

### **3. FIRE MANAGEMENT PROGRAM COMPONENTS**

The fire management plan addresses strategies for suppressing wildfires while taking into account resource objectives and sensitive resources to be protected, preventing the accumulation of hazardous fuels around Monument structures, high value outbuildings and paved roads, focusing use of wildland fire to maintain natural fire intervals and prevent establishment of non-native, invasive plants while addressing the needs of the native plants and animals endemic to the area. These strategies will entail strategic planning, interdisciplinary coordination, and inter-organizational collaboration as needed to provide appropriate treatment using adaptive management practices that range from site specific to landscape level. Fire management planning will also include monitoring programs that record fire behavior, smoke behavior, fire decisions, and fire effects to provide information on whether specific objectives are met and to improve future fire management.

Fuels management planning will incorporate activities, such as prescribed fire, mechanical, biological, grazing and, rarely, chemical treatments (applying integrated pest management principles), that may be appropriate in specific instances, as guided by NPS and Department of the Interior (DOI) policies and legal requirement. Prescribed burning will be used on an “as-needed” basis to achieve resource management needs.

All components of fire management planning, including suppression, fire use, or mechanical fuel reduction, will factor in the protection of natural and cultural resources, while maintaining the safety of employees and private citizens.

#### **3.1 GENERAL PROCEDURES FOR SUPPRESSION ACTIONS**

All fires besides management prescribed fire, regardless of origin, will be declared wildfires and will be suppressed in a manner that minimizes environmental impacts of suppression activities.

All suppression activities within the Monument will be managed in Unified Command with CDF and NPS. Unified Command with CDF is required due to the proximity of state fire protection areas of jurisdiction. The local agency Emergency Command Center (ECC) or the federal Communication Center is responsible for contacting the appropriate fire management or law enforcement personnel to respond to the report of a wildfire. Typically, the BLM FMO from Hollister Field Office or the Monument’s Protection Operations Supervisor responds to the Incident Command Post and serves as a Unified Incident Commander (if qualified), Agency Representative or Resource Advisor. CDF, BLM, USFS fire resources from Los Padres National Forest and U.S. FWS resources from San Luis National Wildlife Refuge will respond depending upon availability.

A qualified Resource Advisor will be requested to proceed to all fires in the Monument or to fires that start outside the Monument and have potential to spread onto these lands. The Resource Advisor will assist in identifying sensitive resources and provide

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input on appropriate actions to minimize the impacts to these resources. The NPS Incident Commander or Agency Representative is responsible for requesting a Resource Advisor through the Monument Dispatch and/or the Regional Fire Management Office.

### 3.2 MINIMUM IMPACT TACTICS

The policy at the Monument is to suppress all wildfires using MIT to the extent feasible given the sensitive resources to be protected. All suppression responses to wildfires will provide for firefighter and public safety as the highest consideration but will, to the greatest extent feasible, minimize the loss of resource values, economic expenditures and/or the use of critical firefighting resources. Specific MIT Guidelines tactics appropriate to the Monument are included in Appendix H, Part 11.

Suppression will be accomplished through a combination of formal and informal agreements with CDF and other federal agencies in close proximity to the Monument. Annual operating plans between CDF San Benito-Monterey Operational Unit and the Monument will identify individual suppression concerns in order to minimize suppression impacts. Furthermore, all specific actions taken in response to a wildfire (such as appropriate management response) will be evaluated for consideration of effects on resource values.

### 3.3 WILDFIRE SUPPRESSION

All wildfires in the Monument will be suppressed in a manner that minimizes environmental impacts of suppression activities. The objective of wildfire suppression, as an integral part of wildland fire management in the NPS, is to manage wildfires safely and efficiently to accomplish protection objectives. It is integrated into land and resource management plans and activities on a landscape scale, across agency boundaries, and is based on best available science. Protection priorities are (1) human life and (2) property and natural/cultural resources (NPS 2005b).



The NPS has wildland fire protection responsibility for the lands of the Monument. These lands are Federal Responsibility Areas (FRA) and for the NPS, the Direct Protection Area (DPA). The NPS has the financial responsibility for wildland fire suppression. Currently, however, due to the lack of a fire suppression capability, CDF provides initial attack response on all wildfires in the area, due to the proximity and extent of the State Responsibility Area (SRA) lands. Fires originating in the Monument and

well as those starting outside the Monument but threatening to move into the Monument will receive an initial attack response from CDF.

Because the Monument has limited fire incident management capabilities, suppression activities will be accomplished in conjunction with the CDF. This allows CDF to assume interim Incident Command of initial attack actions until a qualified federal Incident Commander and personnel arrives to assume Unified Command of the incident. Within the boundary of the Monument, all wildland fires will be suppressed according to federal and state government protocols as determined by the Unified Incident Commanders.

Federal actions will be consistent with direction provided in RM #18, Director's Order #60, Aviation Management (NPS 2003) and Interagency Standards for Fire and Fire Aviation Operations (NIFC 2006).

### **3.3.1 Range Of Potential Fire Behavior**

Fuel loading and continuity, the amount of dead material, and fuel availability are all important components of the fire environment. Considerable variation exists within and between plant communities in the Monument. Fuel loading and continuity in grassland and grass understory areas are affected by yearly precipitation, grass productivity, and phenology. Phenology at the Monument changes significantly from year to year and can be difficult to predict. An increase in yearly precipitation will result in greater productivity and increased fuel loading. Grassland areas will not burn until grasses cure unless there is substantial thatch buildup and fuel moisture is low. Annual and perennial grasses cure at different rates, with annual grasses usually curing in May and June, and perennials grasses curing during July and August. Additionally, annual grasses on shallow soils or steep slopes cure sooner than those on deeper soils.

Fuel loading in the chaparral is high over most of the Monument. Loading, continuity, and percent dead material all increase with the stand age in chaparral vegetation.

Fuel loading varies with aspect in most of the Monument's chaparral, with loading averaging from 7-15 tons per acre on north aspects, 12-18 tons per acre on west aspects, 15-25 tons per acre on east aspects, and up to 40 tons per acre on south aspects. These values are for chaparral that has not burned for at least twenty years. It is important to note that chaparral shrubs, which contain volatile compounds, are just as likely to burn, if not more so, when alive than when dead. Therefore, increased fuel loading in chaparral areas is not necessarily an indication of an increase hazard, as discussed below.

The availability of shrubs to burn depends in large part on live fuel moisture. Shrubs are least flammable after green up in the spring when live fuel moisture is greatest, and are most flammable in late July or August after they enter senescence and live fuel moisture is lowest. Fuel moisture continues to be low throughout the winter and doesn't rise appreciably until green up in February and March. The availability of live shrubs to burn can also be influenced by the amount and moisture content of the dead portion of the brush. Dead material reacts to short-term changes in relative humidity and temperature and can significantly influence fire behavior regardless of live fuel moisture. Volatile compounds in the plants can also contribute to changes in fire behavior.

A majority of the chaparral has not burned since 1931, and some may not have burned since 1887. Recent evidence has shown that fire risk probabilities in shrublands are not

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strongly driven by vegetation age as was commonly assumed. Historical fire patterns and quantitative measures of fire hazard show that large fires are not necessarily caused by a buildup of older fuels. In fact, large and intense wildfires may be inevitable in shrublands exposed to extreme fire weather (Moritz et al., 2004).

Fire behavior varies with community composition. The strata carrying fire, in mature chaparral, is the brush layer. Flame length, rate of spread, and other fire behavior parameters are affected by fuel loading and dead to live ratio. Because the brush layer is involved in any fire, flame lengths generally exceed ten feet and direct attack is rarely possible. Fire behavior varies with weather parameters and slope and can easily become extreme during fire season

### 3.3.2 Fuel Models

Vegetation at Pinnacles can be classified into five fuel models (following Anderson [1982] Aids to Determining Fuel Models for Estimating Fire Behavior). Determination of flame length and rate of spread for each fuel model followed Rothermel (1983).

#### 3.3.2.1 *Fuel Model 1, Annual Grasslands*

Fuel Model is National Fire Danger Rating System (NFDRS) Fuel Model A, Annual Grasslands. Fire spread in this fuel model is governed by fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Fuel loading is 0.74 tons/acre and consists of ¼" or smaller (1 hour) dead fuel component. Spot fires are generally not produced because fuels are consumed too quickly and thoroughly. Resistance to control is low to moderate, depending upon windspeed. Fire behavior in fuel model 1 is characterized by low intensity, fast moving fires. Under conditions of low wind speeds, fire flame lengths range from 2-6 feet with rate of spread ranging from 1-150 chains per hour. Under conditions of high wind speeds, flame lengths can range from 4-18 feet, with rate of spread ranging from 1-1500 chains per hour. Though this is a grass fuel model, it represents those areas of the Monument that are dominated by annual grasses such as the non-native annual grasslands, valley oak woodlands, and mixed riparian woodlands.

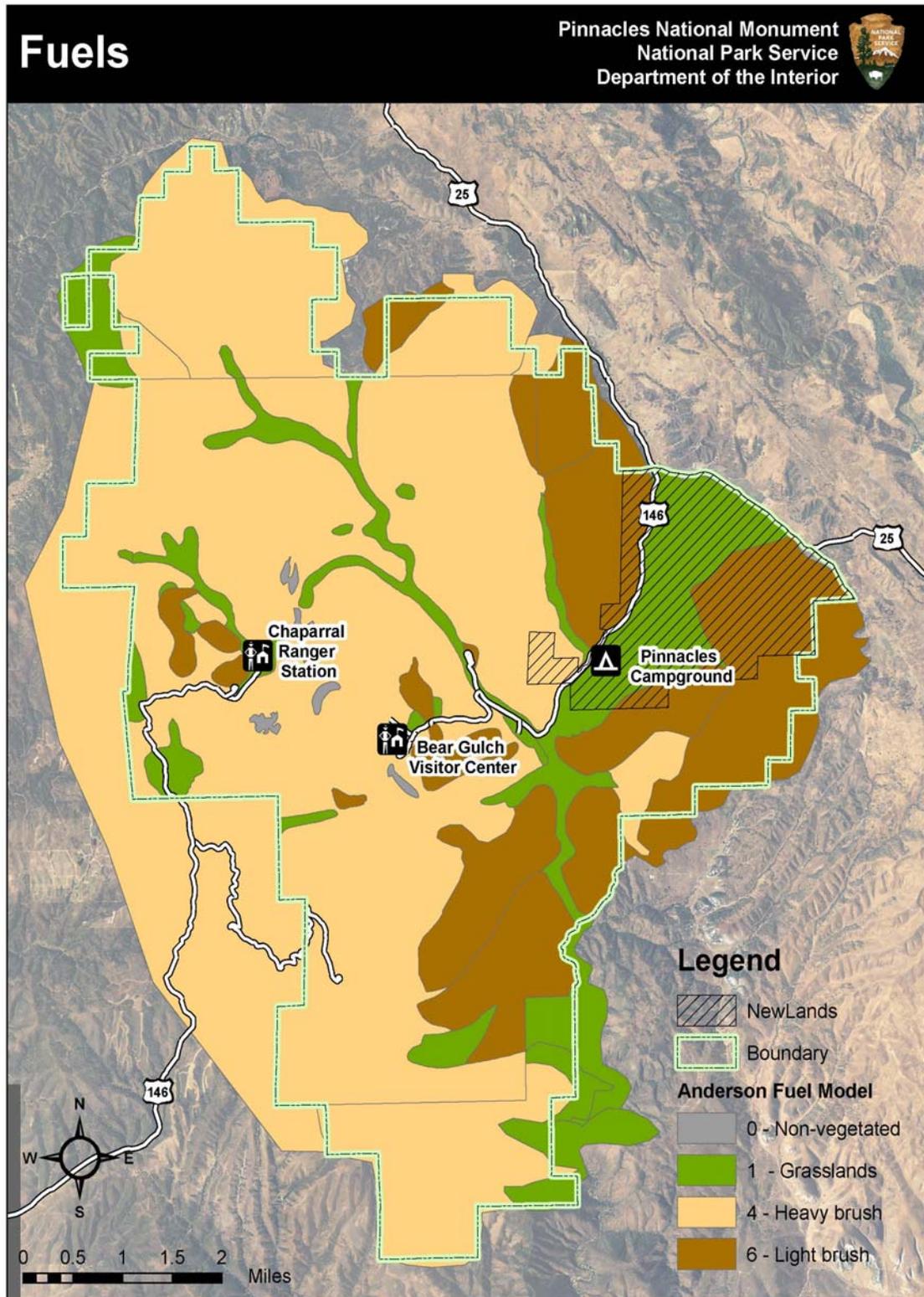
#### 3.3.2.2 *Fuel Model 2, Mixed Chaparral w/ Heavy Grass Groundcover*

Fuel Model 2 (NFDRS Model T, Mixed Chaparral with Heavy Grass Groundcover) includes areas of mixed chaparral with heavy grass invasion. Fire intensity and rate of spread range from slow, cool fires to rapidly spreading, high intensity burns. Under conditions of low wind speeds, fire flame lengths can range from 2-8 feet with rate of spread ranging from 1-55 chains per hours. However, under conditions of high wind speeds, flame lengths can reach 4-22 feet in height and rate of spread can range from 1-550 chains per hour.

#### 3.3.2.3 *Fuel Model 4, Heavy Chaparral*

Fuel Model 4 is NFDRS Model B representing Heavy Chaparral. Areas of mixed chaparral with manzanita and hollyleaf cherry can be classified under Fuel Model 4. Fire intensity can be quite high in Fuel Model 4 when significant amounts of dead,

Figure 7 – Generalized Fuel Map, Pinnacles National Monument



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woody fuel are present. Under conditions of low wind speed, fire flame lengths can range from 5-25 feet, and rate of spread can range from 1-120 chains per hour. Under conditions of high wind speeds, fire flame lengths can reach up to 10-60 feet in height with rate of spread ranging from 1-900 chains per hour.

#### 3.3.2.4 Fuel Model 5, Intermediate Brush

Fuel Model 5 (NFDRS Model F, Intermediate Brush) includes areas of coastal sage scrub and chaparral dominated by chamise, although if the brush is dormant, chaparral chamise can be classified under fuel model 6. Fire in these fuel models are generally carried through the shrub layer where the foliage is more flammable, or in the surface fuels made up of litter cast by the shrubs and the grasses or forbs in the understory. Under conditions of low wind speeds, flame lengths can range from 1-9 feet, and rate of spread can range from 1-60 chains per hour. Under conditions of high wind speed, flame lengths can range from 4-18 feet and rate of spread can range from 1-600 chains per hour.

All of the wildland fuels complexes represented at the Monument display a range of fire behavior; the most typical are described below:

- May and June. Creeping ground fires occur early in the season before annual grasses are fully cured and fuel moistures are still high. Active flame fronts in shrub models will develop as fuel moistures and relative humidity (25% to 35%) begins to drop during the higher air temperature days (85 to 95 degrees).
- July through October. Active surface fire spread with torching, short range spotting, usually due to higher frontal winds and/or lower humidity. Air temperatures may rise to over 100 degrees and relative humidities in the high teens (15% to 7%). When periodic, short-lived foehn wind conditions occur during this time period, running sustained crown fires in shrub canopy with high heat intensities, rapid rates of spread and extreme flame lengths can be expected. Nighttime humidity recovery is minimal during this time period which translates to a nighttime fire activity that could be equal to that of daytime conditions.

### 3.3.3 Preparedness Actions

The term “preparedness” refers to activities that lead to a safe, efficient and cost-effective fire management program in support of land and resource management objectives through appropriate planning and coordination.

The FMOs from each unit should meet on a regular basis to coordinate preparedness activities, establish joint projects and procedures for wildfires, mechanical fuels reduction and prescribed fire, readiness, funding issues, problem areas, and other items.

The following items will be reviewed annually at joint meeting of the respective FMOs:

- Prepare mutual severity needs analysis for coming fire season when conditions exceed those of a normal fire year (consider: pre-positioning of suppression resources; augmentation and support outside local organization needed).

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- Review new policies, roles and responsibilities.
- Review and update as necessary all delegations of authority and Agency Administrator Briefing Package.
- Identify any mutual safety issues and mitigating actions required.
- Clarify mutual criteria for team transitions, managing mutual multiple fire activity.
- Develop mutual and integrated action items to implement staffing levels (Step-up Plan).
- Identify strategies to communicate fire program principles to cooperators and publics (Red Flag alerts, severity, closures, etc.).
- Agree on mutual standards to evaluate performance of the preparedness operations within the Network.
- Exchange updated maps or databases or other information sources regarding sensitive resources.
- Schedule Resource Advisor availability.
- Clarify dispatch procedures.
- Review BAR/BAER procedures.
- Address other issues requiring coordination.

### 3.3.3.1 *Fire Prevention*

Prevention objectives for the planning area will include:

- Reduce the number of human-caused wildfires.
- Integrate fire prevention messages into a variety of programs, ranger activities, and local media, targeting the community, schools, visitors, and landowners.
- Coordinate fire prevention efforts with all cooperators and affected landowners.
- Prepare and post prevention-related signs and messages.

### 3.3.3.2 *Training and Fire Readiness*

The purpose of wildland and prescribed fire training is to promote safe and effective individual performance in accomplishing fire management goals and objectives.

All wildland fire personnel will be qualified and certified for the position(s) assigned, according to the Wildland and Prescribed Fire Qualifications System Guide (PMS 310-1, 2000). The Interagency Standards for Fire and Fire Aviation Operations, Chapter 2, "Requirements for Fire Management Positions" details additional requirements for fire positions (NIFC 2006). Reference Manual #18 (NPS 2006b) and Director's Order #18 (NPS 2005b) provide the guidelines for training and readiness.

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All employees involved in wildfire and prescribed fire operations will have their qualification records entered into and maintained annually in the Incident Qualification and Certification System (IQCS) and Resource Ordering System Status (ROSS).

Refresher courses (firefighter safety, basic aviation operations, etc) and other required annual training will be coordinated by qualified staff and held annually.

Readiness actions (in addition to those listed above) are described below.

- Fire caches and equipment shall be inspected and documented for completeness and serviceability on a pre-season and fire season basis.
- Ensure timely follow-up actions to preparedness inspections (see Table 2).
- Pinnacles Protection Operations Supervisor or their designee will keep abreast daily during fire season for updated availability of local CDF initial attack resources.

| <b>Timing</b>         | <b>Preparedness Action</b>                                                                                                                               |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Year-round            | NFDRS Weather Station (#044410) online, data entered into WIMS.                                                                                          |
| Annually              | Local Preparedness Review.                                                                                                                               |
| April 1               | Annual Operating Plan (AOP) between Pinnacles National Monument and CDF San Benito-Monterey Operational Unit will be updated and signed by both parties. |
| May 1                 | Central Coast Group Cooperative Fire Protection Agreement - Operating Plan will be updated and signed by all parties.                                    |
| June 1                | Defensible space inspections completed around Monument structures. Campground and campfire ring vegetation clearance needs identified.                   |
| May 1– July 15        | All Red Carded employees, permanent and seasonal will have completed the annual refresher and Work Capacity Test.                                        |
| May 1 – July 30       | Red Cards will be signed by authorized supervisor and distributed to employees.                                                                          |
| June 1                | Step-Up Plan reviewed and updated.                                                                                                                       |
| May 1 – end of season | Roster of all fire qualified personnel maintained, with PPE/initial attack gear/Red pack ready for two-hour callout.                                     |
| November 15           | Fire Training and Experience Records will be entered in IQCS for permanent employees.                                                                    |
| November 31           | Cache inventoried, post-season reviews and reports completed.                                                                                            |
| July 15               | Annual Preparedness Review completed (RM#18 & 2006 Interagency Standards for Fire and Fire and Fire Aviation Operations, Chapter 19).                    |

California Seasonal and Monthly Outlooks, prepared by the Southern California Geographical Area Predictive Services Unit will be analyzed as early as conditions warrant before and during fire season. The Monument lies in the Central Coast Mountains and Valleys Predictive Service Area (PSA). Energy Release Component (ERC), 100 hour and 1000 hour dead fuel moisture level charts are available at [http://gacc.nifc.gov/oscc/predictive/fuels\\_fire-danger/index.htm](http://gacc.nifc.gov/oscc/predictive/fuels_fire-danger/index.htm). Severity funding requests, if indicated from the Outlooks and PSA charts, should also be prepared in coordination with BLM Bakersfield District and BLM Hollister Field Office FMO. Severity submissions will be signed by Monument Superintendent and transmitted to PRNS FMO for review. The PRNS FMO will route information through agency fire channels to Fire Program Staff at the Regional Office. Refer to Interagency Standards for Fire and Fire Aviation Operations, Chapter 9 (NIFC 2006), and/or RM #18, Chapter 18 (NPS 2006b).

### 3.3.3.3 *Fire Weather and Fire Danger*

Local weather and topography interact to affect fire behavior. The Monument is subject to afternoon sea breezes which blow with a force roughly proportional to the temperature gradient between the cool air over the Pacific Ocean and the heated air over the land. The sea breeze is increased by air flow from the North Pacific High into the Central Valley Thermal Low and peaks during the height of the summer fire season. The breeze reaches Pinnacles between 1100 and 1400 hours each day arriving at different times and from different directions, depending on how it is modified by local topography. The sea breeze interacts with complex topography and normal upslope and upvalley winds, causing frequent midday wind shifts and eddies at the junction of drainages. These winds result in unpredictable fire behavior and contribute to the formation of whirlwinds.

The sea breeze approaches the Monument from the Salinas Valley and combines with normal upslope flow to produce upslope winds on the west side of the Monument from mid-morning to late afternoon. These winds divert over and around major landforms of the Monument. Chalone Creek channels the flow from the Salinas Valley. The sea breeze blows up Chalone Creek out of the south in mid-morning, flows downstream, through the water gap between Machete Ridge and the Balconies, and surfaces on the east side in the afternoon. Westerly flow approaches through Bear Gulch. The sea breeze overrides normal upslope winds, producing downslope winds in many locations on the east side of the Monument.

When the marine layer remains stationary along the coast on hot days, the sea breeze can penetrate up to 100 miles inland, with no appreciable cooling or increase in relative humidity. The sea breeze moderates fire weather when a deep layer of marine air accompanies it, particularly in the fall and spring.

Four synoptic weather patterns cause high fire danger at Pinnacles.

1. Heat wave conditions occur when a subtropical high settles over California.

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2. A high fire danger pattern occurs when a trough moves inland followed by high pressure along the coast. The flow of marine air is blocked as a result, temperatures are high, and relative humidities are low.
3. Frontal passage can produce shifting winds and dry northerlies after passage in the summer and fall.
4. Subsidence from the Great Basin High during the summer and fall produces foehn winds surfacing on the western slope of the Sierra Nevada. These winds do surface at lower elevations at the Monument and can be felt on peaks and ridgetops. Influence of foehn winds at the Monument should not be underestimated, even though they do not create the explosive, uncontrollable fires associated with Santa Ana conditions in southern California or the Diablo winds in the San Francisco Bay Area.

Local weather and topography interact to affect fire behavior. Following the cessation of winter rains in mid-April, fuels dry rapidly and the light fuels of the annual grassland (2,000-7,000 lbs/acre) cure and live, dead and downed round wood material and duff in the understory of the forest stands gradually lose moisture.

#### 3.3.3.4 Weather Stations

The Monument accesses daily fire weather data from the Pinnacles Remote Automated Weather Station (RAWS) located above Frog Canyon in the southeastern portion of the Monument at 1,322 feet. The RAWS is located on a west to southwest facing aspect. The station is cataloged in the Weather Information Management System (WIMS) as # 044410 (see Table 3, Vicinity RAWS) and will provide the Monument staff with NFDRS indices. The station is part of Northern California Fire Weather Zone 210 and FCST (Forecast Zone) Zone 523. Other RAWS in Fire Weather Zone (FWZ) 210 and FCST Zone 523 includes the Hollister RAWS. The Santa Rita RAWS provides fire weather information at extreme elevations in the area (5000 feet elevation). This unit is located outside FCST 523 and is the highest elevation site in the FWZ.

| Station Name | NFDRS ID | ROMANS ID | MSGC  | Location            | Elevation | Owner   |
|--------------|----------|-----------|-------|---------------------|-----------|---------|
| Santa Rita   | 044408   | SRTC1     | 7A2A2 | 36.3478<br>120.5978 | 5000 feet | BLM-BDD |
| Pinnacles    | 044410   | PCLC1     | 7B2A2 | 37.4708<br>121.1422 | 1322 feet | NPS-PIP |
| Hollister    | 044406   | HSEC1     | 7A2A2 | 36.8422<br>121.3622 | 423 feet  | CDF-BEU |
| Hernandez    | 044409   | HDZC1     | 7B3A2 | 36.2825<br>120.8558 | 3733 feet | CDF/BEU |

National Fire Danger Rating System (NFDRS)

NFDRS is a multiple index system developed to provide information about current and predicted fire danger conditions. Analysis used NFDRS Model B, Slope Class 2 (0-25 percent), perennial herbs, and Climate Class of 2 (semi-arid). Restriction thresholds for Park Visitor Activities are found in Appendix H, Part 5. The Southern California Coordination Center Predictive Services Group, in conjunction with the National Weather Service San Francisco Bay/Monterey Weather Forecasting Office, monitors, analyzes and predicts fire weather, fire danger and fire management resource impacts across the Central Coast and Monterey Bay.

Red Flag Warnings are issued to warn of an impending or unusually severe fire weather event. As shown in Table 4, a warning is issued when the combination of conditions shown in the chart are occurring or expected within 24 hours.

**Table 4 – Red Flag Warning Matrix**

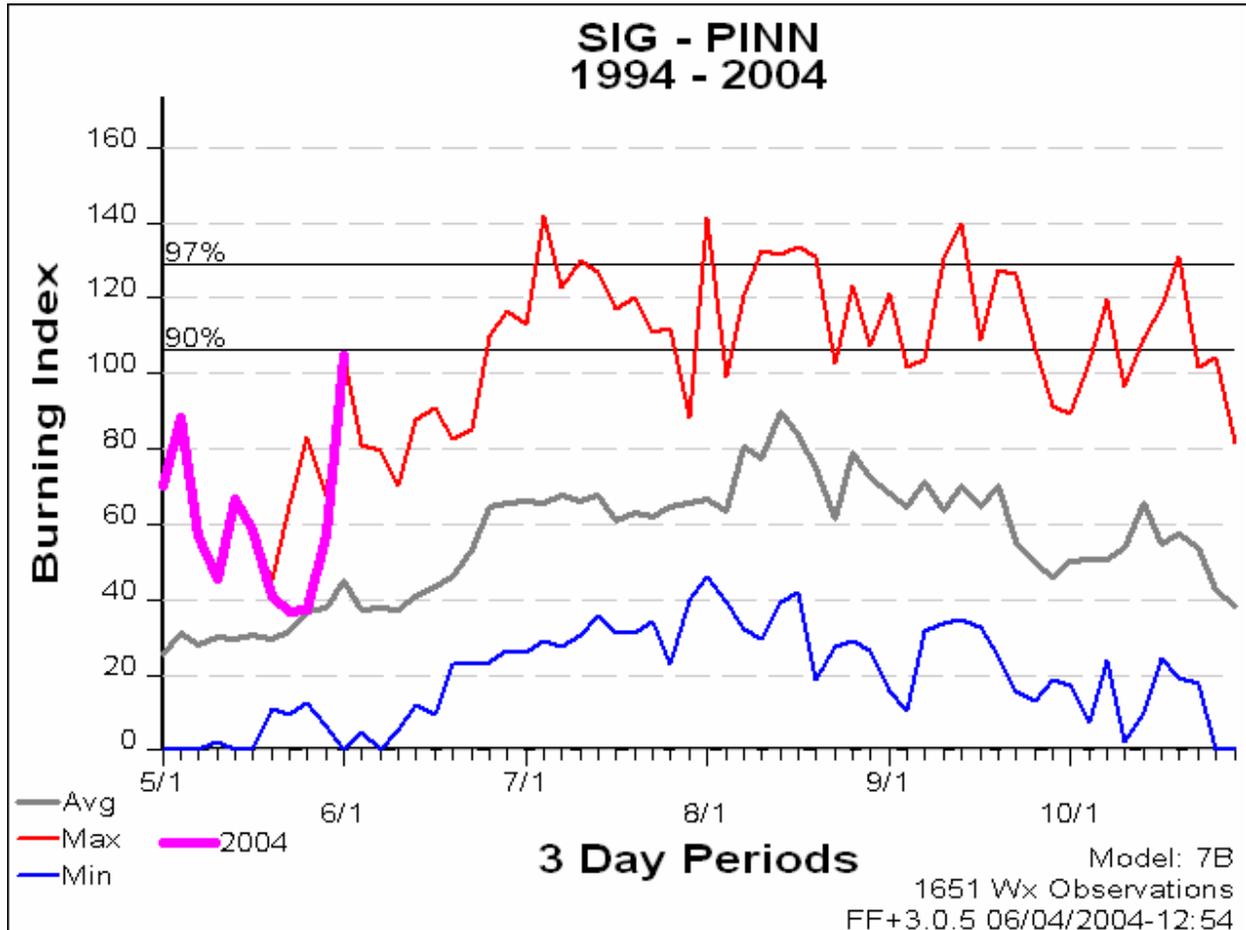
| <b>Red Flag Guidance/Verification Matrix</b>                                                                                                                                                                                                                                          |                                                                                                    |                             |                             |                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------------|-----------------------------|---------------------------|
| The matrix below assume 10-hour fuel moisture of less than 6%, annual grasses are cured, and no wetting rain (greater than 0.10 inch) has fallen in the past 24 hours.                                                                                                                |                                                                                                    |                             |                             |                           |
| Relative Humidity                                                                                                                                                                                                                                                                     | Sustained 20 foot Wind Speed<br>(Note: the wind event should be expected to last at least 8 hours) |                             |                             |                           |
|                                                                                                                                                                                                                                                                                       | Sustained Wind<br>6-11 mph                                                                         | Sustained Wind<br>12-20 mph | Sustained Wind<br>21-29 mph | Sustained Wind<br>30+ mph |
| <u>Day MIN 29-42%</u><br><u>Ngt MAX 61-80%</u>                                                                                                                                                                                                                                        |                                                                                                    |                             |                             | <b>RED FLAG WARNING</b>   |
| <u>Day MIN 19-28%</u><br><u>Ngt MAX 46-60%</u>                                                                                                                                                                                                                                        |                                                                                                    |                             | <b>RED FLAG WARNING</b>     | <b>RED FLAG WARNING</b>   |
| <u>Day MIN 9-18%</u><br><u>Ngt MAX 30-45%</u>                                                                                                                                                                                                                                         |                                                                                                    | <b>RED FLAG WARNING</b>     | <b>RED FLAG WARNING</b>     | <b>RED FLAG WARNING</b>   |
| <u>Day MIN &lt; 9%</u><br><u>Ngt MAX &lt; 30%</u>                                                                                                                                                                                                                                     | <b>RED FLAG WARNING</b>                                                                            | <b>RED FLAG WARNING</b>     | <b>RED FLAG WARNING</b>     | <b>RED FLAG WARNING</b>   |
| To help verify Red Flag Warnings the links above will show you what RAWS sites have met the RFW criteria during the last 24 hours. After clicking on the Day MAX or Ngt MAX RH link <u>double check the times on the observations</u> . Both day and night observations will show up. |                                                                                                    |                             |                             |                           |

Fire managers can use the NFDRS Burn Index for computing daily and forecasted fire danger. FireFamily Plus analysis calculates the 90<sup>th</sup> percentile Burn Index at a burn index of 106; 97<sup>th</sup> percentile threshold is 128 (see Figure 8). The 90<sup>th</sup> percentile level of the Burn Index is used in the NFDRS as the threshold for the NFDRS rating of Very High Fire Hazard. According to Figure 8, the upper 10% of three-day periods with Very High or Extreme Fire Hazard Levels between 1994 and 2004 occurred when the Burn

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Index was at or above BI 106. The 97<sup>th</sup> percentile descriptor is equivalent to NFDRS Extreme Fire Hazard rating. For the Monument, the upper 3% of fire hazard conditions were at burning index levels of 128 and above between 1994 and 2004. The fuel model used to calculate this analysis was the NFDRS Model B (Mature Brush > 6 feet). The comparable Fire Behavior Fuel Model is Fuel Model 4.

**Figure 8 -- Burn Index Graph, Pinnacles National Monument**



**3.3.3.5 Step-Up Plan**

The Step-Up Plan describes a series of escalating management responses which are intended to supplement normal wildfire capabilities for short periods (i.e., normally one burn period). This policy-compliant plan is located in FMP Appendix H, Part 7.

**3.3.3.6 Detection**

Typically, most fires will be discovered by members of the public visiting the Monument or by Monument personnel conducting routine work. The general public wishing to report a fire would contact San Benito County Sheriffs Dispatch Center by dialing 911 rather than notifying the Monument staff directly. Local emergency 911 phone calls route directly to San Benito County Sheriffs Dispatch Center. Reporting a wildfire to

Sheriffs Dispatch Center will be re-routed to CDF Monterey Emergency Command Center in Monterey. After dispatching a CDF initial attack response, CDF Monterey ECC will notify Sequoia-Kings Canyon National Parks Communication Center. Sequoia-Kings Canyon National Park Communications Center will subsequently contact the Monument's Protection Operations Supervisor or other staff of the Monument's Visitor Protection Division.

Monument personnel discovering a fire will contact Sequoia-Kings Canyon National Park Communication Center directly. Sequoia-Kings Canyon will notify CDF Monterey ECC of a reported wildfire and CDF initial attack units will be dispatched. The Sequoia-Kings Canyon Communication Center will also contact the Monument's Protection Operations Supervisor or other member of the Visitor Protection Division staff confirming a report of a wildfire.

CDF established North Chalone fire lookout several years ago but it closed in the mid-1980s for budgetary reasons. There are no current plans to re-establish it as a fire detection resource.

Immediately after a lightning storm event, CDF will launch lightning detection flights over the Central Coast area of which they will pass over the Monument. CDF flights will abide by guidelines to protect condors, (such as maintaining a minimum elevation and not entering the area near flight pens).

### **3.3.4 Initial Attack**

Initial Attack is an aggressive suppression action consistent with firefighter and public safety and values to be protected. It will be the first considered Appropriate Management Response (AMR) option when a wildfire is detected on the Monument.

All wildfires must receive a suppression response since Wildland Fire Use is not an option in the Monument. Aggressive initial attack action (IA) by the nearest available suppression forces will be the primary suppression response. Initial attack will consist of a full CDF wildland- vegetation fire alarm response. Numbers of resources and kinds dispatched to the alarm are based upon the daily fire danger adjective. See Appendix H, Part 7, Fire Step-up Plan, for the types of resources and, numbers responding.

Qualified NPS personnel respond after notifying Monument Dispatch to provide incident size-up, assist CDF Incident Command (IC) with selection of suppression tactics to minimize natural resource damage and provide local knowledge to assist with logistics, traffic control and evacuation.

Unless qualified to do so, Monument staff will not take direct suppression action on a wildfire. CDF Monterey ECC will be the initial ordering point for all initial attack fires. Per the Central Coast Group Cooperative Fire Protection Agreement, a Unified Ordering Point will be established on wildfires that necessitate Unified Command.

Since all wildfires occurring at the Monument will be placed in unified command, the Unified Command ICs will agree on the Unified Ordering Point after the first operational period when it has been determined that the fire has escaped initial attack and has gone into an extended attack incident or at any time the Unified Command ICs feel it is

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necessary to switch the Ordering Point. As safety allows, initial attack Incident Commanders will assess the complexity of the fire to determine their capacities to manage the incident. If the initial attack Incident IC is unable to initiate action due to the management complexity of the incident, forces will be staged in a safe location or modified tactics will be used until a fully qualified Type 3 Incident Commander arrives on scene.

If a federal Type 3 IC (closest federal Type 3 IC will either be from Los Padres National Forest or BLM Hollister Field Office) is not immediately available to take over the incident, a CDF Battalion Chief may assume that position with the Superintendent's concurrence. If a fire continues into a second operational period, the ordering point will be decided upon by agreement of the Unified Command ICs. Ordering Point options are continued use of CDF Monterey ECC or moving to the Los Padres National Forest Communication Center (Santa Maria).

#### 3.3.4.1 *Initial Attack Priorities and Closest Resources*

In the unusual event that there are multiple simultaneous fires within the Monument, the fire start which has the greatest potential to threaten life or property will have priority for suppression actions.

The Cooperative Fire Protection Agreement - Central Coast Group, of which the Monument is a signatory, follows the Closest Forces Concept for initial attack actions on all watershed lands including federal lands. Employing the closest forces concept means that regardless of the protecting agency, the fire suppression resource that has the shortest timeframe to reach the incident location will be the one dispatched.

#### 3.3.4.2 *Appropriate Management Response*

The AMR will be based on objectives, relative risk, external influences and management boundary defensibility and may include one or some combinations of the following:

Initial Attack. A planned response to a wildfire given the wildfire's potential fire behavior. The objective of initial attack is to stop the spread of the fire and put it out at least cost. This is an action where an initial response is taken to suppress wildfires consistent with firefighter and public safety and values to be protected.

Wildfire suppression with multiple strategies. This action categorizes wildfires where a combination of tactics such as direct attack, indirect attack and confinement by natural barriers are used to accomplish protection objectives as directed in the Wildland Fire Situation Analysis (WFSA).

Control and extinguishment. These actions are taken on a wildfire when the selected WFSA alternative indicates a control strategy. Sufficient resources are assigned so that control of the fire can be achieved with a minimum of acres burned.

### 3.3.4.3 *Fire Response Time Frames*

Limited road access within the Monument is a serious consideration for controlling fires. Only two (2) main access roads leading into the Monument exist. Off of these main arterial roads are primitive hiking trails, most of which are not capable of handling vehicular traffic. Therefore rapid response by fire engines in areas not accessible by vehicles cannot be expected. Hiking trails at the Monument are maintained on a periodic basis but would need considerable improvement and reinforcement if needed to be used as fireline. Aerial delivery of firefighters by helicopter is an alternative to hand crew walk-in if speed to an incident is necessary. If fire response personnel feel they cannot walk to a fire by nightfall, firefighters can be delivered by helicopter and additional handcrews can walk-in the following morning to reinforce those that staffed the fire the previous night.

CDF Helicopter 406 stationed at Bear Valley Fire Station is the closest available helicopter capable of aerially delivering firefighters on the ground to staff an incident in remote areas where walk-in times are long. Bear Valley is extremely close to the east entrance to the Monument and flight time to anywhere in the Monument would be less than 20 minutes. Helicopter 406 with helitack crew is available from early June through late November. The helicopter would be ordered through Monterey ECC as CDF assistance by hire supplied resource. Bear Valley also maintains two (2) staffed wildland engines during fire season. Two (2) Type 2 air tankers (Tankers 80 and 81) are assigned to Hollister Air Attack Base during fire season. Flight time over an incident at the Monument would be less than 20 minutes. A CDF fixed wing air attack platform (Air Attack 460) is also assigned out of the Hollister Air Attack Base. Response of these initial attack resources to a fire at the Monument depends on their availability.

### 3.3.4.4 *Restrictions and Special Concerns*

As a unit of the NPS, there are sensitive resources requiring special protection throughout the Monument. During the NEPA process which preceded the preparation of this FMP, NPS staff, regulatory agencies and the public considered the potential impacts to the Monument and general area resources from wildfire, fire suppression actions and more routine fire management projects. After reviewing the level of adverse and beneficial effects that could result from implementation of the FMP, a set of mitigation measures was developed for FMP actions in order to minimize or avoid the predicted potential effects. These mitigation measures were adopted by the NPS through the signature of the FONSI by the Pacific West Region Deputy Director. It is therefore mandatory that appropriate mitigation measures from the list attached in Appendix D be adhered to when implementing FMP actions in the Monument.

The FONSI for the FMP requires that each FMP action conforms to the agreements and commitments made through the FMP NEPA process and ensured as NPS commitments through the signing of the FONSI by the Regional Director on September 12, 2006. To ensure that internal review occurs for each project, the internal review process was specifically incorporated into the FONSI as mitigation measure GEN-1.

**GEN-1.** To ensure that implementation of projects under the fire management plan conforms to NEPA assessment for the FMP, subsequent 5-year plans and individual

projects will be subject to NPS project review. Prior to approval, all projects will be subject to the NPS internal review process wherein an interdisciplinary team evaluates whether the potential effects of proposed projects have been adequately addressed in the FMP EA. Conformance to the conclusions in the FMP EA will be documented for the NEPA record by a Memo to File. If the interdisciplinary team concludes that the project has the potential for new environmental effects not addressed in the EA or effects greater than those assessed in the EA, a separate environmental process would be conducted (NPS 2005, p. 3-18).

The interdisciplinary team will assign mitigation measures to the proposed FMP actions. Mitigation measures will be taken from those adopted with the FONSI and listed in Appendix D of this FMP and other site-specific measures developed by the Interdisciplinary Team (IDT) during project review. All FMP actions and project review materials will be signed by the Superintendent prior to implementation.

### **3.3.5 Extended Attack and Large Fire Suppression**

The Incident Command System (ICS) provides for a management/organizational structure on incidents that evolve in complexity or increase in size, whether within a few hours or over several days. While the criteria for incident complexity vary by local conditions, a fire that has escaped initial attack is considered in extended attack when it:

1. Has not been contained by the initial attack resources dispatched to the fire.
2. Will not have been contained within management objectives established for that unit or area.
3. Has not been contained within the first operational period and there is no estimate of how long it will take to achieve confinement or control.

When complexity levels exceed initial attack capabilities, the appropriate ICS positions should be added commensurate with the complexity of the incident. The Incident Complexity Analysis and the WFSA assist the Superintendent in determining the appropriate management structure to provide for safe and efficient fire suppression operations. When an Incident Management Team is ordered to manage a fire, a Superintendent In-Briefing Package and Delegation of Authority as well a draft WFSA will be prepared and presented to the team upon arrival at PINN. A unified command structure will be a requirement in all multi-jurisdictional incidents.

An Incident Complexity Analysis (NIFC 2006, Chapter 10, Appendices 10-4 or 10-5) will be used as a guide for IC's, fire managers and Agency Administrators to evaluate emerging fires in order to determine the level of management organization required to meet agency objectives. This will assist in identifying resource, safety, and strategic issues that will require mitigation.

Extended attack occurs when a fire has not been contained or controlled by initial attack forces and continues into the next operational period. Qualified IC's from CDF may fill this role if a federal IC from the BLM, NPS or Forest Service is not available or until federal oversight can be provided. A transition to a higher level incident management team may be necessary as the incident grows in complexity. A Delegation of Authority will be

prepared for all incidents involving federal lands which transition to a Federal Type1 or 2 Incident Management Team. Per the Central Coast Cooperative Fire Protection Agreement the ordering point for all Type 1 or Type 2 complexity fires where unified command is in effect will be agreed upon by the Unified ICs. The unified ordering point will be either CDF Monterey ECC or Los Padres National Forest Communication Center (Santa Maria).

3.3.5.1 *The Wildland Fire Situation Analysis (WFSA) Development*

The WFSA is a decision-making process in which the Superintendent or representative describes the situation, compares multiple strategic wildland fire management alternatives, establishes objectives and constraints for the management of the fire, selects the preferred alternative, and documents the decision. The format and level of detail required depends on the specific incident and its complexity. When a wildfire cannot be controlled during the initial suppression response action or a prescribed fire has exceeded its parameters and been declared both unsuccessful and a wildfire, a WFSA will be initiated and a new strategy selected *Interagency Standards for Fire and Fire Aviation Operations*, Chapter 10-E (NIFC 2006) (see Table 5).

The Superintendent or designee and the FMO and/or Incident Commander prepare the WFSA. Required elements to be addressed in a WFSA are:

- Current Situation
- Evaluation Criteria
- Alternatives
- Analysis of Effects
- Record of Decision
- Review/Evaluation/Update
- Probability of Success
- Consequences of Failure

| <b>Table 5 – Wildland Fire Situation Analysis</b>                                                                      |                            |
|------------------------------------------------------------------------------------------------------------------------|----------------------------|
| <b>SPECIFIC SITUATION</b>                                                                                              | <b>WFSA CONSIDERATIONS</b> |
| Human-caused fire =(unwanted fire)                                                                                     |                            |
| Fire exceeds extended suppression action =(unwanted fire)                                                              |                            |
| Fire Exceeds prescribed burn plan in all FMU =(unwanted fire)                                                          |                            |
| Fire projected to leave federal lands, and the adjoining jurisdiction(s) will not/cannot accept management of the fire |                            |

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### 3.3.5.2 Complexity Decision Process for Incident Management Transition.

The Monument does not have a unit specific Incident Complexity Analysis that determines when an incident moves into a different complexity level. The Monument will use the Incident Complexity Analysis for Type 1 and 2 incidents as well as the Incident Complexity Analysis for Types 3, 4 and 5 as recommended in the Interagency Standards for Fire and Fire Aviation Operations and Incident Pocket Response Guide for all emerging incidents.

### 3.3.5.3 Delegation of Authority for IC

The Delegation of Authority for IC form permits the Superintendent to delegate the responsibility for all incident suppression efforts to another qualified individual. The newly delegated IC may be from another park unit, another federal agency or a state or local agency. The person has to be qualified for the complexity level of the incident as determined by the previous IC. See further information in Section 3.3.4, Extended Attack, and Appendix H, Part 14, Example of Delegation of Authority Form.

## 3.3.6 Rehabilitation Guidelines and Procedures

While many wildfires cause only limited damage to the land and pose few threats to fish, wildlife and people downstream, some fires create conditions that require proactive efforts to prevent further damage from occurring. Loss of vegetation exposes soil to erosion; runoff may increase and cause flooding, sediments may move downstream and damage houses or fill reservoirs, and put endangered species and community water supplies at risk. The Burned Area Emergency Response (BAER) program addresses these situations with the goal of protecting life, property, water quality, and deteriorated ecosystems from further damage after the fire is out.

There are four complementary parts to the BAER Program:

1. Suppression Activity Damage (SAD) are those repairs necessitated by damage resulting from the suppression activity rather than a result of the wildfire. The repairs are planned and implemented primarily by the incident command organization prior to demobilization. Suppression Activity Damage repairs are charged to the incident account.
2. Emergency stabilization (ES) actions are set out in the Burned Area Emergency Response Plan completed within 7 days of the containment of the fire by an interdisciplinary Burned Area Emergency Response Team. The Team surveys the burn area, identifies where repairs are needed and how the repair will be conducted. The goal of ES is to minimize threats to life and property or to stabilize and prevent unacceptable degradation to natural and cultural resources. ES repairs are to be implemented within one year of containment of the wildfire. ES is part of the Emergency Operations appropriation
3. Burned Area Rehabilitation (BAR) requires the preparation of a Rehabilitation Plan identifying projects that are in need of repair or improvement on a landscape scale resulting from direct damage by the wildfire. The goal of the rehabilitation plan is to rehabilitate and establish healthy, stable ecosystems in

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the burn area, prioritizing relative values to be protected, commensurate with rehabilitation costs. The plan is developed with public participation and describes projects and follow-up actions occurring up to three years after containment. BAR is a separate non-emergency appropriation.

4. Long-term (>3 years) Restoration are those rehabilitation actions occurring beyond the initial three years or after the repair or replacement of major facilities damaged by the fire. These types of projects are financed through regular program funding rather than fire funding.

Interior Department Guidance on the BAER program is found in Departmental Manual 620, Chapter 3. An Interagency Burned Area Emergency Response Handbook, Version 4.0 can be found at <http://fire.r9.fws.gov/ifcc/esr/Policy/es%20handbook%202-7-06.pdf>. The Burned Area Rehabilitation Handbook is currently in Draft form and circulating for review. Best management practices for implementing ES and BAR actions at the Monument could include the following recommendations:

- Burn area seeding may be considered, depending on specific local impacts. All seed applications must be approved by the Monument's Resource Advisor prior to purchase and application.
- To the greatest extent possible, waterbars shall be hand-placed. No mechanical equipment will be used in wilderness areas unless such action is in response to an immediate threat to watershed stability and has been analyzed through a Wilderness Minimum Tool process.
- A post-burn watershed assessment will be made for fires affecting sensitive watersheds.
- Rehabilitation actions may require consultation with the FWS (See Endangered Species Act (ESA) Section 7 Handbook, Chapter 8 for further guidance). Consultation shall be coordinated through the BAER Team in conjunction with Monument staff. If a BAER Team is not assigned to the incident, an ESA Coordinator will be assigned to this duty.
- NHPA compliance may be required prior to implementation of ES or BAR projects. A determination should be made as to whether the actions meet the requirements for NHPA compliance under emergency conditions described in the NHPA regulations, provision 800.12.
- Emergency stabilization funds can be used to control nonnative invasive plants within burned areas when it can be documented that the invasive may spread quickly and can out-compete emergency stabilization relying on seedings or reestablishment of native vegetation. Options for treatment may include chemical, biological or mechanical methods to control aggressive invasives, post-fire detection and monitoring which may be funded for up to one year following containment of the fire.
- If herbicides are prescribed for emergency stabilization actions, they will be applied according to strict specifications using detailed Material Safety Data

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Sheets. Any application requires the approval of the Monument's Integrated Pest Manager and the Washington Office coordinator for herbicide application. No applications would occur in riparian or wetland areas.

- Monitoring intensity should be commensurate with the complexity of the emergency stabilization treatments, level of concern or controversy associated with the emergency stabilization treatment. (See Appendix I, Wildland and Prescribed Fire Monitoring and Research Plan). Monitoring of rehabilitation treatments will be coordinated with the Network Fire Ecologist and Network Fire Effects Monitoring Program.

### 3.3.7 Records and Reports

Quality, long-term documentation records for all actions taken on a wildfire is critical. All decision documents, monitoring data, supporting documentation, and operational documents (Incident Action Plans, maps, unit logs, etc.) will be assembled and organized during and following a wildfire management action.

Specifically, the fire report and file should contain:

- Any written policies, guidelines or authority statements signed by the Superintendent.
- Copy of the NPS WFSA.
- ICS-209's (Incident Status Report) for fires over 100 acres in Timber or over 300 acres in Grass.
- Copies of purchase orders, personnel request orders, etc. associated with the fire.
- All situation maps.
- Personnel rosters.
- Press releases, clippings, videotapes.
- Accident reports.
- All monitoring data, spot weather forecasts, internet printouts.
- Documentation of financial charges made against the assigned account number.
- Narratives and unit logs.
- Burned Area Rehabilitation Plan.
- Burned Area Response Plan.
- Resource Advisor Report.
- DI-1202 Fire Report (completed within 10 working days after fire has been declared out).

It is particularly important to include IC narratives (see above) regarding effectiveness of planned strategies, trigger points, holding actions, and other pertinent factors encountered during the fire.

### **3.4 PRESCRIBED FIRE**

For purposes of the FMP and as defined by federal Wildland Fire Management Policy, prescribed fire is any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan (burn plan) must exist prior to ignition. This burn plan contains a prescription defining goals, weather and fire behavior parameters, monitoring, and treatment methods used to achieve project specific objectives, while prioritizing firefighter and public safety. All prescribed fire projects require filing a Burn Permit Application, a Smoke Management Plan approved and a Smoke Management Permit issued by the Monterey Bay Unified Air Pollution Control District (MBUAPCD).

For the foreseeable future, the prescribed fire program will be aimed at restoring fire as a natural ecological process (maintaining ecosystem structure and function) and, on a limited basis, used to re-establish native herbaceous vegetation through the treatment of areas invaded by non-native plants. The prescribed burn program will focus on maintaining a “natural” fire interval by addressing the ecological needs of the plants and animals through adaptive management. In conjunction with the Network Fire Ecologist, stationed at PRNS, prescribed burn prescriptions will be developed to meet ecological needs that are not being met by the prolonged absence of fire.

To achieve success in controlling non-native exotic weed species requires prescribed burn window days in the mid to late spring (May thru early July) prior to flowering and seeding of the weeds. Air quality is generally satisfactory for this type of burning during this time period.

#### **3.4.1 Annual Planning, Review and Documentation for Prescribed Burning**

Prescribed fire project prioritization for the Monument takes place during annual update of the five year implementation plan. Project priorities are set for the coming year based on actual accomplishments during the prior year and target goals of the FMP and Resource Management Plan. Projects scheduled but uncompleted for the prior year and re-evaluated in light of the current years project list and some project rescheduling normally occurs. The effects of rescheduling the current year ripples through the five year plan causing some reshuffling in the project schedule. The following actions and dates structure the planning process:

- Prepare annual program priority list based on projects listed in the multi-year implementation plan.
- Prepare map of archaeological/biological survey before January 15 for anticipated projects to be conducted during the following fiscal year.
- Submit prioritized listing of projects through NFPORS database by March 10.
- Regional fire staff informs Monument Superintendent of the final list of selected projects by mid-summer via Superintendent Verification Sheet.

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*3.4.1.1 Prioritizing and Review the Annual Implementation Plan*

The five-year fuels treatment plan will be updated annually as target units are burned. Fire Management staff at the NPS Pacific West Regional Office (PWR) have established a process for the annual review of the five year fuels treatment plan vis-à-vis ensuring that actions conform to the findings and commitments agreed to in the NEPA process for the FMP. In addition to NEPA conformance, the annual review process provides a framework for ensuring continued conformance with the requirements of the ESA consultations and compliance with NHPA. The review of the five year fuels treatment plan will be undertaken by a multi-disciplinary team representing the range of expertise of the fire staff.

To update the annual implementation plan for the coming fiscal year, the Monument's Fire Management Committee will develop priorities based on Monument needs. Sites for prescribed burning are initially proposed based on the fuel conditions and resource management issues identified in the FMP.

Project selection and prioritization will be the responsibility of the Monument's Fire Management Committee.

Based on the relative strength of the justification, projects are further considered for potential effectiveness in addressing critical needs and feasibility of implementation. The FMUs and project areas have goals and objectives, and the development and prioritization of projects must be based on the reasoned expertise of resource and fire personnel on the Fire Management Committee.

All these disciplines gather and are able to bring new ideas to the table and to discuss and provide input for projects that are developed by the Fire Management Committee.

New projects for resource enhancement, vegetation management, and defensible space are presented amongst the group. These projects are prioritized based on the likelihood of funding, difficulty of operations, actual benefits from project completion, resource emphasis and the safety of the public and Monument staff. An additional key ranking criteria is how future projects relate to previous ones. Projects that are a continuation of work begun on long-term invasive weed control areas carry a high ranking. This ensures that previous efforts are maximized.

There is no set formula for determining and prioritizing projects though emphasis on prescribed burn priorities will be based on using fire to address the ecological needs of the plants and animals through adaptive management. Monument staff needs to remain very flexible to address and react to changing management goals and budget realities. All projects that are approved have the complete involvement and support from the various management disciplines within the Monument.

Once verified, the annual FMP review can be conducted. Once the Fire Management Committee has finalized the list of projects it will be presented at the beginning of the fiscal year to the Division Chiefs and Superintendent for review and comment. At that point, it is appropriate to conduct NEPA project review on the finalized list. As FPA comes on-line, the annual FMP review may be tied to the FPA schedule changing the annual review period to each January.

### 3.4.1.2 *Review of Projects for NEPA Conformance*

Requirements set forth in RM #18, Chapter 10, Part VIII, Prescribed Fire (revised 9/26/06), will be followed. These revised guidelines conform to the Interagency Prescribed Fire Policy Planning and Implementation Guide (NIFC 2006). The following information should be included in project-level plans involving prescribed fire:

- Develop project objectives and site-specific treatment methods to accomplish objectives into a comprehensive project description for the NEPA assessment.
- Input project information into the Planning, Environment and Public Comment (PEPC) database system, implemented agency-wide for all levels of NEPA review. Burn plans for areas that were sufficiently assessed through the FMP EA will be reviewed by the IDT and the conformance with the EA documented through a Memo to the File of the EA. The project impacts and mitigation measures must conform to the formal consultations conducted as part of the FMP EA and the findings of the EA's FONSI. If a proposed project does not conform, additional consultation may be warranted. Upon completion of annual review process, any additional written documentation will be filed as part of the FMP EA NEPA process as a Memo to File.
- If, due to proposed burn location or burn intensity, sensitive resources could be directly or indirectly affected in a manner not anticipated and addressed in the FMP EA, the burn will require a separate NEPA review and perhaps additional ESA or NHPA consultation. NEPA conformance for these projects will be conducted per DO-12, RM-12. Conformance would be achieved by an EIS or EA if there is potential for significant adverse effect or exceptional circumstances; projects without potential for significant adverse effect may meet the requirements for a categorical exclusion for prescribed burning (categorical exclusion G.1).
- Following mitigating actions, an original copy of the burn plan will be routed with attached clearances by the FMO/Burn Boss.

### 3.4.1.3 *Developing Burn Plans*

- Reconnaissance (GPS) and burn unit layout and compliance (involve resources staff as needed to identify values to be protected, etc.).
- On-site documentation, fire effects monitoring, Job Hazard Analysis (JHA) elements, logistics, and identified mitigation work; complete complexity rating.
- Analyze potential ignition patterns with prescriptions, weather, fuels, and topography.
- Coordinate all burns w/grazing permit holders, cooperators, and media.
- Smoke management considerations, monitoring, modeling, and consultation with the Monterey Bay Unified Air Pollution Control District.
- Pre-burn notifications.

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- Briefings, logistics, contingencies.
- Go/No-Go decision process.
- Organization, implementation plans.
- Follow-up coordination, evaluations, cost summaries, record keeping, reporting requirements (a DI-1202-NPS will be completed for each burn and submitted via Wildland Fire Management Information (WFMI) system within 10 working days after declared out date).
- Submit data for GIS addition to prescribed fire thematic map.

No prescribed burning will occur when a wildfire is in progress within the agency units of the Central Coast Group, when fire indices are at or above Very High (90%) or when CDF Monterey-San Benito Operational Unit has issued an open burning restriction.

#### 3.4.1.4 Long-Term Strategy

The long-term strategy for the prescribed fire program is to employ prescribed fire as a tool to address the ecological needs of plant and animal communities in the Monument, with special emphasis on the chaparral ecosystems and bottomland ecosystems in the Wilderness and Adaptive Management FMUs.

Consideration should be made such that prescribed fire treatments should be implemented in a manner that simulates the natural ecosystem function of fire as determined through fire ecology and historic research to restore fire as a keystone natural process.

The Monument's fire history indicates that, from an ecological standpoint, a "natural" fire interval has been maintained for most areas of the Monument. Therefore, the prescribed burning will focus on the ecological needs of the ecosystem and, with the prolonged absence of fire, will develop prescribed burn prescriptions to meet the ecological needs.

Fire records indicate that roughly 2,500 acres burn naturally every nine years from human caused wildfires either starting in the Monument or coming into the Monument from outside its boundaries. If a wildfire of that magnitude does not occur in the Monument during a 10-year period, a prescribed burn will be planned of this size. Areas considered suitable for management burns will be in areas that have not burned in over 25 years.

Prescribed burns at the Monument will not be used as a primary tool to manage hazardous fuel loadings. In forested ecosystems, the accumulation of hazardous fuels can lead to wildfires that burn hotter and faster. This is not the case in chaparral ecosystems like the Monument. Since the primary fuel in chaparral fires is the live shrubs, the accumulation of fuels in these vegetation types is not likely to increase the intensity or size of a fire.

### 3.4.1.5 Debris Disposal by Fire

Debris burning may be used as a method to dispose of vegetative material generated from maintenance activities (i.e., mowing or tree trimming), manual and or mechanical activities, non-fire hazardous fuels treatment, hazard tree removal, construction projects or similar activities. Where permitted specifically by local regulations (refer to MBUAPCD regulations) discarded building and administrative materials can also be burned. All debris disposal projects should be evaluated for alternative methods of removal. Alternative treatments to burning may be possible, and desirable in terms of smoke management and safety concerns.

All debris disposal activities involving fire as the primary disposal method will be reviewed and approved by the Superintendent. In providing that approval, the Superintendent will consult with one of the Network FMOs and BLM Hollister Field Office FMO. If, after consultation with the FMOs, it is determined that the debris disposal can be safely executed and the project conforms to each of the following conditions, the project may be implemented as a debris disposal burn:

1. The project would have virtually no chance to burn into the wildland environment. The burn is conducted in a non-wildland environment, or in a wildland environment where the surrounding fuels are unavailable due to lack of adjacent fuels, snow cover or are wet from rainfall. Surrounding fuels must remain unavailable until the fire is declared out.
2. The project has no potential to damage surrounding natural or cultural resources.
3. Once properly ignited, the project would not present a safety threat to personnel on-scene or the public.
4. The project has no potential to require curtailment for the entire duration of the disposal operation.
5. The project would not require follow-up monitoring to evaluate environmental effects.
6. The project will conform to all MBUAPCD regulatory requirements.

If the proposed debris burn does not conform to any of these six conditions, then the proposed project would constitute a prescribed fire and must comply with all requirements for prescribed burning including completion of a burn plan.

For debris disposal burns, a Prescribed Fire Burn Boss 3 (RXB3) or higher qualification will be assigned to supervise and oversee the burn. The Burn Boss will ensure that a safety briefing is conducted and that all personnel assigned to the project wear proper PPE. The Burn Boss will coordinate the notification of CDF Monterey ECC, CDF Bear Valley and Gonzalez Fire Stations, San Benito County Sheriffs Dispatch, Los Padres Communications Center, BLM Hollister Field Office and local landowners that may be affected by the burn. Personnel assigned to implement the burn will meet minimum IQCS qualifications.

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### 3.4.1.6 Personnel

Prescribed fire personnel assigned to prescribed fires will meet all national requirements for training and experience in NWCG 310-1 if they are federal government employees. The Burn Boss assigned to prescribed fires will be certified according to complexity and fuel type of the treatment unit per NWCG 310-1. The Burn Boss position will be filled with only federal government personnel. CDF personnel can fill support positions for prescribed burns within the Monument. CDF personnel will meet the requirements of their own agency for training, personnel protective equipment, and fitness standards while working on prescribed burn projects or wildfire incidents.

### 3.4.1.7 Fire Behavior and Fire Effects Monitoring

Before the burn, fuels characteristics such as live and dead fuel moisture contents will be established to check prescription parameters and fire behavior calculations. Prior to ignition, a Spot Weather Forecast will be submitted and the results analyzed by the Fire Effects Monitor and the Burn Boss as a factor of the Go/No-Go decision making process. During ignition, on a timetable agreed upon by the Fire Effects Monitor and the Burn Boss, but not to exceed one hour, on-site weather, smoke, and fire behavior observations will be recorded on forms found in the Western Region Fire Monitoring Handbook.

The Bay Area Cluster Fire Effects Monitoring Crew has established plots in a representative number of prescribed burn units. After the burns, on a schedule established by monitoring protocols, the crew will record post-fire data and submit annual reports to the Fire Ecologist and the Superintendent for evaluation of burn effectiveness.

### 3.4.1.8 Reporting and Documentation

For NPS, all prescribed fires will be documented with the following information, stored in an individual fire folder and maintained in the Monument's files:

- Original signed Prescribed Burn Plan.
- Checklist of pre-Burn prescribed fire activities.
- All reviewer comments.
- All maps.
- Notification checklist.
- Permits such as burn, smoke, etc.
- Monitoring data.
- Weather forecasts.
- Superintendent Go/No-Go pre-ignition approval.
- Operational Go/No-Go checklist.
- Incident Action Plans.

- Unit logs, Daily Validation or other unit leader documentation.
- Press releases, public comments, and complaints.
- Smoke dispersal information.
- Post fire analysis.
- Fire Occurrence Report (DI-1202).
- NFPORS entry.

#### 3.4.1.9 *Prescribed Burn Plan Elements*

For NPS, each plan shall include at the minimum, the elements listed below. An example of a Prescribed Fire Plan is Appendix H, Part 18 of this FMP. The Interagency Prescribed Fire Planning and Implementation Guide lists the elements required for prescribed fire plans and briefly describes how to develop the contents for each element and the implementation policy that goes along with it. Prescribed fire plans must address the following 21 minimum elements and appendices in the following sequence (see the Interagency Prescribed Fire Planning and Implementation Guide for description and guidance):

1. Signature page
2. GO/NO-GO Checklists
3. Complexity Analysis
4. Description of the Prescribed Burn Area
5. Goals and Objectives
6. Funding
7. Prescription
8. Scheduling
9. Pre-burn Considerations
10. Briefing
11. Organization and Equipment
12. Communication
13. Public and Personnel Safety
14. Test Fire
15. Ignition Plan
16. Holding Plan
17. Contingency Plan

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18. Wildfire Conversion
19. Smoke Management and Air Quality
20. Monitoring
21. Post-burn Activities

## Appendices

- Maps
- Technical Review Checklist
- Complexity Analysis
- Job Hazard Analysis
- Fire Behavior Modeling Documentation or Empirical Documentation (unless empirical documentation is included in the fire behavior narrative in the Element 7, Prescription)

**3.4.2 Exceeding Existing Prescribed Burn Plan**

If prescription parameters are exceeded during project execution, the Burn Boss will terminate ignition operations at a safe and appropriate location based on fire behavior, fuels, topography and weather conditions. If the project area comes back into prescription based on current and forecasted weather, ignition operations may continue. If not, the project area is put into a mop-up or patrol status. Holding actions will maintain control of the fire until a decision to continue, postpone or extinguish the prescribed fire is made and the Agency Administrator or their designee is notified. This decision making process will be articulated in the prescribed burn plan.

If the prescribed fire exceeds project boundaries and/or slopovers and spot fires are not contained within one burning period, suppression actions will be taken and the entire prescribed fire project will be declared a wildfire. Once declared a wildfire, suppression is the only option. A wildland fire cannot be converted back to a prescribed fire.

If at any time the prescribed fire poses a threat to life, property, or high value resources, beyond those mitigated in the plan, suppression actions will be taken and the fire will be declared a wildland fire.

Once the prescribed fire is declared a wildfire, all subsequent actions (i.e. operational needs, notification, strategies, resource orders, etc.) will be defined under a wildland fire transition plan, which is part of the prescribed fire plan until an initial Wildland Fire Situation Analysis (WFSA) is completed.

NPS park units are required to notify the Regional Fire Management Office within 24 hours of any of the following conditions resulting from a prescribed fire that has escaped or is a threat to escape:

- a) any prescribed fire converted to a wildfire.

- b) any prescribed fire requiring activation of the contingency plan specified in the burn plan.
- c) any prescribed fire that requires additional resources or operational time not accounted for in the Incident Action Plan.

If the burn is not an escape or a threat to escape, or is not and will not be declared a wildfire, regional notification is not required (RM #18, Chapter 10, Section VIII, A. 5, 9/26/06).

### **3.4.3 Air Quality and Smoke Management**

#### *3.4.3.1 Regulatory Compliance and the Approval Process*

Visibility and clean air are primary natural resource values in all NPS units. The protection of these resources must be given full consideration in fire management planning and operations.

Pinnacles National Monument is a Class I air shed under the amendments to the Clean Air Act (CAA) adopted in 1977. Class I areas are National Park Service units established before 1977 with a total area greater than 6,000 acres where emissions of particulate matter, sulfur dioxide, and nitrogen dioxide is restricted to control impacts to visibility at sensitive airsheds. The Federal Government has ceded responsibility and authority to establish air quality standards and regulations to the states (RM #18, Chapter 14). Therefore, the Monument complies with the Clean Air Act by adhering to the requirements of the California Air Resources Board (CARB) and the MBUAPCD.

The CARB is responsible for disseminating regulations about air quality, including state ambient air quality standards and area designation. Title 17 of the California Code of Regulations, entitled Smoke Management Guidelines for Agricultural and Prescribed Burning, provides direction to air pollution control and air quality management districts for the regulation and control of agricultural burning and prescribed burning. These guidelines are intended to allow the use of prescribed burning as a tool, while minimizing smoke impacts on the public.

The state of California is divided into 15 air basins based on a similarity of meteorological and geographic conditions. The Monument is in the North Central Coast Air Basin which includes all lands in Santa Cruz, Monterey and San Benito Counties and is regulated by the MBUAPCD with offices in Monterey. The MBUAPCD has primary responsibility for control of air pollution from prescribed burning and has adopted rules for implementing the State Regulations such as Title 17. Rule 438 on Open Outdoor Fires regulates prescribed burning in the air basin and lays out the permissible parameters for burning and the approval procedures that must be followed prior to implementation of a prescribed burn plan.

Prior to submitting the Burn Permit Application Form, the Burn Project Registration Form must first be filed with MBUAPCD as soon as you know that funding has been approved. This form should be submitted early in the fiscal year once funding is secured for project implementation (i.e., NFPORS funding authorization).

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The MBUAPCD rules require that a Smoke Management Plan and Application be submitted to the its offices for approval prior to conducting a prescribed burn, typically as the burn plan is being completed and at least 30 days prior to the proposed burn date. Though not required, the project burn plan is normally submitted to the District when it is finalized and, if possible, 30 days prior to the proposed burn date as a courtesy. The MBUAPCD's Smoke Management Plan, Application Form and instructions are in Appendix H, Part 19. The Smoke Management Plan and Application consists of:

Project Description section which requests general information and identifies conditions burning, such as project name, location, burn size, type of fuel to be burned, and an estimate of emissions. **Must be completed for all Pinnacles prescribed burns.**

Section A of the form must be completed if the prescribed burn has the potential to result in impacts to smoke sensitive areas. The Monument, like all the Class I Areas under Section 169A of the Clean Air Act, meets the definition of “smoke sensitive area” along with towns, campgrounds, trails, populated recreation areas, nursing homes, schools, roads, airports, etc. **Must be completed for all Pinnacles prescribed burns.**

Section B of the form must be completed if the area of the prescribed burn is greater than 100 acres or the burn would produce more than 10 tons of particulate matter, additional information on climatic conditions and contingency plans must be provided.

Post-fire Evaluation Form must be submitted for larger burns, greater than 250 acres or which could affect “smoke sensitive areas”. **Must be completed for all Pinnacles prescribed burns.**

Once approved, the Smoke Management Plan serves as a conditional permit to burn when combined with the District's Smoke Management Permit.

Once permit approval on the Smoke Management Plan is received by the Monument, the prescribed burn can take place but only after calling the MBUAPCD during normal business hours anytime within 24 hours of the proposed burn and receiving a daily burn authorization from the MBUAPCD. All fire management-ignited fires must be conducted on an “allowable burn day” unless the district has granted a variance in advance. The daily burn authorization is based on the air quality of the air basin on that day during the set burn season of December 1<sup>st</sup> through April 30<sup>th</sup> (MBUAPCD Rule 438, Section 2.9).

CARB makes available a 96, 72, 48, and 24 hour burn forecast service to better assist fire agencies in determining their proposed burns dates. Form CB-3 ARB Burn Day Prediction Request is to be submitted to the MBUAPCD when a tentative burn day has been determined by the fire staff. The MBUAPCD will transmit this form to the CARB Meteorological Services and burn outlook and forecasting will be provided at the times requested. Final approval to burn is obtained by contacting the District at 1-800-CALBURN the morning on the planned burn day. The MBUAPCD will verify the total acreage burning allocations throughout the air basin and, if the Monument's acres

and/or tonnage to be burned that day would not exceed the total allocation for the area, final approval is granted.

If the NPS receives a smoke complaint from a prescribed burn at the Monument, a report of the complaint needs to be transmitted to the District within 72 hours either by phone, fax or voicemail. The complaint report should include the location of the impact, a short description of smoke behavior at the time including wind direction, wind speed, visibility, any public safety effects that occurred and the complainant's contact information. The NPS must inform the complainant that they can contact the District directly and provide the MBUAPCD's contact information. Whenever the NPS receives a complaint on a burn at the Monument, the NPS must submit a post-burn evaluation form to the MBUAPCD.

If the NPS receives approval for a Smoke Management Plan but cannot complete the burn before the permit expiration, the NPS may file a shorter permit extension form to renew the permit application for another season.

Following the burn, the Fuels Management Specialist will submit the Post-Burn Evaluation form to the MBUAPCD. It is the final section of the Smoke Management Plan & Permit Application found in Appendix H, Part 19.

### **3.5 NON-FIRE TREATMENT APPLICATIONS**

High priority non-fire hazard fuel treatments will be sited strategically with the objective of meeting the goals and objectives of this FMP. Hazard fuel reduction lessens the threat of catastrophic wildland fire, and reduces the risk of negative effects to Monument resources in the event of a wildfire. Hazard fuel reduction also improves conditions for firefighter and public safety, and reduces suppression costs in the event of a wildfire.

The Monument uses three (3) primary non-fire treatments to achieve FMP objectives of reducing hazardous fuels and control of invasive plant species: manual treatment, mechanical treatment and chemical treatment. Grazing could also be used under special circumstances. Non-fire treatments allow fire managers to produce a desired change in vegetation on the ground based on values to be protected and fuel characteristics without the hazards associated with applying fire. The defensible space zone created around a structure is tactically located on the landscape to increase the effectiveness of adjoining fuel breaks, prescribed burn control lines or to help alter future fire behavior during a wildfire. Vegetation removed is chipped, piled to be burned or moved to another area for reuse.

Manual treatment includes the use of non-powered hand tools and powered tools, including chainsaws and motorized brush cutters to cut, clear, thin or prune herbaceous and woody vegetation. Handtools include axes, hoes and handclippers. Mechanical treatment may involve the use of the following equipment: chippers, mowers, and heavy equipment such as bulldozers, front loaders or haul trucks to thin, pile, crush, cut, chip and lop. Based on the type of vegetation to be treated, some projects will require the use of approved herbicides to ensure that plants do not re-sprout. The most commonly treated plants are annual non-native grasses and non-native annual/biennial forbs. For

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shrubs and trees herbicides are typically spot applied to the stump directly after the plant is cut using backpack pumps.

The NPS has adopted the ICC (International Code Council) 2006 International Urban-Wildland Interface Code (NPS 2006b, Chapter 10, Section H, p. 18). Contained in the ICC's code (Sections 603 and 604) are descriptions of urban-wildland interface area defensible space requirements and maintenance. Maintenance of the defensible space includes modifying or removing non-fire resistant vegetation and keeping needles, leaves and other dead vegetative material regularly removed from around structures and roofs. The Code stipulates that the minimum requirement for defensible space around structures is 30 feet. Tree crowns should be pruned and maintained to a minimum of 10 feet horizontal clearance from structures and overhead electrical facilities. Tree limbs should be pruned to maintain a six foot clearance above the ground. High fire-hazard areas, flammable construction materials, topography and fuels may require up to and possibly exceeding 100 feet of additional clearance space. The need for additional clearance should be determined by the Monument's FMO, Protection Operations Supervisor or Superintendent.

Defensible space around buildings and other improvements within the Monument is maintained annually. Hazardous fuels reduction in and around developed recreation sites should be completed prior to the high use visitor season. Fuel reduction in developed recreation sites includes clearing around campfire pits, tent sites, vehicle parking pull-ins and picnic tables. The primary areas to receive mechanical treatment to reduce hazardous fuels around improvements are the Bear Gulch Headquarters area, the Chalone housing and maintenance area, the Chaparral Ranger Station and picnic area, Pinnacles Campground and the proposed Westside development area.

Roads identified as potential evacuation routes during an incident (flood, fire, etc) will be inspected annually to determine if there is adequate clearances for ingress and egress. If additional roadside clearance is recommended mechanical fuels treatments will be employed. Follow-up herbicide treatment will also be considered. Roadsides will also receive a minimum 2 foot vegetation clearance to reduce the potential for spread of fires from these corridors.

Manual and mechanical treatments are also used on a limited basis to re-establish native herbaceous vegetation through the treatment of areas invaded by non-native plants. Specific manual and mechanical fuel reduction projects would fall under one of the following broad categories of project types described in Sections 3.5.1 and 3.5.2.

### **3.5.1 Defensible Space Surrounding Monument Structures and Other Improvements**

The Monument has 40+ historic structures as well as non-historic structures used for housing and operations, many of which are amidst burnable vegetation and need to be protected by clearing for defensible space. Vegetation around these structures will be reduced to provide the minimum 100-foot radius of defensible space recommended for structures in high fire hazard areas. If the predominant fuel to be cleared around a structure is grass, then the remaining herbaceous cover after treatment will be either low grass or a patchy continuity of taller grasses. Fuel reduction will be accomplished

by the Division of Facility Maintenance, Monument rangers, CDF Gabilan Conservation Camp Crews, the BLM Ft. Ord Hazardous Fuels Crew or other entities.

### **3.5.2 Maintenance of Required Roadside Fuel Reduction and Overhead Roadway Clearance**

Fire roads are maintained to allow for safe access by emergency vehicles using as a minimum standard the access requirements of a Type III fire engines. FMP actions may include blading of road surfaces, placement of erosion control measures, and vegetation thinning by mowing or cutting along the road corridor to a specified width based on fuel type, slope, and roadway composition.

Native trees and shrubs along the sides of the roadways may be limbed up and smaller trees and shrubs removed as needed to ensure emergency vehicle clearance is met. Thinning of vegetation will focus on the removal of non-native invasive species. Where roadside vegetation is predominantly native, natural resource staff will provide guidance on prioritizing plants to remove to achieve the required fuel reduction. Grass that grows within the roadway may be cut or mowed. Debris would be cut up and broadcast in the immediate area, piled and burned, or chipped and hauled offsite.

Roadside mowing will be accomplished by the Division of Engineering with assistance from the CDF Gabilan Conservation Camp Crews for limbing or tree removal.

### **3.5.3 Annual Review**

The five-year fuels treatment plan will be updated annually as target units are burned and fuel reduction projects completed. Fire Management staff at the PWR office have established a process for the annual review of the five year fuels treatment plan *vis-à-vis* ensuring that actions conform to the findings and commitments agreed to in the NEPA process for the FMP. In addition to NEPA conformance, the annual review process provides a framework for ensuring continued conformance with the requirements of the ESA consultations and compliance with the NHPA. The update of the five year fuels treatment plan will be undertaken by a multi-disciplinary team representing the range of expertise of the fire staff. More information on the Annual Review process can be found in FMP Section 4.6.

### **3.5.4 Equipment and Seasonal Use Restrictions**

Project equipment will be selected for effectiveness and the potential to avoid or minimize impacts to Monument resources. The process is the same as described for prescribed burning. Please refer to Section 3.4.

### **3.5.5 Effects Monitoring**

For non-fire treatments, treatment prescriptions and locations will be documented and photo-monitoring will take place. Monitoring of non-fire treatments will be carried out by the Fire Effects Monitoring Crew according to the protocols found in Appendix I, Wildland and Prescribed Fire Monitoring and Research Plan.

### 3.5.6 Reporting and Documentation

All mechanical treatment projects will be listed in the Monument's five year fuels treatment plan and subject to the FMP annual review process. Individual projects will be assessed for potential effect and conformance with federal regulations through the Planning, Environment and Public Comment (PEPC) database system. Site specific projects should be posted on PEPC and reviewed by an IDT to determine if there is a potential for impacts to occur that were not anticipated in the EA or FONSI for the FMP. If potential effects were sufficiently addressed in the EA and FONSI for the FMP, the compliance for the site specific project can be documented through a Memo to File (i.e., a memo to the file of the EA and FONSI).

If the IDT finds that a site specific project would have impacts that were not addressed or not sufficiently addressed in the EA and FONSI, or proposes a type of action not included in the alternatives addressed in the EA, a separate NEPA process should be initiated. NEPA conformance for these projects will be conducted per D.O 12 and RM-12. If the site specific project does not involve the use of pesticides, would not result in significant adverse impacts or trigger any of the exceptional conditions (RM-12 Section 3.5), the site specific project may qualify for one of the two fire management Categorical Exemptions approved for the NPS (CEs G-1 or G-2).

### 3.5.7 Annual Planned Projects

All fire management projects, including mechanical treatments and prescribed burns, will be scheduled in the Monument's Five Year Implementation Plan. Where projects will require recurring maintenance on a predictable interval or several initial re-treatments, these actions will also be scheduled in advance on the five year plan.

## 3.6 FIRE EDUCATION, INFORMATION AND NOTIFICATION

Public information and education are essential components of a successful fire management program. Informed and supportive agency staff, local community, visiting public, and partner organizations, will contribute greatly to the effectiveness of the fire program and the resources that it is designed to benefit.

Based on the ecological principles and operational procedures of the Fire Management Plan, the goals for the fire information and education program are:

Goal 1: Offer year- round educational opportunities focusing on fire ecology, fire history, and fire management, which communicates how fire and fuels management activities meet natural resource management goals, and accomplish the mission of the National Park Service.

Goal 2: Work with local communities, Monument residents, and Monument permittees to promote fire safety, fire prevention, defensible space, firewise community planning, and fuels management. Provide fire safety messages with camping permits.

Goal 3: Develop and maintain interagency, educational, and community partnerships to improve and expand fire education activities.

Goal 4: Provide accurate and timely incident information for local, regional, and national fire operations as needed.

Goal 5: Support regional and national fire management program activities through information and education.

Monument staff will be assisted by the Network Fire Education Specialist in the development and implementation of a public information and education program for the fire management program. Proposed strategies include:

- Establishing a network of contacts and develop a proactive process that disseminates current and accurate fire information to multiple audiences.
- Incorporating the principles of fire's role in the ecosystem and the importance of fire as a resource management tool into interpretive programs, exhibits, video, interpretive trails through burned areas, publications, and special group presentations.
- Using national and local websites to promote prevention/mitigation and wildland fire education objectives.
- Reporting wildland fire activity through the NPS Fire News website.
- Forwarding all fire-related press releases to the respective Agency Administrator or Public Information Officer (PIO) for approval and keep members of the administrative staffs well informed of fire activity.
- Developing public information programs that promote the benefits of firewise community planning, defensible space, mechanical fuel reduction, and fire safe recreation.
- Establishing relationships with local media representatives, and accommodate requests for information and access in order to promote the fire program.
- Conducting outreach to owners of adjacent lands and/or groups with traditional cultural concerns in conjunction with planning fire education, and fire management activities.

Once completed, a detailed Fire Communications and Education Plan will be Appendix J to this FMP.

### **3.7 FIRE ECOLOGY AND FIRE EFFECTS MONITORING PROGRAMS**

#### **3.7.1 Programmatic and Policy Direction**

The NPS is committed to monitoring fire management activities to determine whether management goals and objectives are being met and to facilitate adaptive management. The authority for fire management monitoring in the NPS is found in Director's Order #18, Wildland Fire Management, Section 5.2 Fire Management Plans and Section 5.8 Prescribed Fire Monitoring. The NPS Fire Ecology Strategic Plan: 2004-2008 ([http://www.nps.gov/fire/ecology/program\\_direction/strategic\\_plan.htm](http://www.nps.gov/fire/ecology/program_direction/strategic_plan.htm)) provides programmatic direction and Reference Manual #18, Chapter 11, provides

policy direction for fire management monitoring ([http://www.nps.gov/fire/download/fir\\_wil\\_rm18\\_ch11.pdf](http://www.nps.gov/fire/download/fir_wil_rm18_ch11.pdf)).

### **3.7.2 Current Program**

Pinnacles National Monument is served by the Network Fire Ecologist and the Southern and Central California Fire Effects Monitoring Crew. The Fire Ecologist is stationed at PRNS and serves Golden Gate National Recreation Area (GGNRA) and PRNS in addition to the Monument. The Fire Effects Monitoring Crew is also stationed at PRNS and serves six California parks in addition to the Monument. The goal of the Fire Ecology and Fire Effects Monitoring program at the Monument is to determine whether prescribed fire and mechanical fuels treatments objectives are being met and to help refine projects and objectives based on monitoring data.

The primary ecosystems at the Monument are chaparral, oak woodland, grassland, and rock scree vegetation. Of these, chaparral is by far the most prevalent, covering 80% of the land area of the Monument. Past fire management activities have occurred in chaparral and blue oak woodland vegetation types. The Fire Effects Program has installed a total of 76 monitoring plots in three different monitoring types: chamise chaparral, California mixed chaparral, and blue oak woodland. The majority of these, 69 plots, can be retired as they have already completed their 10-year read or have never been burned. The remaining 7 plots will continue to be monitored through 2008 at which point they will reach their 10-year read and be retired. All of the plots in these monitoring types follow the protocols described in the Fire Monitoring Handbook (NPS 2003). Future prescribed fire monitoring will likely be limited to non-native plant management burns. Monitoring will also take place in the event of a wildfire at the Monument.

### **3.7.3 Monitoring Levels**

Fire effects monitoring occurs at a variety of levels. The most basic of these, Level 1, is the monitoring of environmental conditions including weather, fuel conditions, fire danger rating, etc. The fire effects program will coordinate with the Network Inventory and Monitoring program to coordinate Level 1 monitoring efforts. Both programs will work together to ensure that monitoring efforts are not duplicated and to determine the most efficient way to accomplish Level 1 monitoring.

Monitoring Level 2 is fire observation, including fire behavior, smoke volume and movement, fire location and size, etc. Data will continue to be collected at levels 1 and 2 to satisfy the requirements for a Post-Fire Report for prescribed fires or a Wildland Fire Report for wildfires. Protocols for Level 2 post-wildfire monitoring will be included in Appendix I. Additionally, burn severity assessments will be completed for all fires greater than 500 acres and CBI plots will be installed in association with the burn severity assessment. For mechanical projects, treatment prescriptions and locations will be documented and photo-monitoring will take place. Protocols for monitoring non-fire treatments will be included in Appendix I.

Levels 3 and 4 are the monitoring of short-term ( $\leq 2$  years) and long-term ( $> 10$  years) change. Variables monitored at these levels of change include fuel loading and

vegetation composition among others. Level 3 and 4 monitoring will take place in all monitoring types that are being actively managed by the fire management program through either prescribed fire or non-fire treatments. The monitoring effort must be sufficient to evaluate whether fire management objectives are being met.

### **3.7.4 Data Management and Analysis**

Fire effects data will be maintained by the fire ecologist and lead fire effects monitor in both paper and digital form. Data will be analyzed by the fire ecologist on an ongoing basis. Data analysis will be presented to Monument fire management and resource staff annually as part of the annual review/update process. This analysis will be used to determine whether fire management projects are meeting their objectives, to adjust and refine fire management objectives if necessary, to adjust how and where fire management projects are carried out, and to identify fire research needs.

### **3.7.5 Wildland and Prescribed Fire Monitoring and Research Plan**

The Wildland and Prescribed Fire Monitoring and Research Plan describes in detail how monitoring is to be conducted at the Monument. The Fire Monitoring and Research Plan presents ecological models for each of the monitoring types within Pinnacles NM and outlines the management and monitoring objectives for each. It also details the methods, locations, and frequency of monitoring. The format for the Plan will follow the guidelines provided by the NPS Fire Ecology Steering Committee. Appendix I will be added to the FMP coincident with the 2009 annual FMP update.

## **3.8 FIRE RESEARCH**

The NPS is committed to supporting fire research to promote sound fire management decisions. The policy direction for fire research within the NPS is found in RM #18, Chapter 15 ([http://www.nps.gov/fire/download/fir\\_wil\\_rm18\\_ch11.pdf](http://www.nps.gov/fire/download/fir_wil_rm18_ch11.pdf)). It is the goal of the fire program at Pinnacles NM to increase in-park research efforts and to recruit high caliber research from outside organizations.

A fire research plan for the Monument will be developed and added to Appendix I of this FMP during the first months of 2009. High priority topics for future fire research include the use of fire to control non-native plants, prehistoric uses of fire, the role of fire in blue oak regeneration and the effects of high fire frequencies in chaparral communities.