ASSIGNMENTS AND RESPONSIBILITIES
for
INTERDISCIPLINARY TEAM PLANNING
for
BURN REHABILITATION

Team Leader -_____

1. Overall coordination of planning:
   Coordinate with Plan Chief
   Coordinate with District Ranger
   Coordination where private lands are involved
   Coordination within the Planning Time

2. Logistics, transportation, communication, and materials (e.g., maps, photos, handbooks, etc.).

3. With Forest Supervisor and District Ranger, determine which disciplines are needed.

4. Makes environmental, economic, and social evaluations with I.D. Team input. Makes the Benefit-Cost Analysis.

5. Presents Survey Report with recommendations to Forest Supervisor and District Ranger.

6. Provide rehabilitation team's findings to P.I.O. for press release.

7. Coordinates with Plan Chief to assure fire equipment and manpower is retained to rehabilitate areas disturbed as a result of suppression activities. Work with Range Conservationist in locating seed and seeders.

Soil Scientist (Alternate Team Leader) -_____

1. Soil survey, mapping, and interpretations.

2. Identify problem soil areas (e.g., hydrophobic soils and fertility or soil moisture problem areas).

3. Identify areas suitable and not suitable for seeding.

4. Determine major geologic types.

5. Work with Hydrologist on estimation of on-site soil loss computations.

6. Determine erosion hazard rating.

7. Work with Engineer in identifying roads located on sensitive soils which might need special treatment.

8. Provide soils information to Range Conservationist for determining proper seed mixture.

9. Assess the effects of on-site loss in productivity as a result of soil loss.

Hydrologist -_____

1. Determine basic hydrologic characteristics of burned area: annual precipitation, annual runoff, design storms, peak flow potential by NFS watershed.

2. Work with Soil Scientist and Range Conservationist in determining on-site soil loss (cu.yd./sq. mi.).

3. Inventory channels within burned area by stream order.

4. Determine effects of increased sedimentation and flood peaks on downstream water uses and facilities. Work with Team Leader in evaluating economic effects of these potential damages.

5. Evaluate channel conditions: potential channel erosion, sediment deposition, channel stability. Work with Engineer on recommendations on channel structural measures needed. Make cost estimates and give to Team Leader.

6. Determine potential effects of sediment, ash, etc., on water quality. Work with Wildlife Biologist in assessing potential damages to fisheries habitat.

7. Inventory channels with excessive debris as a result of the fire. Make recommendations on debris clearing. Provide estimated cost to Team Leader for Benefit-Cost Analysis.

Range Conservationist -_____

1. Map intensity of burn (L,M,H)

2. Determine proper seed mixture with input from Soil Scientist and Wildlife Biologist.

3. Make paced transects to determine residual ground cover. Work with Soil Scientist and Hydrologist in estimation on-site soil loss.

4. Identify areas not suitable or not in need of reseeding.

5. Determine availability of seed on Forest and in major seed supply houses for (a) seeding fire lines and (b) seeding burned area.

6. Calculate cost of seed and seeding. Provide cost data to Team Leader for Benefit-Cost Analysis.

7. Locates equipment for seeding operation (a) cyclone seeders for fire lines (b) helicopter and seeding bucket for seeding burned area. Coordinate closely with Team Leader.

Wildlife Biologist -

1. Determine effects on existing wildlife species and populations. Estimate possible adverse and beneficial effects.

2. Assess potential damage to downstream fisheries with input from Hydrologist.

3. Work with Range Conservationist in selection of proper seed mixture.

Engineer -

1. Evaluate damage and potential damage to transportation system and recommend prescriptions with input from Soil Scientist (soil types) and Hydrologist (peak flows and sedimentation). Make cost estimates of recommendations and submit to Team Leader for Benefit-Cost Analysis.

2. Provide engineering skills to design of erosion control and channel structures. Make cost estimates and give to Team Leader.

3. Assists Hydrologist in evaluation of channel hydraulics.

4. Determines availability of equipment, materials, and engineering personnel for rehabilitation work.

Recreation -

1. Evaluates the aesthetic land quality of past activities (treatment measures).

2. Evaluate the damages to recreation sites and make recommendations on restoration of the sites.

3. Provide the Team Leader with evaluations of the economic effects of aesthetic land quality reducing damage to recreation sites, and the loss of recreation opportunities.

Definitions

Appropriate Management Response - Specific actions taken in response to a wildland fire to implement protection and fire use objectives.

Aerial Fuels - All live and dead vegetation in the forest canopy or above surface fuels, including tree branches, twigs and cones, snags, moss, and high brush.

Aerial Ignition - Ignition of fuels by dropping incendiary devices or materials from aircraft.

Air Tanker - A fixed-wing aircraft equipped to drop fire retardants or suppressants.

Agency - Any federal, state, or county government organization participating with jurisdictional responsibilities.

Aramid - The generic name for a high-strength, flame-resistant synthetic fabric used in the shirts and jeans of firefighters. Nomex, a brand name for aramid fabric, is the term commonly used by firefighters.

Backfire - A fire set along the inner edge of a fireline to consume the fuel in the path of a wildfire and/or change the direction of force of the fire's convection column.

Blow-up - A sudden increase in fire intensity or rate of spread, which strong enough to prevent direct control or to upset control plans. Blow-ups are often accompanied by violent convection and may have other characteristics of a firestorm. (See Flare-up.)

Brush - A collective term that refers to stands of vegetation dominated by shrubby, woody plants, or low growing trees, usually of a type undesirable for livestock or timber management.

Burn Out - Setting fire inside a control line to widen it or consume fuel between the edge of the fire and the control line.

Burning Conditions - The state of the combined factors of the environment that affect fire behavior in a specified fuel type.

Burning Index -An estimate of the potential difficulty of fire containment as it relates to the flame length at the most rapidly spreading portion of a fire's perimeter.

Burning Period - That part of each 24-hour period when fires spread most rapidly, typically from 10:00 a.m. to sundown.

Campfire - As used to classify the cause of a wildland fire, a fire that was started for cooking or warming that spreads sufficiently from its source to require action by a fire control agency.

Closure - Legal restriction, but not necessarily elimination of specified activities such as smoking, camping, or entry that might cause fires in a given area.

Cold Front - The leading edge of a relatively cold air mass that displaces warmer air. The heavier cold air may cause some of the warm air to be lifted. If the lifted air contains enough moisture, the result may be cloudiness, precipitation, and thunderstorms. If both air masses are dry, no clouds may form. Following the passage of a cold front in the Northern Hemisphere, westerly or northwesterly winds of 15 to 30 or more miles per hour often continue for 12 to 24 hours.

Command Staff - The command staff consists of the information officer, safety officer and liaison officer. They report directly to the incident commander and may have assistants.

Complex - Two or more individual incidents located in the same general area, which are assigned to a single incident commander or unified command.

Confine - Confinement is a wildland fire management strategy employed as an appropriate management response where a fire perimeter is managed by a combination of direct and indirect actions and use of natural topographic features, fuel and weather factors.

Contain a fire - A fuel break around the fire has been completed. This break may include natural barriers or manually and/or mechanically constructed line.

Control a fire - The complete extinguishment of a fire, including spot fires. Fireline has been strengthened so that flare-ups from within the perimeter of the fire will not break through this line.

Control Line - All built or natural fire barriers and treated fire edge used to control a fire.

Cooperating Agency - An agency supplying assistance other than direct suppression, rescue, support, or service functions to the incident control effort; e.g., Red Cross, law enforcement agency, telephone company, etc.

Coordination Center: A facility from which resources are directly assigned to an incident. And, coordination between agencies occurs.

Creeping Fire - Fire burning with a low flame and spreading slowly.

Crew Boss - A person who supervises between 16 to 21 firefighters and is responsible for their performance, safety, and welfare.

Crown Fire (Crowning) - The movement of fire through the crowns of trees or shrubs more or less independently of the surface fire.

Curing - Drying and browning of herbaceous vegetation or slash.

Dead Fuels - Fuels with no living tissue in which moisture content is governed almost entirely by atmospheric moisture (relative humidity and precipitation), dry-bulb temperature, and solar radiation.

Debris Burning - A fire spreading from any fire originally set for the purpose of clearing land or for rubbish, garbage, range, stubble, or meadow burning.

Defensible Space - An area either natural or made by humans where material capable of causing a fire to spread has been treated, cleared, reduced, or changed to act as a barrier between an advancing wildland fire and the loss to life, property, or resources. In practice, "defensible space" is defined as an area a minimum of 30 feet around a structure that is cleared of flammable brush or vegetation.

Direct Attack - Any treatment of burning fuel, such as by wetting, smothering, or chemically quenching the fire or by physically separating burning from unburned fuel.

Dispatch - The implementation of a command decision to move a resource or resources from one place to another.

Dispatcher - A person employed who receives reports of discovery and status of fires, confirms their locations, takes action promptly to provide people and equipment likely to be needed for control in first attack, and sends them to the proper place.

Division - Divisions are used to divide an incident into geographical areas of operation. Divisions are established when the number of resources exceeds the span-of-control of the operations chief. A division is located with the Incident Command System organization between the branch and the task force/strike team.

Drip Torch - Hand-held device for igniting fires by dripping flaming liquid fuel on the materials to be burned; consists of a fuel fount, burner arm, and igniter. Fuel used is generally a mixture of diesel and gasoline.

Drought Index - A number representing net effect of evaporation, transpiration, and precipitation in producing cumulative moisture depletion in deep duff or upper soil layers.

Dry Lightning Storm - Thunderstorm in which negligible precipitation reaches the ground. Also called a dry storm.

Duff - The layer of decomposing organic materials lying below the litter layer of freshly fallen twigs, needles, and leaves and immediately above the mineral soil.

Energy Release Component (ERC) - The computed total heat released per unit area (British thermal units per square foot) within the fire front at the head of a moving fire.

Engine - Any ground vehicle providing specified levels of pumping, water and hose capacity.

Engine Crew - Firefighters assigned to an engine. The Fireline Handbook defines the minimum crew makeup by engine type.

Equilibrium Moisture Content - Moisture content that a fuel particle will attain if exposed for an infinite period in an environment of specified constant temperature and humidity. When a fuel particle reaches equilibrium moisture content, net exchange of moisture between it and the environment is zero.

Escape Route - A preplanned and understood route firefighters take to move to a safety zone or other low-risk area, such as an already burned area, previously constructed safety area, a meadow that won't burn, natural rocky area that is large enough to take refuge without being burned. When escape routes deviate from a defined physical path, they should be clearly marked (flagged).

Escaped Fire - A fire, which has exceeded or is expected to exceed initial attack capabilities or prescription.

Extended Attack Incident - A wildland fire that has not been contained or controlled by initial attack forces and for which more firefighting resources are arriving, en route, or being ordered by the initial attack incident commander.

Extreme Fire Behavior - "Extreme" implies a level of fire behavior characteristics that ordinarily precludes methods of direct control action. One of more of the following is usually involved: high rate of spread, prolific crowning and/or spotting, presence of fire whirls, strong convection column. Predictability is difficult because such fires often exercise some degree of influence on their environment and behaves erratically, sometimes dangerously.

Fire-Adapted Ecosystem - Ecosystems exhibiting successional evolution and plant associations that are both tolerant of and dependent upon the occurrence of frequent, low-intensity fires. Under historical cycles of fire occurrence, these systems are stable and sustainable.

Fire Behavior - The manner in which a fire reacts to the influences of fuel, weather and topography.

Fire Behavior Forecast - Prediction of probable fire behavior, usually prepared by a Fire Behavior Officer, in support of fire suppression or prescribed burning operations.

Fire Behavior Specialist - A person responsible to the Planning Section Chief for establishing a weather data collection system and for developing fire behavior predictions based on fire history, fuel, weather and topography.

Fire Cache - A supply of fire tools and equipment assembled in planned quantities or standard units at a strategic point for exclusive use in fire suppression.

Fire Crew - An organized group of firefighters under the leadership of a crew leader or other designated official.

Fire Cycle - The historical or desired range (frequency) of fire disturbances over time necessary to the stability and sustainability of a given ecosystem. Synonymous with "Recurrence Interval" and "Return Interval."

Fire Intensity - A general term relating to the heat energy released by a fire.

Fire Line - A linear fire barrier that is scraped or dug to mineral soil.

Fire Management Plan (FMP) - A strategic plan that defines a program to manage wildland and prescribed fires and documents the Fire Management Program in the approved land use plan. The plan is supplemented by operational plans such as preparedness plans, preplanned dispatch plans, prescribed fire plans, and prevention plans.

Fire Regime - The total pattern of fires in vegetation, over time, characteristic of an ecosystem. Variables, which lead to the formation of a “natural” fire regime, include ignition sources (human, lightning), fire intensity and behavior, size of burn, recurrence (or return) intervals and ecological effects. An "altered" fire regime is different from the "natural" regime due to fuel and vegetation changes (which could have been caused by long-term changes in climate or human activities, including fire exclusion) and likewise displays a distinct pattern of fire intensity, behavior, size, recurrence and ecological effects.

Fire Season - 1) Period(s) of the year during which wildland fires are likely to occur, spread, and affect resource values sufficient to warrant organized fire management activities. 2) A legally enacted time during which burning activities are regulated by state or local authority.

Fire Shelter - An aluminized tent offering protection by means of reflecting radiant heat and providing a volume of breathable air in a fire entrapment situation. Fire shelters should only be used in life-threatening situations, as a last resort.

Fire Shelter Deployment - The removing of a fire shelter from its case and using it as protection against fire.

Fire Use - The combination of wildland fire use and prescribed fire application to meet resource objectives.

Fire Use Module (Prescribed Fire Module) - A team of skilled and mobile personnel dedicated primarily to prescribed fire management. These are national and interagency resources, available throughout the prescribed fire season, that can ignite, hold and monitor prescribed fires.

Fire Weather - Weather conditions that influence fire ignition, behavior and suppression.

Firefighting Resources - All people and major items of equipment that can or potentially could be assigned to fires.

Flame Length - The distance between the flame tip and the midpoint of the flame depth at the base of the flame (generally the ground surface); an indicator of fire intensity.

Fuel Bed - An array of fuels usually constructed with specific loading, depth and particle size to meet experimental requirements; also, commonly used to describe the fuel composition in natural settings.
Fuel Loading - The amount of fuel present expressed quantitatively in terms of weight of fuel per unit area.

Fuel Model - Simulated fuel complex (or combination of vegetation types) for which all fuel descriptors required for the solution of a mathematical rate of spread model have been specified.

Fuel Moisture (Fuel Moisture Content) - The quantity of moisture in fuel expressed as a percentage of the weight when thoroughly dried at 212 degrees Fahrenheit.

Fuel Reduction - Manipulation, including combustion, or removal of fuels to reduce the likelihood of ignition and/or to lessen potential damage and resistance to control.

Fuels Treatment - Manipulation or reduction of the amount and/or configuration of vegetation to meet Forest protection and management objectives while preserving and enhancing environmental quality.

Fuel Type - An identifiable association of fuel elements of a distinctive plant species, form, size, arrangement, or other characteristics that will cause a predictable rate of fire spread or difficulty of control under specified weather conditions.

Fusee: A colored flare designed as a railway warning device and widely used to ignite suppression and prescription fires.

Geographic Area - A political boundary designated by the wildland fire protection agencies, where these agencies work together in the coordination and effective utilization

Ground Fuel - All combustible materials below the surface litter, including duff, tree or shrub roots, punchy wood, peat, and sawdust, that normally support a glowing combustion without flame.

Haines Index - An atmospheric index used to indicate the potential for wildfire growth by measuring the stability and dryness of the air over a fire.

Hand Line - A fireline built with hand tools.

Hazard Reduction - Any treatment of a hazard that reduces the threat of ignition and fire intensity or rate of spread.

Helitack - The use of helicopters to transport crews, equipment, and fire retardants or suppressants to the fire line during the initial stages of a fire.

Helitack Crew - A group of firefighters trained in the technical and logistical use of helicopters for fire suppression.

Holding Actions - Planned actions required to achieve wildland prescribed fire management objectives. These actions have specific implementation timeframes for fire use actions but can have less sensitive implementation demands for suppression actions.

Holding Resources - Firefighting personnel and equipment assigned to do all required fire suppression work following fireline construction but generally not including extensive mop-up.

Hose Lay - Arrangement of connected lengths of fire hose and accessories on the ground, beginning at the first pumping unit and ending at the point of water delivery.

Hotshot Crew - A highly trained fire crew used mainly to build fireline by hand.

Incident - A human-caused or natural occurrence, such as wildland fire, that requires emergency service action to prevent or reduce the loss of life or damage to property or natural resources.

Incident Action Plan (IAP) - Contains objectives reflecting the overall incident strategy and specific tactical actions and supporting information for the next operational period. The plan may be oral or written. When written, the plan may have a number of attachments, including: incident objectives, organization assignment list, division assignment, incident radio communication plan, medical plan, traffic plan, safety plan, and incident map.

Incident Command Post (ICP) - Location at which primary command functions are executed. The ICP may be co-located with the incident base or other incident facilities.

Incident Command System (ICS) - The combination of facilities, equipment, personnel, procedure and communications operating within a common organizational structure, with responsibility for the management of assigned resources to effectively accomplish stated objectives pertaining to an incident.

Incident Commander - Individual responsible for the management of all incident operations at the incident site.

Incident Management Team - The incident commander and appropriate general or command staff personnel assigned to manage an incident.

Incident Objectives - Statements of guidance and direction necessary for selection of appropriate strategy(ies), and the tactical direction of resources. Incident objectives are based on realistic expectations of what can be accomplished when all allocated resources have been effectively deployed.

Initial Attack - The actions taken by the first resources to arrive at a wildfire to protect lives and property, and prevent further extension of the fire.

Job Hazard Analysis - The analysis of a project is completed by staff to identify hazards to employees and the public. It identifies hazards, corrective actions and the required safety equipment to ensure public and employee safety.

Keech Byram Drought Index (KBDI): Commonly-used drought index adapted for fire management applications, with a numerical range from 0 (no moisture deficiency) to 800 (maximum drought).

Ladder Fuels - Fuels which provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease. They help initiate and assure the continuation of crowning.

Light (Fine) Fuels - Fast-drying fuels, generally with a comparatively high surface area-to-volume ratio, which are less than 1/4-inch in diameter and have a timelag of one hour or less. These fuels readily ignite and are rapidly consumed by fire when dry.

Lightning Activity Level (LAL) - A number, on a scale of 1 to 6, that reflects frequency and character of cloud-to-ground lightning. The scale is exponential, based on powers of 2 (i.e., LAL 3 indicates twice the lightning of LAL 2).
Line Scout: A firefighter who determines the location of a fire line.

Live Fuels - Living plants, such as trees, grasses, and shrubs, in which the seasonal moisture content cycle is controlled largely by internal physiological mechanisms, rather than by external weather influences.

Micro-Remote Environmental Monitoring System (Micro-REMS) - Mobile weather monitoring station. A Micro-REMS usually accompanies an incident meteorologist and ATMU to an incident.

Mineral Soil - Soil layers below the predominantly organic horizons; soil with little combustible material.

Mobilization - The process and procedures used by all organizations, federal, state and local for activating, assembling, and transporting all resources that have been requested to respond to or support an incident.

Modular Airborne Firefighting System (MAFFS) - A manufactured unit consisting of five interconnecting tanks, a control pallet, and a nozzle pallet, with a capacity of 3,000 gallons, designed to be rapidly mounted inside an unmodified C-130 (Hercules) cargo aircraft for use in dropping retardant on wildland fires.

Mop-up - To make a fire safe or reduce residual smoke after the fire has been controlled by extinguishing or removing burning material along or near the control line, felling snags, or moving logs so they won’t roll downhill.

Multi-Agency Coordination (MAC) - A generalized term which describes the functions and activities of representatives of involved agencies and/or jurisdictions who come together to make decisions regarding the prioritizing of incidents, and the sharing and use of critical resources. The MAC organization is not a part of the on-scene ICS and is not involved in developing incident strategy or tactics.

Mutual Aid Agreement – A written agreement between agencies and/or jurisdictions in which they agree to assist one another upon request, by furnishing personnel and equipment.

National Environmental Policy Act (NEPA) - NEPA is the basic national law for protection of the environment, passed by Congress in 1969. It sets policy and procedures for environmental protection, and authorizes Environmental Impact Statements and Environmental Assessments to be used as analytical tools to help federal managers make decisions.

National Fire Danger Rating System (NFDRS) - A uniform fire danger rating system that focuses on the environmental factors that control the moisture content of fuels.

National Wildfire Coordinating Group - A group formed under the direction of the Secretaries of Agriculture and the Interior and comprised of representatives of the U.S. Forest Service, Bureau of Land Management, Bureau of Indian Affairs, National Park Service, U.S. Fish and Wildlife Service and Association of State Foresters. The group's purpose is to facilitate coordination and effectiveness of wildland fire activities and provide a forum to discuss, recommend action, or resolve issues and problems of substantive nature. NWCG is the certifying body for all courses in the National Fire Curriculum.

Nomex ® - Trade name for a fire resistant synthetic material used in the manufacturing of flight suits and pants and shirts used by firefighters (see Aramid).

Normal Fire Season - 1) A season when weather, fire danger, and number and distribution of fires are about average. 2) Period of the year that normally comprises the fire season.

Operations Branch Director - Person under the direction of the operations section chief who is responsible for implementing that portion of the incident action plan appropriate to the branch.

Operational Period - The period of time scheduled for execution of a given set of tactical actions as specified in the Incident Action Plan. Operational periods can be of various lengths, although usually not more than 24 hours.

Overhead - People assigned to supervisory positions, including incident commanders, command staff, general staff, directors, supervisors, and unit leaders.

Pack Test - Used to determine the aerobic capacity of fire suppression and support personnel and assign physical fitness scores. The test consists of walking a specified distance, with or without a weighted pack, in a predetermined period of time, with altitude corrections.

Peak Fire Season - That period of the fire season during which fires are expected to ignite most readily, to burn with greater than average intensity, and to create damages at an unacceptable level.

Personnel Protective Equipment (PPE) - All firefighting personnel must be equipped with proper equipment and clothing in order to mitigate the risk of injury from, or exposure to, hazardous conditions encountered while working. PPE includes, but is not limited to: 8-inch high-laced leather boots with lug soles, fire shelter, hard hat with chin strap, goggles, ear plugs, aramid shirts and trousers, leather gloves and individual first aid kits.

Preparedness - Condition or degree of being ready to cope with a potential fire situation

Prescribed Fire - Any fire ignited by management actions to meet specific objectives. Prior to ignition, a written, approved prescribed fire plan must exist and NEPA requirements must be met.

Prescribed Fire Plan (Burn Plan) - This document provides the prescribed fire burn boss information needed to implement an individual prescribed fire project.

Prescription - Measurable criteria that define conditions under which a prescribed fire may be ignited, guide selection of appropriate management responses, and indicate other required actions. Prescription criteria may include safety, economic, public health, environmental, geographic, administrative, social, or legal considerations.

Prevention - Activities directed at reducing the incidence of fires, including public education, law enforcement, personal contact, and reduction of fuel hazards.

Project Fire - A fire of such size or complexity that a large organization and prolonged activity is required to suppress it.

Pulaski - A combination chopping and trenching tool, which combines a single-bitted axe-blade with a narrow adze-like trenching blade fitted to a straight handle. Useful for grubbing or trenching in duff and matted roots. Well-balanced for chopping.

Rappelling - Technique of landing specifically trained firefighters from hovering helicopters; involves sliding down ropes with the aid of friction-producing devices.

Rate of Spread - The relative activity of a fire in extending its horizontal dimensions. It is expressed as a rate of increase of the total perimeter of the fire, as rate of forward spread of the fire front, or as rate of increase in area, depending on the intended use of the information. Usually it is expressed in chains or acres per hour for a specific period in the fire's history.

Reburn - The burning of an area that has been previously burned but that contains flammable fuel that ignites when burning conditions are more favorable; an area that has reburned.

Red Card - Fire qualification card issued to fire rated persons showing their training needs and their qualifications to fill specified fire suppression and support positions in a large fire suppression or incident organization.

Red Flag Warning - Term used by fire weather forecasters to alert forecast users to an ongoing or imminent critical fire weather pattern.

Rehabilitation - The activities necessary to repair damage or disturbance caused by wildland fires or the fire suppression activity.

Relative Humidity (Rh) - The ratio of the amount of moisture in the air, to the maximum amount of moisture that air would contain if it were saturated. The ratio of the actual vapor pressure to the saturated vapor pressure.

Remote Automatic Weather Station (RAWS) - An apparatus that automatically acquires, processes, and stores local weather data for later transmission to the GOES Satellite, from which the data is re-transmitted to an earth-receiving station for use in the National Fire Danger Rating System.

Resources - 1) Personnel, equipment, services and supplies available, or potentially available, for assignment to incidents. 2) The natural resources of an area, such as timber, crass, watershed values, recreation values, and wildlife habitat.

Resource Management Plan (RMP): A document prepared by field office staff with public participation and approved by field office managers that provides general guidance and direction for land management activities at a field office. The RMP identifies the need for fire in a particular area and for a specific benefit.

Resource Order - An order placed for firefighting or support resources.

Retardant - A substance or chemical agent, which reduced the flammability of combustibles.

Safety Zone - An area cleared of flammable materials used for escape in the event the line is outflanked or in case a spot fire causes fuels outside the control line to render the line unsafe. In firing operations, crews progress so as to maintain a safety zone close at hand allowing the fuels inside the control line to be consumed before going ahead. Safety zones may also be constructed as integral parts of fuel breaks; they are greatly enlarged areas, which can be used with relative safety by firefighters and their equipment in the event of a blowup in the vicinity.

Scratch Line - An unfinished preliminary fire line hastily established or built as an emergency measure to check the spread of fire.

Severity Funding - Funds provided to increase wildland fire suppression response capability necessitated by abnormal weather patterns, extended drought, or other events causing abnormal increase in the fire potential and/or danger.

Single Resource - An individual, a piece of equipment and its personnel complement, or a crew or team of individuals with an identified work supervisor that can be used on an incident.

Size-up – A term used to evaluate a fire to determine a course of action for fire suppression.

Slash - Debris left after logging, pruning, thinning or brush cutting; includes logs, chips, bark, branches, stumps and broken understory trees or brush.

Sling Load - Any cargo carried beneath a helicopter and attached by a lead line and swivel.

Slop-over - A fire edge that crosses a control line or natural barrier intended to contain the fire.

Smokejumper - A firefighter who travels to fires by aircraft and parachute.

Smoke Management - Application of fire intensities and meteorological processes to minimize degradation of air quality during prescribed fires.

Smoldering Fire - A fire burning without flame and barely spreading.

Snag - A standing dead tree or part of a dead tree from which at least the smaller branches have fallen.

Spark Arrester - A device installed in a chimney, flue, or exhaust pipe to stop the emission of sparks and burning fragments.

Spot Fire - A fire ignited outside the perimeter of the main fire by flying sparks or embers.

Spot Weather Forecast - A special forecast issued to fit the time, topography, and weather of each specific fire. These forecasts are issued upon request of the user agency and are more detailed, timely, and specific than zone forecasts.

Spotting - Behavior of a fire producing sparks or embers that are carried by the wind and start new fires beyond the zone of direct ignition by the main fire.

Staging Area - Locations set up at an incident where resources can be placed while

Strategy - The science and art of command as applied to the overall planning and conduct of an incident.

Suppression - All the work of extinguishing or containing a fire, beginning with its discovery.

Surface Fuels - Loose surface litter on the soil surface, normally consisting of fallen leaves or needles, twigs, bark, cones, and small branches that have not yet decayed enough to lose their identity; also grasses, forbs, low and medium shrubs, tree seedlings, heavier branchwood, downed logs, and stumps interspersed with or partially replacing the litter.

Tactics - Deploying and directing resources on an incident to accomplish the objectives designated by strategy.

Temporary Flight Restrictions (TFR) - A restriction requested by an agency and put into effect by the Federal Aviation Administration in the vicinity of an incident, which restricts the operation of nonessential aircraft in the airspace around that incident.

Terra Torch ® - Device for throwing a stream of flaming liquid, used to facilitate rapid ignition during burn out operations on a wildland fire or during a prescribed fire operation.

Test Fire - A small fire ignited within the planned burn unit to determine the characteristic of the prescribed fire, such as fire behavior, detection performance and control measures.

Timelag - Time needed under specified conditions for a fuel particle to lose about 63 percent of the difference between its initial moisture content and its equilibrium moisture content. If conditions remain unchanged, a fuel will reach 95 percent of its equilibrium moisture content after four timelag periods.

Torching - The ignition and flare-up of a tree or small group of trees, usually from bottom to top.

Type - The capability of a firefighting resource in comparison to another type. Type 1 usually means a greater capability due to power, size, or capacity.

Uncontrolled Fire - Any fire which threatens to destroy life, property, or natural resources.

Underburn - A fire that consumes surface fuels but not trees or shrubs. (See Surface Fuels.)

Water Tender - A ground vehicle capable of transporting specified quantities of water.

Weather Information and Management System (WIMS) - An interactive computer system designed to accommodate the weather information needs of all federal and state natural resource management agencies. Provides timely access to weather forecasts, current and historical weather data, the National Fire Danger Rating System (NFDRS), and the National Interagency Fire Management Integrated Database (NIFMID).

Wet Line - A line of water, or water and chemical retardant, sprayed along the ground, that serves as a temporary control line from which to ignite or stop a low-intensity fire.

Wildland Fire - Any non-structure fire, other than prescribed fire, that occurs in the wildland.

Wildland Fire Implementation Plan (WFIP) - A progressively developed assessment and operational management plan that documents the analysis and selection of strategies and describes the appropriate management response for a wildland fire being managed for resource benefits.

Wildland Fire Situation Analysis (WFSA) - A decision-making process for wildland fires that evaluates alternative management strategies against selected safety, environmental, social, economic, political, and resource management objectives.

Wildland Fire Use – The management of naturally ignited wildland fires to accomplish specific prestated resource management objectives in predefined geographic areas.

Wildland/Urban Interface - Wildland areas adjacent to habitations and high-value improvements. These are areas of urban development and concentrated human activity (including developed recreation sites) that is located within or adjacent to otherwise undeveloped wildlands.

History of the Federal Fire Policy and its Effects

By

Sherry Tune

Forest fires in the western United States have grabbed headlines many times in the last several years – California in 1987, Yellowstone in 1988, Arizona in 1990, Colorado in 1994, New Mexico in 2000, Washington in 2001, and most recently Arizona and Colorado in 2002. In all these cases, firefighters were killed or homes destroyed.

Fire has always played a major role in the life cycle of vegetation in the natural landscape. Since the dawn of time, lightning has started most fires, influencing the life cycles of plants and ecosystems. Many plants adapted to fire's effects. Many adapted so well that they now depend on fire for their normal life cycle. In the United States, fires have been actively suppressed for more than ninety years. And now, without natural fire, forest ecosystems have become unhealthy and prone to major wildland fires, which threaten the perpetuation of the very forests as they have evolved.

By studying growth rings and fire scars on trees hundreds of years old, researchers at the University of Arizona's Tree Ring Laboratory learned that areas of ponderosa pine stands averaging 3,000 acres in size have reburned every two to ten years. These fires typically burned along the ground and at lower heat intensity, and thus were not destructive (Kaib, Swetnam, and Baisan 1999). However, our forests have changed during the Twentieth Century as public policy and forest management practices interfered with the natural fire cycle.

Since the advent of large-scale Anglo-American settlement, wildland fire exclusion, logging, grazing, federal agency management, fuelwood cutting, mining, and the construction of transportation corridors, have all had major effects on the ecology and age structure of ponderosa pine and mixed-conifer forest of southeastern Arizona. C.F. Cooper, who studied Arizona's ponderosa pine forests, wrote the following in 1960:

> *The most important change brought about by the white man has been the virtual exclusion of fire from the forest of the Southwest. Under natural conditions, light surface fires, set by lightning or Indians, burned through all parts of the pine forest at regular intervals of 3 to 10 years. These fires acted as natural thinning agents and reduced surplus fuel. The reduction of flammable grass by grazing animals, and an intensive fire prevention program have largely eliminated fire from the woods. The major cause of the present excess of pine production is exclusion of fire. (Bahre 1991, 183)*

Over the years, federal land management agencies have learned that by actively suppressing the natural occurrence of smaller, cooler fires in forests, they are unwittingly increasing tree density and causing the buildup of dangerous amounts of dead vegetation, which fuel larger and larger fires.

Over the last century, the federal policy of fire suppression on public lands has degraded forest health and, antithetically, has increased the likelihood of catastrophic stand-replacement fires. This is evident in the southwest forests.

Fire, as a tool for people to control and modify their surroundings and to assist in various aspects of everyday life, has been used for thousands of years. Prehistoric people used fire in a variety of ways, which has been documented archaeologically and through analogies with historic Indian societies (Williams 1993). In addition to deliberate use of fire, fire played a more natural role in the evolution of ecosystems because previous societies did not possess the technology, the livestock, or anything like the modern political mandate for fire suppression that has existed during the last century. We know that prehistoric settlements burned, that landscapes surrounding these settlements burned, and that much of the mountain and valley environment of the Southwest has been exposed to fire at one time or another (Bahre 1991).

Change began in the southwestern ponderosa pine forest during extensive livestock grazing in the late 19th century. As grazing intensified, herbaceous vegetation could not respond, and its coverage declined. This decline led to three subsequent changes: reduced fire spread because of the decrease in fire fuels (grasses), an eventual increase in ponderosa pine regeneration because of reduced competition and fire mortality, and more mineral seedbeds (Cooper 1960). Beginning in the early 1900's, forestry practices, including fire control, further reduced the spread of inevitable fires, leading to unprecedented fuel accumulations and stagnation of seedling and sapling thickets (Harrington and Sackett 1990). During previous centuries, fire was the natural thinning agent that kept southwestern ponderosa pine forest open (Cooper 1960). Dense sapling thickets – uncharacteristic of pre-settlement ponderosa pine ecosystems – are common today. Sackett and Harrington reported typical stands averaging from 2,000 up to 90,000 trees per acre, of which 65 percent were 1 to 4 inches diameter at breast height (seedlings). In the early 1900s ponderosa pine forests had substantially fewer stems per acre, greater height, and larger diameters than today.

By the beginning of this century, wildland fire had earned its reputation as a notorious adversary. For example, the 1871 Peshtigo Fire, fueled by logging slash, killed 1,500 people in Michigan and Wisconsin. The inferno burned more than 3.5 million acres. In 1910, fires in Idaho and Montana killed 80 firefighters and blacked another 3 million acres. They leveled entire towns and cost over $1 million to extinguish.

Dictated by our society's values, stringent Federal fire control policies quickly evolved,

> *The Use Book that guided Forest Service management from 1905 to 1911 envisioned small fires handled by a solitary ranger or guard, or at most a forest officer in charge of a posse comitatus of ranchers, farmers, miners, and loggers. Early rangers were instructed to "take horses and ride as far as the Almighty will let you and get control of the forest fire situation on as much of the mountain country as possible. And as to why you should do first, well, just get up there as soon as possible and put them out." (Pyne 1982)*

Management practices on public lands appear to run in cycles. The historical fact is that fire suppression was essentially nonexistent in western forests before 20th century. (Loveridge 1944, Kilgore 1976) "Let burn" practices were common to a number of areas in the 1910s and 1920s, particularly in California. The "hit-em hard and hit-em fast" strategy of the "10 A.M. policy"

finally won out completely in the heated controversy in the early 1930s, and the pendulum was then solidly on the side of total suppression. This adopted fire policy aimed at controlling a fire by 10 A.M. the next day following the report. If the fire escaped control, plans would be made to control it by 10 A.M. the next day. If it escaped again, control would be planned for 10 A.M. the following day, and so on.

In the 1970s and 1980s, land management agencies in the western United States shifted back toward the approach of using fire for management purposes. Although the term "let-burn" was still officially banned from the fire management lexicon, it was clear that the pendulum had moved back toward center.

Part of the cycling of *fire policy* may be linked to the cycling of *fire regimes*. Public (i.e., political) support of the early total suppression policy grew out of the shock of devastating fires in the late 1800s, such as the Hinckley and Peshtigo fire of the Lake States, and the 1910 fires of the Northern Rockies. Following the catastrophic fires in California and the Pacific Northwest in 1987, and the Yellowstone and other western fires in 1988, there was a similar "fire shock" for both the public and land management agencies.

The fire policy changed in 1979 from the 10 A.M. policy to one requiring a timely response for each wildland fire ignition. Each fire is managed using a suppression strategy based upon local conditions of fuels, weather, and terrain, established fire management direction, and cost efficiency. Suppression strategies may range from direct control, with minimum acreage burned, to more indirect methods of containment and confinement, which often allow large areas to burn. In all cases, suppression strategy was designed to avoid unacceptable resource losses. This policy is referred to as an "appropriate suppression response" and was first implemented in 1985.

The events of the 1994 wildland fire season, which resulted in 34 fatalities, created a renewed awareness and concern among the Federal land management agencies and various constituent groups about the impacts of wildland fire. As a result of the concerns and in response to the specific recommendation of the South Canyon Fire in Colorado where 14 firefighters perished, the *"Federal Wildland Fire Management Policy and Program Review"* was finalized and signed by both the Secretary of the Interior and Agriculture in December 1995.

For the first time, one set of Federal fire policies were established, which created a change in policy for both Departments. The Land Management agencies were directed to reintroduce "natural" fire back into the ecosystem. The 1995 Federal Fire Policy states,

> *Every acre with burnable vegetation will have an approved Fire Management Plan. . . .Wildland fire, as a critical natural process, must be reintroduced into the ecosystem. . . .Wildland fire management decisions and resource management decisions go hand in hand . . . Agency administrators must have the ability to choose from a full spectrum of fire management actions – from prompt suppression to allowing fire to function in its natural ecological role.*

Thus, mandating the development of a Fire Management Plan. Additionally, it was very clear that protection of human life is the first priority in wildland fire management, and property and

natural/cultural resource jointly become the second priority. In the past, in terms of developing and implementing firefighting strategy, life and property were equal in priority.

After the Cerro Grande prescribed fire escaped in May 2000 in New Mexico, the Secretaries of the Interior and Agriculture again requested a review of the *1995 Federal Wildland Fire Management Policy* and its implementation. In that review, the review team concluded that, given the current conditions of public lands and the exploding population of people living in the wildland-urban interface, the ideology of reintroducing natural fire into the ecosystem was an enormous task requiring an equally enormous risk. Furthermore, the review team identified a lack in coordination, consistency, and agreement by the five federal land management agencies (Forest Service, Bureau of Land Management, National Park Service, Bureau of Indian Affairs, and National Fish and Wildlife Service), which they considered as failing to fully implement the *1995 Federal Wildland Fire Management Policy.* This review resulted a 2001 Federal Wildland Fire Management Policy, which continued to support the 1995 Policy, but placed a stronger emphasis on the Federal agencies to establish and implement a clear, concise system of accountability and cooperation among themselves. Furthermore, the new policy calls for using "the full range of fire management activities . . . to achieve ecosystem sustainability," including fire use, and recognizes the "importance of sound science in fire management activities." The policy stresses the need to complete or revise fire management plans that are "more effectively and directly" integrated "with other natural resource goals." But most importantly, Firefighter and public safety is the first priority in every fire management activity.

In October 2000, the Forest Service released *Protecting People and Sustaining Resources in Fire-Adapted Ecosystems: A Cohesive Strategy* in response to the U.S. General Accounting Office (GAO) Report, *Western National Forests: A Cohesive Strategy is Needed to Address Catastrophic Wildfire Threats (GAO/RCED-99-65).* The GAO concluded, "The most extensive and serious problem related to the health of National Forests in the interior West is the over-accumulation of vegetation." The Forest Service report "outlines a cohesive strategy to reduce wildfire threats and restore forest health in the interior West. . . .The strategy focuses on maintaining and restoring healthy, resilient fire-adapted ecosystems as the means to better protect people and sustain natural resources."

Congress then mandated the implementation of the National Fire Plan through its appropriation action and written direction. Five key objectives were identified in the National Fire Plan, *"Managing the Impacts of Wildfires on Communities and the Environment: A Report to the President in Response to the Wildfires of 2000"*:

1. Firefighting – Ensure adequate preparedness for future fire seasons;
2. Rehabilitation and Restoration – Restore landscapes and rebuild communities damaged by wildfire;
3. Hazardous Fuels Reduction – Reducing fuels in wildlands at risk from uncharacteristic fire effects, especially near communities. Invest in projects to reduce fire risk;
4. Community Assistance – Work directly with communities to ensure adequate protection;
5. Accountability – Be accountable and establish adequate oversight and monitoring for results.

The successful reduction of natural fire within the last century has created hazardous, unhealthy forest conditions. With careful use of fire under the general guidance of the prescriptions and cautions, the vigor and stability of these forests should return. With time, albeit a lot of time, we may even be able to improve upon, the multiple-use production of pre-settlement, natural conditions, and maintain healthy ecosystems that face less risk of high intensity, catastrophic wildland fires.

Forest Fire Management Analysis

for the

Coronado National Forest

December 17, 1998

PREPARED BY: **/s/ Sherry A. Tune** **December 17, 1998**
Sherry A. Tune (Forest AFMO) Date

REVIEWED BY: **/s/ Richard N. Kvale** **December 18, 1998**
Richard N. Kvale (Forest FMO) Date

APPROVED BY: **/s/ John M. McGee** **December 21, 1998**
John M. McGee (Forest Supervisor) Date

CERTIFIED BY**: /s/ Dan Winner** **January 15, 1999**
Dan Winner (Regional Fire Planner) Date

1998 NFMAS ANALYSIS DOCUMENTATION

ANALYSIS DESCRIPTION

Reasons for undertaking the analysis:

The previous analysis was completed in December of 1995 and is being redone in the fall of 1998 to consider changes that have taken place in the last three years. This analysis includes increased costs due to the addition of FERS employees and other changes, which reflects the current organization, costs, and philosophies.

The planning team consisted of the following:

The following personnel were on the planning team: Richard N. Kvale (Forest Fire Staff), Sherry A. Tune (Forest Assistant Planning Fire Staff), Larry Tuck (Relief Dispatcher), Larry M. Eppler (Forest Assistant Operation and Aviation Fire Staff), and District Fire Staffs.

Goals, Objective, and assumptions

The analysis was completed in early winter 1998.

The goal of the Fire Management Analysis is to examine different suppression alternatives to find the most efficient organization.

This will result in a Fire Management Organization that should meet Forest Plan guidelines and be the most efficient and effective in providing fire protection for the Forest.

There are three Fire Management Zones.

Airtankers are usually available and on the scene within one hour. There are two Type I airtankers at Libby, Silver City, and Phoenix Airtanker Bases.

Three Helicopters are available, one at Rucker Helibase, one at the Tucson International Airport Helibase, and one at Safford Helibase from May thorough Mid July. The Helicopter is available for Forest Dispatches approximately 2/3 of the time. The Tucson Helicopter is a shared resource with funding provided by the NWS, NPS, and USFS.

The Coronado is subject to multiple lightning fires and to human caused fires, which occur annually in high use recreation areas.

Approximately 80% of the fires fall into size class A and B. Fires larger than 1,000 acres make up approximately 3% of all fires.

Fuel types represented are Mixed Conifer, Ponderosa Pine, Oak Woodland, Brush, Desert Scrub, and Grass.

Elevations Range from approximately 2,800 feet to just over 10,700 feet.

Most areas on the Forest are inaccessible by vehicle.

The fire season runs from late March through November, with a normal break in late July and early August due to summer monsoons. This has been established by the historical analysis.

Historical fire occurrence and weather data are based on the ten year period of 1986 through 1995.

Fire resources used in calibration are the historic resources used during this ten year period. Dispatch philosophies are those that are consistent with historical and current procedures.

SUMMARY OF ANALYSIS USED ON THE FOREST AND THE RESULTS.

A. Regional ``rules'' or ``standards''.

Regional Policy is basic: Common Sense, Keep it simple and be professional.

- FMZ's use 24 hour escape times.
- Do not dispatch all resources at FIL 1.
- Representative Locations (RL) are polygons, not just one fire.
- Average Acre Costs were derived from forest and regional data.

PROCESS USED:

The NFMAS process is generally divided into four levels. Level one consists of the data collection of the historical and current situations. The second level is an Analysis of the data followed by analysis of different mixes of resources developing the Most Efficient Levels (MEL). The MEL, when implemented, meets the Forest Plan. The most efficient program level is the one that results in the minimum Cost plus Net Resource Value Change (C+NVC). This is the point where the next dollar increase in the fixed budget cost results in less than one dollar reduction in the variable suppression cost plus NVC. This Forest-level data is used to provide an estimate of the consequences in changes in the Regional and National program budgets, and to support (by Congressional direction) the national fire program in the annual Forest Service budget request. Level three is the implementation of MEL through the Fire Management Plan (FMP). The fourth level is monitoring, evaluation, and updating the analysis and the FMP. All cost figures in this analysis are in 1998 dollars.

The NFMAS process is an ongoing evaluation of the fire program's effectiveness and efficiency.

CHANGES FROM LAST ANALYSIS.

The Forest Supervisor's Office is directly involved on a regular basis with fire management planning, prevention, coordination, training and dispatching. Each districts provides its own fire management and initial attack organizations. Initial attack forces consists of Engine Modules, Helicopter Modules, Crews, Airtankers, and other resource personnel.

In doing the analysis, the following situations and conditions have changed since the last analysis:

- The workforce for other disciplines is not static; changes have occurred and will continue.
- The costs of peripheral programs including radio upgrades, land management planning, support to law enforcement, computer support, transfer of station, unemployment compensation, and facilities maintenance have all risen in the past ten years.
- Increased costs of FERS employees is reflected in module and personnel costs.
- Organization shift to PFT for all Engine and Crew Supervisors and 13-13 for Assistants.
- Organization shift for all Helitack Modules to PFT and 13-13 and upgrades.
- The NFMAS Process is utilizing the new PCHA and IIAA format and program.

THE RATIONALE FOR THE SELECTION OF FIRE MANAGEMENT ZONES (FMZ).

Selection of FMZ's

The previous planning effort, conducted in 1995, contained three Fire Management Zones (FMZs). The zones are the same in this analysis. Within the Coronado NF land management plan there are two Fire Management Zones. These zones are based on resource management objectives with consideration being given to the value of property and resources to be protected. Further, the forest has been divided into planning units, referred as Fire Management Analysis Zones (FMAZs), geographically delineated for the purpose of the level II Analysis. These FMAZs are based upon common fire management direction and fire behavior characteristics.

NOTE: The FMAZ have been changed to FMZ for the IIAA program.

The FMZs and Representative Locations (RLs) are entered in a GIS layer, which is utilized in conjunction with the Fire Occurrence Layer, to determine numbers of fires by FMZ and the percent represented by each RL. This data was used to complete the Forest Fuels Analysis, FORBS.

FMZ's and their Locations:

FMZ AA	High Elevation, high resource value. Fifty percent of the Chiricahua Mountains, higher elevations of the Santa Catalina Mountains, 75% of the Pinaleno Mountains, 90% of the Huachuca Mountains, and 40% of the Santa Rita Mountains.
FMZ BB	Low Elevation, low resource value. Fifty percent of the Chiricahua Mountains, 90% of the Peloncillo Mountains, and all of the Dragoon Mountains; 70% of theTumacacori Mountains; 20% of the Santa Rita Mountains; 80% of Canelo Hills and Patagonia Mountains; all of the Whetstone, Galiuro, Winchester, and Santa Teresa Mountains; 25% of the Pinaleno Mountains; all the USFS jurisdiction of the Rincon Mountains; and 75% of the Santa Catalina Mountains.
FMZ CC	Low Elevation, high resource value. Ten percent of the Peloncillo Mountains, 30% of the Tumacacori Mountains, 40% of the Santa Rita Mountains, 20% of Canelo Hills and Patagonia Mountains, and 15% of the Santa Catalina Mountains.

Description of FMZ AA

a: General Description: This zone is the higher elevations of all the sky islands on the Coronado, consisting of Mixed Conifer, Ponderosa Pine and Oak Woodland. The high resource values include multi-million dollar astrophysical sites on the Santa Rita Mountains, Pinalenos Mountains, and Santa Catalina Mountains. Summerhomes and private land, multiple high use recreational areas, and many Threaten and Endangered Species (T&ES) both plants and animals are also present on the different mountain ranges. The representative NFDRS fuel model is C.

b: Weather Factors: The weather data within this zone was obtained from the Class I weather station at Sabino Canyon, referred to as Saguaro Station. Missing weather data was extracted from the Class I weather station at Globe.

c: Fire Suppression Considerations: This zone contains the highest percentage of human and lightning fire occurrence for the analysis, (62% of all fires within the analysis period occurred within this FMZ). Dispatch philosophies will be consistent with historic and current dispatching.

d: Fire Management Analysis Considerations: This zone has five representative fire locations.

Description of FMZ BB

a: General Description: This zone is the lower elevations of the Forest consisting of Ponderosa Pine -- Oak Woodland eco-zone, brush, desert scrub, and grass; and includes some T&ES, both plants and animals. The representative NFDRS fuel model is L.

b: Weather Factors: The weather data within this zone was obtained from the Class I weather station at Sabino Canyon, referred to as Saguaro Station. Missing weather data was extracted from the Class I weather station at Globe.

c: Fire Suppression Considerations: This zone contains sufficient fire occurrence for the analysis: approximately 25%. Dispatch philosophies will be consistent with historic and current dispatching.

d: Fire Management Analysis Considerations: This zone has three representative fire locations.

Description of FMZ CC

a: General Description: This zone is the lower elevations of the Forest consisting of oak woodland, brush, desert scrub, and grass: it is located next to rapidly expanding urban areas; approximately 34,000 acres of the total forest acres are urban interface areas. This number is based on numbers of homes per mile along the interface of Tucson, Oracle, Sierra Vista, Nogales and Sonoita/Patagonia. Additionally it contains summer homes located inside the Forest on three districts, administrative sites owned by the Forest Service, and ranches scattered throughout the oak woodland areas. Multiple high use recreational areas are located within this FMZ and many T&ES, both plants and animals, are present. The representative NFDRS fuel model is L.

b: Weather Factors: The weather data within this zone was obtained from the Class I weather station at Sabino Canyon, referred to as Saguaro Station. Missing weather data was extracted from the Class I weather station at Globe.

c: Fire Suppression Considerations: This zone contains sufficient fire occurrence for the analysis: approximately 13%. Dispatch philosophies will be consistent with historic and current dispatching.

d: Fire Management Analysis Considerations: This zone has two representative fire locations.

REPRESENTATIVE LOCATIONS

During the NFMAS development process different locations across the forest were selected to represent fire occurrence in different vegetative conditions, fuel types, topographic relief and with a variety of access situations. The purpose of this section is to describe in general terms the conditions at these ``representative fire" locations.

FMZ AA

Rep Fire No. 1
Situated on the Santa Catalina Mountains, Organization Ridge area.
Ponderosa Pine with medium slash and some grass.
Fuel Model - C
W aspect 30-40% slope
Some road access
Fairly rugged terrain, may require some reopening of closed roads

Best represented by Saguaro weather station

Rep Fire No. 2
Situated on the Santa Catalina Mountains, Shovel Springs area
Ponderosa Pine with medium slash and some grass
Fuel Model - C
W-NW aspect 30-40% slope
Roadless area, remote
Fairly rugged terrain, walk-in
Best Represented by Saguaro weather station

Rep Fire No. 3
Situated on the Chiricahua Mountains, Monte Vista area
Ponderosa Pine with medium to heavy slash and some grass
Fuel Model - C
Ridge-top, multiple aspects, 30-45% slope
Roadless area, remote
Rugged terrain, walk-in
Best represented by Saguaro weather station

Rep Fire No. 4
Situated on the Pinaleno Mountains, SW of West Peak
Ponderosa Pine with heavy slash and some grass
Fuel Model - C
Ridge-top, multiple aspects, 30-45% slope
Roadless area, remote
Rugged terrain, walk-in
Best represented by Saguaro weather station

Rep Fire No. 5
Situated on the Huachuca Mountains, NW of Miller Peak
Ponderosa Pine with moderate to heavy slash and some grass
Fuel Model - C
Ridge-top, multiple aspects, 30-45% slope
Roadless area, remote
Rugged terrain, walk-in
Best represented by Saguaro weather station

FMZ BB

Rep Fire No. 1
Situated in the Canelo Hills area, N of San Rafael Valley
Grass and oak woodland
Fuel Model - L
Multiple aspects, 10-25% slope
Road Access
Rugged to moderate terrain with many broken canyons
Best represented by Saguaro weather station

Rep Fire No. 2
Situated on the Southern end of the Pinalenos, Gillespie area
Grass, desert scrub, and oak woodland
Fuel Model - L

Multiple aspects, 10-25% slope
Road Access
Rugged to moderate Terrain
Best Represented by Saguaro weather station

Rep Fire No. 3
Situated on the Chiricahua Mountains, near Bruno Peak area
Grass, desert scrub, and oak woodland
Fuel Model - L
Multiple aspects, 10-35% slope
Limited road access
Rugged to moderate Terrain
Best Represented by Saguaro weather station

Rep Fire No. 3
Situated on the Galiuro Mountains, Bassett Peak area
Grass, desert scrub, and oak woodland
Fuel Model - L
Multiple aspects, 10-45% slope
Roadless area, remote
Rugged terrain, walk-in
Best Represented by Saguaro weather station

FMZ CC

Rep Fire No. 1
Situated on the Santa Rita Mountains, Melendez Pass area
Grass, desert scrub, and oak woodland
Fuel Model - L
Multiple aspects, 10-35% slope
Limited road access
Rugged to moderate Terrain
Best Represented by Saguaro weather station

Rep Fire No. 2
Situated on the Santa Catalina Mountains, Oracle Hill area
Grass, desert scrub, and oak woodland
Fuel Model - L
Multiple aspects, 10-35% slope
Limited road access
Rugged to moderate Terrain
Best Represented by Saguaro weather station

The Historical Analysis Process:

a. Rationale for the analysis period selected:

Fire history Analysis period was selected for a ten year period of 1986 thorough 1995, in order to determine an average fire occurrence for the Forest. This ten year period was selected in order to represent both current average fire occurrence and fire suppression resources.

b. Number of fires by Fire Intensity Level (FIL);

PCHA IIAA Summary
Coronado National Forest

FMZ - AA

Description	FIL 1	FIL 2	FIL 3	FIL 4	FIL 5	FIL 6
Annual Fires	46.60	27.60	2.80	1.10	0.50	0.50
50th pcl ROS	10.52	16.01	21.30	21.31	21.32	21.33
90th pcl ROS	12.72	19.10	25.98	25.99	26.00	26.01

FMZ - BB

Description	FIL 1	FIL 2	FIL 3	FIL 4	FIL 5	FIL 6
Annual Fires	12.30	13.90	3.30	1.00	0.50	1.10
50th pcl ROS	36.49	53.99	78.96	141.79	141.80	141.81
90th pcl ROS	41.57	68.09	112.15	165.29	165.30	165.31

FMZ - CC

Description	FIL 1	FIL 2	FIL 3	FIL 4	FIL 5	FIL 6
Annual Fires	7.50	6.30	1.90	1.20	0.30	0.00
50th pcl ROS	24.53	40.97	70.41	142.89	142.90	0.00
90th pcl ROS	31.61	53.33	96.96	149.50	149.51	0.00

c. Number of fires by cause:

FIRES BY STATISTICAL CAUSE YEARS 1986 - 1995

LTNG	EQUIP	SMOKG	CMPFR	DEBBR	RROAD	ARSON	CHILD/MISC.

701	27	49	220	15	0	79	122

d. Rationale for the length of the fire season chosen:

The fire season length is best defined by four distinct levels. The first being the most critical, May thru July. The second level is that of April thru July, and the third level is Mid-March through Mid-November. The fourth level is year round. The Forest studied fire occurrence in conjunction with fire weather to come up with these four separate levels.

e. Rationale for adding or deleting fires:

There were no fires that were added or deleted.

CONFIDENCE IN DATA:

- Weather: The weather was taken out of the National Data Kansas City using KCFAST and importing it into PCHA. The confidence level in the National Database is high and there are no missing weather matches in PCHA. We used both Saguaro and Globe stations.

- Fire Occurrence: The fire occurrence database was taken for the Kansas City Database, the confidence level is high and there were no missing Fires in PCHA.

- Historic Organization: The Forest used the average historical organization for the period from 1985 thru 1996. District expertise and input were utilized to arrive at the organization and realistic costs associated with this organization.

MODEL CALIBRATION PROCESS:

The calibration process began with running Auto-Cal within IIAA. Production rates were obtained from the NFMAS handbook as per Regional guidelines. Adjustments in Rates of Spread (ROS), Fires by FIL and the EFT table were made to bring calibration within less than five percent error from historical. Calibration was accomplished manually.

DEVELOPMENT OF AVERAGE ACRE COSTS:

Average Acre Costs (AAC): The AAC was calculated using Forest cost history data and then leveled utilizing Regional costs. Figures were derived from Regional and Forest average costs per acre, figured from fire reports and actual costs by Sherry Tune. See AAC table from IIAA below:

Average acre costs used are as follows:
0-.25 Acres is $ 3138/Acre
.26-10 Acres is $ 989/Acre
10.1- 100 Acres is $ 526/Acre
100.1-300 Acres is $ 422/Acre
300.1-1000 Acres is $310.00/Acre
1000.1 - 100,000 Acres is $ 237.00/Acre

- Net Value Change (NVC): Values from previous analyses were revisited and adjusted appropriately by Resource Specialists. See attached documentation and NVC tables produced by IIAA.
- Unit Mission Costs (UMC): Unit Mission Costs were calculated, as indicated in attached document

tion.

- Escaped Fire Tables (EFT): The Forest used the IIAA EFT tables. See attached EFT tables from IIAA outputs.
- Historic Fire Tables (HFT): The Forest used the IIAA HFT that was produced by the model.

SUPPRESSION MODULE COSTS: Sherry Tune developed the program module costs using actual FY 1997 figures. Module Costs for each unit may obtained by printing the line item for the unit; they are also found in the NFMAS documentation.

Costs of other program support:

SEZ Coordination Center - FCDC	SEZ Expanded Dispatch - FCDC
Public Affairs Support - SPEC	Rent - Rent
Head Tax - SPEC	IBM Support - IBM
Mexico - SPEC	Ecosystem Management Support - NFEM
District OH Costs - RENT	Forest Overhead Costs - RENT
Workers Compensation - OWCP	Business Mgt Support - ADMIN
SWFF Program - SPEC	Transfer of Station - TOS
Forest Unemployment - UNEMP	

BUDGET LEVEL OPTIONS AND A GRAPH OF THE CURVE, THE ORGANIZATIONAL MIX, THE DISPATCH PHILOSOPHY USED AND IDENTIFICATION OF MOST EFFICIENT LEVEL (MEL).

- Six budget levels were used for the Coronado:

60% of the MEL option
70% of the MEL option
80% of the MEL option
90% of the MEL option
MEL
115% of the MEL option
The budget level options from IIAA and the curve are included below.

Description of the Forest's Dispatch Philosophy Used

- Send closest available resource.
- Helicopter and helitack crew is utilized as available through complete run.
- Use available closest engine crew is utilized as available thru complete run
- There are two airtankers positioned at Libby Airtanker Base during the fire season and will be utilized.
- Utilize two airtankers from Silver City and two from Phoenix and two from Tucson
- Fire resources will be prepared to respond in the following time table:

Method	Time Until Travel

Helicopters	10 minutes
Airtankers	10 minutes
Handcrew	10 minutes
Engines	10 minutes
Fire Prevention Tech	10 minutes

PREFERRED ALTERNATIVE – MEL

- Operate ten Type 6 engines 7 days per week. There are three people on each engine for seven day coverage during fire season.
- Operate two Airtankers out of the Libby Airtanker Base, 1) May 15 to June 21 and 2) June 1 to July 5.
- Operate two Airtankers out of the Silver City Airtanker Base.
- Operate two Airtankers out of the Phoenix Airtanker Base.
- Operate two Airtankers out of the Tucson Airtanker Base.
- Operate six fire lookouts (Monte Vista, Barfoot, Red Mountain, West Peak, Heliograph, and Lemmon Rock)
- Operate three helicopter and a six person helitack crew at, 1) Rucker for seven days per week from April 26 to July 14, 2) Tucson for seven days per week from April 27 to July 12, and 3) Safford for seven days per week from April 27 to July 14.
- Operate one Class I weather station during fire season at Sabino Canyon..
- Operate six Class II weather stations during fire season at Monte Vista, Peloncillos, Carr Canyon, Noon Creek, Columbine, and Palisades.
- Operate the Southeast Arizona Zone Coordination Center to support initial attack for the forest, zone, regional, and national fire situations with one full-time Center Manager, one full-time Assistant Center Manager, one full-time dispatcher, one 18-8 dispatcher, one 13-13 dispatch, and a 13-13 relief dispatcher.
- Operate five 6 person hand crew effective 7 days per week. Located at Rucker, Rustler, Nogales, Columbine, and Palisades.

LINK WITH THE LAND MANAGEMENT PLAN (LMP) AND FIRE MANAGEMENT PLAN (FMP).

The LMP references to the disposition of the Fire Management direction. A description of the fire management direction and the plan's expected response, by management area, which show expected average annual acres burned by fire size and intensity, and expected costs and net value changes.

The link with the FMP is based on the description of response with the Forest using the most efficient level of resources. The dispatch philosophy used for the NFMAS analysis is based on the Forest FMP.

LINK WITH OPERATIONS (I.E., DISPATCH CARDS AND DISPATCH BLOCKS TIED TO OUTPUTS).

The Forest Dispatcher was involved in all dispatch schemes at all levels, she/he assisted in accurate dispatch times, location of resources and travel times.

- Send closest available resources.
- Helicopters and helitack crews are utilized when available and requested.

- There are two airtankers positioned at Libby Tanker Base during fire season and will be utilized.
- Two Airtankers from Silver City were also used.
- Two Airtankers from Phoenix were also used.

LINK WITH BUDGET PROCESS: The cost for each organization is shown by individual line item and a Line item sheet is included in the documentation information for each district.

ANALYSIS OF OTHER ORGANIZATION THEMES CONSIDERED (AIR, GROUND, ENGINE, AND HAND CREW BASED). The forest is in the process of looking at different organizational themes.

LOCATION OF FILES, FILE NAMES, BACKUP DISKS, AND DOCUMENTATION BOOKS.

The location of the NFMAS Documentation and backup disks will be kept in the Assistant Forest Fire Staff for Planning and Fuels office and a copy is filed at the Regional Fire Planners office.

File names are called CNFIIAA98, CNFPCHA98, CNFFORBS98, and 981214_NFMAS_Summary_98.

These files, file names, backup disks, and documentation books are available to the Regional Fire Planner, Forest Fire Staff, Assistant Forest Fire Staff for Operation and Aviation, Forest Supervisor, District Rangers, and District FMOs.

FUEL TREATMENT OR PREVENTION ANALYSIS USED:

Description of the Forest Prescribed fire Program: Fuels program is based on the Land Management Plan and Regional Budgeting process. A copy of the Forest Fuels Program, resulting from the FORBS analysis, is attached.

A Forest Prevention Program analysis was not used. Prevention plans are completed at the District level.

APPENDICES:

- A hard copy of the calibrated run
- A hard copy of all budget levels of the preferred theme
- A hard copy of financial management documentation (5100-2)
  - Implementation of planning updates
  - All budget levels of the preferred theme
- Hard copies of worksheets for :
  - NVC
  - AAC
  - EFT
  - HFT
- A hard copy of module cost spreadsheets
- A map with FMZ's, representative fire locations and fire occurrence.
- PCHA outputs
- Other organization themes (graphs and output tables)
- Documentation of Fuels analysis.
- Module Costs

FY03 initial	OR/Dif	Days	Cost	Salaries	Tvl/Trn	EQ FOR	EQ Mile	Supls	Misc	Totals		
Douglas											09/23/02	
FMO/AFMO												
Vehicle 3911 12	333/25					3996	2500		323	6819		
Vehicle 3336 12	242/20					2904	2000			4904		
P. Gordon 11		261	230	60030	1000			500	150	61680		
AFMO 9		261	213	55593	1000			500	150	57243		
Totals				115623	2000	6900	4500	1000	623	130646		
										130646		
H-318 MODULE												
Helitack Vehicle 3340 12	440/40					5280	2000			7280		
Extra Vehicle 4449 12	341/23					4092	1150			5242		
Extra Vehicle 4263 12	333/25					3996	1250			5246		
A.Stone 9 Foreman		261	204	53244	500			500	1150	55394		
M.Gil 8 Ast Frmn		261	181	47241	500			500	150	48391		
T. Beck 6 Lead Helitack 18		180	157	28260	500			500	150	29410		
K. Knapp 5 Helitack 13		130	146	18980	500			500	150	20130		
M. McRoberts 5 Helitack 13		130	139	18070	500			500	150	19220		
C. Brinkley 5 Helitack 13		130	141	18330	500			500	150	19480		
1 (4) Helitack 4 120 days		120	94	11280	200			200	150	11830		
Totals				195405	3200	13368	4400	3200	2050	221623		
										221623		
ENGINE 11 4115 12	364/40					4368	2000			6368		
Pump 6752 12	287					3444				3444		
Extra Vehicle 4112 12	333/25					3996	1250			5246		
F. Flores Supervisor 6		261	190	49590	500			500	150	50740		
Ast Suprv 5		180	140	25200	500			500	150	26350		
Lead Crewperson 4		130	120	15600	500			500	150	16750		
2 Crewperson 3		200	84	16800	400			400	300	17900		
Totals				107190	1900	11808	3250	1900	750	126798		
										126798		
CREW 11 (9 people)												
Vehicle 4454 12	364/32					4368	1600			5968		
Extra Vehicle 4448 12	333/25					3996	1250			5246		
L.Martinez Supervisor 6		261	187	48807	500			500	150	49957		
Ast Suprv 5		180	140	25200	500			500	150	26350		
R.Amesquita Crmn 5		261	155	40455	500			500	150	41605		
Lead Crewperson 4		120	94	11280	200			200	150	11830		
5 Crewpersons 3		500	84	42000	1000			1000	750	44750		
Totals				167742	2700	8364	2850	2700	1350	185706		
										185706		
CREW 12 (7 people)												
Vehicle 3890 (+3897) 12	364/40					4368	2000			6368		
Extra vehicle 4796	333/25					3996	1250			5246		
R.Morales Supervisor 6		261	202	52722	500			500	150	53872		
J. ThivenerAst Supe 5		180	139	25020	500			500	150	26170		
Lead Crewperson 4		130	120	15600	500			500	150	16750		
4 Crewpersons 3		400	84	33600	800			800	600	35800		
Totals				126942	2300	8364	3250	2300	1050	144206		
										144206		
FPTs and LOOKOUTS												
Rucker FPT 4283	314/23					3768	2300			6068		
D.Soto Rucker FPT 5		261	123	32103	500			500	150	33253		
Monte Vista Lookout Bovee 5		100	105	10500	200			500	150	11350		
Barfoot Lookout 5		100	105	10500	200			500	150	11350		
Totals				53103	900	3768	2300	1500	450	62021		
										62021		
Douglas WFPR Totals				766005	13000	52572	20550	12600	6273	871000	**871000**	

FY03 initial	OR/Dif	Days	Cost	Salaries	Tvl/Trn	EQ FOR	EQ Mile	Supls	Misc	Totals		
Nogales												
FMO/AFMO												
Vehicle 4657 12	333/25					3996	2500		367	6863		
Vehicle 4122 12	333/25					3996	2500			6496		
Shane Lyman 9		261	230	60030	1000			500	150	61680		
Buddy Zale 7		261	204	53244	1000			500	150	54894		
Totals				113274	2000	7992	5000	1000	667	129933		
										129933		
CREW 21 (E-21) (9 people)												
Vehicles (3503+7762) 12	364/40					7812	2000			9812		
Vehicle (6-pack) 4455 12	364/32					4368	1600			5968		
Vehicle 4280 12	333/25					3996	1250			5246		
Crew Supervisor 6		261	165	43065	500			500	150	44215		
R. Romero Ast Sup 5		180	153	27540	500			500	150	28690		
Lead Crewperson 4		130	120	15600	500			500	150	16750		
6 Crewpersons 3		600	84	50400	1200			1200	900	53700		
Totals				136605	2700	16176	4850	2700	1350	164381		
										164381		
ENGINE 22 3502 12	364/40					4368	2000			6368		
Pump 7762 12	287					3444				3444		
Extra vehicle 4797	333/25					3996	1250			5246		
M. Grambs 6 Supervisor		261	165	43065	500			500	150	44215		
Ast Suprv 5		180	140	25200	500			500	150	26350		
Lead Crewperson 4		130	120	15600	500			500	150	16750		
2 Crewperson 3		200	84	16800	400			400	300	17900		
Totals				100665	1900	11808	3250	1900	750	120273		
										120273		
FPTs												
Santa Rita FPT P21 4444	333/25					3996	2500			6496		
A.Elek 5 Santa Rita FPT		261	142	37062	500			500	150	38212		
Pena Blanca FPT P22 3903	333/25					3996	2500			6496		
J. Coleman FPT 5		261	119	31059	500			500	150	32209		
Romero Workforce Development				12000	13000					25000		
Totals				80121	14000	7992	5000	1000	300	108413		
										108413		
Nogales WFPR Totals				430665	20600	43968	18100	6600	3067	523000	**523000**	

FY03 initial	OR/Dif	Days	Cost	Salaries	Tvl/Trn	EQ FOR	EQ Mile	Supls	Misc	Totals		
Sierra Vista												
FMO/AFMO												
Vehicle 3685 12	275/22					3300	2200			5500		
Vehicle 4654 12	333/25					3996	2500		476	6972		
B Wilcox 11 (20 days FHU)		241	266	64106	1000			500	150	65756		
B. Crolly 9		261	176	45936	2000			500	150	48586		
Totals				110042	3000	7296	4700	1000	776	126814		
										126814		
ENGINE 32 3892 12	364/40					4368	2000			6368		
Pump 3895 12	287					3444				3444		
P.Boy E-32 Supervisor 6		261	166	43326	500			500	150	44476		
S.McMurtrie Ast Sup 5		180	135	24300	500			500	150	25450		
J. Gordon Lead Crew 4		130	126	16380	500			500	150	17530		
2 Crewperson 3		200	84	16800	400			400	300	17900		
Totals				100806	1900	7812	2000	1900	750	115168		
										115168		
ENGINE 33 3893 12	364/40					4368	2000			6368		
Pump 3898 12	287					3444				3444		
R.Johnson Supervisor 6		261	155	40455	500			500	150	41605		
C. Massingill Ast Sup 5		180	140	25200	500			500	150	26350		
S. Henry Lead Crew 4		130	118	15340	500			500	150	16490		
2 Crewperson 3		200	84	16800	400			400	300	17900		
Totals				97795	1900	7812	2000	1900	750	112157		
										112157		
ENGINE 34 3343 12	364/40					4368	2000			6368		
Pump 7760 12	287					3444				3444		
D.Haygood E-34 Supervisor 6		261	188	49068	500			500	150	50218		
B.Quinonez Ast Sup 5		180	140	25200	500			500	150	26350		
K. Mauzy Lead Crew 4		130	117	15210	500			500	150	16360		
2 Crewperson 3		200	84	16800	400			400	300	17900		
Totals				106278	1900	7812	2000	1900	750	120640		
										120640		
ENGINE 35 9309 12	735/7.00					8820	3500			12320		
Vehicle 4798	333/25					3996	1250			5246		
R.Martinez 7		261	194	50634	500			500	150	51784		
B. Levine Ast Sup 5		180	142	25560	500			500	150	26710		
A. Crone Lead Crew 4		130	120	15600	500			500	150	16750		
2 Crewperson 3		200	84	16800	400			400	300	17900		
Totals				108594	1900	12816	4750	1900	750	130710		
										130710		
FPTs and LOOKOUTs												
Sierra Vista FPT 4121 12	333/25					3996	2500			6496		
M.Dalton 7 S.V. FPT		261	189	49329	500			500	150	50479		
Huachucas FPT 3335	333/25					3996	2500			6496		
B. McCormick Huachucas FPT		261	140	36540	500			500	150	37690		
Red Mountain Lookout 5		100	105	10500	200			500	150	11350		
Totals				96369	1200	7992	5000	1500	450	112511		
Sierra Vista WFPR Totals				619884	11800	51540	20450	10100	4226	718000	**718000**	
NATIONAL RESOURCES FHU												
Libby ATB Vehicle 4456	364/32					4368	1600		202	6170		
B. Parks ATBM		261	190	49590	1000			500	150	51240		
Assistant ATBM 13/13		130	170	22100	500			500	150	23250		
B. Wilcox		20	267	5340				0		5340		
Totals				77030	1500	4368	1600	1000	502	86000	**86000**	
										86000		

FY03 initial	OR/Dif	Days	Cost	Salaries	Tvl/Trn	EQ FOR	EQ Mile	Supls	Misc	Totals		
Safford												
FMO/AFMO												
Vehicle 4119 12	333/25					3996	2500		608	7104		
Vehicle 3905 12	333/25					3996	2500			6496		
D. Streeper 11		261	279	72819	1000			500	150	74469		
R. Huffman 9		261	213	55593	1000			500	150	57243		
Totals				128412	2000	7992	5000	1000	908	145312		
										145312		
H-319 MODULE												
Helitack Vehicle 12	440/40					5280	2000			7280		
Extra Vehicle (six pack)	364/32					4368	1600			5968		
9 Fman		261	230	60030	500			500	2150	63180		
8 Ast Form		261	200	52200	500			500	150	53350		
6 Lead Helitack		180	165	29700	500			500	150	30850		
5 Helitack		130	145	18850	500			500	150	20000		
5 Helitack		130	145	18850	500			500	150	20000		
5 Helitack		130	145	18850	500			500	150	20000		
4 Helitack 4		120	105	12600	200			200	150	13150		
Totals				211080	3200	9648	3600	3200	3050	233778		
										233778		
CREW 43 (E-43) (9 persons)												
Vehicles (3891+3896) 12	364/40					7812	2000			9812		
Vehicle (six pack) 4457	364/32					4368	1600			5968		
E. Phillips Supervisor 6		261	165	43065	500			500	150	44215		
F. Henry Ast Sup 5		180	135	24300	500			500	150	25450		
Lead Crewperson 4		130	120	15600	200			200	150	16150		
6 Crewpersons 3		600	84	50400	1200			1200	900	53700		
Totals				133365	2400	12180	3600	2400	1350	155295		
										155295		
ENGINE 41 3501 12	364/40					4368	2000			6368		
Pump 3044 12	287					3444				3444		
Vehicle 3908	333/25					3996	1250			5246		
7 Supervisor		261	180	46980	500			500	150	48130		
Ast Sup 5		180	140	25200	500			500	150	26350		
Lead Crewperson 4		130	120	15600	500			500	150	16750		
2 Crewperson 3		200	84	16800	400			400	300	17900		
Totals				104580	1900	11808	3250	1900	750	124188		
										124188		
FPTs and LOOKOUTs (E-42)												
Safford FPT4275 (+7516)12	400/40					8244	2000			10244		
Safford FPT 6		261	165	43065	500			500	150	44215		
Turkey Flat FPT 4446	333/25					3996	2500			6496		
K.Rhodes Turkey Flat FPT 5		261	140	36540	500			500	150	37690		
West Peak FPT 4800	341/23					4092	2300			6392		
West Peak FPT 13/13 5		261	140	36540	500			500	150	37690		
Heliograph Lookout 5		100	105	10500	200			500	150	11350		
West Peak Lookout 5		100	105	10500	200			500	150	11350		
Totals				137145	1900	16332	6800	2500	750	165427		
										165427		
Safford WFPR Totals				714582	11400	57960	22250	11000	6808	824000	**824000**	

FY03 initial	OR/Dif	Days	Cost	Salaries	Tvl/Trn	EQ FOR	EQ Mile	Supls	Misc	Totals		
Santa Catalina												
FMO/AFMO												
Vehicle 4801 12	335/21					4020	2100		615	6735		
Vehicle 4662 12	333/25					3996	2500			6496		
R. Tow 11		261	249	64989	1000			500	150	66639		
J. EtsHokin 9		261	199	51939	1000			500	150	53589		
Totals				116928	2000	8016	4600	1000	915	133459		
										133459		
H-320 MODULE												
Helitack Vehicle 3914 12	440/40					5280	2000			7280		
Extra Veh 4118 12	314/23					3768	1150			4918		
Extra Vehicle (six pack) 4450	341/23					4092	1150		0	5242		
P.Schwab 9 Fman		261	253	66033	500			500	1150	68183		
D.Van Gorden 8 Ast Form		261	216	56376	500			500	150	57526		
T.Risch 6 Lead Helitack		180	177	31860	500			500	150	33010		
B.Schmidt 5 Helitack		130	153	19890	500			500	150	21040		
S.Phelps 5 Helitack		130	151	19630	500			500	150	20780		
B.Knapp Helitack 5		130	148	19240	500			500	150	20390		
1 (4) Helitack 4		120	105	12600	200			200	150	13150		
Totals				225629	3200	13140	4300	3200	2050	251519		
										251519		
CREW 51												
Vehicle 4269 12	382/26					4584	1300			5884		
Vehicle (six pack) 4524 12	364/32					4368	1600			5968		
Vehcile 4x4 4447 12	333/25					3996	1250			5246		
C.Stetson 6 Supervisor		261	183	47763	500			500	150	48913		
M. Watson Ast Supervisor 5		180	149	26820	500			500	150	27970		
B.Trost Lead Crewperson 4 (5)		130	147	19110	500			500	150	20260		
6 Crewpersons 3		600	84	50400	1200			1200	900	53700		
Totals				144093	2700	12948	4150	2700	1350	167941		
										167941		
ENGINE 51 6985 12	735/7.00					8820	3500			12320		
Vehicle 4453 12	242/20					2904	1000			3904		
G.Urquidez 7 Supervisor		261	193	50373	500			500	150	51523		
Ast Sup 6		180	165	29700	500			500	150	30850		
F. Mason Lead Crewperson		130	146	18980	500			500	150	20130		
2 Crewperson 3		200	84	16800	400			400	300	17900		
Totals				115853	1900	11724	4500	1900	750	136627		
										136627		
ENGINE 52 4276 12	400/40					4800	2000			6800		
Pump 4279	287					3444				3444		
M. White Supervisor 6		261	161	42021	500			500	150	43171		
G. Sasek Ast Supervisor 5		180	159	28620	500			500	150	29770		
A. Kelso Lead Crewperson 4		130	153	19890	500			500	150	21040		
2 Crewperson 3		200	84	16800	400			400	300	17900		
Totals				107331	1900	8244	2000	1900	750	122125		
										122125		
ENGINE 53 3894 12	364/40					4368	2000			6368		
Pump 3899 12	287					3444				3444		
C.Coates 6 Supervisor		261	159	41499	500			500	150	42649		
A. Smits Ast Sup 5		180	139	25020	500			500	150	26170		
Lead Crewperson 4		130	120	15600	500			500	150	16750		
2 Crewperson 3		200	84	16800	400			400	300	17900		
Totals				98919	1900	7812	2000	1900	750	113281		
										113281		
FPTs and LOOKOUTS												
Palisades FPT 3130 12	314/23					3768	2300			6068		
L. Harmon Palisades FPT 5		261	149	38889	500			500	150	40039		
Redington FPT 4452	242/20					2904	2000			4904		
D. Brown Redington FPT 5		261	117	30537	500			500	150	31687		
Lemmon Rock Lookout 5		100	105	10500	200			500	150	11350		
Kim Workforce Development		0	0	12000	13000					25000		
Totals				91926	14200	6672	4300	1500	450	119048		
										119048		
Catalina WFPR Totals				900679	27800	68556	25850	14100	7015	1044000	**1044000**	

FY03 initial	OR/Dif	Days	Cost	Salaries	Tvl/Trn	EQ FOR	EQ Mile	Supls	Misc	Totals		
Supervisor's Office												
SO LEADERSHIP												
FMO Vehicle 4458 12	335/21			0		4020	2100			6120		
Vehicle 2461	257/15			0		3084	1500			4584		
D. McAlister FMO 13		241	388	93508	4000			1000	150	98658		
M. South AFMO 11		251	273	68523	3000			1000	150	72673		
Miscellaneous/Supplies								2965	2000	4965		
RLT									0	0		
Totals				162031	7000	7104	3600	4965	2300	187000		
										187000		
DISPATCH												
Dispatch vehicle 3594	343/20			0		4116	2000			6116		
C.Dickson Center Mgr 10		261	231	60291	1500				150	61941		
A.Kramer Lead Disp 7		261	202	52722	1000			0	150	53872		
B. Coe 5		261	117	30537	500				150	31187		
L. Edmunds 5		241	152	36632	500			0	150	37282		
L.Tuck 5		180	154	27720	500			0	0	28220		
Dispatcher		130	115	14950	500				0	15450		
Dispatcher		0	100	0	0				0	0		
Dispatch Furniture				0					11000	11000		
Storage Space				0					800	800		
Supplies				0				5932		5932		
BIFC Order				0				2000		2000		
Disp Comm phones				0					2000	2000		
BLM Lightning maps				0					1100	1100		
Disp Cell phones				0					2700	2700		
Paging Service				0					800	800		
Answering Service				0					600	600		
Totals				222852	4500	4116	2000	7932	19600	261000		
										261000		
FOREST SUPPORT												
TIA Phones				0				0	800	800		
TIA maintenance				0				0	800	800		
Comp Lines to TIA,THB,Portal				0					3500	3500		
SO Office Modification				0					14900	14900		
Physical exams				0					30000	30000		
Engine Upgrades 2003				0					24000	24000		
Type II Team Support				0					3000	3000		
TOS AFMOs 80,000				0					29000	29000		
Global Star				0					2000	2000		
Support Training 8,000				0				2000	6000	8000		
Mexico Support 75,000				0					5000	5000		
Radio System Repair		0	0	0					17000	17000		
Consoles Dispatch				0					70000	70000		
Prevention Materials				0				0	5000	5000		
Team Trailers 3,000				0					0	0		
New Vehicles 50,000		0	0	0				0	50000	50000		
Totals				0	0	0	0	2000	261000	263000		
										263000		

FY03 initial	OR/Dif	Days	Cost	Salaries	Tvl/Trn	EQ FOR	EQ Mile	Supls	Misc	Totals		
AVIATION												
H-318 2347x82									200000	200000		
H-319 175,000									169000	169000		
H-320 1732x78									140000	140000		
H-319 Equip/Supplies 10,000									5000	5000		
THB Mockup $60,000									0	0		
Tucson Helibase Lease									50000	50000		
Support Other Agencies 10,000									0	0		
Rappel Proficiency									2000	2000		
New Helitack Eq: radios, etc									4000	4000		
Air Attack 20,000									0	0		
Aviation Support/Equipment									3000	3000		
Aviation Travel/Train									0	0		
Totals				0	0	0	0	0	573000	573000		
										573000		
SUPPORT COSTS contributed												
Planning S. Tune		261	266	69426	2000			1000	574	73000		
Amend Forest Plan				115574	5000		3000	2000	1426	127000		
Fleet Rollins Salary		10	260	2600					400	3000		
Cost Pools									1918000	1918000		
Totals				187600	7000	0	3000	3000	1920400	2121000		
										2121000		
NATIONAL RESOURCES												
T-26 5/13-6/21 Aero Union P3	4437	34							150858	150858		
T-131 5/30-7/14 HP C-130	5193	40							207720	207720		
T-119 6/10-7/26 Ardco S-DC-4	3708	40							148320	148320		
Ramp Manager 5		0	100	0						0		
McAlister		10	409	4090						4090		
South		10	276	2760						2760		
Libby ATB									252	252		
Totals				6850	0	0	0	0	507150	514000		
										514000		
Total SO Support				187600	7000	0	3000	3000	1920400	2121000		
Total SO WFPR				572483	18500	11220	8600	17897	2776300	3405000		
Total SO with National				579333	18500	11220	8600	17897	3283450	3919000		
										3919000		
Total District Non-National WFPR				3431815	84600	274596	107200	54400	27389	3980000		
Total District National				77030	1500	4368	1600	1000	502	86000		
											Allocation	Balance
Forest Non-fuels Support				187600	7000	0	3000	3000	1920400	2121000		
Total Forest WFPR				4004298	103100	285816	115800	72297	2803689	**7385000**	**7417000**	***32000***
Total Forest with National				4088178	104600	290184	117400	73297	3311341	7985000	8017000	32000
										7385000		
										7985000		

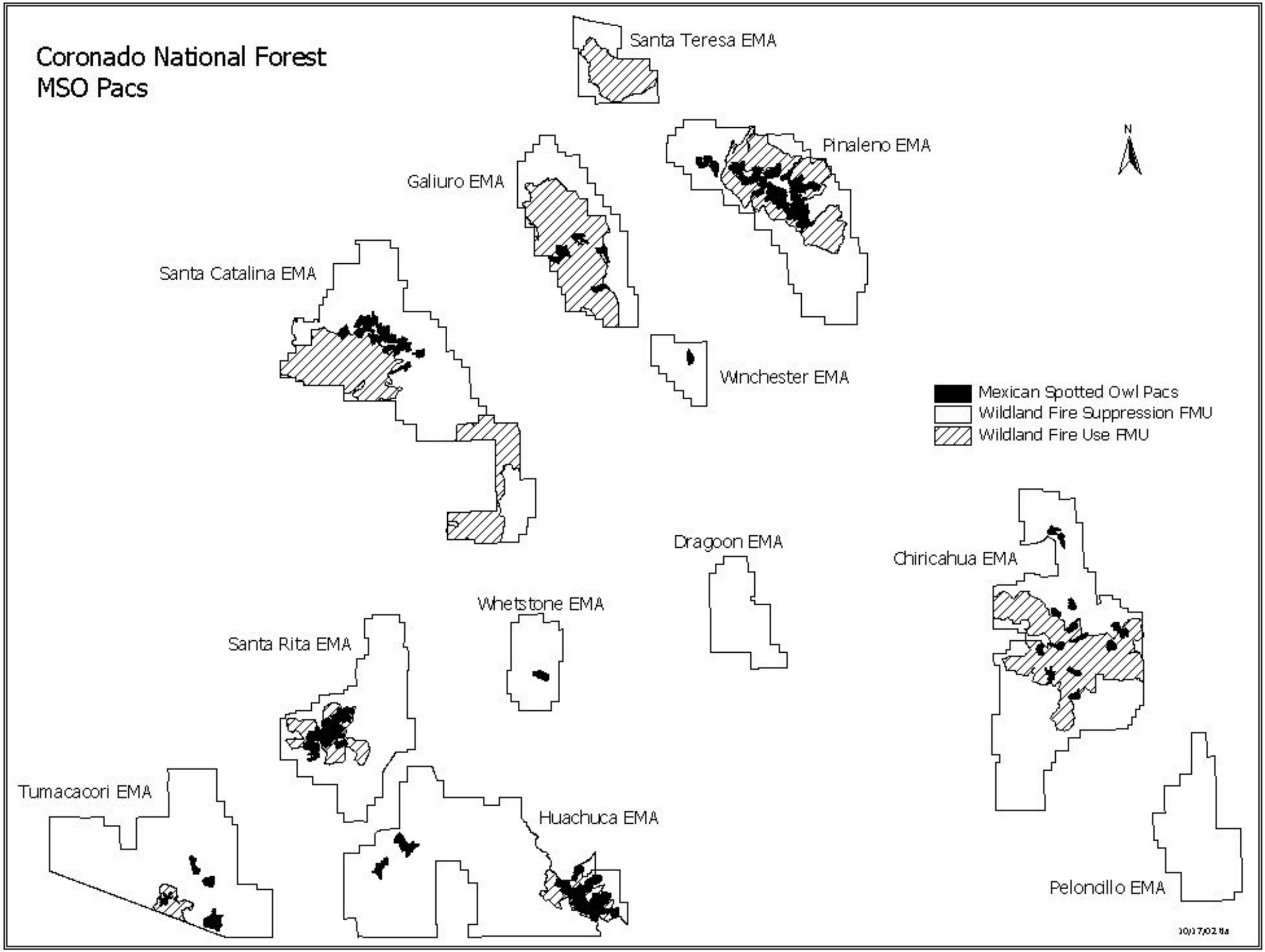
Mileage allotment for FMO/AFMO and FPT vehicles is 10,000; for engines, etc, 5,000. Each FMO/AFMO gets 1000 travel/training, other permanent employees 500, and seasonals 200. Each permanent employee gets 500 for supplies; each seasonal 200.

Sierra Vista has $86,000 in National Resources funding for personnel at Libby.
This is to ensure that personel are show as funded where they actually work.

FY03 MEL is 7808 (by extrapolation). MEL has increased to cover cost pools, increased employment period for engine/crew assistants and leads, etc. We received 7154 in FY02. This years figure is 7417 (95% of MEL)
Even with a 600 increase in MEL to cover cost pools we are still funded 393 less than the 1918 cost pool charges for FY03.

The Program Leadeship and Production columns have been eliminatedd from the spreadsheet since everything is now charged to the same jobcode -- WFPR05.

Coronado National Forest
MSO Pacs



Coronado National Forest 2002 Monitoring Report

Protection

Item Monitored: Fire Suppression Effectiveness

Monitoring Method: Periodic inspections and review by specialists to determine if fire control organization is effective in controlling fire loses within acceptable limits and fire reviews of selected fires.

Results: The National Fire Management Analysis System (NFMAS) process is an ongoing evaluation of the fire program's effectiveness and efficiency. The NFMAS process is generally divided into four levels. Level one consists of the data collection of the historical and current situations. The second level is an Analysis of the data followed by analysis of different mixes of resources developing the Most Efficient Levels (MEL). The MEL, when implemented, meets the Forest Plan. The most efficient program level is the one that results in the minimum Cost plus Net Resources Value Change (C+NVC). This is the point where the next dollar increase in the fixed budget cost results in less than one-dollar reduction in the variable suppression cost plus NVC. This Forest-level data is used to provide an estimate of the consequences in changes in the Regional and National program budgets, and to support (by Congressional direction) the national fire program in the annual Forest Service budget request. Level three is the implementation of MEL through the Fire Management Plan (FMP). The fourth level is monitoring, evaluation, and updating the analysis and the FMP. The Fire Management Plan will serve as the primary guide for the management of fires on the Coronado, which is reviewed and updated annually.

Evaluation: There are inconsistencies within the 1986 Forest Plan, relating to Fire Management, and the Federal Fire Policy. Therefore, change to the Forest Plan to integrate the 2001 Federal Fire Policy, addressing the appropriate management response and use of wildland fire is needed. Wildland fire use on a landscape scale is needed to 1) reduce hazardous fuels and avoid catastrophic fires, and 2) sustain wildland ecosystems. Providing for wildland fire use Forest-wide also broadens management discretion (decision space) in the use of naturally occurring wildland fires to meet resource management objectives, identified by the Forest Land and Resource Management Plan. Wildland Fire Use will 1) allow fire to assume a more natural role as an essential ecological process and natural change agent across a greater extent of the landscape, 2) Improve habitat for native species, 3) Provide authority for managers to implement fire use measures instead of the current obligatory suppression of all fires.

Currently the CNF does not have an approved Fire Management Plan to utilize wildland fire use for resource benefits within designated wilderness areas, as defined in the Forest Plan. Thus all fires, regardless of cause or location, will be suppressed. The Forest Supervisor is reviewing a proposal to amend the Forest Plan. The Coronado expects to amend the Forest Plan specifically to address Fire Management prior to the scheduled Forest Plan revision in 2004. The NFMAS process is still the accepted process for determining fire suppression efficiency and effectiveness. The Coronado is scheduled to update their NFMAS Analysis in 2003. No formal reviews have been conducted on any wildland fires since 1995.

The Forest Plan does not currently address management of Mexican spotted owl and northern goshawk habitat in WUI areas. Wildland-urban interface management is one of several concerns the Forest expects to address during development of initial revision topics for the pre-revision analysis report.

Trend analysis: Fuels and forest presuppression funding (MEL funding) has increased from $ 2.6 million in 1995 to $ 7.2 million 2001. From 1995 to 2000, there was a decline in funding from 92% to 50% of MEL. In 2001, the National Fire Plan implementation funding was 114% of MEL. However, the Suppression Funding has increased annually, unlike MEL funding. There are two reasons for the continuous increase, 1) annual NFMAS adjustment and 2) Analysis update occurred in 1998. Both contributed to an increase in total amount in MEL dollars.

Table 1a. MEL & Net Resource Value Change Table

Budget Option	Budget $	Suppression $	NVC	C+NVC	Acres
060	3,399,284	13,745,299	4,722,427	21,867,010	46,306.54
070	3,970,216	9,315,812	4,064,609	17,350,637	28,694.57
080	4,541,986	8,631,604	3,838,595	17,012,185	27,076.71
090	5,054,621	6,826,099	3,349,456	15,230,176	19,314.15
100	5,630,826	6,337,382	3,179,891	15,148,099	18,100.57
115	6,480,452	6,163,534	3,113,641	15,757,627	17,642.01

Six budget levels were used to analyze the and determine the Most Efficient Level (MEL) for the Coronado. All dollar figures in this analysis are in 1998 dollars.

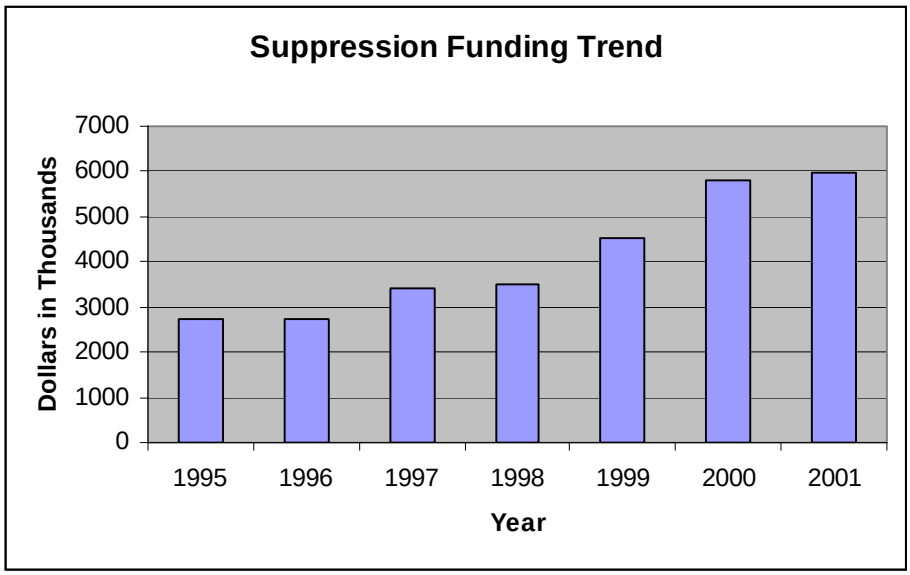
60% of the MEL option
70% of the MEL option
80% of the MEL option
90% of the MEL option
MEL
115% of the MEL option

Table 1b. CNF Presuppression and Fuels Funding

FY	Presuppression	Fuels	Total	% of Fuels Funding	MEL	% of MEL Funding
1995	2520	103	2623	4.1/3.9	2736	92
1996	2472	300	2772	12.1/10.8	2736	90
1997	2863	367	3230	12.8/11.4	3416	84
1998	3411	371	3782	10.9/9.8	3491	98
1999	3199	477	3676	14.9/13.0	4505	71
2000	2967	546	3513	18.4/15.5	5790	50
2001	6819	934	7753	13.7/12.0	5971	114

The Presuppression figures do not include national resources, i.e. airtankers. The two percentage figures are the ratio of Fuels to Presuppression and the ratio of Fuels to Total. Thus in 1995 103 is 4.1% of 2520 and 3.9% of 2623. All funds are in thousands of dollar. No adjustments have been made for inflation.

Graph 1a. Suppression Funding Trend



Graph 1b. Percent of MEL Funding from 1995 through 2001

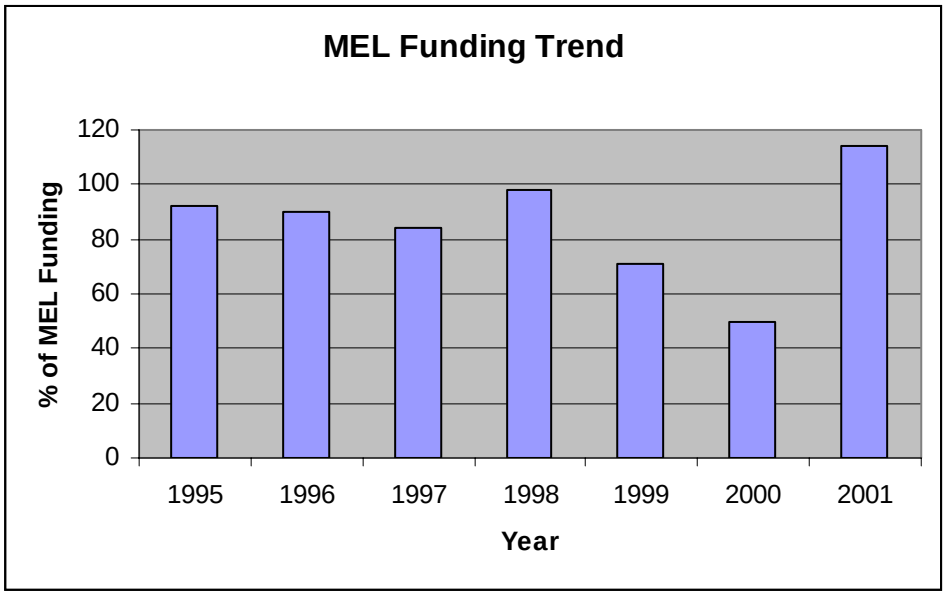


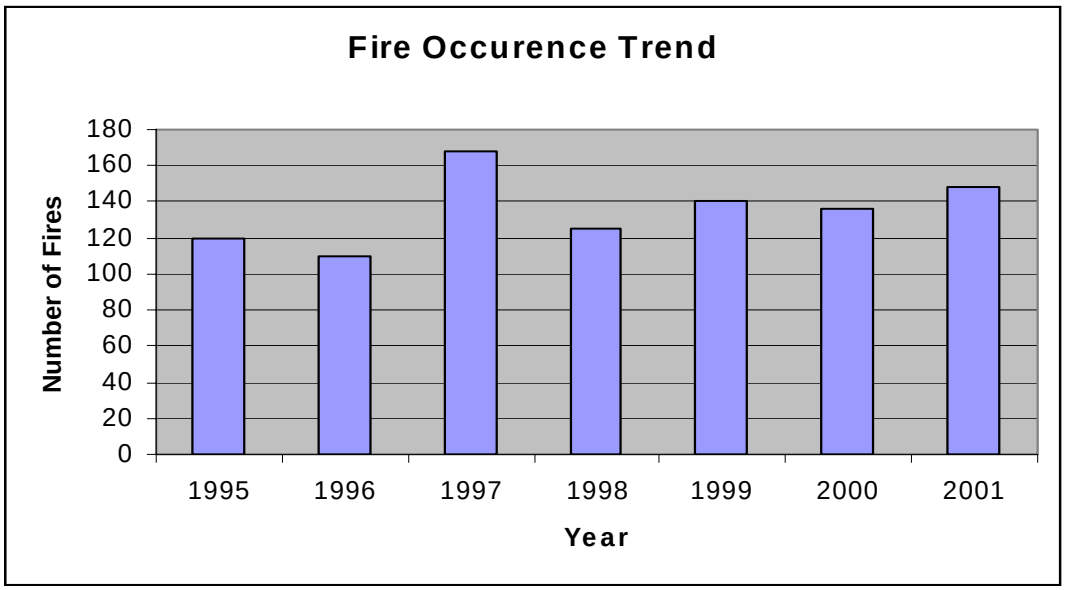
Table 1e. Wildland Fire Occurrence and Acres Burned

Year	Total # of Fires	Human-caused # of Fires (%)	Lightning-caused # (%)	Total Acres	HC Acres	Lightning Acres
1995	120	52 (43%)	68 (57%)	4134	2639	1495
1996	110	48 (44%)	62 (56%)	7649	7451	198
1997	168	69 (41%)	98 (59%)	2380	1828	552
1998	125	91 (73%)	34 (37%)	659	506	153
1999	140	102(73%)	38 (37%)	2512	1415	1097
2000	136	58 (43%)	78 (57%)	2515	915	1600
2001	148	82 (55%)	66 (45%)	2716	259	2457

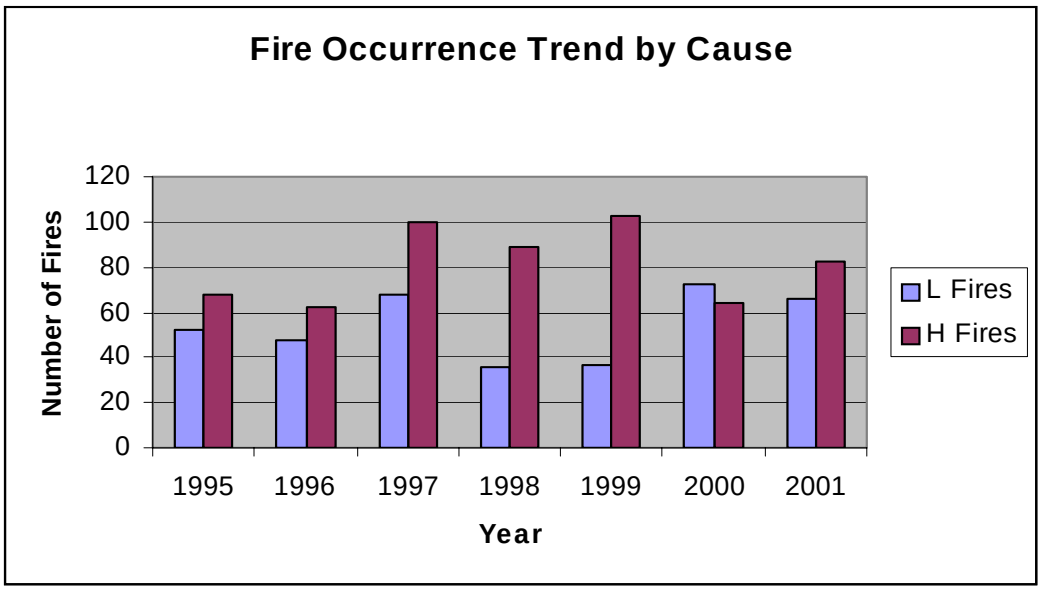
Over the past seven years 53% of all fires are human-caused. This is an increase in trend as noted in our recent historical fire occurrence records. In the last 43 years (1959 through 2001) the Coronado had a total of 2,140 human-caused fires and 4,223 lightning fires. Historically, 34% of all fire was human cause.

From 1959 through 2001 the Forest averaged 148 fires per year and burned on average of a approximately 7,800 acres per year. Over the past seven-years there is a decrease in the total number of fires (135 fires per year) and a decrease in the average acres burned (3,223 acres) per year.

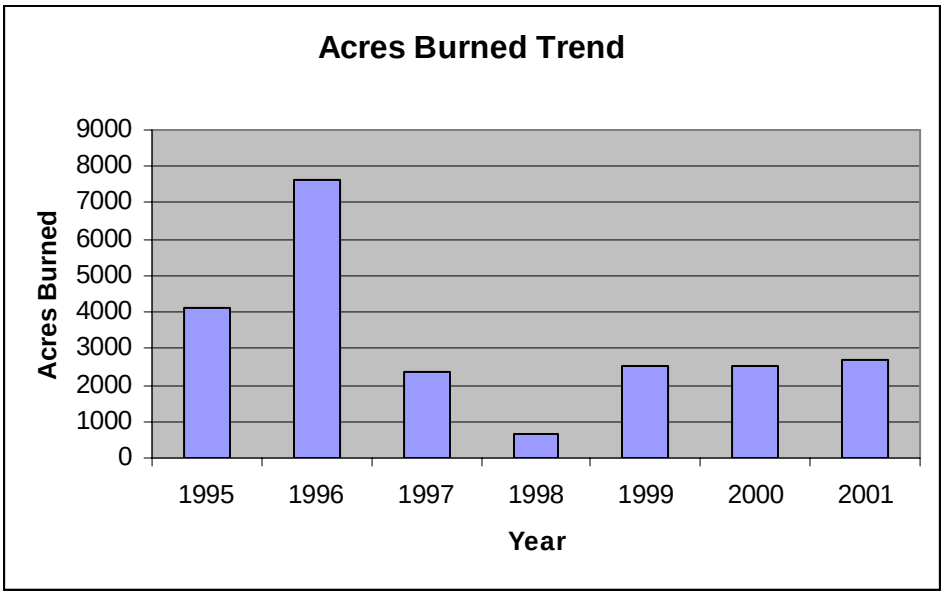
Graph 1d. Wildland Fire Occurrence Trend



Graph 1e. Wildland Fire Occurrence Trend by Cause.

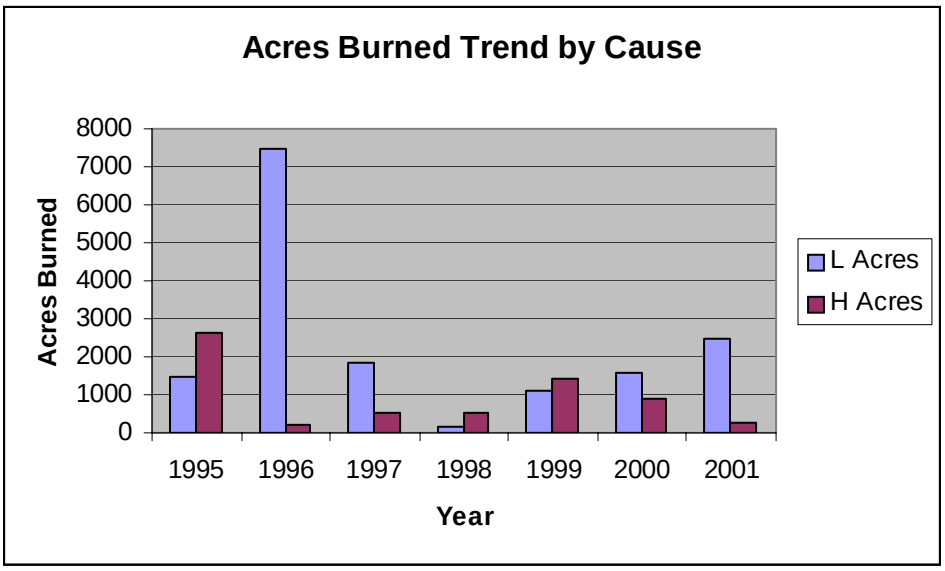


Graph 1f. Wildland Fire Acres Burned Trend



As one would expect, as funding (MEL) increases, the acres burned would decrease. However, there is not a correlation, because of other factors, which affect acres burned (e.g., severity funding creates additional staffing—increasing suppression effectiveness; closure orders--reducing human caused fires – directly affecting acres burned, and, occurrence of dry lightning (presences or absence) etc.)

Graph 1g. Wildland Fire Acres Burn by Cause Trend



Incident Intelligence Summary (ICS-209)

1: Date	2: Time	3: Initial | Update | Final	4: Incident Number	5: Incident Name

6: Incident Type	7: Start Date Time	8: Cause	9: Incident Commander	10: IMT Type	11: State-Unit

12: County	13: Latitude and Longitude Lat: Long:	14: Short Location Description (in reference to nearest town):

Current Situation

15: Size/Area Involved	16: % Contained or MMA	17: Expected Containment Date: Time:	18: Line to Build	19: Costs to Date	20: Declared Controlled Date: Time:

21: Injuries Today:	22: Fatalities	23: Structure Information		
		Type of Structure	# Threatened	# Destroyed
24: Threat to Human Life/Safety: Evacuation(s) in progress ---- No evacuation(s) imminent -- Potential future threat -------- No likely threat ----------		Residence		
		Commercial Property		
		Outbuilding/Other		

25: Fuels/Materials Involved	26: Resources threatened (kind(s) and value/significance):

27: Current Weather Conditions Wind Speed: mph Temperature: Wind Direction: Relative Humidity:	28: Resource benefits/objectives (for prescribed/wildland fire use only):

29: Today's observed fire behavior (leave blank for non-fire events):

30: Significant events today (closures, evacuations, significant progress made, etc.):

31: Committed Resources

Agency	CRW1		CRW2		HEL1	HEL2	HEL3	ENGS		OVHD	DOZR		WTDR	Camp Crews	Total Personnel
	SR	ST	SR	ST	SR	SR	SR	SR	ST	SR	SR	ST	SR		
USFS															
NPS															
PRI															
BLM															
ST															
Total															

32: Cooperating Agencies Not Listed Above:			
Outlook			
33: Estimated Control Date and Time:	34: Projected Final Size	35: Estimated Final Cost	36: Tomorrow's Forecasted Weather Wind Speed: mph Temperature: Wind Direction: Relative Humidity:
37: Critical Resource Needs (kind & amount, in priority order): 1. 2. 3.			
38: Actions planned for next operational period:			
39: Projected incident movement/spread during next operational period (leave blank for non-fire incidents):			
40: Major problems and concerns (control problems, social/political/economic concerns or impacts, etc.) Relate critical resources needs identified above to the Incident Action Plan.			
41: For fire incidents, describe resistance to control in terms of:			
1. Growth Potential -			
2. Difficulty of Terrain -			
42: How likely is it that containment/control targets will be met,given the current resources and suppression/control strategy?			
43: Projected demobe start date:			
44: Remarks:			
Approval Information			
45: Prepared by:	46: Approved by:	47: Sent to: by: Date: Time:	

FIRE SITUATION

Fire Name	
Fire Number	
Jurisdiction(s)	
Administrative Unit(s)	
FMP Unit(s)	
Geographic Area	
Management Code	
Start Date/Time	
Discovery Date/Time	
Current Date/Time	
Current Size	
Location: Legal Description(s)	T. R. Sec. Sub.
Latitude	
Longitude	
UTM:	
County:	
Local Description	
Cause	

Fuel Model/ Conditions	
Weather: Current	
Predicted	
Fire Behavior: Current	
Predicted	
Availability of Resources	

DECISION CRITERIA CHECKLIST

Decision Element	*Yes*	*No*
Is there a threat to life, property, or resources that cannot be mitigated?		
Are potential effects on cultural and natural resources outside the range of acceptable effects?		
Are relative risk indicators and/or risk assessment results unacceptable to the appropriate Agency Administrator?		
Is there other proximate fire activity that limits or precludes successful management of this fire?		
Are there other Agency Administrator issues that preclude wildland fire use?		

The Decision Criteria Checklist is a process to assess whether or not the situation warrants continued wildland fire use implementation. A "Yes" response to any element on the checklist indicates that the appropriate management response should be suppression-oriented.

Recommended Response Action (check appropriate box)	NO-GO (Initial attack/suppression action)	
	GO (Other appropriate management response)	

Signature _____ Date _____

Coronado Fire Preparedness Review

Element	Standard or Measurement	Unsuccessful	Successful	N/A
Apparatus Appearance	Vehicle(s) clean and presentable			
Apparatus Inventory	Maintained inventory in a constant state of fire readiness. All tools and equipment are refurbished and meet the standard specified in NFES 2249, *Fire Equipment Storage and Refurbishment*.			
Tool and Equipment Standards	Ability to use, check condition of, and identify repair/replacement needs as identified in NFES 1571, *Firefighters Guide*.			
Hose Packs	Working knowledge of hose pack types and how to safely and efficiently deliver water to the fire.			
Types of Hose	Working knowledge of hose identification and use. See NFES 1308, *Wildland Fire Hose Guide*.			
Fittings/Nozzles	Ability to identify fittings and nozzles, understand use, capabilities, limitations, and perform maintenance.			
Stationary pumping	Ability to set up stationary pumping operations to safely and efficiently deliver water to a fire through a hose lay.			
Mobile attack	Understand the set up and perform running attack safely and efficiently. Understand roles and responsibilities associated with multi-engine mobile attack			
Urban Interface	Understand strategies and tactics, recognize hazards, and know the policy with regards to urban interface situations.			
Interface and Municipal Fire Apparatus	Understand capabilities and limitations and how to effectively interface with equipment. Be aware of the pressures and flow rates used with municipal apparatus and their potential effects on wildland fire equipment.			
Engine Protection	Ability to protect engine by positioning in a fire safe area, set up and use engine protection lines.			
Pump Theory and Operation	Ability to effectively apply this knowledge to fire situations most commonly encountered. Must be able to troubleshoot pump/valve problems in various fire and drill situation			
Pump Package Maintenance Procedures	Ability to maintain pump package per manufacturer's standards. Pump package must be in a constant state of fire readiness. Ability to troubleshoot equipment problems and develop solutions/repair needs. Ability to perform required pump test to assure pump/plumbing are operating to specifications, and maintain log.			
Hydraulics	Ability to effectively apply calculations and formulas relating to fire hydraulics, including friction loss. Must understand pump capabilities and limitations (GPM, PSI, elevation gain and loss, etc.)			
Simple Hose Lays	Ability to perform initial lay out and extend a simple hose lay delivery water to fire safely and efficiently.			
Progressive Hose Lays	Ability to perform initial lay out and extend a progressive hose lay delivering water to fire safely and efficiently.			
Hose Lay Troubleshooting	Ability to troubleshoot hose lay evolution problems and develop solutions			
Foam Equipment Maintenance	Ability to flush the engine foam proportioner according to the manufacturer's recommended procedures.			
Foam	Ability to efficiently produce different types of foam from nozzle(s) appropriate for different fire situations. Understand the principles of compressed air foam generation and foam generation through a proportioner.			

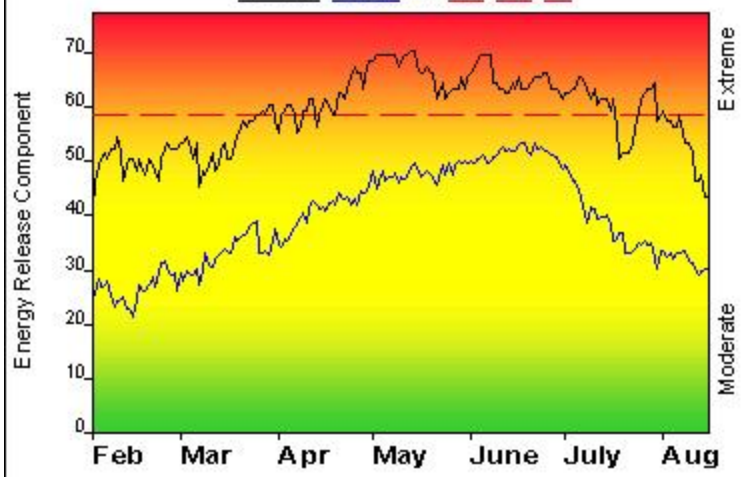
Element	Standard or Measurement	Unsuccessful	Successful	N/A
Drafting Theory	Ability to draft from external source and fill engine tank, and draft from external source and deliver water through a hose lay.			
Hydrant Use	Understand and apply the safe and effective operation of fire hydrants and be able to set up an engine for hydrant water delivery.			
Vehicle Maintenance Procedures	Ability to maintain vehicle in a constant state of fire readiness. Ability to troubleshoot equipment problems, develop solutions/repair needs			
Winterization	Ability to properly winterize apparatus and pump package to protect from potential freeze damage.			
Radio Use	Understand and apply policy regarding radio use and protocol; be proficient at radio programming. Understand call numbering system.			
10 Standard Fire Orders	▪ Fight fire aggressively but provide for safety first. ▪ Initiate all actions based on current and expected fire behavior. ▪ Recognize current weather conditions and obtain forecasts. ▪ Ensure instructions are given and understood. ▪ Obtain Current information on fire status. ▪ Remain in communications with crewmembers, your supervisor, and adjoining forces. ▪ Determine safety zones and escape routes. ▪ Establish lookouts in potentially hazardous situations. ▪ Retain control at all times. ▪ Stay alert, keep calm, think clearly, act decisively.			
18 Watch Out Situations	1. Fire not scouted and sized up. 2. In country not seen in daylight 3. Safety zones and escape routes not identified. 4. Unfamiliar with weather and local factors influencing fire behavior. 5. Uninformed on strategy, tactics, and hazards 6. Instructions and assignments not clear 7. No communication link with crew members/supervisor. 8. Constructing fireline without safe anchor point. 9. Building fireline downhill with fire below 10. Attempting frontal assault on fire 11. Unburned fuel between you and fire. 12. Cannot see main fire, not in contact with anyone who can 13. On a hillside where rolling material can ignite fuel below. 14. Weather is getting hotter and drier. 15. Wind increases and/or changes direction. 16. Getting frequent spot fires across line. 17. Terrain and fuels make escape to safety zones difficult. 18. Taking nap near fireline.			
Maps and Guidebooks	District Maps, Emergency Response Guides, Incident Response Guide, Forest Pocket Card, and Fire Line Handbook are in all vehicles.			
LCES	Lookouts Communication(s) Escape Route(s) Safety Zone(s)			
Miscellaneous				

Comments:

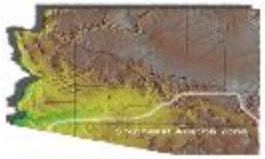
Action Items:

FIRE DANGER -- Coronado National Forest

Maximum, Average, and 90th Percentile



Fire Danger Area:



- Southeast Zone Dispatch
- Weather Forecast Zone 48
- Saguaro Weather Station

Fire Danger Interpretation:

EXTREME -- Use extreme caution

(Caution) -- Watch for change

Moderate -- Lower Potential, but always be aware

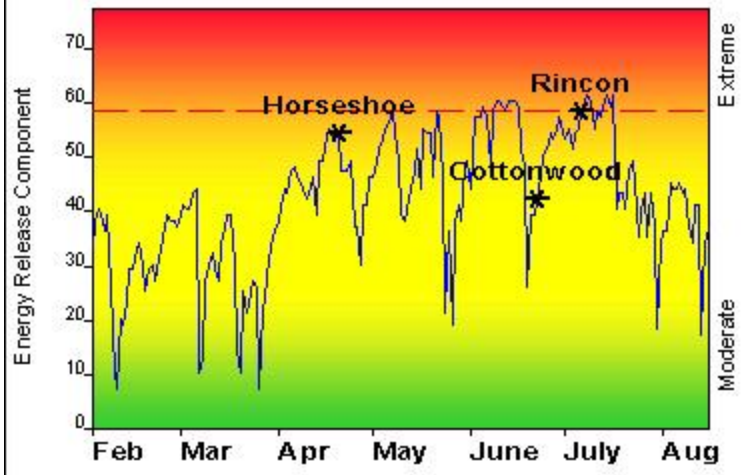
Maximum -- Highest Energy Release Component by day for 1970 - 2001

Average -- shows peak fire season

90th Percentile -- Only 10% of the days from 1970 - 2001 had an Energy Release Component above 58

Local Thresholds - Watch out: Combinations of any of these factors can greatly increase fire behavior: 20' Wind Speed over 15 mph, RH less than 20%, Temperature over 90, Energy Release Component over 42

Years to Remember: 1994



Fuel Model: H - Short-Needle (Normal Dead)

Remember what Fire Danger tells you:

- Energy Release Component gives seasonal trends calculated from 2 pm temperature, humidity, daily temperature & rh ranges, and precip duration.
- Wind is NOT part of ERC calculation.
- Watch local conditions and variations across the landscape -- Fuel, Weather, Topography.
- Listen to weather forecasts -- especially WIND.

Past Experience:

Date	Name	Acres	Elev	ERC
03/01/02	Oversite	2189	7500	52
04/24/96	Clark Peak	6716	9000	58
06/01/95	Sabino	475	3000	58
07/06/94	Rincon	14590	7500	57
07/01/94	Redington	5153	4500	53
06/30/94	Cloverdale	11809	6000	53
06/15/93	Piety	4800	4000	47
06/23/92	Gillespie	1275	4600	51
07/06/89	Chiva	9580	3800	57
06/17/86	Sasabe	10390	3500	43

Developed by NAGFDR--National Advisory Group for Fire Danger Rating

Coronado National Forest
Aviation Management / Risk Management

Narrative: Many factors lead to aviation accidents/incidents. This is an attempt to assist the aviation manager with guidance to assess the potential risks associated with aviation activities.

Purpose: To better manage risks associated with avaition activities. With the intent to provide the manager with a guide to know when you are getting into an area of unacceptable risk.

Sample Factors that need to be considered: **(NOT intended to be all inclusive)**

Thunderstorm	Wind, Temp, etc.	Number of Aircraft
Kind of Aircraft	CWN aircraft	Out-of-Region Aircraft
Total hours flown	Hours flown/day	Fatigue crew or pilot
Base (camp/motel)	Supervison or lack of	Inspections
Airspace Coordination	Communications, Frequency mgt.	Safety Teams

- Trends - "Is the rain coming in the next couple days?"
- Management - "Can we walk? Should we not rappel?" Expense vs value @ risk

Common factors: A) Mission or customer, B) Aircraft / operator, and C) Pilot

RISK = CONSEQUENCE x EXPOSURE x PROBABILITY

Consequences	***Exposure***	***Probability***
Numerous Fatilities	Continuous	Most likely (7 pts)
Fatalities A/C destroyed	Frequent	Not unusual (6pts)
Single Fatality/major damage	Normal	Unusual (5pts)
Serious injury/some damage	Occasional	Remote (4pts)
Injury - equip. damage	Rare	Very Remote (3pts)
Minor injury - minor damage	Very Rare	Near impossible (2pts)
Incident - warning	No Activity	Impossible (1pt)

VALUES AT RISK, (first three are related to protection)

Life / medivac	(4pts)
Property	(3pts)
Resource / T& E etc.	(2pts)
Admin flights	(1pt)

UNACCEPTABLE LIMITS THAT CANNOT BE EXCEEDED / OR MAXIMUM RISKS

Values @ Risk	+	Consequence	+	*Exposure	+	Probability	=	Maximum Risk
4	+	4	+	-	+	6	=	14
3	+	3	+	-	+	6	=	12
2	+	3	+	-	+	6	=	11
1	+	2	+	-	+	6	=	9

*(Regardless of the amount of exposure these limits will apply)

Summary and Recommended Actions:

The point system is arbitrary. The intent is to recognize when you are approaching the unacceptable limits and should cancel missions or modify your operations. Granted one can argue that any Helicopter operation could result in being at the limit or exceeding it. The factors of weather, mission, exposure, fatigue, etc., AND values at risk should be considered in arriving at the final decision.

Bottom line: Can I mitigate the risk? - Cancel the operation; Get a different aircraft - more mangement needed, etc. Our position on the "numbers" is a result of realizing that, no matter what the mission or the exposure, assuming a risk with a high probablity of an occurrence causing a fatality is not acceptable. Assuming a risk that is likely "not unusual" would only be warranted in a life threatening situation, not for a T & E species, etc. Risking serious injury is only a consideration when saving another human life, not property, etc.

ACTIONS:

- Any use of Type II Helicopter(s): contact Regional Helicopter Specialist to determined needed actions, e.g., inspections, management, performance.

- Four (4) helicopters assigned to one incident: regardless of type, contact RASO and Helicopter Specialist to determine course of action.

- Request through RASO, Aviation Safety Team(s) in the event of:

    - Operations using 7 total aircraft on one incident
    - Daily crew shuttle in Helicopters
    - Extended operations of 4 or more Airtankers at Libby
    - 6 Helicopters working National Forest Initial Attack
    - Booster crew ordered for Rappel operations
    - Complexity includes cargo and smokejumpers in connection with normal Helicopter/Airtanker/Rappel operations

Net Value Change Tables

The following is a guide for estimating net value change to different resources for each management area. This guide is for both wildland fire and prescribed fire. The values are dollar amounts used for the 1995 and 1998 NFMAS. Incorporating an adjustment factor for inflation, the values are represented in 2003 dollars. Remember, on the ground assessment is still key to estimating actual fire effects.

FMAZ AA

	Timber	Forage	Water Use	Water Storage	Fish	Wildlife	Recreation	Imp	Total
FIL 1	10.89	+.36	---	---	---	---	---	---	10.53
FIL 2	27.08	+.70	---	---	---	---	---	---	26.38
FIL 3	132.41	+.70	+.99	---	---	---	---	---	130.72
FIL 4	413.95	+.70	+.99	3.52	18.88	---	29.50	.05	464.13
FIL 5	454.76	+.56	+1.96	3.52	18.88	---	29.50	.05	504.11
FIL 6	454.76	---	+1.96	3.52	18.88	---	58.95	.05	534.12

FMAZ BB

	Timber	Forage	Water Use	Water Storage	Fish	Wildlife	Recreation	Imp	Total
FIL 1	---	+1.49	---	---	---	---	---	---	+1.49
FIL 2	7.37	+2.99	---	---	---	---	---	---	4.38
FIL 3	14.72	+2.99	+.99	---	---	---	---	---	10.74
FIL 4	29.45	+2.99	+.99	12.35	---	---	4.59	.11	42.52
FIL 5	29.45	+2.29	+1.96	12.35	---	---	4.64	.11	42.30
FIL 6	29.45	.31	+1.96	12.35	---	---	9.23	.11	49.49

FMAZ CC

	Timber	Forage	Water Use	Water Storage	Fish	Wildlife	Recreation	Imp	Total
FIL 1	---	---	---	---	---	---	---	---	---
FIL 2	1.63	+.43	---	---	---	---	---	---	1.20
FIL 3	3.25	+.43	+.99	---	---	---	---	---	1.83
FIL 4	6.49	+.87	+.99	18.52	57.57	---	19.43	.11	100.26
FIL 5	6.49	+.87	+1.96	18.52	57.57	---	19.43	.11	99.29
FIL 6	6.49	---	+1.96	18.52	117.24	---	38.87	.11	179.27

Summary Chart

	FIL 1	FIL 2	FIL 3	FIL 4	FIL 5	FIL 6
FMAZ AA	11	26	131	464	504	534
FMAZ BB	0	4	11	43	42	49
FMAZ CC	0	1	2	100	99	179

Fireline Intensity (FIL) can be estimated by observing the flame length. Generally speaking, if you know the flame length, you can accurately estimate the FIL. FIL and Flame Length are directly related. For simplicity, the FIL has been reduced to six levels. The different intensity levels correspond to flame lengths as follows:

Flame Length (ft)	Fireline Intensity Level
0-2	1
2-4	2
4-6	3
6-8	4
8-12	5
12+	6

Coronado Cost Risk Assessment Form

NFMAS > LRMP > RESOURCE VALUES > WFSA

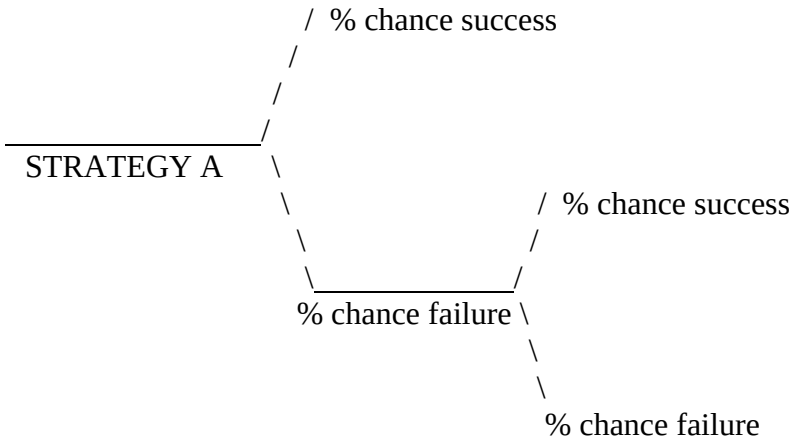
How do they fit to form the Appropriate Management Response

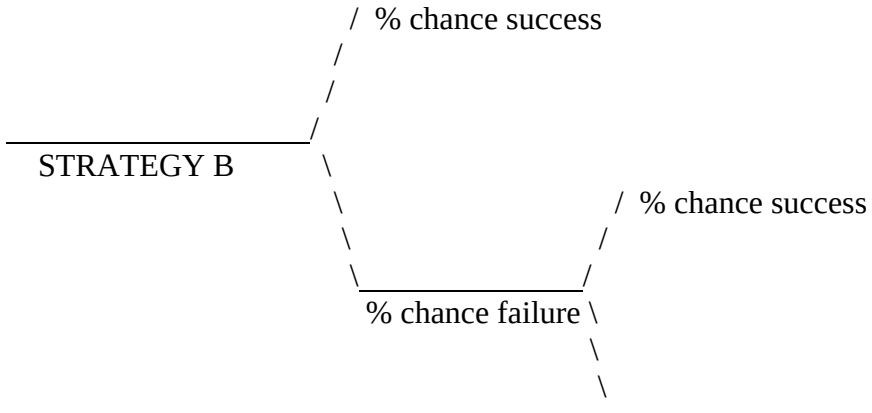
LRMP – outlines resource values by fire management zones.

NFMAS – take LRMP values, determines fire effects based on intensity of the fire, and arrives at a NVC (net value change) per acre in real
dollars!

WFSA – utilizes data on NVC, coupled with suppression strategy, tactics and suppression costs to effect the least cost alternative and appropriate response.

A cost risk assessment can be diagramed easily using the format below. COST + DAMAGES amounts can be filled in for each option to arrive at an appropriate suppression response.





% chance failure

Coronado Cost Risk Assessment Form – Example

NFMAS > LRMP > RESOURCE VALUES > WFSA

How do they fit to form the Appropriate Management Response

LMP – outlines resource values by fire management zones.

NFMAS – uses LMP values, determines fire effects based on intensity of the f ire, and arrives at a NVC (net value change) per acre in real dollars!

WFSA – utilizes data on NVC, coupled with suppression strategy, tactics and suppression costs to effect the least cost alternative and appropriate response.

Example: Small lightning fire near urban area; upslope in desert fuels. No immediate threat to structures, 1600 hours.

Strategy A: Tactic - Control: Use airtanker to buy time and rappel 5 helitack personnel. Use small handcrew in a.m. for mop-up and patrol.

Strategy B: Tactic - Control: Fire backing down hill, wait until a.m. If fire lasts the night, helitack personnel + 2 handcrews needed, plus mop-up.

```
          70% success   COST + DAMAGES = $8,000
         /
        /
STRATEGY A /
$11,000   \     ($18,000)    80% success   COST + DAMAGES
        \          \  /            = $15,000
         \ 30% failure /
                  \
                   \  20% failure   COST + DAMAGES
                              = $30,000


          60% success   COST + DAMAGES = $6,000
         /
        /
STRATEGY B /
$14,800   \     ($28,000)    70% success   COST + DAMAGES
        \          \  /            = $25,000
         \ 40% failure /
                  \
                   \  30% failure   COST + DAMAGES
```

= $35,000

(continued)

Alternative A - (15,000 X 80%) + (30,000 X 20%) = $18,000

(18,000 X 30%) + (8,000 X 70%) = $11,000

Alternative B - (25,000 X 70%) + (35,000 X 30%) = $28,000

(28,000 X 40%) + (6,000 X 60%) = $14,800

On the surface, waiting until morning may look like the least cost alternative. This is the process that feeds the WFSA.

Incident Complexity Analysis Worksheet
Southwestern Region

This complexity analysis should be used as a guide for Agency Administrators and/or fire managers to identify and mitigate certain complexity or safety issues by selecting a different strategy, tactic, or higher qualification of incident management personnel to safely and effectively manage the incident.

The complexity analysis should be reviewed periodically to determine the level of management required. Discussion with Incident Commanders, Fire Managers, and Agency Administrators is critical to completion of worksheet.

Safety	**YES**	**NO**
Exposure of personnel to unusually hazardous conditions	____	___
Accidents have occurred	____	___
Multiple aircraft are involved or anticipated	____	___
Potential for public evacuations	____	___
Terrain adversely affects tactical capability / limits safety zones	____	___
Fire fighter performance affected by cumulative fatigue	____	___
External / Political Factors		
Potential for numerous damage claims	____	___
More than one jurisdiction involved	____	___
Fire policy is controversial	____	___
Sensitive public/media relationships	____	___
Lack of cohesive organizational structure	____	___
Resource Issues		
Structures	____	___
Cultural values	____	___
Recreational developments	____	___
Urban interface	____	___
Critical watershed	____	___
T & E Species	____	___
Fire Behavior		
Current or predicted fire behavior dictates indirect strategy	____	___
Fuels are extremely dry (90th percentile)	____	___
Red Flag Warnings present or predicted	____	___
Extreme fire behavior exhibited	____	___
Current or predicted winds above 20 MPH	____	___
Severe fire weather predicted for next two burning periods	____	___

Personnel / Equipment

100 or more personnel assigned to incident	____	___
Variety of special support personnel or equipment	____	___
Resources unfamiliar with local conditions and accepted tactics	____	___
Heavy commitment of local resources to logistical support	____	___
Local Initial forces nearly depleted	____	___
Two operational periods worked with limited success	____	___
Communication challenges are present	____	___
Total number of elements checked:	**____**	**___**

Complexity Analysis Criteria:

A "yes" in each of the five major elements above could indicate a complexity level sufficient to warrant consideration of utilizing a Type 2 level Incident Management Team. Multiple checks in each element may indicate consideration for a Type I level Incident Management Team. If some elements are not involved then **use the following ranges as a guide:**

1-3 Current resources/management should be able to handle the incident. The local organization fills positions as needed. Continue to monitor objectives and accomplishments; consider a Type 3 organization.

4-6 Indicates complexity level suggesting a Type 3 organization.

7-10 Scrutinize overall complexity and safety concerns, consider past fire history and current and expected situation, and review WFSA. This complexity suggests the need for a Type 2 Team.

10+ May warrant consideration of a Type 1 Team.

Decision / Decision Rationale:

Prepared by: _____ Date: _____ Time: _____

Reviewed by: _____ Date: _____ Time: _____

Reviewed by: _____ Date: _____ Time: _____

Slight modifications were made to match Interior "Red Book".

United States Department of Agriculture **Forest Service** **Coronado National Forest Supervisor's Office**
300 W. Congress
Tucson, Arizona 85701
Phone (520) 670-4552
FAX (520) 670-4567

File Code: (1230/5130 **Date:**
Route To: (5100)

Subject: Delegation of Authority for the _____Incident

To: _____, Incident Commander, _____ Incident Management Team

I hereby delegate authority for the management of the _____Incident to you as Incident Commander of the _____Incident Management Team. The Fire is currently burning on public lands under the jurisdiction and protection of the USDA Forest Service. It is also burning on_____.

You will report to the _____for the Agency Administrator's briefing at _____ hours on _____. Your Team will assume command of the Incident from the current Type ____ I.C, _____ at ____ hours on _____.

I expect all suppression efforts will be executed in accordance with the selected strategy identified in the WFSA prepared for the _____Incident. My representative(s) or myself will be available for daily review of the WFSA.

I have designated _____as my line officer's representative to your Team in the event I am not available. _____is designated as the Resource Advisor for this incident and will work directly with your team on all matters pertaining to land and resource management objectives and mitigations required by implementation of appropriate suppression actions.

The following objectives are considered critical to management of the _____Incident.

1. All incident activities must provide for firefighter and public safety. The Ten Standard Orders will be adhered to by every firefighter, without compromise. The Eighteen Watch-Out Situations must be evaluated and mitigated before any action is undertaken in the fire environment. Your Team is responsible to convey these requirements throughout the incident organization, to monitor compliance and document specific measures you take to ensure adherence to these safety standards. Any violation of the Standard Orders or failure to mitigate the Watch-Out Situations will also be documented, along with appropriate actions taken to correct and hold personnel accountable for their performance. I expect the incident commander to be personally committed to and involved in communicating this expectation and monitoring compliance in your organization.

   Work-rest guidelines for wildland firefighters must be adhered to. The incident commander and the command and general staff will be personally involved in planning, implementing, and monitoring compliance to provide a 2-for-1 work-to-rest ratio. Documentation of actions taken to monitor work/rest cycles and for any work shifts exceeding 16-hours in length will be provided, along with mitigation measures.

2. Control the fire within geographic limits specified by the WFSA selected alternative. The following constraints apply:

- _____
- _____
- _____
- _____

3. Minimize suppression-related impacts and protect structures, facilities, and cultural features located in the fire area. Fire management direction, including suppression guidelines that your Team must follow specific to this area is found in the Coronado NF Land Management Plan. A copy will be furnished upon request. Develop and maintain a close working relationship with Federal, state, and local cooperators essential to managing this incident.

4. Effective management of costs commensurate with resource values to be protected and strategic direction provided in the WFSA is critical. I have designated _____to be the Incident Business Advisor and my liaison with your Team. A copy of the Operating Guidelines for Incident Administration, Coronado National Forest is provided with you briefing packet.

5. Your incident organization will assume initial attack responsibilities for fires _____. Any initial attack action assigned or assumed by your Team will be coordinated through the SEZ (Coronado) Dispatch Center.

6. Incident information and media relations will be coordinated with _____. Provide timely, accurate information about this incident to area residents, permittees, and other National Forest users through local contacts and the Tucson news media.

7. Personnel assigned to this incident must be sensitive to local residents by providing respect to private property and public interests. Your Team should conduct as much incident purchasing in the local communities and with local vendors as possible. Please use closest-resources as much as possible to fill incident needs for special services, equipment, etc.

8. The Incident will function as a Harassment-Free Environment in accordance with USDA and Forest Service policy. Reports of harassment in any form will be dealt with in an immediate and appropriate manner. The Coronado is union forest represented by the National Federation of Federal Employees. _____ is the local Union Representative and may be reached at _____. Should the Incident exceed 300 personnel the Regional Vice President will be notified and informed of the location of the fire and the name of the Incident Commander.

I welcome your Team to the Coronado National Forest and wish you a safe and successful assignment. You can reach me at (520)_____, or my representative at (520)_____.

JOHN M. MCGEE
Forest Supervisor

ICT5 to ICT3 INCIDENT REVIEW

Incident Name: **IC:**

Organization:

1.	IC identified at fire and by dispatch	Y	N
2.	Organization structure fits the incident	Y	N
3.	Cain of command known and followed	Y	N
4.	Fire complexity within the capabilities of the IC	Y	N
5.	VFD and other non-agency resource integrated into the fire organization	Y	N

Communications:

1.	Adequate communications at the incident	Y	N
2.	Adequate communications with dispatch	Y	N
3.	Adequated communications with VFD;s and other Non-agency resources	Y	N
4.	Fireline orders are clear and understood by all personnel	Y	N

Suppression;

1.	Initial Incident size-up adequate	Y	N
2.	Tactics fit current and expected fire behavior	Y	N
3.	Tactics fit experience and capabilities of fire personnel	Y	N
4.	Efficient and safe use of aviation resources	Y	N
5.	IC and personnel aware of current and predicted weather	Y	N

Safety:

1.	Appropriate PPE available and used	Y	N
2.	LCES is in place and followed	Y	N
3.	Standard Fire Orders are observed and followed	Y	N
4.	Hazard trees identified and/or removed	Y	N
5.	Equipment and tools properly used	Y	N
6.	Employee fatigue considered	Y	N
7.	Hazards have been identified, made know to others And mitigated (powerlines, cliffs, bees, box canyons, etc.)	Y	N

Recommendations:

Prepared By: **Date:**

Incident Review
District Ranger: **FMO:**

WILDLAND FIRE COMPLEXITY RATING WORKSHEET

COMPLEXITY ELEMENT	*Weighting Factor (WF)*	*Complexity Value (CV)*	*POINT VALUE (WF X CV)*
SAFETY	**5**		
THREATS TO BOUNDARIES	**5**		
FUELS AND FIRE BEHAVIOR	**5**		
OBJECTIVES	**4**		
MANAGEMENT ORGANIZATION	**4**		
IMPROVEMENTS	**3**		
NATURAL, CULTURAL, SOCIAL VALUES	**3**		
AIR QUALITY VALUES	**3**		
LOGISTICS	**3**		
POLITICAL CONCERNS	**2**		
TACTICAL OPERATIONS	**2**		
INTERAGENCY COORDINATION	**1**		

TOTAL COMPLEXITY VALUE

COMPLEXITY VALUE BREAKPOINTS:

LOW	***40 - 90***
MODERATE	***91 - 140***
HIGH	***141 - 200***

COMPLEXITY RATING (circle) LOW MODERATE HIGH

The Wildland Fire Complexity Analysis provides a method to assess the complexity of both wildland fires. The analysis incorporates an assigned numeric rating complexity value for specific complexity elements that are weighted in their contribution to overall complexity. The weighted value is multiplied by the numeric rating value to produce a point value for each item. All values are then added to generate the total complexity value for the incident. Breakpoint values are provided for Low, Moderate, and High complexity.

The complexity analysis worksheet is accompanied by a guide to numeric values for each complexity element shown, provided on the following pages.

Wildland and Prescribed Fire Complexity Rating Worksheet Numeric Rating Guide

COMPLEXITY ELEMENT	GUIDE TO NUMERIC RATING		
	1	2	3
Safety	• Safety issues are easily identified and mitigated.	• Number of significant issues have been identified. • All safety hazards have been identified on the LCES worksheet and mitigated.	• SOF1 or SOF2 required. • Complex safety issues exist.
Threats to Boundaries	• Low threat to boundaries. • POI <50%. • Boundaries are naturally defensible.	• Moderate threat to boundaries. • POI >50% - <70%. • Moderate risk of slopover or spotting. • Boundaries need mitigation actions for support to strengthen fuel breaks, firelines, etc.	• High threat to boundaries. • POI >70%. • High risk of slopover or spotting. • Mitigation actions necessary to compensate for continuous fuels.
Fuels / Fire Behavior	• Low variability in slope and aspect. • Weather uniform and predictable. • Surface fuels (grass/needles) only. • Grass/shrub, or early seral forest communities. • Short duration fire. • No drought indicated.	• Moderate variability in slope and aspect. • Weather variable, but predictable. • Ladder fuels and torching. • Fuel types/loads variable. • Dense, tall shrub or mid-seral forest communities. • Moderate duration fire. • Drought index indicates normal conditions to moderate drought; expected to worsen.	• High variability in slope and aspect. • Weather variable and difficult to predict. • Extreme fire behavior. • Fuel types/loads highly variable. • Late seral forest communities or long-return interval fire regimes. • Altered fire regime, hazardous fuel/stand density conditions. • Potentially long duration fire. • Drought index indicates severe drought; expected to continue.

COMPLEXITY ELEMENT	GUIDE TO NUMERIC RATING		
	1	2	3
Objectives	• Maintenance objectives. • Prescriptions broad. • Easily achieved objectives.	• Restoration objectives. • Reduction of both live and dead fuels. • Moderate to substantial changes in two or more strata of vegetation. • Objectives are moderately hard to achieve. • Objectives may require moderately intense fire behavior.	• Restoration objectives in altered fuel situations. • Precise treatment of fuels and multiple ecological objectives • Major change in the structure of 2 or more vegetative strata. • Conflicts between objectives and constraints. • Requires a high intensity fire or a combination of fire intensities that is difficult to achieve.
Management Organization	• Span-of-control held to 3. • Single resource incident of project.	• Span-of-control held to 4. • Multiple resource incident of project. • Short-term commitment of specialized resources.	• Span-of-control greater than 4. • Multiple branch, divisions, or groups. • Specialized resources needed to accomplish objectives. • Organized management team required (FUMT, IMT)
Improvements to be Protected	• No risk to people or property within or adjacent to fire.	• Several values to be protected exist. • Mitigation through planning and/or preparations is adequate. • May require some commitment of specialized resources.	• Numerous values and/or high values to be protected. • Sever damage likely without significant commitment of specialized resources with appropriate skill levels.
Natural, Cultural, and Social Values to be Protected	• No risk to natural, cultural, and/or social resources within or adjacent to fire	• Several values to be protected exist. • Mitigation through planning and/or preparations is adequate. • May require some commitment of specialized resources.	• Numerous values and/or high values to be protected. • Severe damage likely without significant commitment of specialized resources with appropriate skill levels.

COMPLEXITY ELEMENT	GUIDE TO NUMERIC RATING		
	1	2	3
Air Quality Values to be Protected	• Few smoke sensitive areas near fire. • Smoke produced for less than 1 burning period. • Air quality agencies generally require only initial notification and/or permitting. • No potential of scheduling conflicts with cooperators.	• Multiple smoke sensitive areas, but smoke impact mitigated in plan. • Smoke produced for 2-4 burning periods. • Daily burning bans are sometimes enacted during the burn season. • Infrequent consultation with air quality agencies is required. • Low potential of scheduling conflicts with cooperators.	• Multiple smoke sensitive areas with complex mitigation actions required. • Health or visibility complaints likely. • Smoke produced for more than 4 burning periods. • Multi-day burning bans are often enacted during the burn season. • Smoke sensitivity Class 1 airsheds. Violation of state and federal health standards possible • Frequent consultation with air quality agencies is required. • High potential of scheduling conflicts with cooperators.
Logistics	• Easy access. • Duration of fire support is less than 4 days.	• Difficult access. • Duration of fire support between 4 and 10 days. • Logistical position assigned. • Anticipated difficulty in obtaining resources.	• No vehicle access. • Duration of fire support is greater than 10 days. • Multiple logistical positions assigned. • Remote camps and support necessary.
Political Concerns	• No impact on neighbors of visitors. • No controversy. • No media interest.	• Some impact on neighbors or visitors. • Some controversy, but mitigated. • Press release issued, but no media activity expected during operations.	• High impact on neighbors or visitors. • High internal or external interest and concern. • Media presence likely during operations.

COMPLEXITY ELEMENT	GUIDE TO NUMERIC RATING		
	1	2	3
Tactical Operations	• No ignition or simple ignition patterns. • Single ignition method used. • Holding requirements minimal.	• Multiple firing methods and/or sequences. • Use of specialized ignition methods (e.g. terra-torch, aerial systems). • Resources required for up to one week. • Holding actions to check, direct, or delay fire spread.	• Complex firing patterns highly dependent on local conditions. • Simultaneous use of multiple firing methods and/or sequences. • Simultaneous ground and aerial ignition. • Use of heli-torch planned. • Resources required for more than one week. • Multiple mitigation actions at variable times and locations required. • Success of actions critical to accomplishment of objectives. • Aerial support for mitigation actions desirable or necessary.
Interagency Coordination	• Cooperators not involved in operations. • No concerns.	• Simple joint-jurisdiction fires. • Some competition for resources likely. • Some concerns.	• Complex multi-jurisdiction fires. • High competition for resources likely. • High concerns.

CORONADO RISK ASSESSMENT CHART
(For Stage 1 Analysis)

The Risk Assessment Chart is used for the initial decision. This decision must be made by the appropriate Agency Administrator(s) or designated acting within two hours from the time of detection. The Energy Release Component (ERC) values for each of the adjective ratings are illustrated below. The chart uses the adjective rating coupled with the time of year to help the administrator(s) determine a base line potential risk, enhanced or mitigated by (but not limited to) the considerations below.

ERC FUEL MODEL H	**ADJECTIVE RATING**
00-20	**LOW**
21-30	**MODERATE**
31-40	**HIGH**
41-50	**VERY HIGH**
51-70	**EXTREME**

Adjective Rating*	4/3-4/14	4/15-4/29	4/30-5/13	5/14-5/28	5/29-6/12	6/13-6/27	6/28-7/11	7/12-7/26	7/27-8/11	8/12-8/26	8/27 ➡
LOW											
MODERATE											
HIGH											
VERY HIGH											
EXTREME											

***If long-term drought conditions exist, use next higher adjective rating**

High Risk **Moderate Risk** **Low Risk**

RISK ASSESSMENT CONSIDERATIONS:	
✓ **Threat to Life or Human Welfare**	✓ **Cause and Location**
✓ **Fire Growth Predictions**	✓ **Smoke Management Concerns**
✓ **Local/Regional/National Status**	✓ **Availability of Resources**
✓ **Fire Proximity to FMU Boundary**	✓ **Fire Behavior**
✓ **Fuel Conditions/Adjacent Fuels**	✓ **Drought Evaluation/Impact**
✓ **Number of Fires Managed as WLFU**	✓ **Current and Predicted Weather**
✓ **Impacts-Visitor/User/Community**	✓ **Duration/Season**
✓ **Impacts-Cultural/Arch/T & E Species**	✓ **Recent vs. Historical ERC Trends**

The Adjective Rating used in the Risk Assessment Chart is a product of the National Fire Danger Rating System. It indicates the level of Risk on a given day for the potential of Fire, or multiple fire starts and large fire growth. It is based on weather and fire history over a very large area, and should not be confused with Fire Behavior Calculations that require local site-specific inputs of Fuels, Weather and Topography. The analysis process for determining the breakpoints or "fire business thresholds" require the selection of a representative weather station, the definition of an annual fire season and the selection of a fuel model and an indice or component (BI, ERC, SC, etc.). The FIRES portion of the "Fire Family Plus" software package allows us to find a fuel model and indice that most accurately models our local fire and weather occurrence. It may not, nor need not be a fuel model that depicts actual conditions in the field, unlike a fuel model selected for fire behavior calculations.

The Saguaro weather station was chosen, it is one of the regional NFDRS stations and has a 30-year history in the database. Based on the fire business depicted in Fig. 1, Feb 1st thru Oct. 15th was chosen for the analysis period. The "Goodness of Fit" test (see Fig. 2) found NFDRS fuel model H and Energy Release Component (ERC) to be an excellent match for the Coronado National Forest. Using the Decision Point portion of the FIRES program (Fig. 3) the ERC thresholds for the 5 Adjective Ratings were adjusted to correlate with "Fire Business".

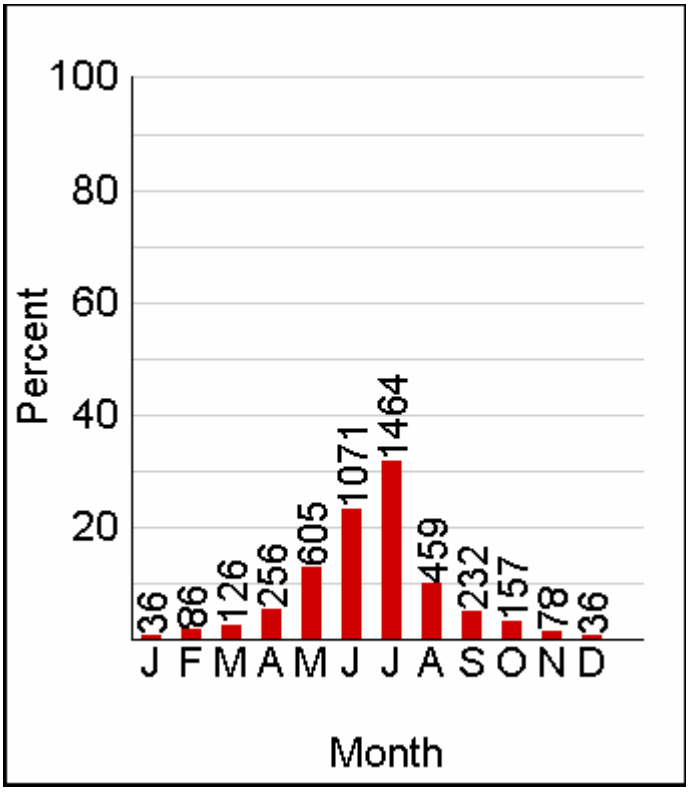


Fig. 1 The chart above graphs the number of fires on the Coronado National forest from 1970-2001 distributed by month.

FireFamily Plus Fires Analysis
021202-SAGUARO
Variable: ERC

Model: 7H3AE1
 Time Frame: 2/1 - 10/15
 Data Years: 1970 - 2001
 Cause = All
 Large Fire Day (LFD)= 25 acres
 Multiple Fire Day (MFD)= 2 fires

 021202-SAGUARO - SAGUARO Model: 7H3AE1

**** Created data for 398 records with missing values. ****
  (Maximum of 5 consecutive missing days for replacement)
181 fires discarded due to no/missing weather.

Fire-Day:
    P(Fire-Day) = 1 / (1 + exp(-1 * -2.2034 + (-1 * 0.0347) * ERC))
      Number of Weather-Days: 6713
      Number of Fire-Days: 2043
Chi-Squared Goodness of Fit Tests for Fire-Day

Prob. Range	ERC Range	Days	FD Pct	FD Obs	FD Exp	No-FD Obs	No-FD Exp	Chi-Square
0.10 - 0.19	0 - 22	746	14	107	118	639	628	1.2
0.19 - 0.22	22 - 27	613	21	131	128	482	485	0.1
0.22 - 0.25	27 - 32	655	24	160	154	495	501	0.3
0.25 - 0.28	32 - 36	856	29	250	227	606	629	3.3
0.28 - 0.30	36 - 39	570	30	172	166	398	404	0.3
0.30 - 0.32	39 - 42	594	28	167	186	427	408	2.9
0.32 - 0.35	42 - 46	700	32	226	238	474	462	0.9
0.35 - 0.38	46 - 50	634	36	229	236	405	398	0.3
0.39 - 0.43	50 - 56	719	44	319	296	400	423	3.1
0.44 - 0.56	57 - 70	626	45	281	294	345	332	1.1
		6713	30	2042	2043	4671	4670	13.4

Chi Square	DF	P-Value	SSTOT	SSE(1)	SSR(1)	DF	P-Value	R(L)-Sq.
13.4	8	0.0982	8248.5	7987.9	260.6	1	0.0000	0.95
				SSE(S)	SSR(S)			
				7974.5	274.0			

Fig. 2 Page 1

Large-Fire-Day: (Conditional on Fire-Day)
P(Large-Fire-Day) = 1 / (1 + exp(-1 * -3.5795 + (-1 * 0.0436) * ERC))
Number of Fire-Days: 2043
Number of Large-Fire-Days: 333
Chi-Squared Goodness of Fit Tests for Large-Fire-Day

Prob. Range	ERC Range	Days	LFD Pct	LFD Obs	LFD Exp	No-LFD Obs	No-LFD Exp	Chi-Square
0.03 - 0.08	0 - 26	209	7	14	14	195	195	0.0
0.08 - 0.10	26 - 32	236	7	16	22	220	214	1.7
0.10 - 0.12	33 - 36	204	12	25	23	179	181	0.2
0.12 - 0.13	36 - 39	172	12	20	22	152	150	0.2
0.13 - 0.15	39 - 43	224	14	32	33	192	191	0.0
0.16 - 0.18	44 - 47	237	20	47	40	190	197	1.4
0.18 - 0.20	48 - 50	161	21	34	31	127	130	0.4
0.20 - 0.23	50 - 54	225	22	50	48	175	177	0.1
0.23 - 0.26	55 - 58	189	24	46	47	143	142	0.0
0.26 - 0.37	59 - 70	186	26	49	54	137	132	0.6
		2043	16	333	333	1710	1710	4.6

Chi Square	DF	P-Value	SSTOT	SSE(1)	SSR(1)	DF	P-Value	R(L)-Sq.
4.6	8	0.7976	6677.5	1748.3	4929.1	1	0.0000	1.00
				SSE(S)	SSR(S)			
				1743.6	4933.9			

Multiple-Fire-Day: (Conditional on Fire-Day)
P(Multiple-Fire-Day) = 1 / (1 + exp(-1 * -0.5419 + (-1 * 0.0042) * ERC))
Number of Fire-Days: 2043
Number of Multiple-Fire-Days: 838
Chi-Squared Goodness of Fit Tests for Multiple-Fire-Day

Prob. Range	ERC Range	Days	MFD Pct	MFD Obs	MFD Exp	No-MFD Obs	No-MFD Exp	Chi-Square
0.37 - 0.39	0 - 26	209	40	83	81	126	128	0.1
0.39 - 0.40	26 - 32	236	42	99	94	137	142	0.5
0.40 - 0.40	33 - 36	204	38	77	82	127	122	0.5
0.40 - 0.41	36 - 39	172	40	68	70	104	102	0.1
0.41 - 0.41	39 - 43	224	35	79	92	145	132	3.0
0.41 - 0.41	44 - 47	237	41	97	98	140	139	0.0
0.42 - 0.42	48 - 50	161	42	67	67	94	94	0.0
0.42 - 0.42	50 - 54	225	46	103	95	122	130	1.3
0.42 - 0.43	55 - 58	189	48	91	80	98	109	2.5
0.43 - 0.44	59 - 70	186	40	74	80	112	106	0.8
		2043	41	838	838	1205	1205	8.7

Chi Square	DF	P-Value	SSTOT	SSE(1)	SSR(1)	DF	P-Value	R(L)-Sq.
8.7	8	0.3679	7626.7	2764.1	4862.6	1	0.0000	1.00
SSE(S)	SSR(S)							
				2755.4	4871.4			

Fig.2 Page 2

FireFamily Plus Decision Points
021202-SAGUARO
Variable: ERC

Time Frame: 2/1 - 10/15
Data Years: 1970 - 2001
Cause = All
Large Fire Day = 25 acres
Mulitple Fire Day = 2 fires

Stations in 021202-SAGUARO :
SAGUARO Model: 7H3AE1

		Percentages Based On Current Class Definitions												Model Probabilities (%)		
Cls #	Index Range	All-Days #	All-Days %	Fire-Days #	Fire-Days %FD	Fire-Days %AD	Large Fire-Days #	Large Fire-Days %LFD	Large Fire-Days %FD	Large Fire-Days %AD	Multi-Fire-Days #	Multi-Fire-Days %MFD	Multi-Fire-Days %FD	Multi-Fire-Days %AD	Fire Day	Large F-Day	Multi F-Day
1	0- 20	510	8	58	3	11	4	1	7	1	26	3	45	5	10- 18	3- 6	37- 39
2	20- 30	1166	17	267	13	23	15	5	6	1	106	13	40	9	18- 24	6- 9	39- 40
3	30- 40	1777	26	497	24	28	57	17	11	3	195	23	39	11	24- 31	9- 14	40- 41
4	40- 50	1781	27	570	28	32	99	30	17	6	223	27	39	13	31- 38	14- 20	41- 42
5	50- 70	1479	22	651	32	44	158	47	24	11	288	34	44	19	38- 56	20- 37	42- 44
		6713		2043			333				838						

Values in columns denoted by an * are displayed in the bar charts.

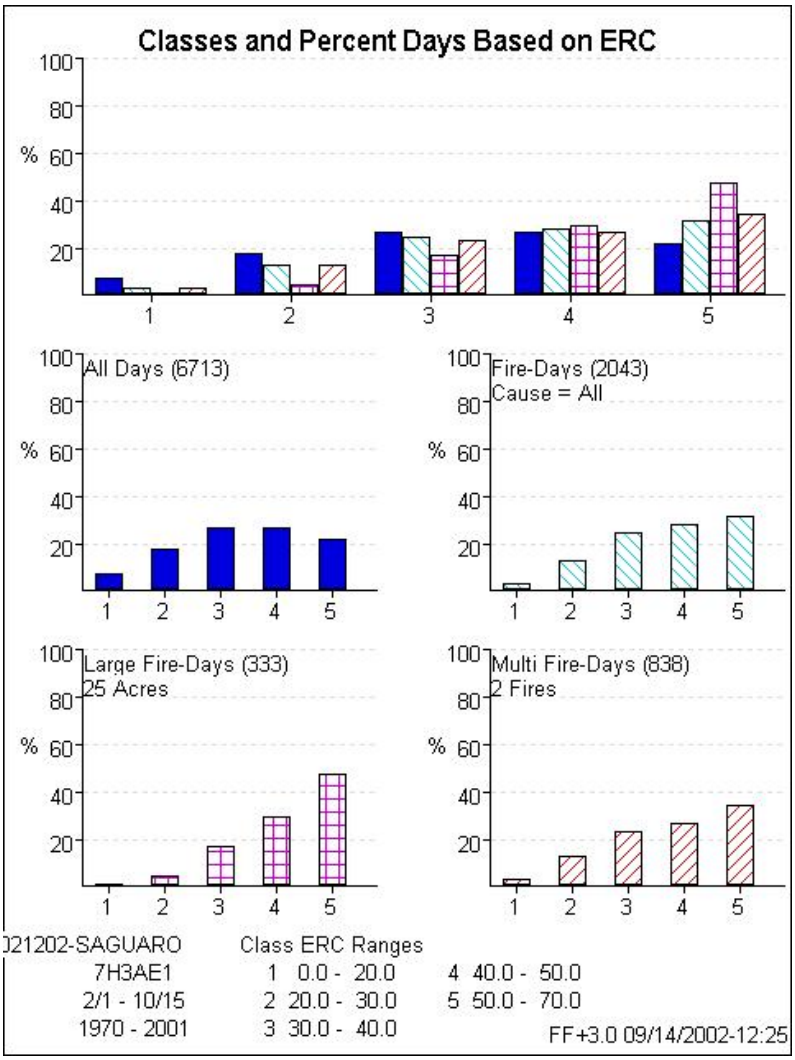


Fig. 3

5142 - Exhibit 01

PRESCRIBED FIRE BURN PLAN
USDA Forest Service
Southwestern Region

	PRESCRIBED BURN
	NATIONAL FOREST
	RANGER DISTRICT
	WILDERNESS

TYPE OF BURN

Broadcast			
Pile			
Other		Describe	

Prepared By		Title		Date	
Recommended By		Title		Date	
Recommended By		Title		Date	
Recommended By		Title		Date	
Recommended By		Title		Date	
Approved By		Title		Date	

NOTE:

COMPLETE ONLY THOSE ITEMS PERTINENT TO THE TYPE OF BURN BEING PLANNED. EVERY LINE/BLOCK MAY NOT BE NECESSARY FOR THE PLANNED BURN. IF ADDITIONAL SPACE IS NEEDED, USE EXTRA PAGES OR THE BACK OF A PAGE.

5142 - Exhibit 01 -- Continued

SUMMARY OF PRESCRIBED FIRE COMPLEXITY (From Complexity Elements Worksheet)

RISK OVERALL RATING	
POTENTIAL CONSEQUENCES OVERALL RATING	
TECHNICAL DIFFICULTY OVERALL RATING	
SUMMARY COMPLEXITY DETERMINATION	

RATIONALE:

Signature: (Line Officer): Date:

Designated Burn Boss (RXB1) (RXB2)	
Designated Prescribed Fire Manager (RXM1) (RXM2)	

5142 - Exhibit 01 -- Continued

Line Officer Daily Review Record

Rx Fire approval authority remains with the Regional Forester when the National Preparedness Level is IV or V. Refer to the Current Regional Mobilization Guide.

Line Officer or acting in conjunction with the Burn Boss must review and sign daily for Moderate & High Complexity burns before ignition and/or before continuation of the next day's activity.

DAILY REVIEW **Yes or No Response Required** (Write in Preparedness Level in the last column)				**SAFETY REQUIREMENTS MET ?**	**BURN ORGANIZATION ON SITE ?**	**ZONE NOTIFICATION & BRIEFING ?**	**RISK ACCEPTABLE ?**	**CONTINGENCY RESOURCES AVAILABLE ?**	**LONG TERM DROUGHT CONSIDERATIONS ?**	**WEATHER FCST CURRENT/ACCEPTABLE ?**	**FOLLOW UP ON VALIDATION OF SPOT WEATHER FORECAST WITH "NWS" ?**	**FIRE BEHAVIOR ACCEPTABLE ?**	**MITIGATION MEASURES WORKING ?**	**FIRE EFFECTS ACCEPTABLE ?**	**PREPAREDNESS LEVEL = I, II, III, IV, V**
Month	Day	Time	BY												

5142 - Exhibit 01 -- Continued

A. DESCRIPTION OF THE PRESCRIBED FIRE AREA

(Include map(s))

Township/Range/Section			
Township/Range/Section			
Township/Range/Section			
Township/Range/Section			

1. Project Size (Acres):

2. Size (Perimeter, Chains):

3. Elevation:

Top		Bottom	

4. Slope %:

Max		Min	

5. Aspects:

6. Drainage Name:

7. Fire Behavior Model(s) (or Custom Model from BEHAVE):

8. Vegetation Type:

9. Fuel Loading (Tons/acre by Size Class):

5142 - Exhibit 01 -- Continued

10. Surface Fuel Depth:

11. Continuity:

12. Arrangement:

13. Stems per acre by size class:

14. Site Preparation: (Type of line construction, fuel rearrangement, etc.):

B. BURN GOALS AND OBJECTIVES

Purpose of the Burn:

5142 - Exhibit 01 -- Continued

1. Resource Management Goals from the Land Management Plan:

2. Specific Objectives of the Burn, Stated in Measurable Terms:

C. RANGE OF ACCEPTABLE RESULTS EXPECTED

Desired Effects:

Range of Acceptable Results, Expressed in Quantifiable Terms:

5142 - Exhibit 01 -- Continued

D. PROJECT ASSESSMENT

Complexity & Risk Rating: (Refer to Complexity Rating Guide for Criteria & Elements)

THIS BURN FITS COMPLEXITY CRITERIA FOR: Low:		Moderate		High	

(NWCG – Prescribed Fire Complexity Rating Guide – PMS-424 – NFES – 2474, and FSM 5141.2).

COMPLEXITY ELEMENTS WORK SHEET
(PMS-424-NFES-2474)

ELEMENT	RISK	POTENTIAL CONSEQUENCE	TECHNICAL DIFFICULTY
1. Potential for escape			
2. The number & dependence of activities			
3. Values at risk			
4. Fuels/Fire Behavior			
5. Size of prescribed fire team			
6. Magnitude of oversight/ political activities			
7. Fire treatment objectives			
8. Environmental constraints			
9. Safety			
10. Ignition procedures/ methods			
11. Interagency problems			
12. Project logistics			
13. Special features inside fire area			
14. Smoke management			
15. Other			
SUMMARY			

RATIONALE:

5142 - Exhibit 01 -- Continued

E. PRESCRIBED FIRE IMPLEMENTATION ACTIONS

1. Preburn Considerations, On and Off Site:

Define line to be built, snags to be felled or protected, equipment to be pre-positioned, special features to be protected, warning signs to be placed, weather recording and monitoring needs. Knowledge and strong consideration shall be given to fuels and fuel loadings near and adjacent to the project boundary in combination with the topographic features. Knowledge and strong consideration shall also be given to long-term drought indicators such as lack of past year snow pack(s), long-term rainfall deficits, long range weather forecasts, consistently low fuel moistures, delay of green-up, and current issues such as approaching frontal systems, etc.

Special Considerations:

Wildlife, Wilderness Values, Soil and Watershed, Soil Moisture, Timber, Public Concerns, Private Land near or adjacent to the project, Archaeology, T&E, Wildland Urban Interface, Public Highways & Roads, High Voltage Transmission or Utility Lines, Pipelines, or Other Sensitive Features.

5142 - Exhibit 01 -- Continued

1. Briefing:

Identify and analyze the topics to be discussed on the Fire Use Daily Briefing Record (Exhibit 02) unique to the individual prescribed fire project, and specify personnel safety and emergency procedures.

If aerial ignition devices will be used, include an Aerial Ignition Operation Hazard Analysis and Aviation Operating Plan including firing map and primary/secondary aircraft landing sites.

3. Test Fire:

Make provisions for a test fire and record the results. The test fire must be ignited in a controllable and representative location within the prescribed fire area to test key fire behavior characteristics prescribed to meet management objectives. In many applications, analysis of the initial ignitions may provide adequate test fire results.

On multiple-day projects, evaluation of current fire behavior may provide a comparative basis for continuing. When in doubt, initiate a separate test fire and evaluate results.

5142 - Exhibit 01 -- Continued

Test Fire On-Site Data:

Shade %,		Temperature (F),		RH %	
1 Hr. TLFM %,		10 Hr. TLFM %,		100 Hr. TLFM %.	
Midflame Windspeed & Direction,		Slope % and Aspect			

Test Results of Fire Behavior:

4. Prescribed Fire Prescription:

A prescribed fire prescription containing those key parameters needed to achieve desired results. Prior to ignition, compare prescription elements, both individually and collectively, against local weather forecasts and any other predicted conditions. Any changes to prescriptive parameters must be approved by the same level of authority required for plan approval.

Type of fire used (backing, head, etc.):

Rate of Spread (Ch/Hr): Head			Backing		
	Min	Max		Min	Max
Fireline Intensity (BTU/Ft/Sec):					
	Min	Max			

5142 - Exhibit 01 -- Continued

Heat Per Unit Area (BTU/Ft/Sec):	

Flame Length (Feet): Maximum		Minimum	

Scorch Height Allowable:	

Other:

Narrative:

BURNING PRESCRIPTION NECESSARY TO OBTAIN THE FIRE BEHAVIOR DESCRIBED ABOVE:

			DAY	NIGHT
Temperature		Maximum		
		Minimum		
Relative Humidity:		Maximum		
		Minimum		

5142 - Exhibit 01 -- Continued

Fuel Moisture:		Maximum		Minimum
	1H			
	10H			
	100H			
	1000H			

Define the acceptable range/s:

Live Fuel Moisture:	
Midflame Wind Speed:	
Time of Year:	

Consideration given to long-term drought conditions: lack of winter snow pack/s, long-term rainfall deficit, delayed green up, continuing low fuel moistures, long range weather forecasts, other identified drought trends ? YES | | NO | |

5. Special Conditions, Public and Personnel Safety:

Describe public and personnel safety and emergency procedures. Specify that all personnel who are within the active burn area must have personal protective equipment, as identified in the Job Hazard Analysis. Identify safety hazards on the burn, measures taken to reduce those hazards, and EMS personnel on the burn, if needed. Specify emergency medical procedures, evacuation routes, and emergency facilities to be used.

5142 - Exhibit 01 -- Continued

6. Burn Organization: (Use Block Organizational Charts)

List required positions to be filled and include training opportunities. Specify the number, type and location of resources that are needed on site. No less than the organization described in the approved plan shall be used to execute the burn. In addition, ensure that the Contingency Plan can be executed as described under Contingency Plan "G" item 3.

7. Ignition Plan:

Describe necessary ignition operation including firing methods, techniques and patterns. Maps showing firing patterns may be included. Necessary equipment and supplies must be listed.

Firing Methods, Techniques, and Patterns:

Equipment and Supplies:

5142 - Exhibit 01 -- Continued

8. Holding Plan:

Provision for holding actions to maintain the prescribed fire within prescription.

Holding, patrol, and mop up procedures.

F. COOPERATION

Plan for interagency and intra-agency pre-burn coordination and, where applicable, public involvement and burn-day notification to appropriate individuals, including adjacent landowners, land managers, agencies, high power transmission line contacts, utility companies, gas companies, oil companies, plus the general public.

1. Interagency and Intra-agency pre-burn coordination:

2. Public Involvement and Pre-Burn Notification:

5142 - Exhibit 01 -- Continued

3. Media (News Releases and Public Service Announcements):

4. Post Burn Notification and/or Follow Up:

5142 - Exhibit 01 -- Continued

G. CONTINGENCY PLAN

CONTINGENCY RESOURCES

The burn plan identifies resources needed to safely and successfully ignite, execute, and hold prescribed fire throughout the range of prescriptive parameters identified.

The contingency resources identified within the prescribed fire plan are identified for those rare events that occur creating or leading to a situation where the burn may become unsuccessful, considering capabilities of existing on-site resources. Contingency resources are additional resources that may be needed to maintain a planned prescribed fire within prescription parameters, and/or to quickly implement suppression alternatives if the prescribed fire exceeds those parameters.

If a prescribed fire exceeds the parameters within the written prescription, the "available resources" identified within contingency plans may be used to bring the prescribed fire back within written prescription guidelines during the 48 hour time frame, as directed in FSM 5140.31.

In Prepardness Level IV and higher, the **Southwest Mobilization Guide** states: "Limit prescribed fires and the fire use fires to those certified by the agency administrator to have little chance of requiring suppression resources beyond those committed **on the unit**. This determination shall be made daily, in writing, and shall become a permanent part of the prescribed fire situation analysis. All new natural ignitions must be classified as wildland fires and appropriate suppression action taken, except when approved by a Southwest Area agency head."

5142 – Exhibit 01 – Continued

1. Contingency Plan for Going Out of Prescription at Low End:
(Low End = Minimum Conditions for Burning, i.e. High RH, High Fuel Moisture, Low Temperatures, etc.)

2. Contingency Plan for Going Out of Prescription at High End:
(High End = Maximum Conditions for Burning i.e. Low RH, Low Fuel Moisture, High Temperatures, Winds, etc.)

5142 – Exhibit 01 – Continued

3. If prescription parameters are exceeded or anticipated to be exceeded, the following actions and contingency resources must be used to return the fire back into prescription. This must be accomplished within the 48 hour limit (FSM 5140.31).

H. FUNDING

1. Primary Purpose		
2. Job Code/s:		
3. Estimated Cost:		
	a. Planning:	
	b. Implementation:	
	c. Monitoring:	

4. Sources of Funding:

5142 - Exhibit 01 -- Continued

5. Contributed Labor or Equipment:

I. SMOKE MANAGEMENT AND AIR QUALITY

Describe how the project will comply with county, state, tribal and federal air quality regulations. Include: mitigation measures, best management practices, and best available control measures to reduce the impacts of smoke production. Ensure that the SASEM run is completed and on file.

5142 – Exhibit 01 – Continued

J. MONITORING

Provisions for post-burn evaluation to enable resource managers and the agency administrator to determine if project objectives have been met.

The items listed below are suggested for full documentation of the project.

Document burn-day conditions, fire behavior, smoke dispersal, first order fire effects, and cost per acre of treatment. Specify the weather information (forecast and observed) required during all phases of the project, and if spot weather and smoke dispersal forecasts need to be requested. In addition to short-term monitoring to document the immediate results of a burn, long-term monitoring is strongly recommended. Permanent photo points, transects, or plots that are revisited in years following a burn will provide information on successional trends that result from the burn. Longer term monitoring may be necessary to determine if objectives were met.

1. Equipment and Personnel Needs (Monitoring):

5142 - Exhibit 01 - - Continued

K. POST-BURN EVALUATION

Ignition Completed on Date		**Time:**	

Date of Evaluation:	

Safety Evaluation of this Project:

Desired Results Achieved:

Undesirable Effects:

5142 - Exhibit 01 -- Continued

Smoke Management and Coordination, Objectives Met ?

Plan Implementation:

Financial Review:

Training Opportunities:

Visitors, Observations, Follow Up Work, Site Rehabilitation or Other Issues ?

Accomplishments entered into Rx Burn Atlas, Data Base, or Other ?

YES		NO	

5142 – Exhibit 01 - - Continued

L. DOCUMENTATION

All prescribed fires shall be documented with the following information and/or documents: (All documents are not required to be attached to the burn plan, but they must be complete, available, and on file.)

1. Prescribed Fire Plan ?
2. Line Officer Daily Review Record ?
3. Fire Use Daily Briefing Record ?
4. Map of Project Area and Surrounding Area ?
5. Monitoring Data, including weather, fire behavior, and fire effects observations ?
6. Weather Forecasts, spot, short and long term, & Follow Up with the National Weather Service (NWS) ?
7. Smoke dispersal information ?
8. SASEM runs complete and on file ?
9. Organizational Charts ?
10. Job Hazard Analysis ?
11. Safety Plan (including Public Safety) ?
12. Air Operations Plan and Flight Plan (if Air Operations is used) ?
13. For Aerial Ignition, include an Aerial Ignition Operation Hazard Analysis (FSM 5142.2) ?
14. Communications Plan ?
15. R3-FS-2300-4 Cultural Resources Inventory Standards & Accounting (IS&A) form?
16. Public and Media Contact List ?

5142 - Exhibit 02

FIRE USE DAILY BRIEFING RECORD

Date of briefing:		Time of briefing:	

Briefing conducted by:	

Attendance:

Items discussed: (X appropriate categories)

	Objectives		Risk assessment
	Maps, drop points, legend		Test fire results
	Topography		Fuels
	Boundary locations/types		Weather forecast
	Sensitive highways/roads		Expected fire behavior
	High voltage & utility Lines		Contingencies
	Pipelines: oil, gas, water		Logistical support
	Job Hazard Analysis / PPE		Management action points
	Personnel Safety (firefighter & public)		Smoke sensitive targets-mitigation
	Escape routes, safety zones		Archaeology/Cultural resources
	Emergency procedures		Threatened & endangered species
	Communications-frequencies-protocols		Public issues
	Organization-responsibilities		Media information
	Tactics/firing/hold/patrol		Special considerations
	Aviation operations/Aerial ignition		Monitoring needs

5142 - Exhibit 02 -- Continued

Briefing Remarks and/or Discussions:

CORONADO FUELS REDUCTION PROJECTS 2003-2008

FY 2004

Project Name	District	Sructures or Facilities Protected (WUI)	Total Project Acres	Total acres to be treated in FY04	Planned Action in FY04	NEPA Completion Date	TES Habitat Protection (Y/N)	FY04 Funding Request	Total Project Cost
Non-Wildland Urban Interface Projects WFHF-FW									
Total Non-WUI									
Wildland Urban Interface Projects WFHF-FN									
Johnson Peak	1	Summerhomes	6000	50	Rx Burn	?	Y	$58,500	$700,000
Hopkins	2	Observatory	12	12	Mechanical	?	Y	$61,200	$61,200
Miller I	3	Urban Interface	65	65	Maint. Burn	2001	Y	$12,000	$12,000
Miller II	3	Urban Interface	240	140	Pile Burn	2001	Y	$31,700	$54,400
Miller III	3	Urban Interface	60	60	Maint. Burn	2001	Y	$11,000	$11,000
Miller IV	3	Urban Interface	103	103	Pile Burn	2001	Y	$23,400	$23,400
Hunter Burn	3	Urban Interface	110	110	Thin and Pile	?	Y	$44,600	$44,600
Jacobsen	4	Summerhomes	906	150	Pile Burn	2000	Y	$129,000	$800,000
Pinaleno Ecosystem	4	Observatory, Electronic site	1100	100	Thin/pile	2001	Y	$144,000	$1,500,000
Rose Canyon	5	Summerhomes, recreation site	300	300	Thin/pile	?	Y	$129,000	$217,210
Oracle IV	5	Urban Interface	300	300	Rx Burn	?	Y	$52,920	$52,920
Hunters Ridge	5	Electronic sites	20	20	Thin/pile	?	Y	$14,000	$25,000
Sabino Highway	5	Summerhomes	33	33	Thin/pile		Y	$13,300	$27,300
Total WUI			**9249**	**1443**				**$724,620**	**$3,529,030**
Monitoring/Planning									
Pedregosa	1	None	800	0	Planning/NEPA	?	?	$9,000	$9,000
Potrero Fuelwood	2	Urban Interface	1500	0	Planning/NEPA	?	?	$27,000	$27,000
Hunter Burn	3	Urban Interface	110	110	Planning/NEPA	?	Y	$6,000	$6,000
Carr Burn	3	Urban Interface	225	225	Planning/NEPA	1999	Y	$12,000	$12,000
Red Bear Soldier	5	Summerhomes	180	180	Planning/NEPA	?	Y	$58,050	$171,500
Hunters Ridge	5	Electronic site	20	20	Planning/NEPA	?	Y	$6,000	$25,000
Sabino Highway	5	Summerhomes	33	33	Planning/NEPA	?	Y	$6,000	$27,300
Monit./Planning Totals			**2868**	**568**				**$124,050**	**$277,800**
Grand Total								**$848,670**	**$3,806,830**