						
Tractor(s)						
ATV(s)						
Grader(s)						

Plow Unit/Disk						
Other (List)						

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

Table 2: Supplies and PPE

Item	Quantity	
	Need	Have
Hose, lightweight, lined 1.5" x 100'	9	
Hose, lightweight, lined 1" x 100'	9	
1" NH gated wye	2	
1.5" NH gated wye	2	
1.5" nozzle	2	
1" Forester nozzle	4	
Hydrant wrench, spanner	2	
Hose clamp	2	
flapper	6	7
Pulaski w/sheath	3	
Shovel w/sheath	6	7

rake	2	4
Combi tool	6	0
Drip Torch	2	4
Fusees	1 Case	
Safety Can: 3 Gallon	2	
Foam	15 gallons	
Backpack Pump	6	3
Canteen, large	2	
Belt Weather Kit	2	
Hard Hat	12	
Goggles	12	
Headlamps	12	
Fire Shelter w/Liner	12	
Line Pack w/harness	12	
Water Bottle	48	
Ear Plugs	12 pks	
Leather Gloves, Assorted sizes	24 pr	
Sleeping Bags	10	
Pearsonal Gear Pak (Red Bag)	12	
Personal First Aid Kit	12	
Nomex Shirts Small Medium Large X-Large	Enter Desired Number should have 18 pr (Men & Women)	

Nomex Pants - Men’s 28x30 32x30 32x34 34x30 34x32 34x34 36x30 36x32 36x34 38x34 40x34		
Nomex Pants - Women’s Size 10 Size 12 Size 14 Size 16		

Reserved for Type 6 Engine Inventory

APPENDIX F: FIREFIGHTER QUALIFICATIONS

Table 1: Current Qualifications

Name	Position	Qualifications
Mike Blenden	Project Leader	FFT2
Ron Garcia	Assistant Project Leader	FFT2
Vacant	Refuge Operations Specalist	
David Lucero	Maintenance	FFT2
Kelli Stone	Wildlife Biologist	FFT2

Thomas Wartman	Maintenance Worker	
Scott Miller	PFFW Biotech	FFT2

Table 2: Developmental Needs

Position	Need	Have	Development Needed
ICT5	1	0	Y
RXB3	1	0	Y
ENGB	1	0	Y
EMOP	1	0	Y
FFT2	3	5	N

APPENDIX G: NWCG TRAINING NOMINATION FORM

NWCG Interagency Training Nomination

PART I Registration *Completion is required.* *Submit one form per course.*

Course Name		FOR COURSE SPONSOR/HOST USE ONLY Priority of
Course Date(s)	Course Location	Course Tuition (if required)
Nominee's Name		Date Submitted
Working Job Title		DG, IAMS, or FAX Address
Sponsor or Agency (Name, Address) Telephone No.:		Nominee's Mailing Address (if different) Telephone No:
I will notify the Course Coordinator/Training Center if I am unable to attend, so others will be allowed to take the course.		

PART II Experience *Complete or attach Qualification & Experience Record printout, if required.*

Do you meet all of NWCG or additional Agency PREREQUISITES for the course? (Reference NWCG 310-1 or Agency Manual.) YES □ NO □
List your past experience pertinent to this course: List training completed and dates pertinent to this course:
Nominee's Signature:
Remarks:

PART III Financial *Complete if required.*

Attach additional financial forms as stipulated by the Training Announcement or required by the Training Centers.

Management Code or Charge Code Number

_____

Make payment to Sponsoring Agency.

This agreement constitutes authority for the Vendor (Sponsoring Agency) to submit a bill to the above agency.

Authorizing Signature (Agency Administrator)	Date

PMS 921-2 (6/90) NFES 2131

APPENDIX H: FITNESS TESTING

Job-Related Work Capacity-Tests for Wildland Firefighters

Background Studies of wildland firefighting clearly show the link between fitness and work performance. Fit workers can do more work with less fatigue, and still have a reserve to meet unforseen emergencies. They perform better in a hot environment, and recover faster from adverse firefighting conditions like long shifts and reduced rest. In short, fitness is the most important factor in work capacity.

Since 1975 Federal Agencies have used a 5-minute step test and an alternative 1.5 mile run test to screen candidates for wildland firefighting. In 1994 the Missoula Technology & Development Center (MTDC) began a review of work capacity testing alternatives. MTDC conducted a comprehensive job task analysis and extensive laboratory and field studies of candidate tests. The result is a family of job-related field tests.

Work Category	Test	Distance	Pack	Time
Arduous	Pack Test	3 Miles	45 lbs	45 min
Moderate	Field Test	2 Miles	35 lbs	30 min
Light	Walk Test	1 Mile	none	16 min

Pack Test The test consists of a 3 mile hike with a 45 pound pack (fire-suppression water bag) over level terrain. A time of 45 minutes, the passing score for the test, approximates a step test score of 45 (ml/kg.min), the established standard for wildland firefighters. The test is a valid, job-related test of the capacity for arduous work, defined as: "Duties involve field work requiring physical performance calling for above average endurance and superior conditioning. These duties may include an occasional demand for extraordinarily strenuous activities in emergencies under adverse environmental conditions and over extended periods of time. Requirements include running, walking, climbing, jumping, twisting, bending, and lifting more than 50 pounds; the pace of work typically is set by the emergency condition." The energy cost of the test is similar to that demanded on the job. The Pack Test is correlated to measures of aerobic and muscular fitness, as well as performance in field tasks such as working with hand tools, or carrying loads over rough terrain. The duration of the test insures the capacity to perform prolonged arduous work under adverse conditions, with a reserve to meet emergencies.

Field Test A 2 mile hike with a 25 pound pack in 30 minutes, approximates a step test (max V02) score of 40. A job-related test of work capacity designed for those with moderately strenuous duties: "Duties involve field work requiring complete control of all physical faculties and may include considerable walking over irregular ground, standing for long periods of time, lifting 25 to 50 pounds, climbing, bending, stooping, squatting, twisting, and reaching. Occasional demands may be required for moderately strenuous activities in emergencies over long periods of time. Individuals usually set their own work pace.

Walk Test This one mile walk test approximates a step test score of 35 is a test to determine the ability to carry out light duties: "Duties mainly involve office type work with occasional field activity characterized by light physical exertion requiring basic good health- Activities may include climbing stairs, standing,

operating a vehicle, and long hours of work, as well as some bending, stooping, or light lifting. Individuals almost always can govern the extent and pace of their physical activity."

Instructions

The Pack Test is a 3 mile hike with a 45 lb pack over level terrain. Field studies show . that performance on the pack test is significantly related to performance of firefighting tasks, including line construction with hand tools. Studies conducted at the University of Montana Human Performance Laboratory indicate that the energy cost of the test is similar to the cost of firefighting tasks. A score of 45 minutes on the Pack test approximates a Step Test Score of 45 (ml/kg-min). Because of its length, the Pack Test is an
excellent indicator of sustained work capacity. Scores on a flat course are highly related to performance on a hilly course. And performance on the Pack Test is significantly related to vascular fitness, including measures of upper and lower body strength. The Pack Test is: job-related, safe, inexpensive, and
easy to administer. It is a valid, reliable, and objective measure of work capacity that does not adversely impact workers on the basis of gender, ethnicity, age, height, or weight. **(These instructions apply to the Field and Walk Tests).**

The course

Course must be essentially level and have a firm, relatively smooth walking surface. Course length (3 miles) must be accurate: double-check measurements. Use a measuring wheel or a calibrated bicycle computer. Vehicle odometers are not sufficiently accurate.

Loop or out-and-back courses are preferable. Avoid one-way courses where unfavorable conditions (wind, grade) are not offset. A moderate grade (2-3%) is acceptable if the course starts and finishes at the same place. Have lap counters available for multi-loop courses. Use course monitors when needed.

Candidates must be informed of the course layout (use a map or sketch of the course). Use distance markers (e.g., at 1 or 1.5 miles) to aid candidates. Use hazard and traffic makers as needed.

Equipment

Packs: The 5 gallon backpack pump water bag (NSN8465-01-321-1678, cost $35.23) used in test development is recommended: The number required will depend on the number of candidates to be tested simultaneously. If other packs are used the test administrator must insure the correct weight (45 lbs).

Pack liners: (NSN8465-01-321-1679, cost $6.51): Have at least one extra liner for each pack.

Canteens:(NSN8465-00-102-6381, cost $0.43): Use up to 2 in pack pocket to obtain proper weight (45 +/- 2 lbs).

Safety Vests/Route Markers: As needed.

Distance Markers: Use mile and mid-point markers so candidates can maintain proper pace.

Stop watches: Utilize 2 watches to provide back-up timing.

Vehicle: Bicycle or other vehicle to monitor candidates on the course.
Radios: As needed for monitoring and safety.

Scale: An accurate hanging style spring scale is recommended for weighing packs.

Forms: **PAR-Q** health screening questionnaire and an informed consent form (attached).
Data collection form (should include: site, date, conditions, test administrator, and columns for
name, gender, age, height, weight, Pack Test and other scores - step test, 1.5 mile run, etc.).

Test Administration

One person can administer the test when:
The administrator is a trained First Responder (American Red Cross) or equivalent.
The timer can monitor the course.
The safety/med evacuation plan can be executed.
Five or fewer people are being tested at. one time.
Candidate safety and compliance with test requirements can be assured.

For larger groups or when course monitoring is difficult, a 2 to 3 person team should be used.

Testing Tips

Fill packs the night before to check for leaks (use plumber's Teflon tape to stop leaks in threaded fitting).

Weigh bags before test. Check weight after the test if necessary. Note: Bags are used without trombone pumps.

Group or staggered starts can be used. Many candidates will benefit from the support provided
by a group start.

Environment: Administer the test in moderate environmental conditions; do not test new recruits when the temperature is high or when the temperature and humidity combine to create high heat stress conditions (see heat stress chart); if necessary, test early in the day to avoid high temperature /humidity combinations; avoid high winds that may affect performance.

Hydration: If the weather is hot, encourage candidates to drink fluids prior to the test, and provide fluid replacement mid way in the course. Candidates may carry a water bottle.
Altitude: Use this chart to adjust for test~.administered at elevations above 4,000 ft.

Table I: Altitude Corrections for Work Capacity Tests*

Altitude	Pack Test	Field Test	Walk Test
8-9,000 ft	90 sec	60 sec	30 sec
7-8,000 ft	75	50	25
6-7,000	60	40	20
5-6,000	45	30	15
4-5,000	30	10	10

* Add correction to required test time (e.g., Pack Test at 6-7,000 ft, add 60 seconds to test standard (45 min) for altitude adjusted standard of 46 n-dn.

The altitude adjustment assumes that the candidate has had an opportunity to acclimate to the altitude of the test site. If a candidate doesn=t meet the required standard, even with the adjustment, he or she should be encouraged to train at the altitude and retake the test.

Instructions for Candidates

In advance of test: Distribute confidential PAR Q physical activity readiness questionnaire so candidates can decide if they should seek medical advice before taking the test. Have candidates read and sign an informed consent form.

Clothing: Candidates may select the clothing worn during the test. "T" Shirts and shorts are acceptable. Footwear that provides ankle height support, such as hiking boots or ankle height sport shoes, is required for the Pack and Field tests, and recommended for the walk test.

Safety: Brief candidates on the test, the course, safety considerations, and accommodations. Tell candidates to terminate the test if they experience major physical problems or discomfort, or feel the need to terminate for any reason.

Pace: Demonstrate to candidates how they should hike (power walk) the course as fast as possible without jogging. The heel of one foot must make contact before the opposite toe leaves the ground. jogging or running will invalidate the test and require a retest.

Accommodations: Candidates may use gloves or other padding to make the pack more comfortable. A candidate-provided walking staff may be used during the test.

Hydration: If weather is hot, tell candidates to drink plenty of fluids prior to the test. Candidates may elect to carry a water bottle, but the extra weight will not be counted as part of the pack weight.

Essentials of Good Testing

*An accurately measured flat course with good surface.

* Proper weight packs. Use the specified water bags and verify pack weight with a calibrated scale. If alternative packs are used encourage candidates to adjust them properly.

* Duplicate and accurate timing. Give candidates split times along the course (e.g., at one mile or the mid point - 1.5 mile for Pack Test).

* Candidates should be rested and well informed about the course and the need to maintain a fast pace.

* Favorable environmental conditions. Avoid adverse conditions.

*Complete the PAR Q physical activity readiness questionnaire and sign an informed consent form.

Safety

A locally developed safety/med evacuation plan must be prepared for the course.

Test administrator(s) must be familiar with the safety plan.

A trained and qualified American Red Cross First Responder (or equivalent) who knows the symptoms of physical distress and appropriate first aid procedures must be on site during the test.

Avoid use of roads and intersections ' where traffic is a problem ' or concern. When using roads, use traffic control devices and traffic controllers in hi-visibility vests as needed.

Require candidates to read and sign the PAR Q health screening questionnaire and an informed consent form.

Check to see that candidates are wearing proper (above ankle) footwear.

Encourage candidates to stretch and warm up prior the test.

Do not test tired or injured individuals, or test during conditions that could compromise health or safety.

Monitor candidates to identify those having difficulties and encourage them to terminate the test if necessary.

Encourage fluid intake and replacement and provide fluids in route when . heat stress conditions (temperature /humidity) exist.

At the mid-point, terminate those who are substantially behind the required pace (22.5 minutes for 1.5 miles and/or are having difficulty maintaining the pace. Candidates cannot jog or run to make up time.

Encourage a cool down with an easy walk after the test. Monitor the recovery of candidates who appear exhausted or distressed.

Recommend several weeks of training before retaking the test.

Training for the Pack Test

Begin at least 4 to 6 weeks before you report for duty. Train by hiking or power walking, using the ankle height footwear you will use in the test.

- $ Hike a 3 mile flat course without a pack. When you can cover the course in less than 45 minutes;
- $ Add a pack with about 25 pounds to your training hikes;
- $ Increase the pack weight until you can hike 3 miles in 45 minutes with a 45 pound pack. Also:
    - $ hike hills (w pack) to build leg strength and endurance
    - $ jog the flat course (w/o pack) to build aerobic fitness
    - $ hike/jog over distance for stamina
    - $ engage in cross-training (mountain biking, weight lifting).

Finally, do job-specific tasks and training to become work hardened for the coming season. Wear work boots on extended hikes. Work with hand tools to prepare trunk and upper body muscles for prolonged work. Work hardening insures that the hands, feet, muscles, tendons and ligaments used on the job are tough and ready to go.

Informed Consent Work Capacity Tests 2/97

Pack Test intended for those involved in arduous duties (defined as requiring a max V02 of 45, lifting more than 50 pounds and occasional demand for extraordinarily strenuous activities). The 3 mile test with a 45 pound pack in 45 minutes is strenuous, but no more so than the duties of wildland firefighting.

Field Test intended for those with moderately strenuous duties (requires a max V02 of 40, lifting 25 to 50 pounds, and occasional demand for moderately strenuous activity). The 2 mile test with a 25 pound pack in 30 minutes is fairly strenuous, but no more so than field duties.

Walk Test intended for those whose duties involves light work with occasional field activity (required max V02 of 35). The -1 mile walk in 16 minutes is moderately strenuous, but no more so than the duties assigned.

Risks: There is a slight risk of injury (blisters, sore legs, sprained ankle) for those who have not practiced the test. If you have been inactive and have not practiced or trained for the test, you should engage in several weeks of specific *training before* you take the test. Be certain to warm up and stretch before taking the test, and to cool down after the test. The risk of more serious consequences (e.g., respiratory or heart problems) is diminished by completing the PAR Q physical activity readiness questionnaire.

If you cannot answer NO to all the questions in the PAR Q health screening questionnaire, or if you are over 40 years of age and unaccustomed to vigorous exercise, you should contact your physician, by phone or in person, before you take the test. Your physician may want to see PAR Q and information about the test or job demands.

1. I have read the information on this form and understand the purpose, instructions, and risks of the job-related work capacity test.

2. I have read, understood, and truthfully answered the PAR Q physical activity readiness questionnaire.

3. I believe I have the ability to complete the test and carry out the assigned duties of the position (e.g., wildland firefighter).

4. I assume responsibility and release the US Government from liability for injuries sustained in testing that result from any physical or mental disorders.* * Reference EEOC #915.002,5/19/94

Test (circle) Pack Field Walk

Signature_____ Date

Print Name

Witness

QUESTIONS AND ANSWERS
"PACK TEST"

1. why are we changing from the Step Test and 1 1/2 mile run?

ANSWER: The Step Test has been used since **1975 by Federal land management** agencies. New Laws (Americans With Disabilities Act), field experience and research on long-term work capacity caused us to reevaluate the current tests. In 1990 the Service-Wide Civil Rights Action Group requested the Forest Service Fire and Aviation Management staff to evaluate the Step Test. They believed that it discriminated against people who should be able to participate in fire activities. The Missoula Technology and Development Center (NMC) was assigned the work of assessing the technical and legal aspects of the Step Test and 1 1/2 mile run. The appropriateness of the physical fitness standard for fire suppression positions was evaluated by the National Wildfire Coordination Group (NWCG). The conclusions were:

The Step Test and 1 1/2 mile run do not meet Federal requirements of testing employee fitness (Federal Uniform Standards for Employee Selection Procedures).

The Step Test and 1 1/2 mile run are not performance related and are therefore not appropriate tests.

Many of the fire position physical fitness standards were not required in order for incumbents to perform the duties of the positions. The fitness requirement were eliminated for many positions and were revised for others in the 1993 revision of the Wildland Fire Qualification Subsystem used by NWCG. (See Summary of ICS Physical Fitness Requirements attached to this document.)

The post-exercise heart rate count used in the step test is difficult to perform accurately thus giving incorrect fitness assessments for some employees.

2. What is the objective of fitness testing/ the "Pack Test"?

ANSWER: Fitness testing was introduced to the process of selecting wildland fire personnel to help reduce the number of heart attacks and other physical fitness related illnesses and injuries experienced by firefighters. Specifically, fitness testing is to determine if a person has the minimum levels of aerobic and muscular fitness to perform the tasks associated with their assigned fire suppression positions safely and effectively.

3. Did line management participate in the decision to utilize the "Pack Test"?

ANSWER: The direction for Fire and Aviation Management to review the Step Test in response to the Service-wide Civil Rights Group came from Dale Robertson, Chief of the Forest Service at that time. The action plan for the review was accepted by the Chief. A 5100 memorandum dated May 29, 1996 signed by John Chambers acting for the Director of Fire and Aviation Management went to all Regional Foresters and Area Director requesting review and comments. The letter explained that the "Pack Test" was proposed to replace the existing tests and giving the history and rationale leading to the "Pack Test".

4. Why was the "Pack Test" chosen?

ANSWER: The enclosed materials contain the details but the general reasons are:

The existing tests were not appropriate in terms of what they were established to evaluate or with respect to legal requirements and the "Pack Test" was developed to meet those criteria.

The "Pack Test" development followed the Federal Uniform Guidelines for Employee Selection producers beginning with a Job Task Analysis for Wildland Firefighting.

The "Pack Test has "energy costs" similar to tasks performed on the fireline. It is significantly correlated to laboratory measures of aerobic and muscular fitness and to performance on field tasks.

Statistical analyses of the data from field tests run on 333 firefighters show no "adverse impact" for gender, ethnicity, age, height or weight based on the Equal Employment Opportunity Commission (EEOC) standard.

5. Are all state and contractor personnel required to take the "Pack-Test"?

ANSWER: The Forest Service requires all contractors' personnel to meet the fitness standard used by the Forest Service. After January 1, 1998, contractors personnel employed by the Forest Service will have to pass the "Pack Test" if required by the position filled. All agencies have the flexibility to establish the appropriate physical fitness test(s) for their personnel under the ICS 310-1, Wildland Fire Qualification Subsystem Guide.

By agreement, all NWCG members (includes the states) accept each others' personnel based on the certification used by the respective members.

6. Was there a control group for the "Pack Test@? What was its makeup? What statistical information is available?

ANSWER: Yes, the attached information prepared by Dr. Sharkey describes the design of the project and details the steps involved.

7. Is the "Pack Test" gender neutral?

ANSWER: Yes, Dr. Sharkey's information describes the testing, the analyses of the data obtained and the conclusions relative to "adverse impact" defined by EEOC.

8. Is the "Pack Test" equally effective in testing the fitness of a 200-pound firefighter and a 120-pound firefighter (45 pound pack requirement for Arduous)?

ANSWER: Yes, Dr. Sharkey's information shows no "adverse impact" based on firefighter weight.

9. Were fire medical records reviewed to ensure that the "Pack Test" is the correct test to prevent injuries/illnesses resulting from inadequate fitness levels?

ANSWER: The goal of work task related testing is to subject employees to testing that represents tasks they would routinely perform on the job. The task analysis identified those kinds of tasks. The development of the two alternative tests that were analyzed was based on the tasks identified. The "Pack Test" is not and was not intended to replace an intensive physical examination which could evaluate the myriad of physical and medical parameters and conditions to "ensure" accident/illness prevention. It is a screening that can be done by the agencies at a reasonable cost which will identify employees who do not have the muscular and aerobic fitness required to safely and effectively perform the tasks required of them fighting fire.

10. Was a medic physician advisor consulted during the development of the "Pack Test"?

ANSWER: Yes, Dr. Sharkey's educational and experience background is enclosed. Fitness, human performance and testing have long medical related histories. Dr. Sharkey, as a professional Human Performance/Exercise Physiologist has incorporated the pertinent background and technology in the development of the "Pack Test". The
"Pack Test" has been formally presented to the Occupational Physiology and medicine section of the American College of Sports Medicine in 1994-95 and 96.

11. How/why was the 45 pounds determined to be the weight for the Pack Test?

ANSWER: Early in the project to evaluate the Step Test and 1 1/2 mile run, fire program managers in the federal agencies were polled to determine the critical tasks required of firefighters. Responses showed a high need for firefighers to be able to carry heavy packs such as hose bags, pumps and 5 gallon waterbags. The 5 gallon waterbag was chosen because it fit the identified task and it is commonly available.

12. Were Demographics of the f ire organization (red carded employees)reviewed in the development of the "Pack Test"?

The Wildland Fire fighter Job Task Analysis included input f rom all Federal agencies from all geographic areas of the United States. The field testing done to evaluate the Pack Test included statistically valid numbers representing gender, ethnicity, age, height and weight.

13. Has the test protocol been reviewed by medical doctors? With what results?

ANSWER: All phases of test development have been reported at the Occupational Medicine and Physiology Research section of the American College of Sports- Medicine for peer review and feedback- We have consulted with researchers at the U.S. Army Environmental Medicine Laboratory in Natick, and with physicians and physiologists in Canada, Australia and New Zealand. The "Pack Test" has received favorable comments and has caused some to reevaluate their approaches.

14. Define and explain the energy expenditure formula of the Pack Test.

ANSWER: The pack weight and required pace (4 MPH) were determined in laboratory studies to approximate the average energy cost of fireline duties, 22.5 ml of oxygen per kilogram of body weight. The previous fitness standard (45 ml) was based on that energy cost. Correlation analysis of treadmill oxygen intake (max V02), step test and the 1 1/2 mile run score of 45 ml/kg/minute. That indicates that the "Pack Test" does not "raise the barn. it does show that an individual has the capacity to sustain the energy cost of firefighting duties - at least for 45 minutes.

15. Administering the "Pack Test" to 1200 to 1300 firefighters is a huge investment in time. Additionally there is a concise period of time (window) in which they can be done. Are there recommendations on how this can best be accomplished?

ANSWER: Using the "Pack Test" does require an investment of time and energy but the benefits of screening employees who do not have the aerobic or muscular fitness to safely perform firefighting duties out weigh the drawbacks. our commitment is to perform our work safely and the screening is a small price to pay. Firefighters have been outspoken about the inadequacy of the current fitness testing (TriData Phase I report of the Wildland Firefighter Safety Awareness Study) and the need to have more realistic testing. Anecdotal reports have repeatedly charged that emergency hire firefighters often are not fit enough to walk the fireline to their work assignment or to work effectively through the operational period. Anecdotal reports from medical units have reported that many firefighters they saw were not physically fit enough to perform the work required. A screening that deals with those three areas of concern would be very beneficial to prospective firefighters and the agency.

Fire Program managers will have to work out testing schedules. **compared** to the Step Test the "Pack Test" takes longer **per test it but lends itself** to testing several/many employees at a time. The requirement for physical fitness testing to be done prior to issuing a fire qualification (red card) has not changed so there is no impact on date of completion. A significant benefit to the "Pack Test" is that employees can practice the test and know that they are capable of passing the test prior to coming in for official testing. This should reduce the need for and impact of repeat testing.

16. Is the use of a treadmill acceptable for retesting?

ANSWER: The "Pack Test" was designed and validated on a flat track. No work has been done to validate the tests on a treadmill (it would require at least a 1% grade to adjust for lack of wind resistance, terrain variation etc. Holding the rail for balance would invalidate the test given on the

treadmill and it is likely most would need to hold the rail. There is no reason to increase the cost of testing while increasing the risk of inaccurate results.

17. Is it possible to use other packs (not the bladder bag)?

ANSWER: Yes, the test requires that the pack meet the weight specified for the respective test. Good testing will require that pack weights are verified prior to and immediately following testing.

18. The test is to be conducted in temperatures below 80 degrees. In some geographic locations the temperature exceeds 80 degrees during June when employees would need to be tested. What options are available?

ANSWER: The latest publication draft by Dr. Sharkey does not contain the temperature reference. It does include a heat stress and a recommendation about testing during high heat stress conditions.

19. Are there recommendations on how to manage the logistics of administering the "Pack Test"?

ANSWER: Dr. Sharkey makes recommendations on how to conduct the tests in the interest of test validity and safety. We expect to get additional suggestions after the tests have been used for training and practice.

20. There were several questions pertaining to the liability clause and the PAR-Q form. Dr. Sharkey has suggested the use of the forms to encourage and aid employees to assess their personal health and fitness states prior to. taking the test. The Forest Service will determine if and how forms Such as those 2 are to be used and will include the instructions in the implementation instructions.

21. What is the **reason for omitting blood pressure reading immediately prior to** taking the "Pack Test"?

ANSWER: Use of blood pressure (or similar types of information like heart rate used in the Step Test) violates the EEOC's interpretation of the Americans with Disabilities Act (ADA). Blood pressure was not a parameter in the test or previous testing and has no direct correlation with the ability of employees to safely and effectively perform the tasks of their positions.

22. Were fire medical records reviewed; was a fire medic advisor consulted?

ANSWER: In 1994-95, interviews were conducted with crew members, safety officers and crew"bosses. KMC and the SHWT continually review medical records, injury reports and other information related to employee injuries and illnesses. we requested advice from physicians, physologist, field workers and others during the development and field evaluation of the test. The NWCG SHWT was also consulted and asked for comments during the development process.

23. Were demographics of the fire organization reviewed?

ANSWER: Yes, all studies included female subjects and in the field study, we attempted to "mirror" the composition of the work force in terms Of gender, ethnicity, age, height and weight of firefighters. This consideration is mandated by the Federal Uniform Guidelines for Employee

Selection procedures.

24. Has the "Pack Test" protocol been reviewed by medical doctors?

ANSWER: Yes, see response above: American College of Sports Medicine, U.S. Army, etc. None has questioned the test. U.S. Army has conducted studies in which they trained female recruits to hike at 4.4 mph with 75 pounds.

25. Liability; what does the EEOC have to do with it?

ANSWER: The language for the suggested waiver comes from an EEOC publication that discusses the ADA. The ADA precludes asking questions re: a candidate's health or disability in a pre-employment test. The EEOC suggests this waiver subject to managements, approval.

26. Why use the PAR Q form?

ANSWER: It is a validated questionnaire that has been shown to substantially reduce risk in exercise tests and training. Developers require that it be used as is. We do not intend to see the responses on the PAR Q, only to confirm that the candidate read and understood what it says. The form considers the major risks - other questions were discarded during the development of the form.

27. Can the Pack Test be used to meet the fitness requirements for Law Enforcement?

ANSWER: Yes, the Law Enforcement Coordinators for western regions of the FWS agreed to also use the Pack Test as a means to test fitness for LE personnel. Those passing the Pack Test will receive a Level 5 Fitness Rating.

28. Let's say that I start out with a 45 pound pack to do the pack test. I pass the 2 mile mark in under 30 minutes, but it takes me over 45 minutes to finish the 3 mile course. Can I receive a Moderate rating?

ANSWER: Yes. This would more than demonstrate your ability to perform at a Moderate level.

PAR Q & YOU

(A Questionnaire for People Aged 15 to 69)

Regular physical activity is fun and healthy, and increasingly more people are starting to become more active every day. Being more active is very safe for most people. However, some people should check with their doctor before they start becoming much more physically active.

If you are planning to become much more physically active than you are now, start by answering the seven questions in the box below. If you are between the ages of 15 and 69, the PAR-Q will tell you if you should check with your doctor before you start. If you are over 69 years of age, and you are not used to being very active, check with your doctor.

Common sense is your best guide when you answer these questions. Please read the questions carefully and answer each one honestly: check YES or NO.

YES	NO	
___	___	1.Has your doctor ever said that you have a heart condition and that you should only do physical activity recommended by a doctor?
___	___	2.Do you feel pain in your chest when you do physical activity
_____		3.In the past month, have you had chest pain when you were not doing physical activity?
_____		4.Do you lose your balance because of dizziness or do you ever lose consciousness?
_____		5.Do you have a bone or joint problem that could be made worse by change in your physical activity?
_____		6.Is your doctor currently prescribing drugs (for example, water pills) for your blood pressure or heart condition?
_____		7.Do you know of any other reason why you should not do physical activity?

IF YOU ANSWERED YES TO ONE OR MORE QUESTIONS
Talk with your doctor by phone or in person BEFORE you start becoming much more physically active or BEFORE you have a fitness appraisal. Tell your doctor about the PAR-Q and which questions you answered yes. You may be able to do any activity you want - as long as you start slowly and build up gradually. Or, you may need to restrict your activities to those which are safe for you. Talk with your doctor avout the kinds of activities you wish to participate in and follow his/her advice. Find out which community programs are safe and helpful for you.

IF YOU ANSWERED NO TO ALL QUESTIONS	**DELAY BECOMING MUCH MORE ACTIVE:** If you are not feeling well because of a temporary illness such as a cold or fever - wait until you feel better; or If you are or may be pregnant - talk to your doctor before you start becoming more active.
If you answered NO honestly to all PAR-Q questions, you can be reasonably sure that you can: Start becoming more physically active - begin slowly and build up gradually. This is the safest and surest way to go. Take part in a fitness appraisal - this is an excellent way to determine your basic fitness so that you can plan the best way for you to live actively.	**PLEASE NOTE:** If your health changes so that you then answer YES to any of the above questions, tell your fitness or health professional. Ask whether you should change your physical activity plan.

Informed Use of the PAR-Q The Canadian Society for Exercise Physiology, Health Canada and their agents assume no liability for persons who undertake physical activity, ane if in doubt after completing this questionnaire, consult your doctor prior to physical activity.

You are encouraged to copy the PAR-Q but only if you use the entire form

NOTE: *If the PAR-Q is being given to a person before he or she participates in a physical activity program or a fitness appraisal, this section may be used for legal or administrative purposes.*

I have read, understood and completed this questionnaire. Any questions I had were answered to my full satisfaction.

Name:

Signature: _____ Date:

Signature or Parent _____ Witness:
or Guardian (for participants under the age of majority)

APPENDIX I: STEP-UP PLAN

Alamosa/Monte Vista National Wildlife Refuge Complex Step-up Plan
NFDRS Fuel Model L, Big Horn RAWS

PREPAREDNESS ACTION	**BURNING INDEX**				
	0 - 14	**15 - 29**	**30 - 60**	**61-79**	**80+**
Engine Response Ready	X	X	X	X	X
Non-Fire funded Personnel will have fire gear on engine		X	X	X	X

Emergency preparedness funding may be authorized				X	X
Refuge Fire Ban Conditional				X	
Refuge Fire Ban Mandatory					X
Collateral duty employees will be in Nomex and may be placed in stand-by status to staff engine					X

WILDLAND FIRE SITUATION ANALYSIS

Incident Name:
Jurisdiction:

Date and Time Completed:

This page is completed by the Agency Administrator(s).

Section I, WFSA Information Page

A.	Jurisdiction(s): Assign the agency or agencies that have or could have fire protection responsibility, e.g., USFWS, BLM, etc.
B.	Geographic Area: Assign the recognized "Geographic Coordination Area" the fire is located in, e.g., Northwest, Northern Rockies, etc.
C.	Unit(s): Designate the local administrative unit(s), e.g., Hart Mountain Refuge Area, Flathead Indian Reservation, etc.
D.	WFSA #: Identify the number assigned to the most recent WFSA for this fire.
E.	Fire Name: Self-explanatory.
F.	Incident #: Identify the incident number assigned to the fire.
G.	Accounting Code: Insert the local unit's accounting code.
H.	Date/Time Prepared: Self-explanatory.
I.	Attachments: Check here to designate items used to complete the WFSA. "Other could include data or models used in the development of the WFSA. Briefly describe the "other" items used.

I.	Wildland Fire Situation Analysis
To be completed by the Agency Administrator(s)	
A. Jurisdiction(s)	**B. Geographic Area**
C. Unit(s)	**D. WFSA #**
E. Fire Name	**F. Incident #**
G. Accounting Code:	
H. Date/Time Prepared _____@_____	
I. Attachments	

- Complexity Matrix/Analysis *	_____	
- Risk Assessment/Analysis *	_____	
Probability of Success *	_____	

Consequences of Failure *	_____	
- Maps *	_____	
- Decision Tree **	_____	
- Fire Behavior Projections *	_____	
- Calculations of Resource Requirements *	_____	
- Other (specify) * Required ** Required by FWS	_____	

This page is completed by the Agency Administrator(s).

Section II. Objectives and Constraints

A. Objectives: Specify objectives that must be considered in the development of alternatives. Safety objectives for firefighter, aviation, and public must receive the highest priority. Suppression objectives must relate to resource management objectives in the unit resource management plan.

Economic objectives could include closure of all or portions of an area, thus impacting the public, or impacts to transportation, communication, and resource values.

Environmental objectives could include management objectives for airshed, water quality, wildlife, etc.

Social objectives could include any local attitudes toward fire or smoke that might affect decisions on the fire.

Other objectives might include legal or administrative constraints which would have to be considered in the analysis of the fire situation, such as the need to keep the fire off other agency lands, etc.

B. Constraints: List constraints on wildland fire action. These could include constraints to designated wilderness, wilderness study areas, environmentally or culturally sensitive areas, irreparable damage to resources or smoke management/air quality concerns. Economic constraints, such as public and agency cost, could be considered here.

II. Objectives and Constraints

To be Completed by the Agency Administrator(s)

A. Objectives (Must be specific and measurable)

1. *Safety*

   - Public

   - Firefighter

2. *Economic*

3. *Environmental*

4. *Social*

5. *Other*

B. Constraints

This page is completed by the Fire Manager and/or Incident Commander.

Section III. Alternatives

A. Wildland Fire Management Strategy: Briefly describe the general wildland fire strategies for each alternative. Alternatives must meet resource management plan objectives.

B. Narrative: Briefly describe each alternative with geographic names, locations, etc., that would be used when implementing a wildland fire strategy. For example: "Contain within the Starvation Meadows' watershed by the first burning period."

C. Resources Needed: Resources described must be reasonable to accomplish the tasks described in Section III.B. It is critical to also look at the reality of the availability of these needed resources.

D. Final Fire Size: Estimated final fire size for each alternative at time of containment.

E. Estimated Contain/Control Date: Estimates of each alternative shall be made based on predicted weather, fire behavior, resource availability, and the effects of suppression efforts.

F. Cost: Estimate all incident costs for each alternative. Consider mop-up, rehabilitation, and other costs as necessary.

G. Risk Assessment - Probability of Success/Consequences of Failure: Describe probability as a percentage and list associated consequences for success and failure. Develop this information from models, practical experience, or other acceptable means. Consequences described will include fire size, days to contain, days to control, costs, and other information such as park closures and effect on critical habitat. Include fire behavior and long-term fire weather forecasts to derive this information.

H. Complexity: Assign the complexity rating calculated in "Fire Complexity Analysis" for each alternative, e.g., Type II, Type I.

I. A map for each alternative should be prepared. The map will be based on the "Probability of Success/Consequences of Failure" and include other relative information.

III. Alternatives (To be completed by FMO / IC)

	A	B	C
A. Wildland Fire Strategy			
B. Narrative			
C. Resources needed Handcrews Engines Dozers Airtankers Helicopters			

D. Final Size			
E. Est. Contain/ Control Date			
F. Costs			
G. Risk Assessment **- Probability of success** **- Consequence of failure**	_____ _____	_____ _____	_____ _____
H. Complexity			
I.	**Attach maps for each alternative**		

This page is completed by the Agency Administrator(s), FMO and/or Incident

Commander.

Section IV. Evaluation of Alternatives

A. Evaluation Process: Conduct an analysis for each element of each objective and each alternative. Objectives shall match those identified in Section II.A. Use the best estimates available and quantify whenever possible. Provide ratings for each alternative and corresponding objective element. Fire effects may be negative, cause no change, or may be positive. Examples are: 1) a system which employs a "-" for negative effect, a "0" for no change, and a "+" for positive effect; 2) a system which uses a numeric factor for importance of the consideration (soils, watershed, political, etc.) and assigns values (such as -1 to +1, - 100 to +100, etc.) to each consideration, then arrives at a weighted average. If you have the ability to estimate dollar amounts for natural resource and cultural values, this data is preferred. Use those methods which are most useful to managers and most appropriate for the situation and agency. To be able to evaluate positive fire effects, the area must be included in the resource management plan and consistent with prescriptions and objectives of the fire management plan.

Sum of Economic Values: Calculate for each element the net effect of the rating system used for each alternative. This could include the balance of:
pluses (+) and minuses (-), numerical rating (-3 and +3), or natural and cultural resource values in dollar amounts. (Again, resource benefits may be used as part of the analysis process when the wildland fire is within a prescription consistent with approved Fire Management Plans and in support of the unit's Resource Management Plan.)

IV. Evaluation of Alternatives			
To be Completed by the Agency Administrator(s) and Fire Manager / Incident Commander			
A. Evaluation Process	**A**	**B**	**C**

Safety Firefighter Aviation Public			
Sum of Safety Values			
Economic Forage Improvements Recreation Timber Water Wilderness Wildlife Other (specify)			
Sum of Economic Values			

Environmental Air Visual Fuels T & E Species Other (specify)			
Sum of Environmental Values			
Social Employment Public Concern Cultural Other (Specify)			
Sum of Social Values			
Other			

This page is completed by the Agency Administrator(s) and Fire Manager and/or

Incident Commander.

Section V. Analysis Summary

A. Compliance with Objectives: Prepare narratives that summarize each alternative's effectiveness in meeting each objective. Alternatives that do not comply with objectives are not acceptable. Narrative could be based on effectiveness and efficiency. For example: "most effective and least efficient," "least effective and most efficient," or "effective and efficient." Or answers could be based on a two-tiered rating system such as "complies with objective" and "fully complies with or exceeds objective." Use a system that best fits the manager's needs.

B. Pertinent Data: Data for this Section has already been presented, and is duplicated here to help the Agency Administrator(s) confirm their selection of an alternative. Final Fire Size is displayed in Section III.D. Complexity is calculated in the attachments and displayed in Section III.H. Costs are displayed on page 4. Probability of Success/Consequences of Failure is calculated in the attachments and displayed in Section III.G.

C. External and Internal Influences: Assign information and data occurring at the time the WFSA is signed. Identify the Preparedness Index (1 through 5) for the National and Geographic levels. If available, indicate the Incident Priority assigned by the MAC Group. Designate the Resource Availability status. This information is available at the Geographic Coordination Center, and is needed to select a viable alternative. Designate "yes," indicating an up-to-date weather forecast has been provided to, and used by, the Agency Administrator(s) to evaluate each alternative. Assign information to the "Other" category as needed by the Agency Administrator(s).

Section IV. Decision

Identify the alternative selected. Must have clear and concise rationale for the decision, and a signature with date and time. Agency Administrator(s) is mandatory.

V. Analysis Summary			
To be Completed by the Agency Administrator(s) and Fire Manager / Incident Commander			
Alternatives	**A**	**B**	**C**

A. Compliance with Objectives Safety Economic Environmental Social Other			
B. Pertinent Data Final Fire Size Complexity Suppression Cost Resource Values Probability of Success Consequences of Failure			

C. External / Internal Influences

National & Geographic Preparedness Level _____

Incident Priority _____

Resource Availability _____

Weather Forecast (long-range) _____

Fire Behavior Projections _____

VI. Decision

The Selected Alternative is: _____

Rationale:

_____ _____

Agency Administrator's Signature Date/Time

This Section is completed by the Agency Administrator(s) or designate.

Section VII. Daily Review

The date, time, and signature of reviewing officials are reported in each column for each

day of the incident. The status of Preparedness Level, Incident Priority, Resource Availability, Weather Forecast, and WFSA validity is completed for each day reviewed. Ratings for the Preparedness Level, Incident Priority, Resource Availability, Fire Behavior, and Weather Forecast are addressed in Section V.C. Assign a "yes" under "WFSA Valid" to continue use of this WFSA. A "no" indicates this WFSA is no longer valid and another WFSA must be prepared or the original revised.

Section VIII. Final Review

This Section is completed by the Agency Administrator(s). A signature, date, and time are provided once all conditions of the WFSA are met.

VIII.		**Daily Review**							
To be completed by the Agency Administrator(s) or Designate									
Selected to be reviewed daily to determine if still valid until containment or control									
			PREPAREDNESS LEVEL	**INCIDENT PRIORITY**	**RESOURCE AVAILABILITY**	**WEATHER FORECAST**	**FIRE BEHAVIOR PROJECTIONS**	**WFSA VALID**
Date	**Time**	**By**						

If WFSA is no longer valid, a new WFSA will be completed!

VIII. Objectives Final Review

The elements of the selected alternative were met on: _____ _____
Date Time

By:_____
(Agency Administrator(s)

A GUIDE FOR ASSESSING FIRE COMPLEXITY

The following questions are presented as a guide to assist the Agency Administrator(s) and staff in analyzing the complexity or predicted complexity of a wildland fire situation. Because of the time required to assemble or move an Incident Management Team to wildland fire, this checklist should be completed when a wildland fire escapes initial attack and be kept as a part of the fire records. This document is prepared concurrently with the preparation of (and attached to) a new or revised Wildland Fire Situation Analysis. It must be emphasized this analysis should, where possible, be based on predictions to allow adequate time for assembling and transporting the ordered resources.

Use of the Guide:

1. Analyze each element and check the response "yes" or "no."

2. If positive responses exceed, or are equal to, negative responses within any primary factor (A through G), the primary factor should be considered as a positive response.

3. If any three of the primary factors (A through G) are positive

responses, this indicates the fire situation is, or is predicted to be, Type I.

4. Factor H should be considered after all the above steps. If more than two of these items are answered "yes," and three or more of the other primary factors are positive responses, a Type I team should be considered. If the composites of H are negative, and there are fewer than three positive responses in the primary factors (A-G), a Type II team should be considered. If the answers to all questions in H are negative, it may be advisable to allow the existing overhead to continue action on the fire.

GLOSSARY OF TERMS

Potential for blow-up conditions - Any combination of fuels, weather, and topography excessively endangering personnel.

Rate or endangered species - Threat to habitat of such species or, in the case of flora, threat to the species itself.

Smoke management - Any situation which creates a significant public response, such as smoke in a metropolitan area or visual pollution in high-use scenic areas.

Extended exposure to unusually hazardous line conditions - Extended burnout or backfire situations, rock slide, cliffs, extremely steep terrain, abnormal fuel situation such as frost killed foliage, etc.

Disputed fire management responsibility - Any wildland fire where responsibility for management is not agreed upon due to lack of agreements or different interpretations, etc.

Disputed fire policy - Differing fire policies between suppression agencies when the fire involves multiple ownership is an example.

Pre-existing controversies - These may or may not be fire management related. Any controversy drawing public attention to an area may present unusual problems to the fire overhead and local management.

Have overhead overextended themselves mentally or physically - This is a critical item that requires judgment by the responsible agency. It is difficult to write guidelines for this judgment because of the wide differences between individuals. If, however, the Agency Administrator feels the existing overhead cannot continue to function efficiently and take safe and aggressive action due to mental or physical reasons, assistance is mandatory.

FIRE COMPLEXITY ANALYSIS

A.	FIRE BEHAVIOR: Observed or Predicted	**Yes/No**	
	1. Burning Index (from on-site measurement of weather conditions). Predicted to be above the 90% level using the major fuel model in which the fire is burning.	___	___
	2. Potential exists for "blowup" conditions (fuel moisture, winds, etc.)	___	___
	3. Crowning, profuse or long-range spotting.	___	___
	4. Weather forecast indicating no significant relief or worsening conditions.	___	___
	Total	___	___
B.	RESOURCES COMMITTED		
	1. 200 or more personnel assigned.	___	___
	2. Three or more divisions.	___	___
	3. Wide variety of special support personnel.	___	___
	4. Substantial air operation which is not properly staffed.	___	___
	5. Majority of initial attack resources committed.	___	___
	Total	___	___
C.	RESOURCES THREATENED		
	1. Urban interface.	___	___
	2. Developments and facilities.	___	___
	3. Restricted, threatened or endangered species habitat.	___	___
	4. Cultural sites.	___	___
	5. Unique natural resources, special designation zones or wilderness.	___	___
	6. Other special resources.	___	___
	Total	___	___
D.	SAFETY		
	1. Unusually hazardous fire line conditions.	___	___
	2. Serious accidents or facilities.	___	___
	3. Threat to safety of visitors from fire and related operations.	___	___
	4. Restricted and/or closures in effect or being considered.	___	___
	5. No night operations in place for safety reasons.	___	___
	Total	___	___

			Yes/No		
E.	OWNERSHIP				
1.	Fire burning or threatening more than one jurisdiction.		___	___	
2.	Potential for claims (damages).			___	___
3.	Conflicting management objectives.		___	___	
4.	Disputes over fire management responsibility.			___	___
5.	Potential for unified command.			___	___
		Total		___	___
F.	EXTERNAL INFLUENCES				
1.	Controversial wildland fire management policy.		___	___	
2.	Pre-existing controversies/relationships.			___	___
3.	Sensitive media relationships.		___	___	
4.	Smoke management problems.			___	___
5.	Sensitive political interests.		___	___	
6.	Other external influences.			___	___
		Total		___	___
G.	CHANGE IN STRATEGY				
1.	Change in strategy to control from confine or contain.			___	___
2.	Large amount of unburned fuel within planned perimeter.		___	___	
3.	WFSA invalid or requires updating.		___	___	
		Total		___	___
H.	EXISTING OVERHEAD				
1.	Worked two operational periods without achieving initial objectives.			___	___
2.	Existing management organization ineffective.			___	___
3.	IMT overextended themselves mentally and/or physically.		___	___	
4.	Incident action plans, briefings, etc., missing or poorly prepared.		___	___	
		Total		___	___

Signature_____

Date_____ Time_____

APPENDIX K: FIRE EFFECTS

APPENDIX L: SMOKE MANAGEMENT GUIDELINES