

Environmental Assessment
Fire Management Program
(Prescribed Natural Fire)
Joshua Tree National Monument
California

I. Purpose and Need

There is a continuing need in Joshua Tree National Monument to manage fire to maintain, restore, and perpetuate natural processes in accord with NPS Management Policies and with the recently released findings of the Interagency Fire Management Policy Review Team, released in May of 1989. Among the recommendations of the team was that no prescribed natural fires be allowed until fire management plans meet various standards. Among those standards was the requirement that the National Environmental Policy Act (NEPA) process be followed for fire management plans. This environmental assessment explores the various ways in which that policy can be carried out and analyzes the impacts associated with a variety of fire management programs. The assessment covers the prescribed natural fire program for 1992 and the alternatives have been developed and impact topics developed for analysis based, in part, upon the public review conducted in 1992 of the prescribed burning program. It also serves to supplement the fire management sections of the environmental assessment, completed in 1976, of the resource management plan. This assessment and its analysis will be evaluated in future years as required by changes in policy, existing conditions, new information or other environmental factors which would have an effect on the environmental impacts resulting from activities carried out under any selected course of action.

II. Alternatives

Under all alternatives, human caused wildfires, escaped prescribed fires, and any fire which does not meet prescribed conditions will be suppressed.

A. Full Suppression

Under this alternative all ignitions, including those of a natural origin, would be suppressed and no prescribed fire would be carried out. Any fuel hazard removal would be strictly accomplished by mechanical means to the extent practicable and consistent with the maintenance of the natural environment. Mechanical removal would be limited primarily to protecting developed areas or park boundaries from wildfire. Suppression would be accomplished through the use of confinement, containment or control tactics.

B. Prescribed Burning Only

Prescribed burns will be used in zones of hazardous fuels. In Joshua Tree National Monument, hazardous fuel zones are defined as areas adjacent to the Park boundary where fuel types are such that fires of any source would be difficult to contain within the Monument. Prescribed burns are intentionally set fires carried out in defined zones and at certain defined times under conditions of weather and fuels that would allow restriction of the fire to a pre-determined area while being of sufficient intensity to accomplish the desired results for a specific management purpose. Under this alternative no natural ignitions would be allowed to burn. However, prescribed burns may be conducted in areas in which these natural fires have been suppressed. As is the case with natural fires, a mosaic of burned and unburned areas would be created.

C. Prescribed Natural Fire Program Only

Under this alternative natural ignitions would be allowed to burn in certain areas under certain conditions favorable to their management. All human caused fires would be promptly suppressed as would fires which pose a threat to life or property. Only fires of a natural origin would be allowed to burn, and only under prescribed conditions. Fires would not be ignited by management as prescribed natural fires for any reason.

D. Combined Prescribed Burning and Prescribed Natural Fire Program (Proposal)

Under this alternative elements of alternatives B and C above would be integrated. Natural ignitions would be allowed to burn in certain areas and under certain conditions favorable to their management. Prescribed burns would be ignited by park personnel to reduce hazardous fuels around developments and near park boundaries. The purpose of the prescribed burns would be to reduce fuel loadings to natural levels and to enhance the opportunity for and management of prescribed natural fires and to simulate natural fire. Suppression would be continued in developed areas, near park boundaries with jurisdictions having different fire management objectives, and in areas where human life would be placed at risk and when conditions are outside of prescription. Special Management Areas (SMAs) would continue to be identified throughout the parks in which natural ignitions will either be suppressed or tightly controlled to eliminate potential resource degradation. Examples of SMAs are historical sites such as Key's Ranch or other developed zones with structures or facilities.

Alternatives Considered but Rejected

No Action - Allowing All Natural Fires to Burn in All Areas and at All Times

This alternative was considered but rejected due to the unacceptable environmental, social and economic costs, and the risk to human life.

Full Mechanical Simulation of Fire Effects

This alternative was considered but rejected due to the high implementation costs and the unsatisfactory residual effects on the natural environment. However, the proposal (alternative D) allows for some mechanical removal of fuels around developments and adjacent to boundaries as circumstances warrant.

III. Affected Environment

A. Unit Location and Description

Joshua Tree National Monument is located in the Mojave Desert of Southern California. It lies along the east/west Transverse Ranges of the Little San Bernardino Mountains. The south boundary follows the base of these mountains along the northern perimeter of the Coachella Valley and the Monument's north boundary is defined by the Morongo Basin. The counties of San Bernardino and Riverside bisect the Monument latitudinally.

The Monument is on the eastern end of the Transverse Ranges. These ranges include the Little San Bernardino, Cottonwood, Hexie, Pinto, Coxcomb and Eagle Mountains. The western half of the Monument is mostly above 4,000 feet in elevation. The eastern portion averages 2,000 feet above sea level. Large major valleys include the Pinto Basin, Juniper Flats, Covington Flats, Pleasant, Queen and Lost Horse Valleys. Mountains are typically steep and bisected by many steep canyons.

B. Neighboring Jurisdictions and Fire Policies

The Monument is surrounded by public domain land administered by the Bureau of Land Management along the west, south, east and northeast boundaries. These areas have sparse continuous fuels and there is little concern of fire crossing from one jurisdiction to another. The northwest boundary borders along the communities of Twentynine Palms, Joshua Tree, Yucca Valley and private lands under the jurisdiction of the California Department of Forestry and Fire Protection (CDF). Joshua Tree and Yucca Valley contracts with CDF for fire suppression. The nearby CDF areas generally conduct full fire suppression operations. The Monument has mutual suppression agreements with BLM, Twentynine Palms, and the CDF.

C. Fuels

Unlike other vegetation systems with heavy fuels, fuel accumulation associated with prolonged fire suppression has not been a problem within

the Monument. Fire suppression has only affected fire sizes and therefore, unnaturally influenced fire return frequencies. Fuels within the Monument vary dramatically from zones virtually free of vegetation to areas above 5,000 feet which may contain heavy fuels such as pinyon/juniper and scrub oak. Most fuels are patchy with the exception of blackbrush. Additionally, most fuels are only capable of sustaining fire through one burning period. The principal exception to this is heavy fuels in the bottoms of canyons that are capable of holding fire through night conditions.

D. Resources Affected

1. Vegetation: The diversity of the flora of the area is indicative of the Monument's location in a transition zone between the Colorado Desert, generally at elevations below 2,000 feet, and the cooler and wetter Mojave Desert at elevations from 2,000 to 5,000 feet. It is this diversity of plant life which, in part, contributed to the preservation of this area.

Vegetation types in the Park have been divided into three primary associations according to the classification system devised by Holland (1986):

Mojave Mixed Steppe

Joshua trees, galleta grass, needle grass

Blackbrush Scrub

blackbrush, Mojave yucca, Joshua tree, California juniper

Mojavean Pinyon Juniper Woodland

pinyon pine, scrub oak, California juniper

These associations represent the different fuel types found in the Monument.

2. Wildlife: The rich flora is counterpart to equally diverse wildlife communities. Although large vertebrates such as deer and bighorn sheep are well established in the Monument, the greatest diversity of wildlife is found among the small vertebrates and invertebrate residents.

As would be expected, reptiles are richly represented in this area. Many snakes, lizards and the rapidly disappearing desert tortoise are found throughout the Monument.

Birds are numerous and diverse. More than 230 different species nest or visit habitats within the Monument. The Monument is adjacent to a major migratory flyway in the Coachella Valley. During stormy weather, many

areas within the Monument become critical stopover sites for unexpected species such as loons, herons, egrets, grebes and avocets.

Mammals include bighorn sheep, mule deer, mountain lion, bobcat, coyote, grey fox, kit fox and many smaller species. Rodents are diverse and well represented throughout the Monument.

3. Endangered and Threatened Species: Three species of plants are currently listed as category II, threatened or endangered, by the U.S. Fish and Wildlife Service. Until these species are reclassified, they must be managed as endangered species.

Foxtail Cactus	<u>Coryphantha vivipara var alversonii</u>
California Ditaxis	<u>Ditaxis californica</u>
Rock Pennyroyal	<u>Monardella robisonii</u>

Rare vertebrate species include the desert bighorn sheep, Orvis canadensis, and desert tortoise, Gopherus agassizii.

4. Air Quality: Air quality is recognized as one of the Monument's natural resources. Some views have already diminished because of a gradual deterioration of air quality in recent decades, primarily caused by polluting sources in the Los Angeles basin.

Standard visual range in the Monument is highest during winter, lower during fall and spring, and lowest during summer. Smog related ozone concentrations follow a similar pattern peaking during summer months at levels frequently in violation of both state and federal standards.

Visibility is currently monitored by an automatic 35 mm camera system, and ozone is monitored by instruments employing U.V. absorption technology. Biological effects monitoring for ozone is also in progress, and visible injury to sensitive plant species has been attributed to ozone.

Besides existing air pollution sources from the Los Angeles basin, other sources may develop in the future. For example, a major sanitary landfill site southeast of the Monument is proposed and under consideration. Electrical generation facilities have also been proposed for construction near the Monument.

Air pollution is detectable in the Monument on most days. The Little San Bernardino Mountains form a barrier to the air pollution sources from the Los Angeles basin, with pollutants filtering into the Monument airshed from southwest to northeast.

Because of its Wilderness Units, Joshua Tree National Monument carries a mandatory Class I status as designated by Congress. The Clean Air Act (Section 169A) grants the Service substantial authority and

responsibility in "prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from man-made pollution."

5. Cultural Resources: Archeological and historical remains within the park represent evidence of man's efforts to use the natural resources. Two major periods of aboriginal occupation separated by several thousand years occur. The oldest period is found in Pinto Basin sites, one of the first "early man" areas to be identified in California. These post-Pleistocene sites contain choppers and large projectile points indicative of a big game economy.

Tools of more recent prehistoric people indicate adaptation to a desert environment. Primary sources of food were seeds and small animals; mobility was essential for finding sufficient feed and water for survival. No structures of substance remain but natural rock features such as rock overhangs, caves and rockpiles were used for shelter. Natural "tanks"; or potholes, were used as water sources supplementing springs and oases. Smaller caves and crevices were used to store food in ollas for future needs. Extensive rock art concentrations are located east of Cottonwood Springs, south of Fortynine Palms Oasis, the Desert Queen mine area, and the largest concentration found in the Wonderland of Rocks.

In more recent prehistoric and historic times the area now covered by the park was used by Cahuilla, Chemehuevi, and Serrano people. Trails, important in the trade economy of these peoples, crossed the park. Archeological evidence of this more recent Native American use has been found primarily in rock shelters, although the largest single site is that of the late 19th century Indian village at the Twentynine Palms Oasis.

More recent remains are the remnants of mining. During the last quarter of the 19th century and the first third of the 20th century, there was a steady influx of ranchers and miners hoping to make their fortunes in cattle or gold, or both.

These prehistoric and historic remains representing Joshua Tree's cultural inventories must be considered in fire management planning. Well over a thousand sites have been recorded.

Six sites representative of mining and ranching operations are on the National Register of Historic Places. Ranch sites are the Ryan House and Lost Horse Well, Barker Dam, Cow Camp, and the Desert Queen Ranch (Keys Ranch). Wall Street Mill and Desert Queen Mine represent mining operations. Lost Horse Mine and two oases, the Twentynine Palms Oasis (Oasis of Mara) and the Cottonwood Oasis, known for their historical significance, have been nominated and declared eligible for inclusion to the National Register. Three mining sites have been recently nominated

but no determination on their status has been made. They are the Pinyon Historical Mining District, Eagle Cliff Mine and Pinto Wye Arrastra. In addition, numerous structures associated with historic sites in the park have been included in the List of Classified Structures.

6. Soils/ Water Resources: Throughout the Monument, most soils are poorly developed. The eastern half is mostly alluvial deposits with no true soil structure. This granitic full ranges from boulder size through gravels and coarse sand. These are modern deposits consisting of fan gravels and other alluvium being deposited by present drainage systems.

The prevailing winds of the Mojave Desert are from the west. Much of the wind blown sand, picked up in the open expanses, is carried eastward and deposited in sheets and dunes. The Pinto Basin has extensive sand deposits but few well developed dune systems. The only real soil formation exists in the large basins of the Covington Flats. Granitic in origin, this area does have poorly developed horizons. The A horizon is narrow but definable. A clay pan, approximately three feet below the surface, underlies most of the area.

There are no year-round surface streams in the Monument so prescribed and prescribed natural fire would have no affect on water resources in the Park.

7. Visitation: In 1991, visitation was 1,150,026. The majority occurred during January through May, and October through December. Visitation for the year increased 12 percent from 1990. Overnight back-country use increased 8.8 percent from 1990. The major visitor access to the Monument is from State Route 62 through the north entrance in Twentynine Palms the west entrance in Joshua Tree and the south entrance off Interstate 10.

IV. Environmental Consequences

Fuels

Alternative A (Full Suppression)

Under this alternative fire would be eliminated from its natural role in the vegetation system. Suppression activity would continue to adversely affect park resources.

Alternative B (Prescribed Burning Only)

Under this alternative there would be a replacement of natural fires with prescribed burns. The effect of natural fire on fuel reduction would be replaced by a program of planned prescribed burning. The effects of fire on the fuels would be influenced by the timing and pattern of ignition rather than the pattern of natural ignition, creating an artificial distribution of effects.

Alternative C (Prescribed Natural Fire Program Only)

This alternative would preserve natural ignition patterns and a mosaic of fire effects. Unfortunately, natural ignition cannot be counted on to provide hazard fuel reduction. The proximity of hazard fuel zones to the Monuments boundary necessitates the use of carefully controlled weather conditions to assure safe conditions for burning. However, should prescribed conditions not materialize, natural ignitions would be suppressed.

Alternative D (Prescribed Burning/Prescribed Natural Fire Program)

As in alternative C, this alternative preserves the natural ignition patterns and their effects. However, prescribed burning would be accomplished around developments, near the park boundary, and in other areas where natural ignitions are not acceptable.

Air Quality/Smoke Management

Alternative A (Full Suppression)

Under this alternative there would be a short term reduction in the generation of particulate matter from fires because all fires would be suppressed.

Alternative B (Prescribed Burning Only)

Under this alternative the highest degree of air quality management would occur. This results from the ability to schedule burns to coincide with periods of acceptable air ventilation and, concurrently, reduce contribution by large wildfire to air pollution. Also, natural fires would be suppressed.

Alternative C (Prescribed Natural Fire Program Only)

Because of the pattern of natural ignitions, there is a likelihood that such ignitions would occur or that fires would persist and continue to burn into periods of poor air ventilation. The long term impact on air quality of this alternative would be less than alternative A but more than alternative B.

Alternative D (Prescribed Burning/Prescribed Natural Fire Program)

The impact on air quality under this alternative would be essentially the same as C with the exception that the ability to manage the impact of smoke on sensitive developed areas, roads, and local communities would be improved. This results from the ability to set prescribed burns to reduce fuels or to simulate natural fire around such areas during periods of good air ventilation.

Safety

Alternative A (Full Suppression)

The infrequent but likely occurrence of high intensity fires burning in accumulated fuels resulting from fire suppression would pose a high threat to the safety of both firefighters and the public. Efforts at direct attack or suppression of intense fire would also pose a threat to firefighter safety due to the nature of such activity. Examples of this are fireline construction,

cutting down trees, helicopter transport, backfire operations, and respiratory complaints due to exposure to smoke.

Alternative B (Prescribed Burning Only)

The ignition of prescribed burns allows fireline construction to be accomplished in a safer manner due to the ability to schedule such activities and to plan their construction in an orderly fashion. Fires are ignited in a preplanned pattern and generally are of a low intensity. Hazards associated with suppression of natural ignitions remain the same as alternative A.

Alternative C (Prescribed Natural Fire Program Only)

As a result of the natural ignition patterns a larger threat to safety occurs in this alternative than under alternative B. However, since suppression activities do not occur in all instances, the safety hazards associated with those activities occur at a lesser degree.

Alternative D (Prescribed Burning/Prescribed Natural Fire Program)

As in C, fire suppression activities would be reduced. However, some areas with fuels which would result in unacceptable high intensity fires due to previous fire suppression activities would be burned under prescribed conditions with the same safety impacts as described in alternative B.

Vegetation Management

Alternative A (Full Suppression)

Under this alternative, unnatural successional patterns would occur due to the removal of fire from ecosystems which depend upon fire for their survival. Suppression activities would result in severe resource impacts from fire lines, helispot construction, and other related activity.

Alternative B (Prescribed Burning Only)

Under this alternative, the natural ignition pattern of fire on the landscape would be replaced by a more systematic ignition pattern. This would create an arbitrary pattern of fire effects. Impacts from suppression of natural ignitions are the same as alternative A.

Alternative C (Prescribed Natural Fire Program Only)

Under this alternative, a more natural pattern of fire effects would occur. However, there is a greater likelihood that these fires may impact areas which also have scenic resources, management constraints, or other sensitive resource concerns.

Alternative D (Prescribed Burning/Prescribed Natural Fire Program)

This alternative would have a more natural pattern of fire effects on vegetation. In vegetation around developments or in scenic areas (Special Management Areas), prescribed burning would be done to simulate the effects of natural fire on vegetation.

Wildlife

Alternative A (Full Suppression)

Under this alternative, fire dependent wildlife populations would be influenced indirectly by the impacts on associated vegetative communities. Species which are dependent upon fire influenced ecosystems would decline and be replaced by species which are more tolerant to conditions created by lack of fire. Resultant artificially induced imbalances would occur. Also, inadvertent destruction of wildlife habitat could occur due to the construction of fire lines, helispots, fire camps, and other activities associated with full suppression activities.

Alternative B (Prescribed Burning Only)

With prescribed burns, conditions favorable to fire dependent species would be created but not in the manner associated with natural ignitions. The distribution of habitat would be less natural and determined by prescribed burn timing, locations, conditions, and pattern as compared to natural fires. Impacts from suppression of natural ignitions would be the same as alternative A.

Alternative C (Prescribed Natural Fire Program Only)

With a prescribed natural fire program a more natural distribution of habitat areas would occur. Prescriptions for areas subject to past fire suppression containing unnatural amounts of fuel would restrict the likelihood of fires being allowed to burn in these areas. Since the opportunity for prescribed natural fires to occur in these areas would be restricted, this would have the potential for long term adverse impacts on habitat.

Alternative D (Prescribed Burning/Prescribed Natural Fire Program)

This alternative would maintain a more natural distribution of fire affected habitat. In the areas which have been affected by past fire suppression activities, prescribed burning would be done to more gradually re-introduce fire into the area, decreasing the potential for long term adverse impacts on habitat as a result of unnaturally intense fires.

Threatened/Endangered and Sensitive Species

Alternative A (Full Suppression)

Populations of fire dependent species which are already rare due to previous fire suppression activities may be further reduced due to high intensity fires. Fire suppression activities may further damage habitat. Species which favor undisturbed plant communities and are not fire dependent may show a temporary increase in population.

Alternative B (Prescribed Burning Only)

With the scheduled nature of activities under this alternative, there is a greater ability to plan for, locate, and avoid the disturbance of these populations due to either ignition or fire control activities. Impacts of suppression of natural ignitions are the same as alternative A.

Alternative C (Prescribed Natural Fire Program Only)

Due to the nature of the ignition pattern, sensitive populations may be affected by the fire before they could be located and protected. Species which are fire dependent would benefit from the occurrence of fire in a more ecologically desirable natural pattern.

Alternative D (Prescribed Burning/Prescribed Natural Fire Program)

This alternative combines some of the impact elements of B and C. Through prescribed burns, species which are sensitive to fire can be located and planned for. Natural ignition patterns would be maintained through prescribed natural fires thus benefitting species which are dependent upon fire for their perpetuation.

Visual or Aesthetics

Alternative A (Full Suppression)

This alternative eliminates the short term visual effects resulting from numerous smaller frequent prescribed fires. Some unsightly and potentially long lasting scars from the fire suppression activity (i.e. fire lines, stumps, pink colored retardant, etc.) may also result even under the most carefully conducted fire suppression operations.

Alternative B (Prescribed Burning Only)

Through the use of prescribed burns, areas with sensitive visual resources can be protected from fire and certain fire suppression activities, or burned with lower intensity fire, resulting in minimal change to the visual resource. Some firelines would be cut and maintained to define units

Alternative C (Prescribed Natural Fire Program Only)

This alternative would result in a greater range of impacts to the visual resources as a result of the various levels of fire intensity. Due to the fact that most of these fires would occur in more remote areas, fewer visitors would see the visual effects of such fires. In developed areas, few prescribed natural fires would be allowed to burn due to smoke and safety constraints. As a result, the vegetative patterns in such areas would present an unnatural appearance.

Alternative D (Prescribed Burning/Prescribed Natural Fire Program)

In more remote areas, a broader range of visual effects would be allowed to occur. In areas containing sensitive visual resources, as in certain SMAs, prescribed burning would be done to minimize impacts to the visual character of these resources. There would be a greater long term opportunity to protect sensitive visual resources from wildfire due to fuel reduction from prescribed burning.

Cultural Resources

Alternative A (Full Suppression)

Known cultural resources would receive protection from fire. However, cultural resources which can be damaged by fire may be lost through an intense fire which is beyond the ability of fire control forces to suppress. There would be an increased possibility of destruction of previously unrecorded cultural resources as a result of fire control activities such as fire line construction and backfiring operations.

Alternative B (Prescribed Burning Only)

With the scheduled nature under this alternative, there is an ability to plan for, locate, and avoid the disturbance of cultural resources due to either ignition or fire control activities. Also, dangerous fuel build up in the vicinity of known cultural resources would be reduced, further enhancing the protection of these resources from wildfire. For natural ignition suppression activities the impacts such as fire line construction would be the same as alternative A.

Alternative C (Prescribed Natural Fire Program Only)

Due to the nature of the ignition pattern, sensitive but unrecorded cultural resources may be affected by the fire before they could be located and protected. Known cultural resources would be excluded from prescribed natural fire areas.

Alternative D (Prescribed Burning/Prescribed Natural Fire Program)

This alternative combines the impact elements of B and C. With the planned use of prescribed burns, cultural resources can be located in advance and protected from the effects of fire. Known cultural resources would be excluded from prescribed natural fire areas.

Visitor Use

Alternative A (Full Suppression)

In the short term there would be no appreciable impacts on the visitor use levels except for those impacts described under the preceding Visual Impacts Section. Visitor appreciation and understanding of the natural scene may be influenced by the unnatural structure and composition of the ecosystem due to the exclusion of natural fires. The long term likelihood of a catastrophic fire would result in safety and visual impacts.

Alternative B (Prescribed Burning Only)

The effects of safety and aesthetics on visitor use would be the same as described in preceding sections. Because of the return of fire to the ecosystem, visitors would experience a more natural ecosystem structure than in alternative A. However, the experience would be affected by the frequency and pattern of prescribed burns, which may not produce the variation of effects found in natural fires.

Alternative C (Prescribed Natural Fire Program Only)

This alternative produces a more natural pattern of fire effects and presents a more natural setting for the park visitor. Due to the variable ignition pattern, visitor use of the parks may be influenced by the timing and location of the occurrence of lightning fires.

Alternative D (Prescribed Burning/Prescribed Natural Fire Program)

This alternative would maintain the more natural and variable effects of fire as described in alternative C. However, prescribed burning around areas of high visitor use could be accomplished to maintain the influence of fire while minimizing the impact of fire on visitor use patterns.

Soils

Alternative A (Full Suppression)

Some erosive effects would result from the construction of fire lines and other ground disturbing activity connected with suppression.

Alternative B (Prescribed Burning Only)

Because of the controlled area, timing, and intensity of this activity, there should be little or no long or short term effects on soils. There could be a moderate increase in run-off yield due to the reduction of vegetation resulting from a prescribed burn. Prescribed burns could be designed to minimize the effects of erosion.

Alternative C (Prescribed Natural Fire Program Only)

Depending on the location and intensity of the fire, there could be some soil erosion and increase in run-off. However, all erosion that would occur would be a part of the complete ecological cycle.

Alternative D (Prescribed Burning/Prescribed Natural Fire Program)

The impacts of this alternative are essentially the same as alternative C. However, sensitive drainages can be better protected from high intensity fire by prescribed burning. For example, prescriptions can be designed to reintroduce fire into the area by use of a low intensity fire to avoid subsequent erosion to the maximum extent possible.

Economic

Alternative A (Full Suppression)

In the short term there would be a reduction of economic loss from suppression of potentially damaging fires, however, this program would be costly. There would be a potential for the direct loss of capital improvements as a result of catastrophic fire events.

Alternative B (Prescribed Burning Only)

Fuel hazard reduction around structures and other improved properties would reduce potential economic loss from catastrophic fire. Use of human induced prescribed burns would introduce an element of risk of escape and resulting

economic consequences. However, the precautions in place in conducting this program would minimize this risk.

Alternative C (Prescribed Natural Fire Program Only)

There is a risk of economic loss from the escape of prescribed natural fires. Because prescribed natural fires would not be permitted in developed zones, they would not result in economic loss from the destruction of property. Prescriptions which set forth the conditions under which these fires are allowed to burn would restrict the opportunity for prescribed natural fires to burn, and fuels would continue to accumulate. As a result, the wildfire hazard around developments would persist as would the potential for loss.

Alternative D (Prescribed Burning/ Prescribed Natural Fire Program)

Impacts of this alternative would be essentially the same as alternative C. In addition, prescribed burns carried out to reduce the risk of fire damage in developed areas would further minimize potential economic losses resulting from damage to developments or disruption of visitor use.

Overall Program Risk

Alternative A (Full Suppression)

In the short term, full suppression poses the least amount of risk to park and neighboring resources and developments. The reasons for this have been discussed in the preceding impact sections on fuels and safety. This alternative presents the greatest risk to the resources of the parks which are dependent upon fire for their perpetuation.

Alternative B (Prescribed Burning Only)

This alternative presents the least amount of short and long term risk because prescribed fires are started by trained park personnel in prepared units under prescribed conditions that present the greatest opportunity of control. Concurrently, natural ignitions are suppressed. Nevertheless, there would remain some possibility of escape particularly from unforecasted weather conditions during large prescribed burning operations. There would be loss to the natural character due to less variation in fire effects and the pattern and amount of ignition.

Alternative C (Prescribed Natural Fire Program Only)

This alternative presents the highest degree of risk in the short run because of the longevity of the fire event which would be influenced by variations in weather patterns. The longevity varies because the rate of spread from a single point ignition (i.e. lightning strike) is slower than under alternative B which would feature multiple ignition points. This alternative would present the most natural conditions because of the variety of fire effects which would occur as weather, topography, and fuel conditions change.

Alternative D (Prescribed Burning/Prescribed Natural Fire Program)
Risks from this alternative would be less than A and C but slightly more than B alone.

V. Consultation and Coordination ..

A 1976 environmental assessment was completed and received public review on the natural resources management plan for Joshua Tree National Monument including use of prescribed fire.

In 1987 a comprehensive fire management plan was completed including prescribed burning as well as prescribed natural fire. This plan remained in effect until 1988 when the prescribed natural fire portion was suspended through Servicewide directive.

This document will be sent to state, local and federal agencies having an interest in fire management in this area and a variety of interested individuals and groups.

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Glossary

Confine - a wildfire that remains within predetermined natural boundaries, until out.

Contain - a wildfire that is restricted to a certain area, using natural or constructed barriers that will stop the spread of the fire under the prevailing and forecasted weather conditions, until out.

Control - a wildfire aggressively fought through the skillful use of personnel, equipment and aircraft to establish fire lines around a fire to halt its spread, and to extinguish all hotspots until out.

Ecosystem - an interacting system of interdependent organisms (community and the physical set of conditions upon which they are dependent and by which they are influenced).

Fuel - the materials which are burned in a fire: duff, litter, grass, dead branch wood, snags, logs, stumps, weeds, brush, foliage, and, to a limited degree, green trees.

Fuel Loadings - amount of dead fuel present on a particular site at a given time; the percentage of it available for combustion changes with the season.

Prescribed Fire - skillful application of fire to natural fuels under conditions of weather, fuel moisture, soil moisture, etc., that will allow confinement of the fire to a predetermined area and at the same time will produce the intensity of heat and rate of spread required to accomplish certain planned benefits to one or more objectives of silviculture, wildlife management, grazing, hazard reduction, etc. Its objective is to employ fire scientifically to realize maximum net benefits at minimum damage and acceptable cost.






Prescribed Natural Fire - a lightning caused fire allowed to burn in certain areas that meet prescription criteria, and can achieve approved resources management objectives.

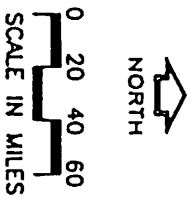
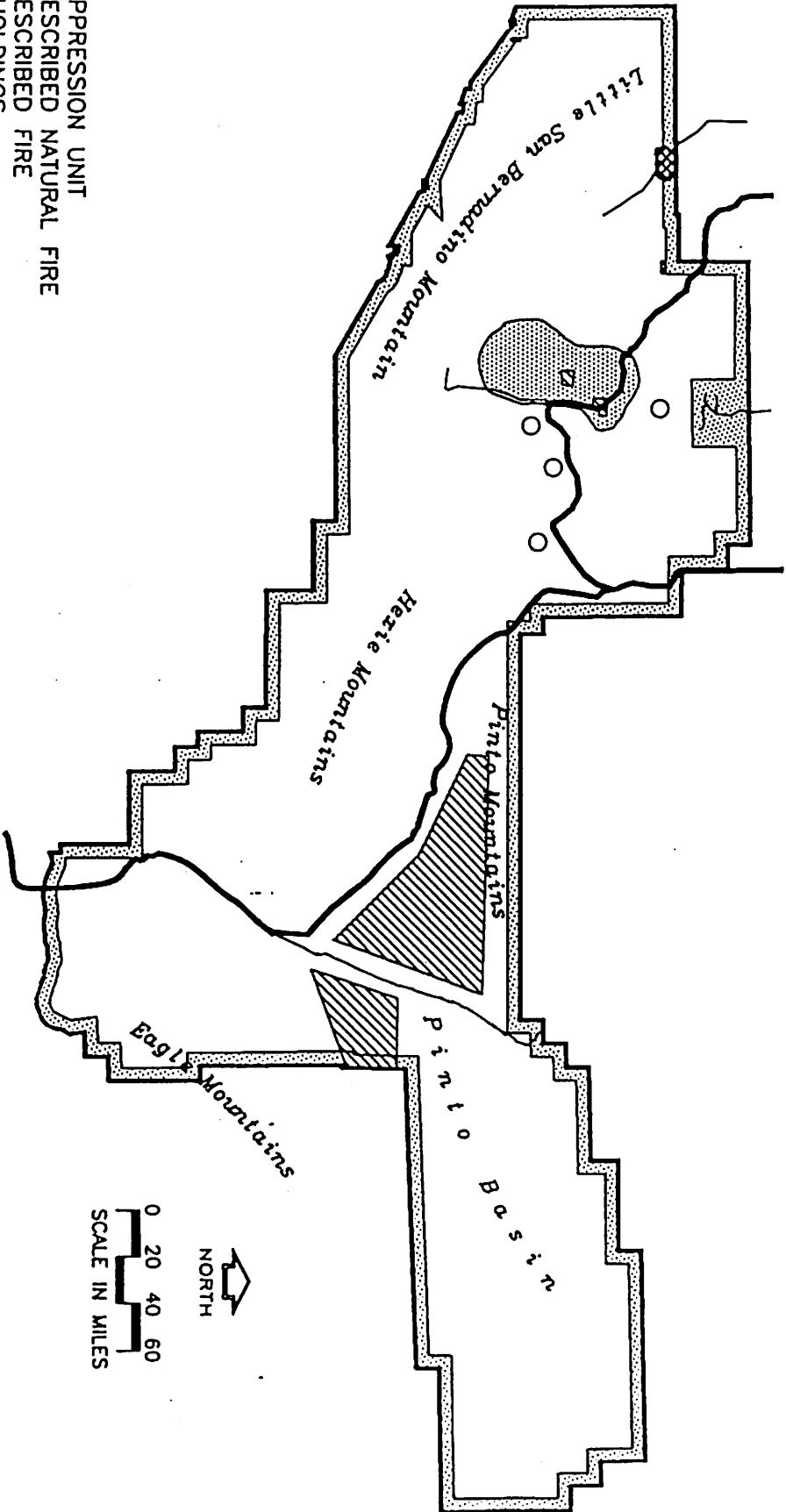
Prescribed Burning - the deliberate ignition of a fire in accordance with an established management plan to accomplish specific objectives under given prescriptions for weather and fuel conditions.

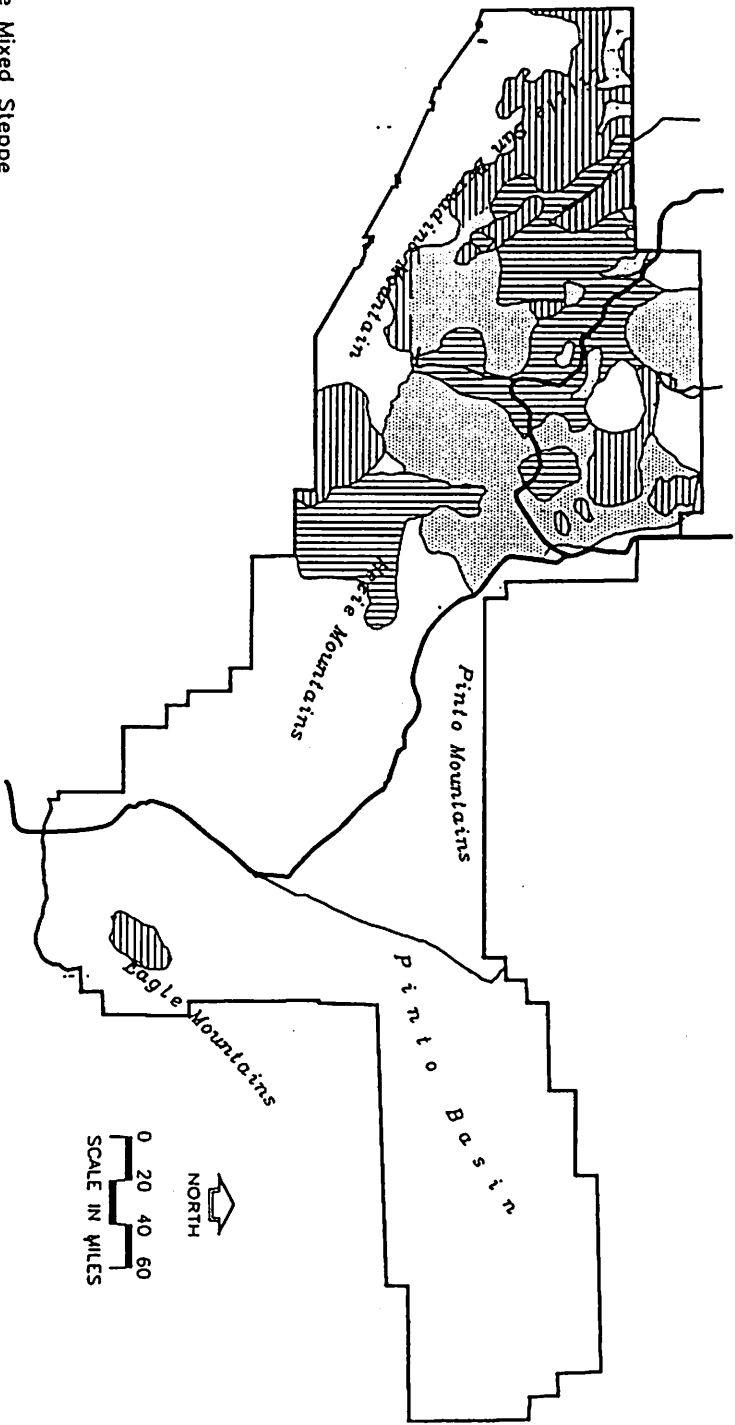
Suppression - includes all actions to extinguish or limit the growth of fires, regardless of the strategies and tactics chosen.

Wildfire - a fire that is not burning in accordance with established prescription criteria.





Legend

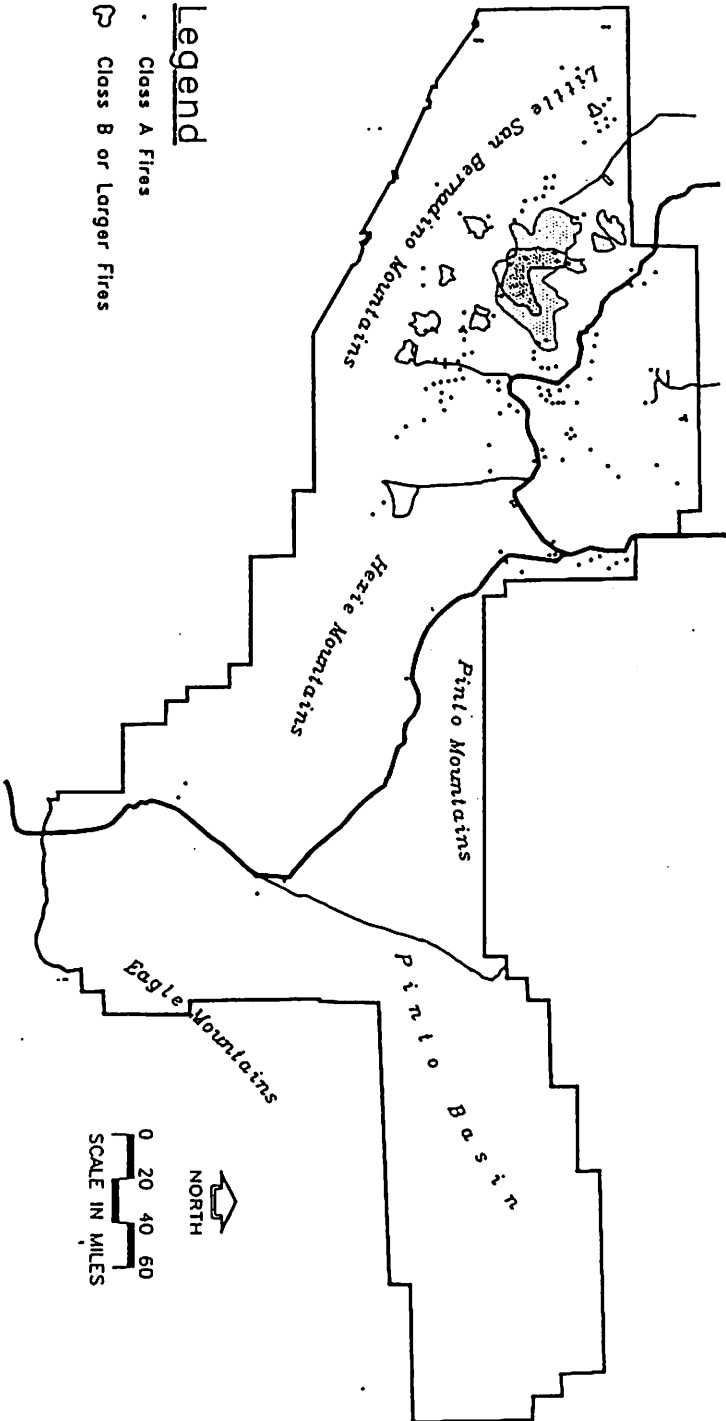
-  FMU-1 SUPPRESSION UNIT
-  FMU-2 PRESCRIBED NATURAL FIRE
-  FMU-3 PRESCRIBED FIRE
-  PRIVATE INHOLDINGS
-  CAMPGROUND OR HISTORIC STRUCTURE





Legend

-  Mojave Mixed Steppe
-  Blackbrush Scrub
-  Mojavean Pinyon Juniper Woodland
-  Mojave Mixed Steppe



Legend

- Class A Fires
- ☐ Class B or Larger Fires



NORTH

0 20 40 60
SCALE IN MILES

**FIRE OCCURRENCE TABLE FOR
JOSHUA TREE NATIONAL MONUMENT
FROM 1964 TO PRESENT**

Appendix B Fire Occurrence Table for Joshua Tree National Monument from 1964 to Present

Prescribed Natural Fire			Prescribed Fires		Wildfire		Total Acreage Burned
Year	No.	Acres	No.	Acres	No.	Acres	
1964	--	--	--	--	2	14.17	14.17
1965	--	--	--	--	6	2.14	2.14
1966	--	--	--	--	3	0.03	0.03
1967	--	--	--	--	5	62.04	62.04
1968	--	--	--	--	1	122.00	122.00
1969	--	--	--	--	Not Available		
1970	--	--	--	--	3	3.00	3.00
1971	--	--	--	--	Not Available		
1972	--	--	--	--	12	1.09	1.09
1973	--	--	--	--	13	1.94	1.94
1974	--	--	--	--	17	0.17	0.17
1975	--	--	--	--	2	0.01	0.01
1976	--	--	--	--	2	0.02	0.02
1977	--	--	--	--	2	0.02	0.02
1978	--	--	--	--	3	6,142.02	6,142.02
1979	--	--	--	--	14	1,310.10	1,310.10
1980	--	--	--	--	7	200.05	200.05
1981	--	--	--	--	5	5.04	5.04
1982	--	--	--	--	11	128.53	128.53
1983	--	--	4	1.0	5	4.01	5.01
1984	--	--	5	52.0	32	364.25	416.25
1985	--	--	3	1.4	5	43.21	44.61
1986	--	--	--	--	3	1.20	4.20
1987	1	20.0	1	1.0	19	1,615.20	1,636.20
1988	1	5.0	1	25.0	9	2.90	32.90
1989	--	--	2	25.5	3	2.6	28.10
1990	--	--	--	--	5	1.4	1.40
1991	--	--	--	--	6	3.4	3.40

**OPERATIONAL PLAN AND MASTER AGREEMENT BETWEEN
JOSHUA TREE NATIONAL MONUMENT AND
CALIFORNIA DIVISION OF FORESTRY**

The Operational Plan and Master Agreement between Joshua Tree National Monument and California Department of Forestry Region III are on file in the Fire Management Office at Joshua Tree National Monument.

DELEGATION OF AUTHORITY

To: _____ Incident Commander

As Superintendent of Joshua Tree National Monument, I have the ultimate responsibility for protection of the Monument's resources and the lives of Monument visitors and employees. Your expertise in the area of fire management will assist me in fulfilling that responsibility during the present incident. By means of this memorandum on this day of _____ at _____ hours, I am delegating to you the authority to carry out the task of suppressing the _____ Fire in accordance with the attached Line Officer's Briefing Package.

The package will provide you with my priorities in fire suppression, specific restraints which are necessary to protect the Monument's natural and cultural resources, and other guidelines for carrying out your overall task of fire suppression within the Monument. In addition, the Line Officer's Briefing Package will provide you with a list of Monument personnel who have been assigned to assist you in carrying out your duties and a list of facilities which are available to you under the conditions stated.

Upon your arrival, I (or my appointed alternate) will conduct an onsite briefing for you and your Incident Management Team. A fireline briefing will also be conducted for you and your team by the current (local) incident commander.

Superintendent
Joshua Tree National Monument

DELEGATION OF AUTHORITY

_____ Fire
As of _____ hours, I have delegated authority to manage the _____ Fire, number _____ to Incident Commander _____ and his/her Incident Management Team.

My considerations are as follows:

1. Provide for fire fighter and visitor safety.
2. Fire suppression methods used should be those which cause minimum resource damage, while accomplishing effective control. Cost effectiveness and efficiency should be an important part of your decision making process.
3. Suppression activities will avoid disturbance of all endemic plants and animals and their habitats, as well as archeological and other cultural sites, whenever reasonably possible. A Wildland Fire Resources Advisor will be present during all suppression activities. Maps of sensitive natural and cultural resources are available from the Resources Management Division.
4. A key cultural feature requiring priority protection is Keys Ranch.
5. Restrictions for suppression actions include no tracked or wheeled vehicles in the wilderness area, except where roads exist and are identified for use. Vehicles and heavy equipment may be used only along designated roads. Use of bulldozers, graders, etc. off-road is permitted only with the expressed written approval of the Superintendent.
6. Aerial and retardant drops will be limited to use for preservation of human life and specific protection, when the value of that specific resource justifies the potential impact to general resources from such use. When feasible, utilize water drops instead of fire retardant chemicals. Fugitive retardant may be used when necessary. Use of non-fugitive retardant must be approved in writing by the Superintendent.
7. Use of Class A foam is approved during wet line construction and mop up.
8. Helicopters may be used if such use is considered essential to the suppression effort. Existing helispots or natural landing sites must be employed, unless otherwise specifically approved by the Incident Resource Advisor.
9. Chainsaws and portable pumps may be used at the discretion of local fire fighting personnel.
10. My Agency Advisor will be park Fire Management Officer Tom Patterson.

David E. Moore
Superintendent

Date

Enclosed: Agency Administrator Briefing Package

SPECIFIC ELEMENTS OF AN AGENCY ADMINISTRATOR BRIEFING

A. General.

1. Incident Name _____
2. Approx. Size _____ @ _____
Date Time
3. Location _____
4. Date of start or escape _____
5. Overhead and Suppression resources currently on incident and present Incident Commander.

6. General fire situation in area _____

7. Other organizations requiring coordination (Area Command, Expanded Dispatch, MAC, other agency jurisdictions) _____

8. Law Enforcement/ongoing investigations.

9. Financial considerations/limitations?

B. Fire Behavior Considerations.

1. Weather Situation.

2. Fuel Types.

3. Topography.

4. Fire Behavior.

C. Suppression considerations established through and for the EFSA Development.

1. Priorities.

2. Environmental Constraints.

3. Utility Corridors.

4. Air Operations.

a. Effectiveness.

b. Hazards.

c. Air Space Restrictions.

d. Airports, Heliports, Helispots.

5. Suppression policies.

6. Other.

D. Environmental, social, political, economic considerations.

1. Environmental.

2. Social.

3. Political.

4. Economic.

E. Logistics considerations.

1. I.C.P. and Base Location.

2. Access.

3. Resources ordered.

4. Communications.

a. Radio.

b. Telephone.

c. Electronic (computers).

5. Expanded dispatch.

a. Procurement arrangements.

b. Agreements.

6. Infrared Status.

7. Security considerations.

F. Incident Management Direction and Considerations.

1. Escaped fire situation analysis.

2. Delegation of authority.

3. Agency Administrator's representative.

4. Comptroller.

5. Resource Advisor.

6. Suppression priorities.

7. Forest Supervisor/Incident Commander contact.

Time _____

Process _____

8. News media and incident information management.

9. Training considerations.

10. Interagency/private property considerations (costs, etc.).

11. Mopup standards.

12. Rehabilitation considerations.

13. Initial Attack responsibility.

14. Support to other incidents.

15. Disposition of Forest resources on the incident.

16. Close out and debriefing.

17. Human Welfare.

a. Safety.

b. Health.

c. Civil Rights.

18. Distribute support documents.
 - a. EFSA (Common EFSA if unified command?).
 - b. Delegation of authority letter.
 - c. Maps, photos.
 - d. Fire Management, Pre-Attack, Land Management Plans.
 - e. Weather forecast.
 - f. Special Management Area Documents.
 - g. Phone directory, FAX number.
 - h. Agreements.
 - i. Incident Status Summary (ICS - 209).

**PRESCRIBED BURNING PRESCRIPTIONS FOR
CONVERTING PINYON-JUNIPER AND BLACKBRUSH
RANGES TO GRASSLANDS AT
JOSHUA TREE NATIONAL MONUMENT**

Appendix E

PRESCRIBED BURNING PRESCRIPTIONS FOR CONVERTING PINYON-JUNIPER AND BLACKBRUSH RANGES TO GRASSLANDS AT JOSHUA TREE NATIONAL MONUMENT, 1992

Prescribed burning prescription for open pinyon-juniper range in FMU #3, Joshua Tree National Monument (Model is based upon a minimum requirement of 5-600 lbs/acre and a maximum crown closure of 60% for sustained fire spread (Klebenow and Burner, 1976)):

Parameter	Maximum Allowable Extremes	Fire Management Implication
Temperature (°F)	95 Backfire 85 Headfire	Mortality of pinyon-juniper stems larger than 4 feet in height can be expected to begin at a BC* of 130.
Average wind (mph)	25 Backfire 15 Headfire	
% Tree Cover	60 Backfire 40 Headfire	
% R.H. (min)	4 Backfire 10 Headfire	

* BC (Burning Condition) = Max wind (mph) + shrub and tree cover (%) + air temperature (°F).

Tentative prescribed burning prescription for burning Blackbrush ranges (Moon, Gavin, 1992):

Appendix F

**JOSHUA TREE NATIONAL MONUMENT
FIRE PREVENTION PLAN 1992**