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Glossary

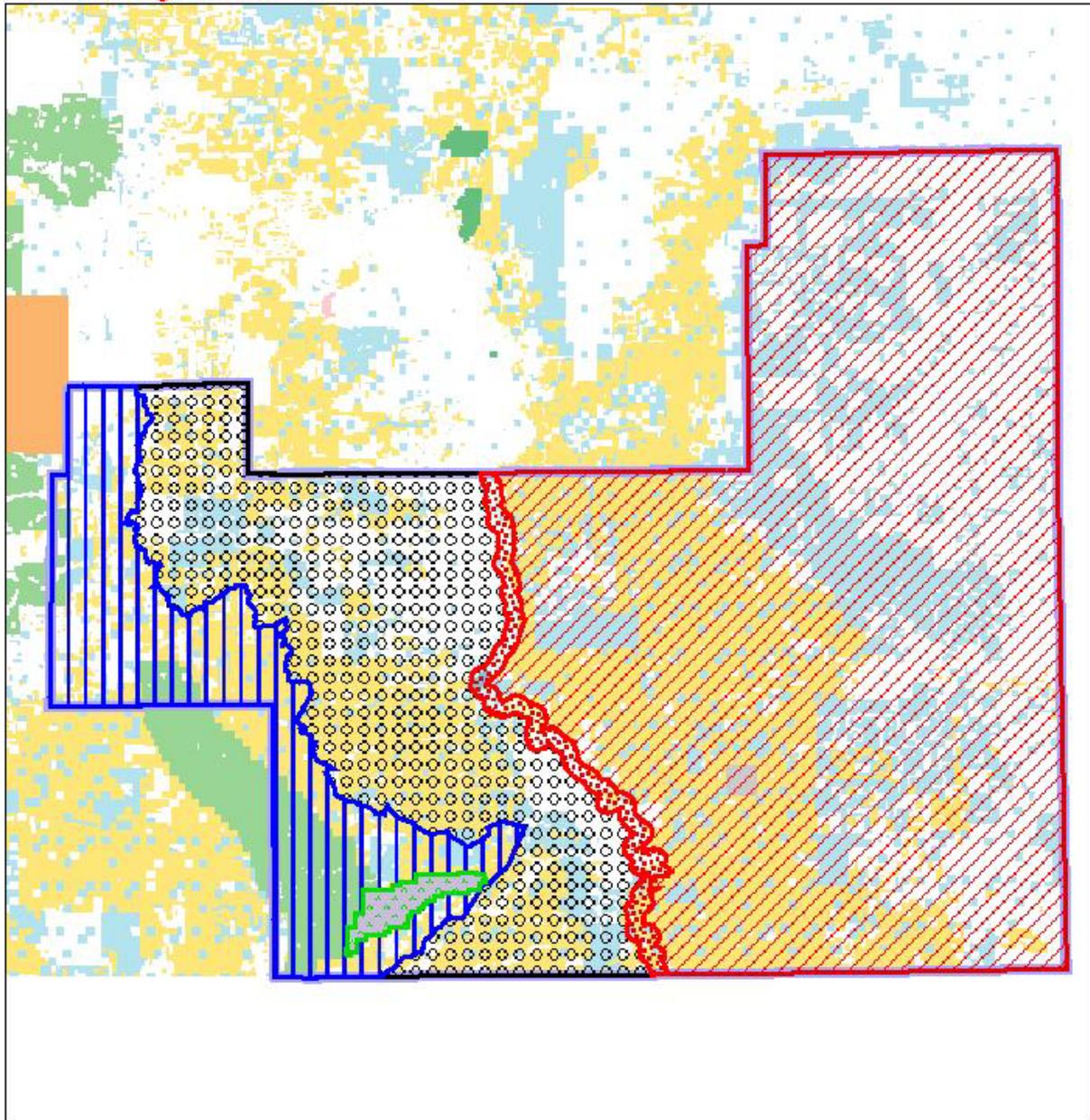
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**Carlsbad Field Office
Fire Management Units**

New Mexico



LOCATION MAP



Produced by the Bureau of Land Management



Map generated September 29, 2004

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Legend	
Carlsbad Caverns	Pecos River Corridor
Eastern Sanchez Country	Western Foothills
Guadalupe Escarpment	Carlsbad Field Office

Statewide Land Status Legend	
Bureau of Land Management	Tribal Lands
Bureau of Reclamation	National Park Service
Dept. of Agriculture	Private
Dept. of Defense	State
Dept. of Energy	State Game & Fish
Forest Service	State Park
Fish & Wildlife Service	Valles Caldera National Preserve

1. Introduction

1.1 Purpose

The purpose of the Carlsbad Field Office Fire Management Plan is to identify and integrate federal wildland fire management guidance, direction, and activities required to implement national fire policy and program direction from the following: *Federal Wildland Fire Management Policy and Program Review* (USDI and USDA 1995), *Review and Update of the 1995 Federal Wildland Fire Management Policy* (USDI and USDA 2001a), *Interagency Strategy for Implementation of Federal Wildland Fire Management Policy* (BLM 2003a), and *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-year Comprehensive Strategy Implementation Plan* (USDI and USDA 2001b).

The Federal Wildland Fire Management Policy requires every area with burnable vegetation to have an approved fire management plan (FMP). The FMP is a strategic plan that defines a program to manage wildland and prescribed fires based on approved land management plans. This FMP provides for firefighter and public safety; includes fire management strategies, tactics and alternatives; addresses values to be protected and public health issues; and is consistent with resource management objectives, activities of the area, and environmental laws and regulations.

The FMP was developed around the Carlsbad Field Office (CFO) fire management program and addresses the full range of fire management activities. This includes fire planning, fire management strategies, tactics and alternatives, prevention, preparedness and education. It addresses the role of mitigation, post-fire rehabilitation, fuels reduction, and restoration activities in fire management. This FMP outlines a fire program that meets identified fire management objectives

This Fire Management Plan will be reviewed annually and updated as necessary.

1.2 General Description

The CFO boundary encompasses approximately 6.2 million acres of land owned and managed by various entities (e.g., public, private, and state) in southeast New Mexico. This FMP addresses fire management on the 2,091,043 public land acres administered by the CFO within Eddy and Lea counties and the ‘bootheel’ of Chaves County. Within the CFO boundary are federal lands administered by the National Park Service, US Forest Service, Bureau of Reclamation, and the Department of Energy. This FMP considers only those public lands under the administration of the CFO. Fire management actions on other federal, state, and private lands are governed by the respective federal agency’s FMP, state management plans, and state and local laws.

The ownership of all surface acres within the CFO boundaries is:

Ownership	Acres
Bureau of Land Management	2,091,043
Lincoln National Forest	173,878
National Park Service	46,518

Bureau of Reclamation	14,126
Department of Energy	10,249
State Land	1,532,001
New Mexico Game and Fish Department	32,443
Brantley Lake State Park	3,039
Private	2,355,060
Total acres within CFO boundary	6,258,357

The CFO Fire and Fuels Program was realigned with the Roswell Field Office on March 1, 2009 to form the Pecos District Fire and Fuels Program. Oversight for the fire and fuels program is at the District level. The realignment is reflected in the table of organization. The CFO is located within the Pecos Zone and is serviced by Alamogordo Interagency Dispatch Center (NM-ADC). At this time the CFO Resource Management Plan (RMP) is in the initial stage of being rewritten and upon completion, a district-wide FMP will be prepared.

The CFO has one of the largest oil and gas programs in the nation. The public lands managed by CFO are within the Permian Basin and produce 95 percent of the crude oil that comes out of New Mexico. CFO is the largest oil producing office in the nation. The oil and gas industry is a major employer in southeast New Mexico and provides most of the region and state’s taxes. Another major industry within the CFO boundary is potassium salt (potash) mining which is utilized in citrus production. CFO has the only potash program in the country. Ranching and farming are also important industries in the region. Other industries include nuclear energy, renewable energy, and tourism.

Other federal firefighting resources within the Pecos Zone include:

Agency	Resource type	number
Lincoln National Forest	Type 6 engine	5
	Type 3 engine	3
	Interagency handcrew (type 1)	2
Mescalero	Type 6 engine	4
	Type 3 engine	2
	Handcrew (type II)	2
	Exclusive use helicopter	1
National Park Service	Type 3 engine	2
	Type 6 engine	2
	Water tender	1
	Handcrew (type II)	2
Fish and Wildlife Service	Type 4 engine	1
	Type 6 engine	1
	Water tender	1

New Mexico State Forestry Division maintains 3 type 6 engines in Capitan and will bring additional engines into the Pecos Zone during periods of high fire activity. The 21 volunteer fire departments within CFO boundary maintain several engines and water tenders. There are several contract engines, mostly type 6, within the Pecos Zone.

Special management designations for other agency managed lands near CFO include the Carlsbad Caverns Wilderness (National Park Service) and the Guadalupe Mountains Wilderness (National Park Service) in Texas.

2. Policy, Land Management Planning and Partnerships

2.1 Fire Policy

- A. Protection Act of September 20, 1922 (42 Stat. 857; 16 U.S.C. 594).
- B. McSweeney-McNary Act of 1928 (45 Stat. 221; 16 U.S.C. 487) – repealed.
- C. Economy Act of June 30, 1932 (47 Stat. 417; 31 U.S.C. 686).
- D. Taylor Grazing Act of June 28, 1934 (48 Stat. 1269; 43 U.S.C. 315).
- E. Clean Water Act of 1948 (CWA) as amended 1966, 1972 (33 U.S.C. 1251-1387).
- F. Reciprocal Fire Protection Act of May 27, 1955 (69 Stat. 66; 2 U.S.C. 1856, 1856a).
- G. Wilderness Act of 1964 (16 U.S.C. 1131-1136).
- H. National Historic Preservation Act of 1966 (P.L. 89-665; 80 Stat. 915; 16 U.S.C. 470) as amended (1992).
- I. National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321-4370).
- J. Clean Air Act of 1970 as amended 1977, 1990, 2004 (42 U.S.C. 7401 – 7671q).
- K. Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 – 1544).
- L. Federal Fire Prevention and Control Act, October 29, 1974 (88 Stat. 1535, 15 U.S.C. 2201).
- M. Disaster Relief Act of 1974, as amended in 1980 and 1988, Sec. 5121 (42 U.S.C. 5121).
- N. Federal Land Policy and Management Act (FLPMA) of 1976 (43 U.S.C. 1701, *et seq.*).
- O. Federal Grant and Cooperative Agreement Act, 1977 (P.L. 950224, as amended by P.L. 97-258, September 13, 1982), (96 Stat. 1003; 31 U.S.C. 6301 thru 6308).
- P. Healthy Forests Restoration Act of 2003 (HFRA).
- Q. Tribal Forest Protection Act, 2004 (P.L. 108).
- R. Selected Annual Appropriations Acts that affect fire planning:
 - a. Omnibus Consolidated Appropriations Act 1997, amended 1998: Public Law 104-208, then Public Law 105-277, Wyden Amendment
 - b. Appropriations Act of 2001: Public Law 107-63 (HR 2217) Wildland Fire Management
 - c. Appropriations Act of 2003: Public Law 108-7, Section 323 Stewardship Contracting
- S. Review and Update of the 1995 Federal Fire Policy, (January 2001) or Federal Wildland Fire Management Policy
- T. Interagency Strategy for the Implementation of the Federal Wildland Fire Policy (June 2003)
- U. National Fire Plan
 - a. 10-Year Comprehensive Strategy Implementation Plan (December 2006)
 - b. Protecting People and Natural Resources, A Cohesive Fuels Treatment Strategy (February 2006) or Cohesive Strategy
- V. Healthy Forests Restoration Initiative of 2002 (HFI)
- W. Interagency Prescribed Fire Planning and Implementation Procedures Reference Guide (September 2006)
- X. Interagency Standards for Fire and Fire Aviation Operations (Redbook)

Y. The Healthy Forests Initiative and Healthy Forests Restoration Act Interim Field Guide (February 2004)

Z. Code of Federal Regulations, Title 43, Public Lands

AA. Department of Interior Departmental Manual: Wildland Fire Management (620 DM 1)

2.2 Land and Resource Management Planning

All fire management objectives, constraints, and activities contained within this plan are consistent with the Carlsbad RMP (1988), the Fire and Fuels Management Plan Amendment and Environmental Assessment for Public Land in New Mexico and Texas (2004), and the Special Status Species Resource Management Plan Amendment (2008).

The Fire and Fuels Management Plan Amendment and Environmental Assessment for Public Land in New Mexico and Texas (2004) (Plan Amendment) incorporates current fire management policy into the Carlsbad RMP. The Plan Amendment forms the foundation for revision of the CFO FMP.

The FMP is a document that compiles land use decisions related to fire management from the RMP and Plan Amendment and is generally considered categorically excluded from further NEPA analysis, provided it does not make decisions other than those in the RMP, Plan Amendment, and other planning documents. Future site specific and project specific proposals to implement the RMP decisions will require additional environmental analysis and compliance with other relevant laws and regulations.

2.3 Partnerships

BLM is a partner in the “New Mexico Joint Powers Agreement for Interagency Wildland Fire Protection (JPA)”. This is an agreement among the federal wildland fire management agencies and the New Mexico State Forestry Division to coordinate wildland fire management activities. Under the JPA, New Mexico is divided into initial attack areas. In each of these areas, one agency assumes the lead in providing initial attack protection to all lands, regardless of ownership. This provides an equitable exchange of protection and workload, and allows the use of the “closest forces” concept for fire suppression. The net result is a more efficient and effective interagency suppression organization throughout the state.

Officials from other federal agencies, state and local fire departments, CFO resource staff members, and adjacent BLM fire management personnel were consulted on a regular basis and participated in the development of this FMP.

CFO works with city and county fire departments to provide trainings for various departments. CFO fire staff has provided technical assistance to area counties in hazard assessments and conducting prescribed fires. The Fire Management Officer regularly attends the Eddy, Lea, and Chaves County Fire Chiefs meetings.

3. Fire Management Unit Characteristics

3.1. Area-wide Management Considerations

3.1.1 Goals

1. Provide for the safety of firefighters and the public during all wildland fire management operations by ensuring that safety is the priority on all fire management actions.
2. Manage the CFO fire and fuels program in accordance with congressional intent as expressed in the annual appropriations act and enabling legislation, and comply with applicable departmental manual and agency policies and procedures.
3. Maintain a fire staff that that applies the highest standards of professionalism and technical expertise
4. Base fire management plans and programs on a foundation of sound science.
5. Strive for more local and community involvement in the fire management program.
6. Work with interagency cooperators to use compatible planning processes, funding mechanisms, training and qualification requirements, operational procedures, value-to-be protected methodologies, and public education programs for all fire management activities.
7. Integrate fire into land and resource management plans and activities on a landscape scale and across agency boundaries.
8. Use wildland fire to protect, maintain, and enhance resources and, as nearly as possible, allow it to function as an essential ecological process and natural change agent in fire-dependent ecosystems.
9. Protect, maintain, preserve, and restore habitats necessary for the conservation of species, and the ecosystems upon which they depend, to maintain viable and diverse populations of native terrestrial and aquatic species including special status species.
10. Protect the characteristics that warranted designation of Areas of Critical Environmental Concern (ACEC), Special Recreation Management Areas (SRMA), Wilderness Study Areas (WSA), and Special Management Areas (SMA).
11. Ensure that fire management actions will not reduce the likelihood of survival or recovery of any listed species or destroy or adversely affect or modify designated critical habitat to those species.
12. Ensure that prescribed fire activities follow agency and departmental policy as well as all air quality and smoke management air requirements
13. Ensure that all fuels management activities are conducted according to NEPA and individual project compliance guidelines
14. Meet Federal and State water quality standards and prevent degradation through Best Management Practices during and after fires and vegetative treatments
15. Suppress unplanned fires at minimum cost, considering firefighter and public safety, benefits, and values to be protected, consistent with resource objectives.
16. Utilize rehabilitation and restoration efforts to protect ecosystems and public health and safety.
17. CFO employees are trained, certified, and made available to participate in the fire program locally, regionally, and nationally as the situation demands.

3.1.2 Standards

Each wildland fire will receive management actions selected after comprehensive consideration of the local situation, risk to firefighter and public safety, current and forecast weather, land and resource management objectives, threats and values to be protected, cost efficiencies, external concerns, and land use concerns necessary to accomplish specific objectives for the individual fire. These management actions, termed the appropriate management response (AMR), may include one or more of the following actions:

- Monitor. Monitor the fire to track the fire's spread, intensity, and characteristics.
- Confinement. Action taken when the fire is not likely to have resource benefits, but threats from the fire do not require costly deployment of large numbers of suppression resources.
- Monitor plus Contingency. Fire is monitored but contingency actions are prepared to ensure adequate preparation for possible undesirable developments.
- Monitor plus Mitigation. Fire is monitored, yet poses real, but not necessarily immediate, threats. These fires are monitored, but plans are developed and implemented to delay, direct, check fire spread, or contain fire, and to ensure public safety.
- Initial Attack. Suppress the fire to protect people or resource values at risk. A combination of tactics such as direct attack, indirect attack, and confinement by natural barriers are utilized to accomplish protection objectives.
- Control and Extinguish: Actions taken using direct attack. Sufficient resources are assigned to achieve control of the fire minimizing acres burned.

No wildland fire will automatically be categorized as having a lower priority than others. The AMR will be selected after comprehensive consideration of the local situation, risk to firefighter and public safety, available funding, management objectives, values to be protected, external concerns, and land use concerns.

3.1.3 Guidelines

3.1.3.1 Heavy equipment

The construction of fire line with heavy equipment (e.g., bulldozers or graders) will be employed only:

- To protect property and public health and safety; or
- In exceptional cases (such as previously disturbed areas);
- With the approval of the Carlsbad Field Office Manager; and
- With the appropriate resource advisors on the scene.

Archeological site data on base maps and in site records will be reviewed to determine the location and significance of cultural resources before using heavy equipment to construct fire line, except where personal safety or property are threatened, or when resource values outweigh cultural values. Wherever possible, an archeologist will monitor the use of heavy equipment to ensure that cultural resources are avoided.

3.1.3.2 Riparian Areas

Fire suppression will include protection of playas larger than 20 acres, springs and seeps, and other riparian areas from surface disturbance and the effects of chemical fire retardant by prohibiting the use of heavy equipment and retardant drops in these areas. No retardant drops within 300 feet of riparian areas, livestock water sources (i. e. troughs), and wildlife guzzlers. The use of engines will be allowed, keeping off-road use to the minimum needed to suppress the fire.

3.1.3.3 Cave and Karst Areas

Fire suppression in cave and karst areas will include protection of caves, cave resources and karst features from surface disturbance by prohibiting the use of bulldozers and other heavy equipment to construct fire line within 200 meters of known cave entrances, passages or aspects of significant caves, or significant karst features.

3.1.3.4 Aquatic invasive plants and animals

Aquatic invasive plants and animals pose a risk to the environment and firefighting equipment. Prevention and sanitation can prevent the spread of these organisms to other environments and help ensure that firefighting equipment remains operational. Appendix A identifies steps that will be followed to reduce the potential of introducing invasive plants and animals to waterways.

3.1.3.5 Slopes

Slopes greater than 30 percent are susceptible to slumping or accelerated erosion when the surface is disturbed. Surface disturbing activities on these slopes will be allowed only after considering site-specific conditions and the degree of anticipated disturbance.

3.1.3.6 Cultural resources

Limited fire suppression (utilization of existing roads only) will be applied to all cultural resource management areas except the Potash Bull Wheel. Full suppression will be applied at the Potash Bull Wheel cultural resource management areas.

3.1.4 Desired Plant Communities

The 2003 Natural Resources Conservation Service Major Land Resources Area Map indicates three major land resource areas occur within CFO. These are the (1) southern desertic basins, plains, and mountains; (2) the southern desert foothills; and (3) the southern high plains, southwestern part. The desired future conditions will be based on the Natural Resources Conservation Service (NRCS) ecological site descriptions.

Management activities such as fire suppression, livestock grazing, and the spread of invasive species have changed these fire regimes, resulting in undesired ecological changes. These changes include increased loss of perennial desert grasslands, loss of riparian habitat to salt cedar

and Russian olive, and expansion of piñon-juniper woodlands. These type conversions often correspond to loss of native biodiversity, decreased sustainability, and altered fire regimes. Fuel treatment applications outlined in this FMP intend to move landscapes and fire regimes closer to their historic conditions.

For a given vegetation type, the fire regime condition class (FRCC) concept describes the degree of departure in: (1) vegetation structure, and (2) fire frequency and severity. This measure describes both the health of the fire regime, and also the appropriateness of the vegetation community for the site. Condition Class 1 corresponds to landscapes where these variables are intact, while Condition Class 3 landscapes have highly altered ecological integrity. Condition Class 2 includes lands having a moderate departure in fire regime health and structural integrity.

3.1.5 Common characteristics

3.1.5.1 Weather

Southeastern New Mexico is on the northern periphery of the Chihuahuan Desert. During the summer months, average daytime temperatures range in the mid to upper 90 °F's. Temperatures over 100 °F are common from May through early September. There is a large diurnal temperature range with summer nights in the upper 60 °F's to upper 70 °F's. Beginning in March, relative humidities are low during the day (a reading of 0% was recorded at Queen RAWS on April 25, 2008) with fair to good overnight recovery. As the spring progresses, overnight recoveries decrease to poor. Around June 20 relative humidities begin to increase as winds become southeasterly, bringing Gulf of Mexico moisture to the region.

Annual precipitation received at Carlsbad is 14.49 inches. Most of the annual precipitation in the area comes as a result of late spring and summer thunderstorms. These are usually accompanied by excessive rainfall over limited areas in a short period of time, lightning, and occasional hail. Local flooding often occurs but is of short duration. It is not uncommon for low water crossings to be impassable for several hours following a thunderstorm. Tornadoes are occasionally spotted.

Wind events are frequent in the late winter and spring (February through May) but also occur in the late fall and early winter. Wind events are associated with Pacific cold fronts moving from west to east and backdoor cold fronts which arrive from a northeasterly direction. Pacific cold fronts are the most common, particularly in the spring months. The strongest events are associated with surface low pressure over northern New Mexico which produces strong gusty west to southwest winds across southeast New Mexico. Sustained 20-foot winds of 35 to 45 mph with gusts to 70 mph are not uncommon on the plains with higher sustained winds and gusts possible in the Guadalupe Mountains.

The fire weather planning forecast for southeast New Mexico is provided by the National Weather Service in Midland, TX. The southeast plains (Carlsbad, Artesia, Hobbs) are in forecast zone 115 while the Guadalupe Mountains (Dunken) are in forecast zone 114.

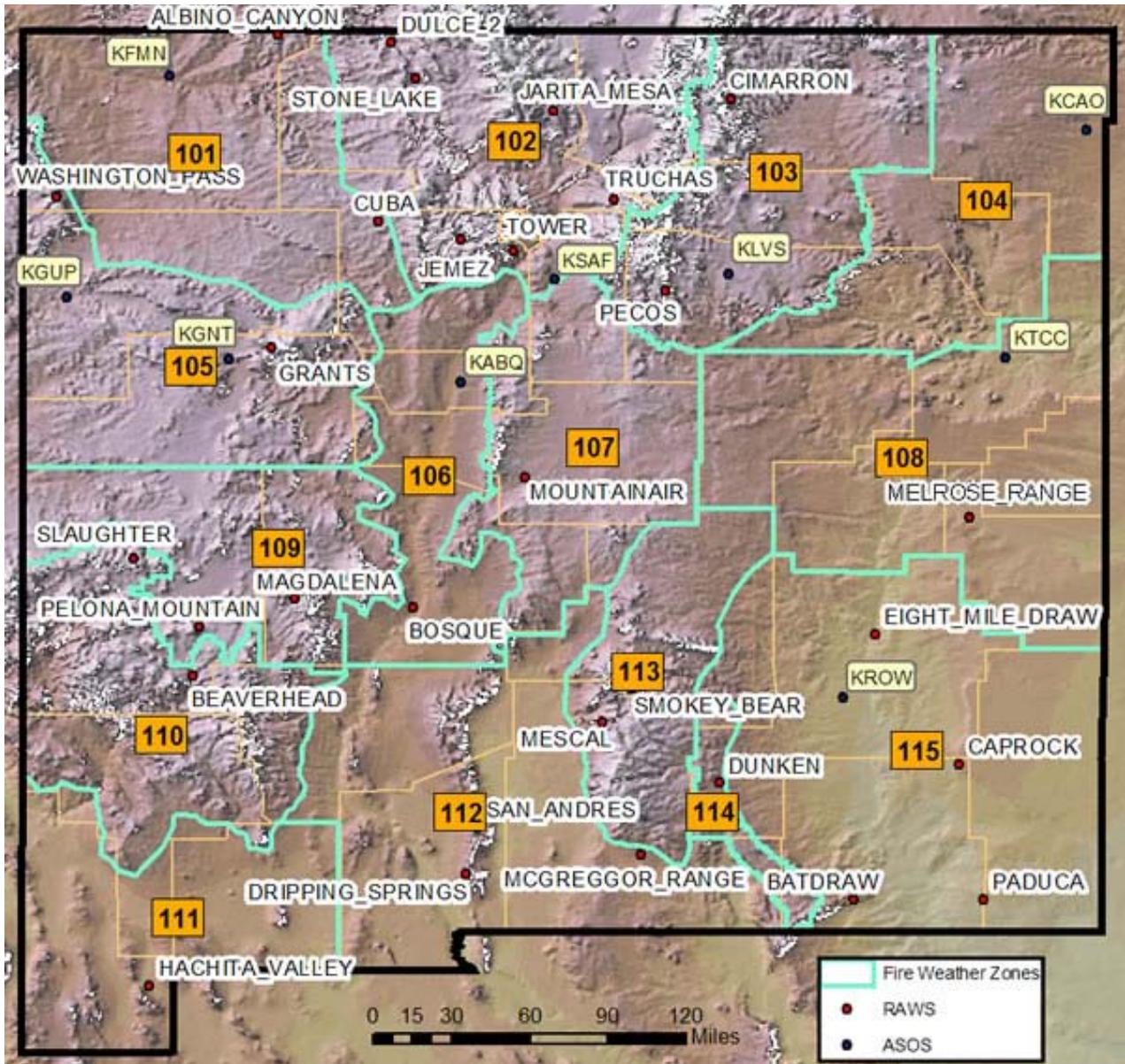


Figure 1. New Mexico Fire Weather Zones

3.1.5.2 Fire Season

Fires can occur during any time of the year. Recent years have seen large fires on Christmas Day and New Year's Day. Typically, fire occurrence begins to increase in February as daytime temperature and relative humidity (RH) values become more conducive to fire development. Fires at this time of year are generally human caused. Winds during the spring are often very strong and can reach speeds of over 60 mph. Fires on these days can grow to several thousand acres in one burn period. Fire season usually continues into mid July when greenup is sufficient to limit fire growth. Lightning caused fires are a common occurrence in May and June as the weather patterns begin to shift towards the summer monsoons which typically begin in early July. An increase in fires can occur during the fall associated with hunting seasons and late season thunderstorms.

Figure 2 illustrates the National Fire Danger Rating System (NFDRS) firefighter pocket guide used to assess fire danger by accessing and evaluating historical weather data. The guide shown is representative of most fire seasons in the CFO. The historical time period maximum, average, and 90th percentile levels for the burning index are formatted onto the card. Significant past fires are marked on the chart to provide an indicator of conditions present during that fire. The chart provides a quick visual reference that has been formatted as a pocket card and is distributed to firefighters. The information revealed by this card can be used as the source of input for the decision criteria checklist.

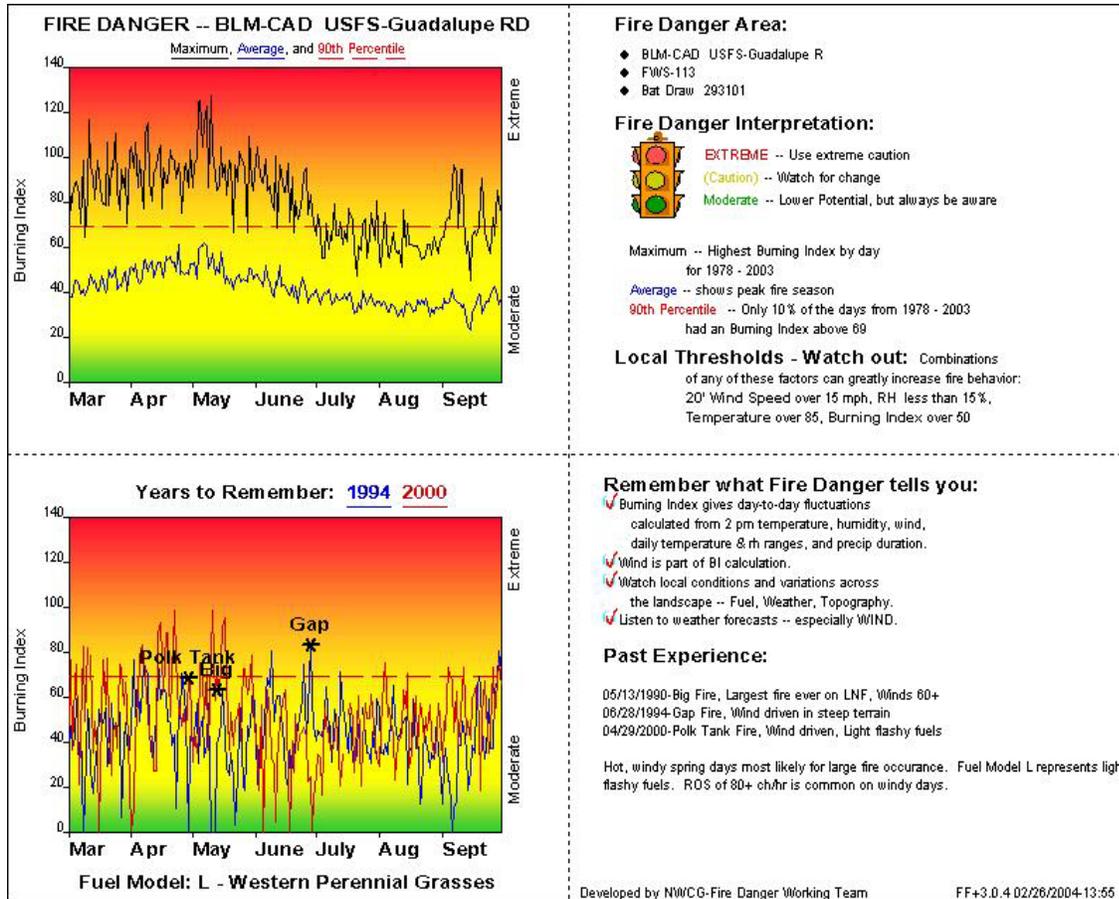


Figure 2. Pocket Card

3.1.5.3 Remote Automated Weather Stations

The CFO maintains three Remote Automated Weather Stations (RAWS) and has two portable RAWS. Data from these RAWS are used for weather forecasting and for NFDRS fire danger rating information. The fire danger ratings, combined with additional criteria (fire situation, current and forecasted weather, fire severity indices, and availability of resources), are used in determining planning levels.

Name	GOES ID	Elevation	Latitude	Longitude
Dunken	DUNN5	3,740'	33°39'20"	104°19'17"
Caprock	CPPN5	4,200'	32°55'37"	103°51'25"
Paduca	MPAN5	3,519'	32°10'45"	103°43'19"

Carlsbad Caverns National Park maintains a RAWS near the visitor center.

Name	GOES ID	Elevation	Latitude	Longitude
Bat Draw	BATN5	4,425'	32° 10' 42"	104° 26' 26"

The Lincoln National Forest maintains a RAWS near the Guadalupe Administration Site

Name	GOES ID	Elevation	Latitude	Longitude
Queen	QENN5	5,605'	32° 12' 12"	104° 41' 25"

3.1.5.4 Fire Intensity Levels

The fire intensity level (FIL) represents the rate of heat energy released during combustion per unit length of fire front. The FIL forecasts the intensity and subsequent potential impact to the surrounding landscape by a fire. The following table displays the flame lengths and burning index associated with the FILs.

FIL	Flame Length (ft.)	Burning Index
1	0 to 2	0 to 20
2	2.1 to 4	21 to 40
3	4.1 to 6	41 to 60
4	6.1 to 8	61 to 80
5	8.1 to 12	81 to 120
6	12.1 and greater	121 and greater

Most fires are wind driven and vary in size and intensity. Generally, only in the Pecos River corridor do high intensity fires (FIL 5 and higher) occur. Most fires are lower intensity (FIL 4 or less) and can burn a large amount of acres in one burn period.

3.1.5.5 Invasive non-native flora species

There are four plant species identified in the New Mexico Noxious Weed List Noxious Weed Management Act of 1998 that are found within CFO. These species are African Rue, Malta Starthistle, Russian olive, and salt cedar.

3.1.5.6 General safety concerns

3.1.5.6.1 Responding to incidents in or near oil and gas fields

Oil and gas fields are found throughout the CFO and increase the complexity of wildland and prescribed fires. Fire staff will receive an annual oil and gas hazard recognition and training. A risk assessment (RA) for wildland fire activities in an oil and gas field has been prepared and will be provided as part of the briefing package given to incoming resources. A petroleum engineer technician (PET) will be assigned as a resource advisor for any incident within or near an oil and gas field.

Added complexities within an oil and gas field include:

- Hydrogen Sulfide (H₂S)

This gas is found in many of the oil and gas fields throughout southeast New Mexico. H₂S is a colorless, flammable, hazardous gas. Low concentrations irritate the eyes, nose, throat and respiratory system. Asthmatics may experience breathing difficulties. Repeated or prolonged exposures may cause eye inflammation, headache, fatigue, irritability, insomnia, digestive disturbances and weight loss. Moderate concentrations can cause more severe eye and respiratory irritation (including coughing, difficulty breathing, and accumulation of fluid in the lungs), headache, dizziness, nausea, vomiting, staggering and excitability. High concentrations can result in death.

A hydrogen sulfide monitor is mandatory for each CFO engine and any off district engine. If H₂S is encountered, personnel are to immediately disengage and leave the area. Personnel will report any H₂S or potential exposure and seek immediate medical care. Base camps and staging areas are not to be established in or near potential H₂S areas.

Wells within areas known to produce H₂S are required to have warning signs posted on the wellpad. The signs also include the name of the company and the legal description of the well location (Figure 3). Most gasfields have signs posted near roads leading into them if there is the potential for H₂S to be present (Figure 5).

A Six Minutes for Safety discussion has been developed concerning operations in H₂S areas (Appendix A).



Figure 3. H₂S warning sign on a well pad



Figure 4. Sign near road leading to a gas field.

- Traffic

Traffic related to oil and gas activity increases the hazard to firefighting resources responding to fires. These vehicles are often travelling at high rates of speed on dusty roads with heavy loads. When travelling around southeast New Mexico, fire personnel must remain alert for tired drivers, oversize loads, hazards that have fallen off trucks, etc. Oil and gas field workers may try to enter a fire area to inspect equipment or get to a jobsite. Traffic control is critical to provide for the safety of firefighters and the public. Untrained and unequipped personnel may be on-scene trying to suppress the fire, often with some type of heavy equipment.

- Oil and gas infrastructure

Infrastructure can be damaged by wildland and prescribed fire. These include plastic surface pipelines (flowlines), compressor stations, transfer stations, tank batteries, and powerlines. The flowlines typically carry produced (brine) water but may also have low pressure natural gas in them as well. Firefighter should never manipulate valves on oil and gas equipment.



Figure 5. Plastic surface lines (flowlines) east of Artesia, NM

3.1.5.2 Fauna

There are several poisonous fauna species such as rattlesnakes and scorpions. These creatures are mainly nocturnal, but fire conditions (heat and smoke) could bring them out during any part of the day. Firefighters need to be alert for these species when working in rocky areas and around down material.

The area has populations of Africanized honey bees (killer bees) which become very aggressive if disturbed. People and animals have been killed by bees in this area.

3.1.5.3 Flora

Cacti in the area have thorns which penetrate clothing, boots, and tires. A few cacti species contain low concentrations of toxins which can make certain individuals ill.

3.1.6. Air Quality

The CFO is within the Pecos River airshed which is classified as a Class II Air Quality Area. The class II rating allows for moderate development or slight degradation of air quality. The Pecos River airshed is classified as an attainment area which means federal air quality standards are being met. Intermittent dust storms are the primary source of air pollution in the area, but are not of adequate frequency or duration to detract from the overall condition of the airshed.

There are no mandatory Class I Federal air quality areas managed by CFO. There are two Class I air quality areas potentially impacted by CFO actions. These are the Carlsbad Caverns Wilderness and the Guadalupe Mountains Wilderness, both of which are managed by the National Park Service. The nearest nonattainment areas are the Anthony PM10 nonattainment area and Sunland Park Ozone nonattainment near Las Cruces, New Mexico.

3.2 Fire Management Units

Information contained in 3.1 is applicable and additive to information contained in 3.2.

The two fire management categories utilized by CFO are:

- **Category C** - Areas where wildland fire is desired, but there are significant constraints that must be considered for its use. Fire is a desirable component of the ecosystem, however, ecological, social or political constraints must be considered. These constraints could include air quality standards, threatened and endangered species, identified cultural, archeological, or historic resources or wildlife habitat considerations. Ecological and resource constraints along with human health and safety factors are considered in determining the appropriate management response. This is performed on a case by case basis by the incident commander or line officer. Eastern Sandhill Country, Pecos River Corridor, and Western Foothills FMUs are within this fire management category. 1,790,042 acres (86% of CFO) are in Category C.

• **Category D** - Areas where an unplanned wildfire and planned prescribed fire may be used to achieve desired objectives. Objectives could include improving herbaceous components and improving wildlife habitats or watershed conditions. These areas offer the greatest opportunity to take advantage of the full range of options available for managing wildland fire under the appropriate management response. Health and safety constraints will apply. Fire use considerations similar to those described for category C may be identified if needed to achieve resource objectives. Areas in this category would be the lowest suppression priority in a multiple wildland fire situation. The Guadalupe Escarpment FMU is classified as Category D management. 301,001 acres (14% of CFO) are within this fire management category.

3.2 Fire Management Unit – Specific Descriptions

3.2.1 Fire Management Unit Name: Eastern Sandhill Country

Category: C

Total Acres within FMU: 3,817,631

BLM acres within FMU: 1,139,078



Figure 6. Shinnery oak community

3.2.1.1 Characteristics

Topography ranges from undulating sand dunes and sandy hummocks to steep canyons draining into the Pecos River. The prominent geologic feature in the FMU is the Caprock escarpment. The Caprock forms the transition between the High Plains (east) and the Trans-Pecos region (west).

The FMU is dominated by light, flashy fuels that readily ignite and spread at very high rates when aligned with the wind. Mop up is typically minimal due to the lack of larger fuels. Large fire growth is often associated with frontal passages and downdrafts from passing thunderstorms.

Fuel model GR 4 (moderate load, dry climate grass) represents the mesquite grasslands and GS 2 (moderate load, dry climate grass – shrub) represents the shinnery oak areas.

The FMU is dominated by oil and gas fields with associated infrastructure. The Waste Isolation Pilot Plant (WIPP) disposes of defense-related transuranic radioactive waste underground at the Department of Energy site east of Carlsbad. There are several potash mines which are serviced by railroads. Many ranch headquarters and oil business headquarters are scattered throughout this FMU. A direct-current powerline which provides electricity to much of the southwestern U. S. runs through this FMU.

Access throughout the FMU is good due to the high density of highways and county and oilfield roads. Off road access is restricted in some areas due to deep sand and the potential for karsts in the gypsum soils.

There are no communities at risk as identified by the Federal Register. However, Riverside, Loco Hills, Maljamar, Eunice, Hobbs, Lovington, and Jal have the fuel components to be threatened by wildfire under high to extreme conditions. The Lea County Fire Chiefs Association has been actively conducting prescribed burns along the major traffic corridors in Lea County to reduce ignitions.

Gypsum buckwheat, a federally threatened species, occurs in the southern portion of the FMU. The FMU contains habitat for 2 special status species, the lesser prairie chicken and the sand dune lizard both of which are dependent on the shinnery oak - dune community.

There are eleven Special Management Areas (SMA) in this FMU:

Special Management Area	Number
Laguna Plata	10
Maroon Cliffs Archaeological District	11
Phantom Banks Heronries	15-1
Tamarisk Flat Heronries	15-2
Poco Site	16
Bear Grass Draw	17
Pecos River/Canyon Complex (also in the Pecos River Corridor FMU)	18
Pope's Well	19
Alkali Lake OHV Area	21
Hackberry Lake OHV Area	22
Gnome Site	24

Fire suppression activities in the Laguna Plata, Maroon Cliffs Archaeological District, and Pope's Well SMAs are restricted to designated routes to protect the cultural resource values. Manage for full suppression within the Alkali Lake OHV Area and Hackberry Lake OHV Area SMAs.

3.2.1.2 Fire behavior

The majority of fires in this FMU are human caused with the leading causes being equipment (roadside) and downed powerlines. Large fire growth in this area is often the result of wind events associated with low pressure systems over southern Colorado or cold fronts moving down the Great Plains. Fires under these influences often exhibit the classic “cigar” shape of wind driven fires. These fires generally lay down as the sun goes down and humidities rise above 30 percent. A direct attack with engines along the flanks is normally the most efficient approach. Fires have high rates of spread as shown by the Stiles Complex (2008) near Buckeye which burned over 35 miles in one burn period.

3.2.1.3 Management guidance

FMU specific objectives are:

- a. No size limits for fires have been established but a primary objective is to control fires during the first burning period. In general, no more than 25 percent of a single grazing allotment should burn in one year as this could create an economic hardship for the livestock operator unless a higher acreage has been identified and agreed to with all partners.
- b. Protect private property and infrastructure, including fences, utilities, oil and gas facilities, and livestock.

3.2.1.4 Specific desired vegetation conditions

The desired vegetation communities are based on the descriptions found in the Special Status Species Resource Management Plan Amendment (2008).

Grassland community		
Percent vegetative cover	Percent vegetative composition	Percent composition by weight
Grass and forbs 15 to 52	Grasses 30 to 85	Grasses 60 to 90
	Forbs 10 to 15	Forbs 10 to 30
Shrubs and trees 3 to 12	Shrubs 1 to 10	Shrubs 15 to 25
		Trees 1 to 10
Bare ground 14 to 60		
Small/large rock 0 to 30		
Litter 8 to 44		

Shinnery Oak – Dune Community		
Percent vegetative cover	Percent vegetative composition	Percent composition by weight
Grass and forbs 16 to 40	Grasses 50 to 70	Grasses 60 to 90
	Forbs 10 to 15	Forbs 10 to 30
Shrubs and trees 3 to 17	Shrubs 25 to 40	Shrubs 15 to 25
		Trees 1 to 10
Bare ground 5 to 20		

Small/large rock 0 to 1		
Litter 25 to 70		

Mixed Desert Shrub Community		
Percent vegetative cover	Percent vegetative composition	Percent composition by weight
Grass and forbs 11to 28	Grasses 55 to 75	Grasses 50 to 80
	Forbs 10 to 20	Forbs 10 to 20
Shrubs and trees 6 to 15	Shrubs 15 to 20	Shrubs 10 to 30
	Trees 1 to 10	Trees 1 to 10
Bare ground 10 to 40		
Small/large rock 15 to 35		
Litter 1 to 12		

3.2.1.5 Approved wildland fire management strategies

Due to the presence of oil and gas infrastructure, the mixed ownership pattern, and varying attitudes of livestock operators, there are no plans for wildland fire use at this time. Any AMR identified in 3.1.2 may be utilized. Soils and topography will drive any decisions regarding suppression strategies in the FMU. In areas with deep sandy soils and dune topography, fire suppression strategies will be based on utilizing existing roads as control lines. Using direct attack methods in these areas increases the threat to firefighter safety due to the difficulty of traveling in deep sand. Common techniques used in this FMU include:

- Monitoring fires which will burn to natural barriers or roads.
- Performing indirect attack by burning out along roadways or other fuel breaks.
- Allowing large pockets of heavy fuels to burn out instead of constructing fireline through the fuels. This is a common practice in sacaton draws and salt cedar stands.

Safe and aggressive fire suppression will be conducted on fires which threaten private property. This may include the use of air tankers, SEATs and helicopters.

Prescribed fire will be utilized to maintain the acres treated with herbicides under the Restore New Mexico program. Prescribed fire will be used to reduce fuel buildup and control shrub encroachment in drainages that were excluded from the herbicide treatment. During normal precipitation years and when sufficient vegetation is available prescribed fires may be used to treat up to 20,000 acres per year in this FMU.

Herbicides will continue to be used to control mesquite, creosote, salt cedar and other invasive species. In many areas, herbicide treatments are necessary to increase herbaceous production before prescribed fire can be used.

Mechanical methods (e.g. equipment, chainsaws) may be used in this FMU. The use of mechanical treatments is limited due to the target species, soils, and cultural resource concerns. It is unlikely that more than 1,000 acres a year would be treated using mechanical methods.

Vegetation treatments to influence the desired plant communities will be considered at the following levels:

Species	Threshold
Mesquite	33 percent of the shrub cover composition
Cholla	100 plants per acre
Catclaw	5 percent vegetative cover
Creosote	20 percent of the vegetative canopy
Lecheguilla	20 percent of the vegetative canopy
Tarbush	20 percent of the vegetative canopy
Broom snakeweed	25 percent by weight of vegetative production
Piñon and juniper	12 percent of the vegetative cover
Shinnery oak	40 percent of vegetative cover by composition

3.2.1.6 Specific guidelines, constraints, or mitigation considerations

Vegetation treatments in shinnery oak – dune communities will feature sand dune lizard dispersal corridors of untreated shinnery oak flats at least 500 meters wide between suitable habitats that are separated by less than 2,000 meters.

3.2.1.7 Safety considerations

The FMU contains large oil and gas fields with safety concerns described previously.

Powerlines are common throughout the FMU and are numerous in and around oil and gas fields. In some leases, the oil and gas operator assumes responsibility for the powerline at the edge of the lease while the power company (CVE or Xcel) is responsible for the powerline to the well.

Karsts are found in areas with gypsum soils. The karsts can collapse under the weight of vehicles. These karsts can be several hundred feet deep with water in the bottom.

Driving in deep sands is not advised as vehicles have become stuck on existing two tracks.

Aviation hazards include communication towers and powerlines. The Bronco 3 and Bronco 4 MOAs are over the northeast quarter of the FMU. There are also military training routes over the FMU.

Methamphetamine production and other illicit activities may occur within the FMU. Illegal dumping of household and industrial waste also occurs throughout the FMU.

3.2.2 Fire Management Unit Name: Western Foothills
Category: C
Total Acres within the FMU: 1,439,916
BLM acres within the FMU: 613,912



Figure 8. Sotols on slope of Robinia Draw



Figure 9. Soaptree yuccas on Tobosa Flat near Hope, NM

3.2.2.1 Characteristics

The topography ranges from relatively flat alluvial plains on the east to deeply incised limestone hills on the west.

Vegetation is typical Chihuahuan desert consisting primarily of creosote, saltbush, mesquite, yucca, cactus and several species of desert grasses. The grasses are primarily alkali sacaton, tobosagrass, black grama, and dropseeds.

Fire spread is predominately in the grass models with the primary fuel model being GR 4 (moderate load, dry climate grass). GS 2 (moderate load, dry climate grass – shrub) also occurs in the FMU. Most of the larger fires are the result of high winds from either frontal passage or downdrafts from passing thunderstorms. These fires can burn for long distances in a single burn period. Another factor leading to a possible increase in fire behavior is the fact that several herbicide treatments encompassing thousands of acres each have been conducted within this FMU, primarily in the southern half. This has resulted in an increase in fuel loading and continuity.

Access on the eastern half of the FMU is usually via county roads or oilfield roads. Access is limited in areas with gypsum soils due to the presence of karsts which can collapse under the weight of fire suppression vehicles. Access on the western half is limited to existing roads due to the nature of the limestone hills. The limestone rocks will damage tires.

Historical fire frequency is unknown but likely occurred enough to remove small shrubs to the competitive advantage of grass species. The principle cause was lightning. Fire suppression, drought conditions, and excessive grazing resulted in an increase in shrub species to the detriment of grasses. The Condition Class (FRCC) is 2 and 3 in areas that have not been treated with herbicides. Areas that have been treated with herbicides are considered to be FRCC 1 or 2.

Gypsum buckwheat, a federally threatened species, occurs in the southern portion of the FMU. The federally endangered Pecos Gambusia is found at Blue Springs in this FMU. Habitat for the Aplomado falcon (a 10J experimental population) occurs in the northern third of the FMU. The Texas hornshell, a candidate species, is found in the Black River.

Oil and gas fields with associated infrastructure occur throughout this FMU with the highest concentration occurring in the eastern half. Indian Basin is found within the FMU and contains H₂S producing wells. A petroleum engineer technician (PET) should be provided as a resource advisor for fires within and near oil and gas fields.

Many ranch headquarters are scattered throughout this FMU. Washington Ranch and Black River Christian Camp are within this FMU. A direct-current powerline which provides electricity to much of the southwestern U. S. runs through this FMU. This area also contains grasslands which have been determined to be suitable for the Aplomado falcon. Nesting structure and nests will be protected during prescribed fire events, and when possible, during wild fires.

There are no communities at risk within the FMU as identified by the Federal Register. However, Hope, Whites' City, Atoka and Artesia have the fuel components to be threatened by wildfire under very high to extreme conditions.

There are thirteen SMAs in the FMU

Special Management Area	Number
Seven Rivers Hills	1
McKittrick Hills	2A
Chosa Draw ACEC	2F
Cottonwood Spring	6B
Preservation Spring	6C
Owl Spring	6D
Ben Slaughter Draw	6E
Blue Spring ACEC	6F
Yeso Hills Research Natural Area	7
Little McKittrick Draw Habitat Management and Research Natural Area	9
Southern Gypsum Soil Area	25
Delaware River	29
Black River Buckwheat Habitat	30-1

Fire suppression activities in all SMAs are to be managed in accordance with ORV designations.

3.2.2.2 Fire behavior

Fire growth in this area is influenced by topography more than the Sandhill Country FMU; however, this is not to say that wind driven fires are not common. The foothills contain a cactus known as sotol. The base of a sotol will burn completely through, break away, and roll down hill causing spot fires as it rolls. Many contained fires have been lost due to sotols rolling across containment lines. Holdover fires can also result from dead material in drainages dominated by sumac and in areas with juniper and sotols.

3.2.2.3 Management guidance

FMU specific objectives are:

a. No size limits for fires have been established but a primary objective is to control fires during the first burning period. In general, no more than 25 percent of a single grazing allotment should burn in one year as this could create an economic hardship for the livestock operator unless a higher acreage has been identified and agreed to with all partners.

b. Protect private property and infrastructure, including fences, utilities, oil and gas facilities, and livestock.

3.2.2.4 Specific desired vegetation conditions

No specific desired vegetation communities have been established for this FMU. In general it is desired that there be a grass/succulent mix with a high degree of diversity in plant communities. This diversity is a reflection of aspect, slope, elevation, and soil depth. Grasses are the dominant component followed by succulents and shrubs. In general shrubs are more prevalent along drainages and on benches formed by outcrops of limestone bedrock. They are less dense and more evenly distributed across steeper slopes between drainageways. Creosotebush is confined to the lower footslopes of hills.

3.2.2.5 Approved wildland fire management strategies

Due to the presence of oil and gas infrastructure, the mixed ownership pattern, and varying attitudes of livestock operators, there are no plans for wildland fire use at this time. Any AMR identified in 3.1.2 may be utilized. Common techniques used in this FMU include:

- Monitoring fires which will burn to natural barriers or roads.
- Performing indirect attack by burning out along roadways or other fuel breaks.
- Allowing large pockets of heavy fuels to burn out, instead of constructing fireline through the fuels. This is a common practice in sacaton draws and salt cedar stands.

Safe and aggressive fire suppression will be conducted on fires which threaten private property. This may include the use of air tankers, SEATs and helicopters.

Prescribed fire will be utilized to maintain the acres treated with herbicides under the Restore New Mexico program. Prescribed fire will be used to reduce fuel buildup and control shrub encroachment in drainages that were excluded during the herbicide treatment. During normal precipitation years and when sufficient vegetation is available prescribed fires may be used to treat up to 20,000 acres per year in this FMU.

Herbicides will continue to be used to control mesquite, creosote, salt cedar and other invasive species. In many areas, herbicide treatments are necessary to increase herbaceous production before prescribed fire can be used.

Mechanical methods (e.g. equipment, chainsaws) may be used in this FMU. The use of mechanical treatments is limited due to the target species, soils, and cultural resource concerns. It is unlikely that more than 1,000 acres a year would be treated using mechanical methods.

Vegetation treatments to influence the desired plant communities will be considered at the following levels:

Species	Threshold
Mesquite	33 percent of the shrub cover composition
Cholla	100 plants per acre
Catclaw	5 percent vegetative cover
Creosote	20 percent of the vegetative canopy

Lecheguilla	20 percent of the vegetative canopy
Tarbush	20 percent of the vegetative canopy
Juniper	12 percent of the vegetative cover

3.2.2.6 Specific guidelines, constraints, or mitigation considerations

A Petroleum Engineer Technician (PET) will be ordered for all fires within, or that could move into, an oil and gas field.

A Rangeland Management Specialist or a wildlife biologist will be ordered as a Resource Advisor (RA) for all fires over 50 acres. The RA will make contact with all potentially affected livestock operators and private landowners as soon as possible. The RA will brief these parties on the potential tactics to be used and will present the IC with any concerns the parties may have.

3.2.2.7 Safety considerations

The FMU contains oil and gas fields with safety concerns described previously. Indian Basin, west of Carlsbad, contains a high concentration of wells with H₂S. There are buried high pressure gas lines throughout the FMU. The pipelines are marked by fiberglass markers with the company name and contact numbers. Associated with these pipelines are above ground appurtenances such as compressor stations, pig launchers, and valves. There are plastic lines (flowlines) on the surface which carry produced water, crude oil, and small amounts of natural gas from the well to a tank battery.

Powerlines are common throughout the FMU and are numerous in and around oil and gas fields. In some leases, the oil and gas operator assumes responsibility for the powerline at the edge of the lease while the power company (CVE or Xcel) is responsible for the powerline to the well.

Karsts are found in areas with gypsum soils. The karsts can collapse under the weight of vehicles. These karsts can be several hundred feet deep with water in the bottom.

Driving in deep sands is not advised as vehicles have become stuck.

Aviation hazards within the FMU include several communication towers. MET towers occur along the western perimeter of the FMU. These towers are less than 200 feet high and are not marked or illuminated. A map of known MET towers is maintained in the CFO and at Alamogordo Interagency Dispatch Center; however, there may be unknown towers on private lands. The Talon High East MOA and military training routes are over the FMU.

Methamphetamine production and other illicit activities occur within the FMU, particularly in heavy vegetated draws and canyons. Illegal dumping also occurs throughout the FMU.

Rattlesnakes and Africanized honeybees are common within the FMU. Poison hemlock is found along the Black River.

3.2.3 Fire Management Unit Name: Pecos River Corridor
Category: C
BLM managed acres within FMU: 37,052



Figure 10. Burned piles on BLM land along Pecos River, untreated salt cedar on private land



Figure 11. Piled salt cedar near Loving, NM

3.2.3.1 Characteristics

Predominant vegetation includes salt cedar and a variety of wetland species as well as lowland grasses, shrubs, and agricultural land. An aggressive salt cedar control project has been undertaken since 2003 and most of the salt cedar on BLM lands in the Pecos River floodplain has been chemically treated, mechanically piled, and burned.

Access to the floodplain is good due to the presence of existing two track and oilfield roads. Access within the floodplain is limited due to sand, flooded areas, and steep gullies.

The Pecos River riparian ecosystem has been significantly altered from what was once a natural disturbance regime. Frequent flooding and fire during dry periods both acted as a catalyst for change within the floodplain. The natural hydrological regime has been entirely altered by the construction of dams and the use of river water for irrigation. Subsequent invasion of exotic species such as salt cedar have further altered the health of the ecosystem. Therefore the existing vegetation has been altered affecting the Fire Regime. Because of the divergence from the natural vegetation and the high fire severity of the invasive fuel type a Condition Class of 3 has been assigned for the Pecos River Corridor.

The Pecos Bluntnose Shiner, a federally threatened species, occurs within the FMU.

There are oil and gas wells along with the associated infrastructure within this FMU

Several campgrounds, housing developments, industrial developments and Brantley Lake State Park are located in this FMU, along with several game management areas. Some of these areas are susceptible to fire damage. They also could be significantly impacted by suppression actions.

Mixed ownership and, at times, conflicting management and agency mandates have significant constraints on the use of fire and suppression tactics.

There are no communities at risk within the FMU as identified by the Federal Register. There are several farm headquarters and residences within the FMU.

There are three SMAs in the FMU

Special Management Area	Number
Bluntnose Shiner Habitat	8
Pecos River and Canyons Complex	18
Pecos River Corridor	23

Fire suppression activities will comply with the ORV closure designation in the Pecos River and Canyons Complex and the Pecos River Corridor SMAs. Fires within the 120 acres of Pecos River Corridor SMA occurring in the Red Bluff Reservoir area will be fully suppressed.

3.2.3.2 Fire behavior

Fire suppression in salt cedar (FM 4) can be difficult and dangerous to fire fighters due to the intensity with which these fires can burn. Spotting is also a problem when dealing with salt cedar fires. Successful suppression tactics are usually accomplished by suppressing a fire as it transitions to lighter fuel types on the adjacent uplands. Dropping back to roads or other openings and burning out is another tactic that can be successful. South of Carlsbad, salt cedar on BLM, State, and most private lands has been piled and burned.

3.2.3.3 Management guidance

FMU specific objectives are:

- a. No size limits for fires have been established but a primary objective is to control fires during the first burning period.
- b. Protect private property and infrastructure, including fences, utilities, oil and gas facilities, and livestock.

3.2.3.4 Specific desired vegetation conditions

There is no current management objective based on Ecological Range Site Goals for this FMU.

3.2.3.5 Approved wildland fire management strategies

Due to the mixed ownership pattern there are no plans for wildland fire use at this time. Any AMR identified in 3.1.2 may be utilized. Common techniques used in this FMU include:

- Monitoring fires which will burn to natural barriers or roads.
- Performing indirect attack by burning out along roadways or other fuel breaks.

- Allowing large pockets of heavy fuels to burn out, instead of constructing fireline through the fuels.

Safe and aggressive fire suppression will be conducted on fires which threaten private property. This may include the use of air tankers, SEATs and helicopters.

Prescribed fire will be utilized to maintain the acres treated with herbicides under the Restore New Mexico program. Prescribed fire will be used to reduce fuel buildup and control shrub encroachment in drainages that were excluded during the herbicide treatment. During normal precipitation years and when sufficient vegetation is available prescribed fires may be used to treat up to 1,500 acres per year in this FMU.

Herbicides will continue to be used to control salt cedar and other invasive species.

Mechanical methods (e.g. equipment, chainsaws) may be used in this FMU. The use of mechanical treatments is limited due to the target species, soils, and cultural resource concerns. It is unlikely that more than 500 acres a year would be treated using mechanical methods.

3.2.3.6 Specific guidelines, constraints, or mitigation considerations

A Petroleum Engineer Technician (PET) will be ordered for all fires within, or that could move into, an oil and gas field.

3.2.3.7 Safety considerations

Powerlines are common throughout the FMU and are numerous in and around oil and gas fields. In some leases, the oil and gas operator assumes responsibility for the powerline at the edge of the lease while the power company (CVE or Xcel) is responsible for the powerline to the well.

Karsts are found in areas with gypsum soils. The karsts can collapse under the weight of vehicles. These karsts can be several hundred feet deep with water in the bottom.

Methamphetamine production and other illicit activities occur within the FMU, particularly in heavy vegetated draws and canyons. Illegal dumping also occurs throughout the FMU.

Rattlesnakes and Africanized honeybees are common within the FMU.

3.2.4 Fire Management Unit Name: Guadalupe Escarpment

Category: D

Acres: 826,145 acres of which 301,001 acres are managed by the BLM



Figure 12. Rocky Arroyo near Three Forks



Figure 13. Giant sacaton and cholla in Box Canyon

3.2.4.1 Characteristics

The Guadalupe Escarpment is one of the more rugged areas in southeast New Mexico. Bluffs, cliffs, deep canyons and inaccessible country are found in this area.

Vegetation is typical Chihuahuan desert consisting primarily of creosote, saltbush, mesquite, yucca, cactus and several species of desert grasses. The grasses are primarily alkali sacaton, tobosagrass, black grama, and dropseeds.

The primary fuel model in the FMU is GS 2 (moderate load, dry climate grass – shrub). Most of the larger fires are the result of high winds from either frontal passage or downdrafts from passing thunderstorms. These fires can burn for long distances in a single burn period. Slope has more of an effect on fire spread in this FMU than in the other three FMUs.

Access within the FMU is primarily by county roads and a few oil and gas field roads. Access is limited to existing roads due to the nature of the limestone hills.

Historically, the area experienced a fire regime of frequent, low intensity fires which kept the vegetation more of savannah grasslands. With the start of aggressive fire suppression around 1900, fires have been suppressed, creating a change of vegetation into the current piñon-juniper woodland type. This change in vegetation has created a change in FRCC from a 1 to a 3.

The values at risk in this FMU are scattered ranch headquarters and range improvements. There are endangered species concerns due to occupied habitats within the FMU by Kuenzler’s hedgehog cactus.

There are no communities at risk within the FMU as identified by the Federal Register.

There are eight SMAs in the FMU.

Special Management Area	Number
South Texas Hill Canyon	3
Lonesome Ridge ACEC	5
Dark Canyon Scenic Area	4 – 1
Dark Canyon ACEC	4 – 2
Bogle Flat Spring	6A
Guadalupe Escarpment Scenic Area	20
East Guadalupe Habitat Management Area	26
Black River Recreational Area	27

3.2.4.2 Fire behavior

Fire behavior on the Guadalupe Mountains is influenced by wind and humidity. It is not uncommon for the wind to blow over 40 mph throughout the night with little humidity recovery. There are areas where the piñon -juniper (FM 2 and 6) are dense enough to sustain a crown fire. A critical indicator is live fuel moisture in junipers of less than 100 percent.

3.2.4.3 Management guidance

FMU specific objectives are:

- a. No size limits for fires have been established but a primary objective is to control fires during the first burning period.
- b. Protect private property and infrastructure, including fences, utilities, oil and gas facilities, and livestock.

3.2.4.4 Specific desired vegetation conditions

There is no current management objective based on Ecological Range Site Goals for this FMU.

3.2.4.5 Approved wildland fire management strategies

Due to the mixed ownership pattern there are no plans for wildland fire use at this time. Any AMR identified in 3.1.2 may be utilized. Common techniques used in this FMU include:

- Monitoring fires which will burn to natural barriers or roads.
- Performing indirect attack by burning out along roadways or other fuel breaks.
- Allowing large pockets of heavy fuels to burn out, instead of constructing fireline through the fuels.

Safe and aggressive fire suppression will be conducted on fires which threaten private property. This may include the use of air tankers, SEATs and helicopters.

Use prescribed fire to create vegetative mosaic and to control juniper and desert shrub encroachment and invasive weeds; returning targeted sites from a FRCC 3 and 2 to a FRCC 1. During normal precipitation years and when sufficient vegetation is available prescribed fires may be used to treat up to 15,000 acres per year.

Herbicides will continue to be used to control invasive species. In many areas, herbicide treatments are necessary to increase herbaceous production before prescribed fire can be used.

Mechanical methods (e.g. equipment, chainsaws) may be used in this FMU. The use of mechanical treatments is limited due to the target species, soils, and cultural resource concerns. It is unlikely that more than 100 acres a year would be treated using mechanical methods.

3.2.4.6 Specific guidelines, constraints, or mitigation considerations

A Petroleum Engineer Technician (PET) will be ordered for all fires within, or that could move into, an oil and gas field.

A RA will be ordered for all fires in the boothill of Chaves to work with the livestock operator.

3.2.4.7 Safety considerations

There has been hostility exhibited by a few ranchers in this FMU towards fire crews, especially when burnout operations are being utilized. An effort is being made to improve the public's understanding of why this tactic is used. If crews are threatened they will disengage the fire, leave the area, and notify the Duty Officer. The Duty Officer will notify the CFO Manager and request law enforcement to the area.

Sotols can dislodge and roll across a fireline, spreading fire outside the perimeter. Actions need to be taken to ensure sotols are not able to roll downhill and cross a fireline.

The FMU is very rocky. Drivers need to ensure rocks are not trapped in dual wheels and tires are safe to drive on highways. Footing is also a concern due to the rocky nature.

3.3. Operational information

3.3.1 Permanent repeater locations

Queen is the primary repeater utilized in CFO. If resources are unable to hit Queen Repeater and they are on the northern end of CFO, they may be able to hit Capitan Peak repeater. On the northeast side of CFO, Maljamar Repeater may work best.

3.3.1.2 Recommendations of successful temporary repeater locations

Temporary repeaters are often needed in the boothill of Chaves County, areas along and south of the Delaware River, and the south and east halves of Lea County.

3.3.2 Radio frequencies

See Appendix E.

3.3.3 Water dip sites

If possible have a resource advisor contact the livestock operator before taking water from livestock water systems. If this is not possible keep track of the gallons utilized so that these can be replaced.

Hydrants in Eddy and Lea County are available for wildland fire use with a phone call to the respective county's emergency management coordinator.

3.3.4 Helispots

There are no identified helispots. There is the always present concern of powerlines, communications towers, and potential for unmarked MET towers.

3.3.5 Potential camp locations

Camps are not to be established in areas with potential for H₂S to be present. Potential camp locations are:

- Dunken Fire Department
- Several areas near Russell Gap
- Intersection of US Highway 82 and Picacho Road
- The rest area near the village of Hope
- Hackberry Lake OHV
- Guadalupe Administrative Site
- Washington Ranch

4. Wildland Fire Operational Guidance

4.1. Management of Unplanned Ignitions

The fire staff will suppress all fires in accordance with management objectives based on current conditions and fire location. Fires will be suppressed at minimum cost, considering firefighter and public safety, benefits, and values to be protected, consistent with resource objectives. An appropriate response can vary from an aggressive initial direct attack to an indirect attack. Many times, suppression actions will be modified or minimized on wildfires where the suppression actions would do more damage than what the fire would cause. On these fires, the appropriate response may be to monitor the fire progress and hot spot those areas that may threaten private property and improvements.

4.1.1 Preparedness

Preparedness activities are carried out prior to a fire occurrence to ensure that the appropriate response to that fire can be accomplished. Preparedness activities include budget planning, equipment acquisition, equipment maintenance, recruitment, and training. The objective of the preparedness effort is to have a well-trained and well-equipped fire management organization in place to manage all fire situations. The CFO strength of force, as determined by analysis during preparedness planning, is from March 10th through August 6th.

4.1.2 Training

Training and fitness requirements for all personnel involved in fire suppression can be found in the NWCG PMS 310 - 1 (<http://www.nwcg.gov/pms/docs/pms310-1.pdf>). Attendance at an annual wildland fire refresher training along with successful completion of the appropriate level of work capacity testing is the basic requirement for all fire personnel. Fire personnel that will be

engaged in arduous firefighting procedures must also pass the Federal Interagency Wildland Firefighting Medical Qualification Standards Program prior to issuance of a red card. This training and testing must be done annually as mandated by the Incident Qualifications and Certification System (IQCS).

Along with the required annual training, the CFO participates in training programs at the zone and regional level. A training needs survey will be submitted to the Pecos Zone training coordinator annually. This training needs survey will be used to schedule training within the Pecos Zone. CFO personnel participate as needed as course coordinators or cadre members. CFO, in cooperation with other local, state, and federal partners, will serve as host for a variety of courses.

Qualifications currently identified as the highest priorities include:

- Burn Boss Type 2 (RXB2). There are currently two qualified RXB2s (one is the District FMO) and one trainee within CFO. There is a need to have at least three qualified RXB2s, excluding the District FMO.
- Incident Commander Type 4 (ICT4). There are currently four qualified ICT4s. It is desirable to have 2 ICT4s per engine.
- Incident Commander Type 3 (ICT3) There is only one qualified ICT3 within the Pecos District (District FMO). The desired organization is to have at least two qualified ICT3s within CFO.
- Strike Team/Task Force Leaders (STEN, TFLD) – there is currently 1 qualified TFLD (District FMO) and 1 STEN (District FMO). There is 1 TFLD trainee and 1 STEN trainee.
- Equipment Inspector (EQPI). There are no qualified equipment inspectors within CFO. This position is necessary given the number of contract engines used for fire suppression.
- Line Safety Officer (SOFR). There are no qualified SOFR in CFO.
- Incident Business Advisor Type 2 (IBA2). This position is necessary to work with any teams that may be assigned to incidents within CFO. The desire is to eventually have the Fire Management and Program Analyst become qualified at this position.

The permanent and career seasonal workforce may desire to enhance their fire qualifications and wish to attend additional advanced training. The majority of these courses will have to be taken at sites off district. CFO fire program covers the expenses for non fire personnel who are active in assisting with the fire and fuels program.

4.1.3 Detection

The CFO does not utilize fire towers or other traditional means of fire detection. During periods of lightning activity, the fire staff can request aerial detection flights. These flights should be coordinated with the Lincoln National Forest, Guadalupe Mountains National Park, and Carlsbad Caverns National Park. A predetermined flight route will be established by fire management personnel using the BLM lightning detection occurrence maps.

4.1.4 Aviation

The District FMO has been delegated the role of Unit Aviation Manager (UAM). The UAM should maintain minimum qualifications standards as outlined in the Aviation Use and Management Qualifications Guide. The Pecos District Aviation Plan identifies roles and responsibilities, policies, and procedures. The plan is updated annually and is available for review at the CFO fire staff office.

The CFO maintains a single engine air tanker (SEAT) base at the Cavern City Air Terminal. Facilities at this base include a storage shed and a camper trailer (office). The space for the base is leased on an annual basis from the city of Carlsbad. Water used for the base operations is paid for by the gallon using a meter on an adjacent fire hydrant.

All requests for special use mission aviation resources including detection aircraft, tactical aircraft, survey flights, and point-to-point charter flights, will be ordered through NM-AIDC. All special use missions will be conducted under the auspices of an approved mission plan and aviation safety plan (PASP). All personnel will receive required aviation safety training prior to participation in aviation activities.

In order to support the SEAT base and other local aviation operations, the CFO will maintain a minimum level of aviation expertise within its organization, including:

- one (1) SEAT manager (SEMG). There are currently no qualified SEMG in CFO.
- one (1) helicopter manager (HEMG). The only HEMG is the District FMO.
- three (3) helicopter crew members (HECM). There are 2 qualified HECMs and 1 trainee.
- two (2) plastic sphere dispenser operators (PLDO). There are 2 qualified PLDOs in CFO.

4.1.5 Size up, initial response and extended response procedures

In the wildland urban interface, the BLM will partner with other federal and state agencies in wildland firefighting, hazard fuels reduction, cooperative fire prevention and education, and technical assistance. Structural fire suppression is the responsibility of the state and local governments.

When a fire affects multiple jurisdictions, those agencies shall develop and implement a Cost Share Agreement as soon as possible after a fire escapes initial attack. Except as otherwise provided by Paragraphs 34 (Independent Action), and 54 (Billing Procedures) of the JPA, the responsible Unit Administrators shall develop and approve a Cost Share Agreement when the incident involves lands of more than one Jurisdictional Agency.

When the Protecting Agency provides initial attack exchange fire protection services and the incident exceeds initial attack capabilities, the Protecting Agency shall notify the Jurisdictional Agency and the Jurisdictional Agency shall assume suppression responsibility for the fire. Under this situation, the Protecting Agency's status changes to Supporting Agency and the Jurisdictional Agency shall bear all costs, including initial attack. The Jurisdictional Agency shall not be required to reimburse costs to Protecting or Supporting Agencies for fires that exceed initial attack capabilities if the Protecting or Supporting Agency does not notify the Jurisdictional Agency within a reasonable time, not to exceed 24 hours.

The BLM is required to utilize the Wildland Fire Decision Support System (WFDSS) to assist fire managers and analysts in making strategic and tactical decisions for fire incidents. A WFDSS will be prepared on all fires that escape initial attack. WFDSS replaces the WFA (Wildland Fire Situation Analysis), Wildland Fire Implementation Plan (WFIP), and Long-Term Implementation Plan (LTIP) processes. WFDSS is a way of integrating the various applications used to manage incidents into a single system, which streamlines the analysis and reporting processes.

The criteria for choosing the initial attack response will be based on the AMR and will be determined by the FMO for routine fires that do not exceed initial attack and by the Resource Advisor and FMO on fires that escape initial attack efforts or pose a serious threat to human life, property, or other areas of concern. The criteria will be based on firefighter and public safety and the values at risk. Sensitive resources will be secondary priorities.

Planning and preparation for suppression actions within CFO have been formulated with the goal of establishing a fire management organization that can control 95 percent of all fires that start. Control of the remaining 5 percent of fire occurrences may require assistance from the nearest available adjacent cooperating agencies and national resources. If a fire exceeds or threatens to exceed CFO capabilities, additional resources will be ordered through normal dispatch procedures. The amount and type of assistance needed and requested will depend on the present and expected complexity of the fire situation.

The FMO will complete the Incident Complexity Analysis to determine the appropriate level of management of a wildland fire that has escaped initial attack. A WFDSS will be completed and the necessary resources, including IMTs, will be ordered through normal dispatching channels. The current IC will remain in place until the local unit representative briefs the incoming team, a Delegation of Authority has been signed, and a mutually agreed time for transfer of command has been established.

When an IMT is assigned, the team will be briefed by the Field Office Manager, FMO, and current IC. The team will be given a written Delegation of Authority (Appendix B) and will have a resource advisor assigned as a staff member to the incoming IC. The Delegation of Authority will provide the IC with the Field Office Manager's priorities, specific restraints, and other guidelines necessary to carry out the WFDSS. When the team has accomplished its assigned tasks, the fire will be transferred back to CFO. A local IC will be assigned and a debriefing will be held by the departing team to provide for an orderly transition of command. The Field Office Manager will then conduct a closeout session that will include a performance evaluation of the departing team. The transition IC will then assume command following a thorough briefing and at the agreed upon time.

4.1.6 Incident Management

Dispatching involves the receiving of a fire report, gathering pertinent information, assessing and analyzing the situation, and assigning personnel to carry out the desired action under the direction of the FMO. The initial attack fire dispatcher will monitor suppression progress, relay information to fire management staff, process requests for additional firefighters, firefighting equipment, and supplies, and order aircraft as needed. Suppression personnel will remain in radio contact with the NM-AIDC during all phases of the suppression operations and report any significant events or fire status change.

The NM-AIDC is responsible for submitting daily situation status reports (ICS-209) to the Southwest Coordination Center (SWCC) in Albuquerque, New Mexico. Requests for all support resources needed in fire and other emergency operations will be processed through NM-AIDC. A current list of qualified personnel will be maintained in the CFO fire office and at NM-AIDC. Requests for interagency assistance will be processed through normal procedures, which include completing the Resource Order form. Dispatching requested non-fire staff resources for off district assignments will be approved by the Field Office Manager after consultation with the FMO.

The following steps will be taken upon report of a wildland fire:

- FMO will dispatch initial attack personnel and notify the Field Office Manager of the dispatch;
- FMO will assign a qualified IC and determine the appropriate suppression strategy to utilize;
- FMO will keep the Field Office Manager informed and updated on the fire situation.

The assigned IC will be responsible for all actions taken on the fire. The IC will inform the FMO of the fire situation as soon as possible after arrival on scene. If the fire behavior and complexity continues to increase, the IC may be replaced by a more qualified IC along with additional support personnel and supplies.

4.1.7 Severity Funding

It is neither reasonable nor prudent to program funds annually for the worst possible fire season. The NM State Director has an authorization limit for severity funds up to \$500,000.00. Appropriate activities for use of severity funds include hiring of temporary emergency

firefighters, placing existing staff on extended tours of duty, increasing or initiating special detection operations, and hiring fixed-wing or rotary aircraft to accomplish necessary preparation. These actions are aimed at ensuring prompt response with adequate forces should fires occur. The National Fire Director has the authority to allocate funds over \$500,000.00 from suppression operations for specified preparedness activities. Severity funds are not provided to restore lost funding or raise funding levels but only to meet the needs during the period of abnormal conditions.

4.1.8 Smoke Management

Smoke management and air quality concerns are fully integrated into fire management planning and operations. CFO fire staff recognizes the responsibility for the smoke produced on prescribed fires and the potential impacts possible to communities, public health, visibility, and the airshed. CFO fire staff will take appropriate actions to mitigate such impacts.

No public lands administered by CFO are classified as Class I airsheds. However, Class I airsheds are located over wilderness areas in the Carlsbad Caverns and Guadalupe Mountains National Parks. Close coordination of prescribed fire projects is needed to ensure maintenance of air quality within these airsheds. Smoke monitors are available through the State Office smoke management specialist to monitor emissions. Burns which may impact these airsheds or other receptor sites should make use of these monitors if they are available.

The nearest non-attainment area for PM-10 is in Dona Ana County, near Anthony, New Mexico. The designation is primarily for windblown dust.

The CFO is aware of, understands and complies fully with the New Mexico Environment Department's (NMED) Air Quality Bureau's Smoke Management Program and regulations (20.65 NMAC). This is an enhanced smoke management program that functions under "permit by rule" which means that burners are allowed to burn as long as the requirements contained in the smoke management regulation are met. CFO will register prescribed fires, submit notifications, cancellations, and end of burn tracking of emissions when the burn has been completed. Other documentation submitted might include: i.e. visual monitoring, ventilation tracking, maps, photos, or public notification documentation. Real time smoke monitoring with smoke particulate instrumentation is done on a case-by-case basis.

The smoke management program web page can be accessed via the Air Quality Bureau's website at <http://www.nmenv.state.nm.us/aqb>. Smoke management support can be reached by calling 505.476.4330.

Burning under good or better ventilation is allowed without a waiver from the NMED/Air Quality Bureau. However, in November 2007, the state revised the ventilation waiver for burning under fair or poor ventilation. This "Combined SMP I and SMP II Statewide Waiver for Broadcast and Pile Burns" is valid for all SMP I and SMP II burns registered in the State of New Mexico. Burners do not need to send a request to use this waiver. For unique circumstances, i.e.

night burning, a separate waiver request may be submitted and would then be reviewed by Air Quality Bureau staff who grant or deny such individual waiver requests.

All prescribed fires will be conducted in accordance with State of New Mexico Air Quality regulations. The CFO will comply with all applicable policies regarding air quality.

4.1.9 Reporting

An Incident Status Summary (ICS-209) will be completed for fires that burn 100 or more acres in timber and slash fuel types, burn 300 or more acres in grass or brush fuel types, or when a Type 1 or 2 Incident Management Team (IMT) is assigned. An ICS-209 is required for ALL other incidents (i.e. flood, hurricane, earthquake, etc.) where significant wildland fire resources or a Type 1 or Type 2 IMT has been assigned. Accurate and timely completion of the ICS-209 is necessary to determine appropriate resource allocation during multiple incident occurrences. The information included on the form often determines the priority of a given incident, and thus its share of the resources available.

The Southwest Coordinating Group (SWCG) requires the following information about fuel consumption to be inserted into Block 31 of the ICS-209 form.

- A breakdown of the fire by fuel model, Fire Behavior Fuel Models 1-13;
- The total fuel load in tons per acre for each fuel model;
- The intensity at which the fire is burning in each fuel model.

All fires over ten acres need a GIS Fire Perimeter Polygon entered into the database as required in Information Bulletin No. 2007-056 (Implementation of Fire History and Daily Fire Perimeter Data Layer Standards).

Each wildland fire response will be assigned a fire number. This action requires the preparation of an Individual Fire Report (DI-1202). All DI-1202s must be completed within five days of the fire being declared out. These reports are submitted in writing by the FMO to the Field Office Manager for approval and are then entered into the Fire Management Computer System for permanent archival. The FMO is responsible for the entry and accuracy of these reports.

The FMO will prepare an annual report detailing fire and aviation activity. This report will be submitted to the Field Office Manager for final approval. A copy will remain on file in the Fire Management Office.

4.2 Burned Area Emergency Stabilization and Rehabilitation

It is tiered to the Department of the Interior Departmental Manual 620 DM 3 Wildland Fire Management Burned Area Emergency Stabilization and Rehabilitation relative to planning and implementing emergency stabilization and rehabilitation (ES and R) projects on public lands administered by the BLM. The following guidance incorporates all pertinent information from the Interagency Burned Area Emergency Response and the Interagency Burned Area Rehabilitation Guidebooks.

4.2.1 Emergency Stabilization

Emergency stabilization is defined as “Planned actions to stabilize and prevent unacceptable degradation to natural and cultural resources, to minimize threats to life and property resulting from the effects of a fire, or to repair/replace/construct physical improvements necessary to prevent degradation of land or resources. Emergency Stabilization actions must be taken within one year following containment of a wildland fire” (620 DM 3.3E). Where necessary, emergency stabilization actions will be taken within one year following containment of a wildland fire. The Interagency Burned Area Emergency Response Guidebook provides direction on the emergency stabilization process.

The protection priorities for emergency stabilization are: 1) human life and safety, and 2) property and unique biological resources (designated critical habitat for Federal and State listed, proposed or candidate threatened and endangered species) and significant heritage sites.

Allowable emergency stabilization actions are limited to the following:

Human Life and Safety

- Replace or repair minor facilities essential to public health and safety when no other protection options are available.

Soil/Water Stabilization

- Place structures to slow soil and water movement.
- Stabilize soil to prevent loss of degradation or productivity.
- Increase road drainage frequency and capacity to handle additional post-fire runoff.
- Install protective fences or barriers to protect treated or recovering areas.

Designated Critical Habitat for Federal/State Listed, Proposed, or Candidate

- Conduct assessment of critical habitat in areas affected by emergency stabilization treatments.
- Seeding or planting to prevent permanent impairment of designated critical habitat.

Critical Heritage Resources

- Conduct assessments of significant heritage sites in areas affected emergency stabilization treatments.
- Stabilize critical heritage resources.
- Patrol, camouflage, and bury significant heritage sites to prevent looting.

Invasive Plants

- Seeding to prevent establishment of invasive plants and direct treatment of invasive plants
- Use integrated pest management techniques to minimize the establishment of non-native invasive species within the burned area.

Monitoring

- Monitor treatments and activities for up to three years from date of fire containment. Accomplishment reports will be prepared at the end of each fiscal year for ES and R projects and submitted to the NMSO coordinator. National Fire Plan Operations and Reporting System (NFPORS)

will be used to track accomplishments and submit budget requests. The initial ES Plan (Form 1310-20 plus attachments) must be submitted to the State Office, the Washington Office, and Denver Budget Office within seven calendar days of wildfire containment. The complete ES Plan must be submitted within 21 calendar days to the State ES&R Program (for Plans below \$100,000) or to the State ES&R Program Lead and the National ES&R Program Lead (for Plans of \$100,000 and above).

4.3 Burned Area Rehabilitation (BAR)

BAR consists of efforts undertaken within three years of containment of a wildland fire to repair or improve fire damaged lands unlikely to recover naturally to management approved conditions, or to repair or replace minor facilities damaged by fire. BAR policies are found in Department of the Interior departmental documents 620 DM 3.

The objectives of BAR are: 1) evaluate actual and potential long-term post-fire impacts to critical cultural and natural resources and identify those areas unlikely to recover naturally from severe wildland fire damage; 2) develop and implement cost-effective plans to emulate historical or pre-fire ecosystem structure, function, diversity, and dynamics consistent with approved land management plans, or if that is infeasible, then to restore or establish a healthy, stable ecosystem in which native species are well represented; and 3) repair or replace minor facilities damaged by wildland fire.

Rehabilitation will only be required where the impacts of the fire itself or the associated suppression actions are significant and can be mitigated. No rehabilitative action will be taken which will cause further damage to the environment. Efforts to rehabilitate the direct impacts of fire suppression activities will begin as soon as possible, at times even before the fire is declared out. This will allow CFO to utilize assigned resources and potentially reduce rehabilitation costs.

It is anticipated that residual seed and sprouting from the surviving plants will provide natural revegetation.

Allowable rehabilitation actions are limited to the following:

Lands Unlikely to Recover Naturally

- Repair or improve lands unlikely to recover naturally from wildland fire damage by emulating historical or pre-fire ecosystem structure, function, diversity, and dynamics consistent with existing land management plans.

Weed Treatments

- Chemical, manual, and mechanical removal of invasive species, and planting of native and non-native species, restore or establish a healthy, stable ecosystem even if this ecosystem cannot fully emulate historical or pre-fire conditions.

Tree Planting

- Tree planting to reestablish burned habitat, reestablish native tree species lost in fire, prevent establishment of invasive plants.

Repair/Replace Fire Damage to Minor Facilities

- Repair or replace fire damage to minor operating facilities (e.g., fences, campgrounds, interpretive signs and exhibits, shade shelters, wildlife guzzlers, etc.). Rehabilitation may not include the planning or replacement of major infrastructure, such as visitor centers, residential structures, administration offices, work centers and similar facilities. Rehabilitation does not include the construction of new facilities that did not exist before the fire, except for temporary and minor facilities necessary to implement burned area rehabilitation efforts.

Monitoring

- Monitoring of treatments and activities for up to three years from date of fire containment.

4.4 Management of Planned Fuels Treatments

The CFO fuels and prescribed fire program focuses on four main areas: (1) reduction of hazardous fuels in the Wildland - Urban Interface; (2) reduction of juniper encroachment and desert succulents; (3) salt cedar control; and (4) restoration of healthy watersheds for a variety of resource benefits. A Fire Management Specialist (Prescribed Fire and Fuels) is a necessary position to oversee the CFO fuels program.

4.4.1 Prescribed Fire

CFO proposes to use prescribed fire to reduce hazardous fuel loadings and to move acres classified as FRCC 2 and 3 towards FRCC 1. Prescribed fire is considered an intricate part of maintaining acres previously treated through the Restore NM program. The annual prescribed fire program will be prepared by the Fire Management Specialist with assistance from the FMO. The program will detail all prescribed fires planned for the year and specify objectives to be accomplished.

The FMO will designate a qualified burn boss and other necessary prescribed fire team members to conduct the prescribed fire. The burn boss will fill all required positions necessary to conduct the prescribed fire with personnel qualified at or above the complexity level of the project including the Firing Boss and Holding Boss. An adequate number of holding personnel on hand to monitor, chase hot spots, mop- up, and serve as the initial attack crew in case the fire escapes. CFO will strive to maintain the qualified personnel necessary to conduct all prescribed fires activity in CFO. This will be accomplished through training, prescribed fire experience, and recruitment.

Weather and fuel moisture conditions must be monitored closely to determine when the prescription criteria are met. A portable RAWS may be set up in the prescribed fire unit. Weather data should be gathered at least 30 days prior to conducting the prescribed fire. Fuel moisture samples of 1-hour and 10-hour fuels and live plants will be collected each week, weighed, oven dried, and percent moisture contents calculated to help determine when the prescription criteria are met.

When all prescription criteria are within the acceptable range, the burn boss will select an ignition date based on current and predicted weather forecasts. A briefing will be given by the burn boss, and specific assignments and placement of personnel will be discussed. A spot weather forecast will be obtained on the day of ignition, and all prescription elements will be rechecked to determine if all elements are within the approved ranges. If all prescription elements are met, a test fire will be ignited to determine fire behavior. If conditions are not satisfactory, the test fire will be suppressed and the prescribed fire will be rescheduled. If conditions are satisfactory the prescribed fire will continue as planned.

All prescribed fires will be conducted under the auspices of an approved prescribed fire burn plan. The Interagency Prescribed Fire Guide has established documentation requirements relative to burn plan preparation. A technical review is conducted by a burn boss qualified individual that was not involved with the preparation of the burn plan. This technical review focuses on development of prescription parameters, complexity analysis and risk assessment, and smoke management mitigation activities. The FMO also provides a review of the burn plan. The focus for this review is on project staffing and organization, as well as resource allocation and planning for instances where the fire may exceed planned treatment areas. A similar review is conducted by the field office aviation manager for projects involving aerial ignition. All prescribed fire burn plans will be approved by the Field Office Manager.

The burn boss will conduct and document an informal post-burn critique (after action review). This critique will include a discussion of what went right, problems encountered, issues with implementation, corrective actions, and recommendations. The burn boss will prepare a final report on the prescribed fire. Information will include a narrative of the prescribed fire operation, a determination as to whether or not the objectives were met, weather and fire behavior data, a map of the prescribed fire area, photographs of the prescribed fire, number of hours worked, and final cost.

The CFO fuels staff is responsible for monitoring through the first year following completion of the prescribed fire project. After the first year, the resources staff assumes monitoring responsibility. Minimum monitoring requirements include pre-burn weather and fuel moisture measurements, and establishing photo points, photo plots, and transects. During the prescribed burn monitoring includes taking weather observations every hour, recording fire behavior such as flame lengths and rates of spread, and monitoring smoke dispersal. Post-burn monitoring includes retaking photos, re-reading transects, estimating fuel consumption, and recording fire perimeter.

CFO will require the following personnel to maintain and meet the complexity requirements of the prescribed fire program:

- one (1) Burn Boss Type 1 (RXB1)
- two (2) Burn Boss Type 2 (RXB2)
- one (1) Firing Leader (FIRL)
- two (2) Firing Bosses (FIRB)
- two (2) Holding Bosses (strike team leader or higher)
- one (1) Fire Effects Monitor (FEMO)

- two (2) plastic sphere dispenser operators (PLDO)
- two (2) terra torch operators

4.4.2 Mechanical and Manual Treatment

The equipment and associated activities may include the use of chainsaws, hydroax, masticator, tractor with shears, chippers, ATVs, winches, motor vehicles, and debris pile stacking and burning. Potential biomass utilization includes firewood sale and material for fence whenever feasible. When biomass material cannot be efficiently or economically accessed for utilization, on site disposal methods such as debris piling and burning, scattering, and chipping will be used.

Mechanical and manual treatments will be focused primarily within riparian areas. These treatments will be designed to remove salt cedar and other invasive species and will normally be combined with herbicide applications followed by prescribed fire treatments. The majority of the Delaware River and the Black River have been mechanically treated. The chemically treated salt cedar along the Pecos River has been piled and burned except for the section from Longhorn Road to south to Red Bluff.

Mechanical treatments are not excluded from any FMU and may be used at any time to meet specific fuels reduction needs which might include preparation for prescribed fire treatments, protection of private property or developments on BLM administered lands, or protection of important wildlife habitat or cultural sites. Widespread use of mechanical treatments, however, is not anticipated due to the higher costs.

Two Contracting Officer Representatives (COR) are desired to oversee any mechanical treatment contracts. The Fire Management Specialist plus an individual from an engine crew should be targeted to become qualified CORs.

4.4.3 Herbicides

Herbicide treatments are a cost effective way to reduce shrub encroachment into grasslands as well as restoring grasslands that are dominated by shrubs. Herbicide treatments have proven to be very effective in reducing salt cedar encroachment in riparian areas along the Pecos River and its tributaries. Herbicide treatments will be primarily focused in the Eastern Sandhill FMU to reduce mesquite and other shrubs, in the Western Foothills and Pecos River Corridor FMUs to reduce catclaw mimosa, mesquite, salt cedar and other shrubs. Herbicide treatments may also be used in the Western Foothills FMU to treat juniper and creosote encroachment. Herbicide treatments may be used in the Guadalupe Escarpment FMU to treat junipers but may be restricted due to slopes.

Herbicide applications will follow BLM procedures outlined in handbook H-9011-1, 1112, and 9015. All herbicide applications will be conducted under an approved Pesticide Use Proposal (PUP) by a certified pesticide applicator or licensed, contracted applicator. The PUP will follow agency guidelines for application as well as all manufacturer's standards and recommendations and any applicable State regulations and policies. Special precautions must be taken to ensure that herbicide applications do not adversely impact lands and waterways not covered under the

application plan. The CFO will maintain at least one certified pesticide applicator on staff, preferably the Fire Management Specialist.

4.4.4 Biological Treatment

Biological treatments involve the use of grazing animals, plant eating insects, nematodes, mites, and pathogens that weaken or destroy plant tissue. There is ongoing research at New Mexico State University Artesia Science Center in the use of leaf beetles to defoliate saltcedar. To date, there has been little success in the leaf beetles overwintering in the area. Other than the potential to use the leaf beetles, there are currently no plans to use biological treatments within CFO.

4.4.5 Reporting Requirements

Project level reporting requirements have been established and include submissions in Rangeland Improvement Project System (RIPS), Management Information System (MIS), and National Fire Plan Operations Reporting System (NFPORS). Separate reporting requirements also include submittal and annual reporting requirements for smoke emissions to the New Mexico State Environmental Department. The Fire Management Specialist is responsible for ensuring that all fuels related reporting requirements are completed in a timely manner.

4.5 Prevention, Mitigation and Education

4.5.1 Fire Prevention Objectives

1. Minimize the number of human-caused fires.
2. Enforce fire closures, restrictions, and prevention clauses specified in permits, contracts, and plans.
3. Increase cooperative efforts with other agencies in preventing human-caused wild land fires.
4. Increase media coverage during high fire danger through news releases in coordination with local partners and those within the Pecos Zone.

4.5.2 Public Education

As a part of the overall fire prevention objectives, public education and information dissemination programs are integral in raising awareness concerning the damages resulting from unplanned ignitions. The following actions will be undertaken to raise public awareness:

1. In coordination with other federal, state, and local partners, fire prevention messages will be broadcast on local and cable TV and radio stations.
2. Periodically prepare media releases with fire prevention messages. Articles will include information on the current fire danger, fire closures, smoking and campfires restrictions.
3. Fire prevention materials will be placed in strategic locations such as trailheads and recreation areas.

4. Formal presentations will be given at organization camps and activities, local festivals, church groups, youth clubs, local parades, and other public activities.
5. Cooperate with and support local and area fire departments with their fire prevention programs.

4.5.3 Fire Prevention Program Objectives

1. Reduce fires within the WUI. With increasing private land development, ignitions in the WUI will continue to be a concern. To mitigate human caused fires in these areas, the following actions will take place:

a. The CFO will cooperate with the residents of local communities and local fire departments, in educating residents and the visiting public about fire prevention and fuels reduction.

b. The CFO will continue to assist in providing training to Volunteer Fire Departments, including prevention activities.

4.5.4 Reduce fires resulting from visitor use

The attraction of the Guadalupe Mountains, Carlsbad Caverns, and the Carlsbad area will continue to draw visitors from around the country. Public land uses include recreation (hiking and camping), hunting, fuel wood gathering, and other outdoor activities. To reduce the risk of unwanted fires, the following activities are prescribed:

1. Frequent visits to remote trailheads, parking lots, and popular camping areas.
2. Increase patrols during high visitation periods such as holiday weekends and during the hunting seasons.
3. Fire prevention signing implemented and signs maintained.
4. Increase prevention patrols when the fire adjective rating is high or above and during red flag warnings.

4.5.4 Reduce fires resulting from equipment use and other industrial activities

The following activities will be implemented to reduce fires resulting from these activities

1. Contact local businesses such as chainsaw and cycle shops, etc., and keep them informed on current spark arrester requirements.
2. Advise motorists with faulty mufflers and take appropriate actions. Enforce current spark arrester regulations for ATVs and motorcycles on federal lands.
3. Advise visitors, utility companies, ranchers, etc., that vehicles with catalytic converters have the potential of starting a fire in fine fuels.

4.5.5 Reduce the incidence of fires from pyromania

Each year, fires are ignited by children, teenagers and others for malicious reasons. A majority of these fires occur in the vicinity of Carlsbad. In order to reduce the number of these fires, the following actions will be initiated:

1. Continue to provide education and fire prevention programs to schools, particularly during Fire Prevention Week (in cooperation with local fire departments).
2. Fire Prevention give-a-ways will be provided to local elementary schools.
3. Aggressively pursue fire trespass investigation and cause determination for human caused fires. Pursue legal action against individuals found responsible for igniting fires as per existing agency policies.
4. Emphasize the “Match Rules” when talking to groups of children.
5. Pursue high visibility fire prevention activities such as participation at county fairs, community festivals, environmental education activities and other community events.

4.5.6 Reduce the number of fires resulting from debris burning, agricultural burning and other legal use of fires

Careless use of fire by local farmers, ranchers and residents results in a number of wildfires each year. The following actions are prescribed.

1. Continue surveillance for illegal dumping areas.
2. Encourage residents to use the approved sanitary landfills.

4.5.7 Fire Prevention Signs and Posters

1. All sign maintenance (staining, relocating, hazard reduction and posting) will be recorded in the unit sign maintenance log.
2. All fire-prevention signs will be updated regularly to be consistent with the existing fire season.
3. All signs will be installed, maintained and posted as set forth in the agency Sign Handbook. All sign work will meet or exceed standards set forth on the Sign Handbook.
4. All posters and signs will be kept in good condition. They will be replaced as conditions warrant. Weather-beaten, or old and vandalized signs will be replaced.

4.6 Fire Trespass

The CFO, per National Policy, will investigate fires on public lands to determine cause (human or natural) and whether negligence and or criminal intent were factors in human-caused fires (see H9238-1, Chapter II: cause Determination and Fire Investigation A – D). For human-caused fires where negligence or intent can be established, actions should be taken to recover the cost of suppression activities, land rehabilitation, and damages to the resources and improvements. Trespass actions are both cost recovery and an effective deterrent to prevent future damage to

public lands. New Mexico's Fire trespass Operating Plan will, in conjunction with H-9238-1, provide guidance and instructions for managing fire trespass for the BLM in New Mexico.

For non-BLM trespass fires, the agency with jurisdiction over the location where the fire originates shall be responsible for any law enforcement action. As initial action is taken on a fire, the initial attack forces shall preserve information and evidence pertaining to the fire's origin and cause. Protecting and Jurisdictional Agencies shall render mutual assistance in the gathering of evidence to the fullest extent practicable. Affected Agencies shall meet to determine an investigation process.

The primary industrial operation that takes place within the CFO is oil and gas exploration and production. Although not a frequent cause of wildland fires, this industry has a high risk from many of their activities, such as welding at pipeline construction sites. Agricultural operations cause a significant amount of wildfire starts each year. Fire prevention and education will be tailored to reach farmers and ranchers with the fire prevention message, through personal contacts, and media outreach. The Prevention and Mitigation Specialist will work closely with the local fire and emergency coordinators in developing strategies to reduce the number of agricultural related wildfires.

In recent years, major highway construction has occurred on US Highways 62/180 and 285 and New Mexico Highways 31 and 128. There have not been any reported wildland fires that have occurred from this activity. Normally, the New Mexico Highway and Transportation Department monitors all environmental compliance, including fire prevention, on these projects.

4.7 Special Orders and Closures

All closures and restriction will be pursuant to 43 CFR 9212.2 (a) applicable to the Bureau of Land Management.

4.7.1. Coordination

All special orders and closures due to fire restrictions will be coordinated with local cooperators, in particular county officials, the Lincoln National Forest, and New Mexico State Forestry as recommended by the FMO and approved by the Pecos District Manager.

4.7.2 Stages of restrictions and closures

4.7.2.1 Stage 1

PROHIBITIONS: Building, maintaining, attending or using a fire, campfire, charcoal, coal, or wood stove, except within a developed recreation site or improved site. The use of petroleum-fueled stoves, lanterns or heating devices providing such devices meet the fire underwriter's specifications for safety is allowed. Smoking, except within an enclosed vehicle or building, a developed recreation site, or while stopped in an area at least three feet in diameter that is barren or cleared of all flammable material. Possessing, discharging or using any kind of firework or other pyrotechnic or incendiary device.

4.7.2.2 Stage 2

PROHIBITIONS: Operating or using any internal or external combustion engine without a spark arresting device properly installed, maintained, and in effective working order. Welding or operating acetylene or other torch with open flame. Possessing or using a motor vehicle off roads, except when parking in an area devoid of vegetation within 10 feet of the roadway.

4.7.2.3 Stage 3

Partial field office closure.

4.7.2.4 Stage 4

Full field office closure

4.7.2.5 Allowable activity-based exemptions

- a. Exemptions to the restrictions or closure orders may be authorized through entry or activity permits.
- b. Require mitigation acceptable to the Field Office Manager.
- c. Exemptions will be managed according to risks and benefits.

4.8 Firewise

CFO will assist in Firewise evaluation and risk planning and assessments for the communities of southeast New Mexico through the Southern Mitigation Specialist.

4.9 Rural Fire Assistance Program

The Rural Fire Assistance Program is designed to increase firefighter and public safety and enhance the wildland fire protection capabilities of rural fire departments through financial and other assistance from the Department of the Interior. The CFO may provide technical assistance, training, supplies and materials, equipment; and participate in interagency prevention, educational activities, and proficiency exercises with rural fire departments. Direct purchase of engines and telecommunications equipment is excluded.

Distribution of funds from BLM is based on applications from rural fire departments. Eligible departments must serve a community of 10,000 people or less and contain a wildland- urban interface area. Priority is given to rural fire departments that meet accepted standards of wildland fire qualifications, training, and performance; protect rural communities; play a substantial cooperative role in the protection of BLM lands; and support interagency fire efforts. The rural fire department must meet a cost share minimum of 10%. Cooperator contribution may be in the form of in-kind service, support costs, or dollars.

4.10 Community Wildfire Protection Plan

The Healthy Forests Restoration Act (HFRA) emphasizes the need for federal agencies to work collaboratively with communities to develop hazardous fuels reduction treatments. The Community Wildfire Protection Plans (CWPP) identifies and prioritizes areas for hazardous fuels reduction treatments on federal and non-federal lands to reduce the threat of wildland fire to the community. The minimum requirements for a CWPP as required by HFRA are:

Collaboration: local and state government agencies in consultation with federal agencies and other interested parties

Prioritized Fuel Reduction: identify and prioritize areas for hazardous fuel reduction; recommend types of treatment; must protect one or more at-risk communities and essential infrastructure

Treatment of Structural Ignitability: A CWPP must recommend measures for homeowners and communities to reduce ignitability of structures.

Without a CWPP, the HFRA limits the WUI to 0.5 mile of an at risk community's boundary or 1.5 mile if extenuating circumstances exist (i.e. steep slopes, natural fuel break, or FRCC 3 exists). The CWPP also identifies any essential infrastructure that may be at risk.

Eddy and Lea County have completed CWPP. Chaves County is in the process of preparing their CWPP.

5. Monitoring and Evaluation

Monitoring and evaluation of the fire program will occur to determine if the program and associated projects are meeting the various resource plans directions and to determine if the costs of implementing the fire program and management effects are occurring as predicted.

Monitoring related to wildland fire or fuels related projects falls under the general monitoring and evaluation guidelines outlined in the RMP. Site specific monitoring needs are identified in the analysis of individual projects.

Monitoring and evaluation techniques include, but are not limited to:

1. Site-specific observations by resource specialists.
2. Field assistance trips by other technical specialists.
3. General field observations.
4. On-going accomplishment reporting processes.
5. Formal management reviews on a scheduled basis.
6. Discussions with other agencies and the public users.
7. Management team review of monitoring results.
8. Interdisciplinary team reviews of monitoring results.
9. Involvement with existing research activities.
10. Review and analysis of records documenting monitoring results.

GLOSSARY

APPROPRIATE MANAGEMENT RESPONSE: The planned strategy for suppression action (in terms of kind, amount, and timing) on a wildfire, which most efficiently meets fire management direction under current or expected burning conditions. The response strategy may be to **confine**, **contain**, or **control** a fire. (See below).

* **CONFINE:** To restrict the fire within predetermined boundaries, established either prior to, or during the fire. These identified boundaries will confine the fire, with no action being taken to put the fire out. Tactics include, but are not limited to: indirect lines with backfiring, extended hose lays, holding along drainage, cold trailing dormant sectors, hot spotting isolated flare-up pockets, aerial retardant pre-treatments, mop up perimeters and extended patrols. Tactical aerial mobility and long distance water distribution systems shall actuate this strategy of time and distance.

* **CONTAIN:** To restrict a fire to a defined area, using combination of natural and constructed barriers that will stop the spread of fire under prevailing and forecasting weather conditions, until out. Tactics include, but are not limited to: direct, parallel and indirect lines with limited backfiring, extended hose lays, improved hand lines, mop up to 300 feet into the fire area to secure perimeter from rekindle and firebrand sources. Theoretically, at this level of effort, perimeter can be considered secure more quickly and with fewer resources required for extended mop-up and patrol than compared with the confinement strategy.

* **CONTROL:** To aggressively fight a wildfire, through the skillful use of personnel, equipment, and aircraft to establish firelines around a fire to halt the spread and to extinguish all hot spots, until out. Tactics are directed at total suppression of the fire as quickly as possible. The objective is to attain “control” by the advent of the following burning period. In practice, this is the traditional “10 a.m.” policy. With respect to suppression responses to wildfire, this is the most effective and time proven technique to achieve the goal of prompt fire control.

BARRIER: May be natural or man-made, any obstruction to the spread of fire; typically, an area or strip devoid of flammable fuel.

BURNING PERIOD: That part of each day when fires spread most rapidly.

DIRECT ATTACK: A series of related actions to cool, drown, smother, starve, beat out, or otherwise extinguish the flames of a going fire. All control action is directly against the fire edge.

ESCAPED FIRE: A fire which has exceeded preplanned initial action capabilities of the fire management personnel.

FIRE BEHAVIOR: The manner in which fuel ignites, flames develop, fire spreads, and exhibits other phenomena. The combined effects of the fire’s environment on how the fire acts or behaves.

FIRE MANAGEMENT UNIT: Predetermined area that has similar fuels, topography, management objectives, and resource needs which allow the area to be managed as a unit.

FIRE MANAGEMENT PLAN: A plan written and agreed upon by all parties concerned to coordinate a response to wildfire so that management objectives and legal responsibilities are met. Also provides for management-ignited fire and fire use.

FUEL: The substance upon which the fire feeds. In the case of a wildland fire, it is the naturally occurring flammable materials.

FUEL MANAGEMENT: The practice of evaluating, planning and executing the treatment of wildland fuel to control the flammability and reduce the resistance to control through mechanical, chemical, biological, or manual means, or by prescribed fire and in support of land management objectives.

FUEL MODEL: A simulated fuel complex for which all fuel descriptors required for the solution of a mathematical fire spread model have been specified.

HOLDING ACTION: Those actions necessary to keep a fire within a designated area. On prescribed fires, these actions are taken to maintain the fire within or return it to prescription. Examples include line construction, burn-out, mop-up and facilities protection.

INDIRECT ATTACK: Control action conducted a distance from and usually parallel to the edge of a wildland fire in such a manner as to deprive the advancing fire of fuel and thereby halting its progress.

INITIAL ATTACK: The prompt, preplanned response to a wildfire.

MAXIMUM MANAGEABLE AREA: The limits of acceptable burned area for a prescribed fire or a wildland fire use, based on land and resource management constraints and representing a reasonably defensible location from a fire management standpoint.

MOP UP: The process of making a controlled fire safe by extinguishing all remnants of fire within a specified strip adjacent to the control line.

NATURAL FUEL: Fuel comprised of combustible wildland vegetation resulting from natural processes and not directly generated or altered by management practices, including fuel that has accumulated as a result of fire exclusion.

NATURAL IGNITION: An ignition resulting from any natural cause, usually lightning.

OVERHEAD: Individuals trained in managing fire.

PREPAREDNESS LEVELS: Levels of preparedness planning that recognizes increasing fire severity and provides direction for management actions at each level.

PRESCRIBED FIRE: A wildland fire burning under preplanned, specific conditions to accomplish specific planned objectives.

RETARDANT: A water-soluble fire suppression agent dropped from aircraft to retard fire spread.

STRIKE TEAM: A combination of “like” resources grouped together for a specific task.

SUPPRESSION: Any action to extinguish a wildfire.

TOPOGRAPHY: The physical features of the land surface – both natural and man-made.

TYPE 6 ENGINE: 4x4, 200 gallon, 2-3 person firefighting vehicle used primarily for wildfire suppression and management.

TENDER: Tank truck designed to carry between 800 and 3,000 gallons of water.

WILDFIRE: An unwanted fire not designated and managed as a prescribed fire, and requiring appropriate suppression action.

Appendix A. Six Minutes For Safety: Hydrogen Sulfide Gas (H²S)

Oil and Gas production across the western United States has increased dramatically and can have an impact on fire suppression operations and expose fire personnel to health hazards. Many parts of the western United States also have natural occurring coal seams that can also produce potentially toxic gases as well.

Fire personnel can be exposed to hydrogen sulfide gas (H²S) which is a commonly expelled during oil and gas extraction operations and some coal seam seeps. H²S is a highly toxic, flammable, colorless gas produced by decaying organic matter and has a characteristic odor of rotten eggs at low concentrations; however, the sense of smell is paralyzed at airborne levels above 50 to 150 ppm. At higher concentrations, H²S can result in respiratory paralysis, asphyxial seizures, and death. Characteristics of a fatal exposure are rapid “knock down”, respiratory depression, tremors, blurred vision, cyanosis, seizures and tachycardia. H²S vapor can also travel considerable distances to a source of ignition and flash back explosively and gives off corrosive and poisonous oxides of sulfur upon combustion.

To avoid exposure to H²S, here are some DO's and DON'Ts concerning fire operations near oil and gas operations:

DOs:

If you are responding to a known oil and gas pad or coal seam areas, DO contact local petroleum engineer or resource advisor.

If your unit has known oil and gas operations or coal seams, DO ensure that every firefighter is provided with training on H²S.

If you happen upon a remote oil and gas pad area, DO cordon off the area with flagging and deny entry and DO modify suppression tactics to avoid the area.

DO avoid low lying drainage, ravines, and gullies near oil and gas pads and coal seams as they tend to accumulate higher air concentrations of potentially toxic gases, especially during early morning hours when air has the tendency to sink.

If you suspect that someone has been exposed to H²S, DO seek medical care immediately at the nearest hospital.

DON'Ts:

DON'T locate fire camps, ICPs, or helispots on or near oil and gas pads.

DON'T depend on sense of smell for warning - H²S causes rapid deterioration of sense of smell.

DON'T attempt fire suppression on or in close proximity to oil and gas pads. Local petroleum engineer or resource advisor may recommend safe working distances and firefighters may also be given H²S monitors when working near oil and gas pad operations and/or coal seams.

DON'T wait to seek medical attention if H²S exposure is suspected.

Appendix B. Steps to prevent introduction of non native flora and fauna to waterways

Prevention

- Avoid dumping water directly from one stream or lake into another.
- Avoid obtaining water from multiple sources during a single operational period unless drafting/dipping equipment is sanitized between sources.
- Use screens and avoid sucking organic and bottom material when drafting from streams or ponds.
- Minimize driving equipment through waterbodies.

Sanitation

- Any equipment that comes into contact with raw water should be sanitized.
- Remove all visible plant parts, soil and other materials from external surfaces of gear and equipment. If possible, powerwash all accessible surfaces with clean, hot water ($\geq 140^{\circ}\text{F}$ ideally).
- Set up a portable disinfection tank using a 5% cleaning solution of quaternary ammonium compound. Two brands are readily available from GSA or local suppliers: *Quat128*® (by Waxie) or *Sparquat 256*® (by Spartan).

Recipe for 5% cleaning solution *Quat128*® or *Sparquat 256*®

- For engines and tenders, empty the tank then circulate the 5% cleaning solution for 10 minutes. Float portable pumps in the disinfection tank and pump cleaning solution through for 10 minutes. Pump cleaning solution through hose then rinse with water. Discharge cleaning solution back into the disinfection tank for re-use.
- Where feasible dip gear or equipment (e.g. helicopter buckets) into the cleaning solution. Alternatively, put the 5% cleaning solution in backpack spray pumps to clean portable tanks, helicopter buckets, and other equipment. The solution must be in contact with the surface being sanitized for at least 10 minutes and then rinsed with water.

Testing Solution

- To determine if the solution is below the 5% strength use “Quat Chek 1000” Test Papers (purchase these from the supplier of the cleaning compound). The used cleaning solution needs to be diluted to about 600 ppm of ammonium compounds before it can be tested with these papers.
- Take **one** cup of used *Sparquat 256*® cleaning solution, pour into a bucket. Add **5** cups of water. Mix. OR
- Take **one** cup of used *Quat128*® cleaning solution, pour into a bucket. Add **4** cups of water. Mix.
- Test the diluted solution with “Quat Chek” Test Paper. Match up the color of the paper with the ppm’s on the color chart. For optimal disinfection, the diluted solution should have a concentration between 600 and 800 ppm. If it is too dilute, dispose of properly and make a new cleaning solution.

Disposal

- Use caution when disposing the used cleaning solution and follow all federal, state, and local regulations.

- Do not dump cleaning solution into any stream or lake, or on areas where it can migrate into any stormdrain, waterbody, or sensitive habitat. Small quantities may be disposed of down sanitary drains into a municipal sewer system. Larger quantities may need to be transported to a municipal wastewater treatment facility. Consult the facility operator/manager prior to disposal.

- It may be possible to dispose of used cleaning solution over open land or on roadways where there is no potential for runoff into stormdrains, waterways, or sensitive habitats. Consult the READ for appropriate locations before using this method and check with the appropriate state or county authority as state or local permits may be required.

Storage

- *Sparquat 256®* and *Quat128®* can be stored up to two years in an unopened container without losing its effectiveness. Both should be stored in a cool, dry place, out of direct sunlight. Temperatures can range from 32° to 110° F.

Appendix C. Example Delegation of Authority

Delegation of Authority
Carlsbad and Las Cruces BLM Field Offices
US Forest Service Lincoln National Forest – Guadalupe Ranger District
New Mexico State Forestry - Capitan Ranger District

As of 1800, June 19, 2008, we have delegated authority to manage the Rocky Fire, Number D8BD, Carlsbad and Las Cruces BLM Field Offices, US Forest Service Lincoln National Forest - Guadalupe Ranger District, New Mexico State Forestry - Capitan Ranger District, to Incident Commander Craig Cowie and his Incident Management Team.

The fire, which originated as two separate lightning strikes occurring on June 17, 2008, is burning in the Segrest Draw area. My considerations for management of this fire are:

1. Provide for firefighter and public safety (zero tolerance policy).
2. Manage the fire with as little environmental damage as possible. Cultural concerns identified on maps should have minimum impact from suppression tactics. Consult with provided agency resource advisors before initiating action in such identified areas (i.e. Archeological Sites and Kuenzler Cactus).
3. Key cultural and resource features requiring priority protection are: caves, mescal pits, rock shelters, and rock art.
4. Key resources considerations are: protecting endangered species by avoiding dozer lines through known populations of Kuenzler Hedgehog Cactus and Cultural Sites.
5. Restrictions for suppression actions include: minimize engines and/or vehicles on slopes greater than 15 percent. No retardant will be used within 100 feet of water tanks for livestock to eliminate contamination (i.e. metal – open storage top water tanks).
6. Minimum dozer line construction in Kuenzler Hedgehog Cactus Habitat. Dozer line only permitted in these areas after consultation with designated agency resource advisor.
7. My agency Resource Advisor will be _____ (Natural Resource Specialist for BLM); _____ for NM State Forestry; _____ for USFS.
8. The NW and E flanks of the fire borders private property and must be protected if threatened.
9. Manage the fire cost-effectively for the values at risk. Daily briefing will be provided to agency administrators on current fire costs.
10. Provide training opportunities for the resources area personnel to strengthen our organizational capabilities. IMT can consult with Agency Administrators for specific IMT training needs.
11. Minimum disruption of residential access to private property especially the area identified as the Incident Command Post.
12. Sensitivity to short and long term impacts to land users. BLM permittees will be deferred grazing a minimum of two years if allotment is burned.
13. Consideration of State/Private jurisdiction as it relates to cost containment.
14. Amendments to this Delegation of Authority can be made if agreed upon by all Agency Representatives.

(BLM Signature and Title of Agency Administrator)

(Date)

Appendix D. Current and Proposed Staffing

The CFO fire management program provides suppression (initial and extended attack), investigation, prevention and education, and fuels management activities for public, state, and private lands that lie within the jurisdiction of the CFO. National support is provided when requested resources or personnel are available. Several CFO personnel, outside of the fire program, are involved with Incident Management Teams as primary and alternate members. The requisite ICS training and refreshers for these people to maintain proficiency and certification requires the CFO Fire Preparedness Program (2810) pay for their travel, per diem and salaries.

The program labor plan for the CFO is shown in the table below and was developed in accordance with the statewide and field office workforce plan. Personnel who are funded for the entire year (PFT) through fire or fuels are considered base staff. This base funding is allocated annually to the presuppression (2810), hazardous fuels-wildland (2823), and hazardous fuels – WUI (2824) sub-activity codes.

Project funded personnel and staff positions are personnel which receive fire or fuels funding for a portion of the work year. This level of funding for fire and fuels projects is required for specific project planning and implementation and is measured in work months. The Carlsbad Field Office requires the following staff, equipment, and funding to accomplish 100 percent of the program goals and objectives:

Resource	Current Staffing	Desired Staffing	Normal Activation	Sub Activity	Annual Cost
District Fire Management Officer	1	1	PFT	2810	\$105,596.00
Assistant District Fire Management Officer	1	1	PFT	2810	Funded by Roswell F. O.
Fire Management Specialist (Fuels)	1	1	PFT	2823	\$89,420.00
Program and Management Analyst	1	1 (PFT)	6 mos	2810	\$67,020.00
Dispatch Center Manager	1	1	PFT	2810	\$89,420.00
Logistics Coordinator	1	1	PFT	2810	\$75,296.00
Initial Attack Dispatcher	1	1 (PFT)	yearly	2810	\$59,724.00
Engine Module Leader	3	3 (PFT)	9 mos	2810	\$123,879.00
Engine Operator	3	3	6 mos	2810	\$71,256.00
Senior Firefighter	3	3	6 mos	2810	\$64,236.00
FFT1	6	6	3 mos	2810	\$22,167.00
FFT2	6	6	3 mos	2810	\$19,746.00
Type 4 Engine	1	1	Jan - Sept	2810	\$13,289.00
Type 6 engine	2	2	Jan - Sept	2810	\$3,549.00
Prevention supplies					\$2,500.00
Detection					\$7,500.00
Dispatch support					\$18,000.00
Fire cache replacement					\$7,500.00

Medical testing					\$15,000.00
Training					\$12,500.00
FMO vehicle					\$4,200.00.00
AFMO vehicle					Funded by Roswell F. O.
Fire Management Specialist Vehicle					\$4,200.00
Total					
7% for CFO overhead					
Total for program					

