700 FIRE PREVENTION MANUAL

701 INTRODUCTION

Wildfires in Montana have resulted in severe damage to our timber and range resources, watersheds, wildlife habitat, recreational, and aesthetic values. Additionally wildfires have damaged and destroyed public and personal property and have caused injury or death to livestock and people. The cost to taxpayers for wildfire suppression has been tremendous. The Montana DNRC has paid over $110 million in suppression costs from the 1981 fire season through the 2003 season, including $9.9 million in 1988, $17.7 million in 1994, and $34.9 million in 2000. DNRC provides direct protection to a total of 5,169,477 acres consisting of 3,499,046 acres of state and private land.

Conversely, fire can be beneficial to the natural environment. It can improve watersheds, wildlife habitat, and recreational and aesthetic values. Wildfire may either promote or inhibit the spread of insects and disease in our forests. A wildfire may reduce the likelihood of a more catastrophic fire at a later time by removing or disrupting the continuity of heavy fuel accumulations.

Recognition of both the harmful and beneficial aspects of fire in the forests and rangelands of Montana has prompted those entrusted with the management of these lands to promote a carefully planned and cautiously conducted prescribed fire program to enable us to reap many of the benefits of fire and, at the same time, promote an aggressive fire prevention program to provide needed protection from the harmful and costly effects of wildfire.

A. PURPOSE

1. Provide guidance for continuing analyses of the relationships between weather, hazards and risks, and the occurrence of person-caused fire. In so doing, develop that ability to make reasonable predictions as to when, where, and how wildfires are most likely to occur, and be thereby better prepared to prevent wildfire.

2. Promote an aggressive fire prevention education program, both in the schools and among the general public, concerning the cautious and responsible use of fire.

3. Promote the adoption and use of home construction design and materials that limit a home's susceptibility to ignition from wildfire and the use of defensible space techniques that promote the survivability of homes and people.

4. Promote the use of those engineering techniques such as fuel treatment and manipulation, the use of fire breaks, inspections of timber harvesting operations, railways and power lines, and specialized techniques needed to promote wildfire prevention.

5. Define our role in the enforcement of fire prevention rules and regulations.

6. Establish fire prevention program implementation responsibilities on the Forestry Division, Land Office and Unit levels.

B. RULES, STANDARDS, GUIDELINES, OBJECTIVES AND GOALS

1. **Rules**

DNRC policy and procedure; State and Federal laws, Administrative Rules.

2. **Standards**

These standards will set the performance requirements of the Fire and Aviation Prevention program and must be met to accomplish the program objectives. By basing our prevention programs on standardized objectives and goals and guided by standards and guidelines, we can develop a statewide prevention program that works at the state and local levels while building on the many national efforts and programs.

3. **Guidelines**

Guidelines are the basis for the prevention program and, while there are many ways to develop a quality prevention program, it is imperative that the key is specific, measurable and documented performance. While this end may be accomplished through various means these guidelines will direct the efforts to achieve a safe, effective and efficient prevention program.

4. **Objectives**

Our objective is to reduce the number and severity of person-caused wildfires occurring each year to an acceptable level. This "acceptable level" is a level of fire activity lower than that which would be predicted by a statistical study of past occurrences during similar and comparable burning conditions and human activity.

5. **Goals**

a. To minimize those person-caused fires which occur because of carelessness or a lack of knowledge of the use of fire.

b. To increase the number of homes and developments adopting, using and maintaining fire resistant construction and defensible space techniques.

C. FIRE PREVENTION PLANS

1. **Standard**

Each Unit, Land Office and the FAMB will produce an annual Fire Prevention Plan. This plan will then be forwarded to the Land Office, and then on to the Fire and Aviation Management Bureau (FAMB) prior to May 1 each year. The FAMB will compile a Statewide Review and plan prior to the spring Fire Advisory Committee spring meeting.

2. **Guideline**

A fire prevention program is the gathering of data, the analysis of annual changes, trends, etc., setting goals and the designing of ongoing actions to confront preventable fires and achieve the goals as set in the plan.

The protection unit must establish the depth of its prevention activities by establishing goals. The protection unit must begin this by compiling data on past fire history. This data should be analyzed on a periodic basis in comparison to past year's records and averages. It can then be incorporated into a running cumulative record and studied to determine trends in types and numbers of fires.

Annual statistics from the F-1000 fire reports for the unit will be used to provide both annual and cumulative data by Unit, Land Office, and Division.

A record of the hazards and risks present on a protection unit must also be compiled prior to drafting a fire prevention plan. This record is then kept current by the unit to reflect an up-to-date status for prevention actions and initial attack actions.

The combining of the record of fire occurrence for the unit, with the types of hazards and risks and analysis of fire occurrence within specific fire danger parameters will assist in identifying the prevention problems. This will also pinpoint which types of fires should be targeted and help the prevention forces establish action items to prevent these fires. This analysis and setting of priorities results in a Fire Prevention Plan.

The Fire Prevention Plan details what specific steps will be taken to attempt to prevent fires originating from specific causes. The plan and its results must be reviewed periodically to see if it is addressing current prevention problems. The Fire Prevention Plan must reflect not only long-term fire problems, but respond to fire threats from new and changing sources as well. A fire prevention plan should not be an inflexible program. It should, however, establish a system that will point out these changes prior to their becoming severe fire problems. The statistics on fire occurrence changes in hazards and risks, and changes in fire danger must be reviewed by the protection unit when they occur, to maintain the plan’s effectiveness.

702 IDENTIFYING FIRE PREVENTION NEEDS

A. FIRE HISTORY

Successful implementation and evaluation of fire prevention program activities must start with in-depth research of the historical prevention problems and issues. As the saying goes, "Those who cannot remember the past are condemned to repeat it."[1]

Fire history should be researched as a broad overview of all the issues involved, for example:

- Occurrence (# fires/cause category/M acres protected).
- Past trends in fire weather.
- Historic risks and hazards on the protection unit.
- Acres protected.

The combination of this data should point out relationships that can be used in targeting prevention actions where they will do the most good.

B. FIRE STATISTICS

A simple percentage reduction (or increase) of person-caused fires is not necessarily an accurate measure of the prevention program. More important are the trends that appear over several years of record keeping. It is difficult to judge quantitatively the success of the program, but it is possible to establish with reasonable accuracy, over the span of several seasons, if the program has produced a decrease, no change, or increase in the number of person-caused fires on a given unit. This is why it is suggested that fire statistics be displayed in the form of 5-year moving averages.

1. **Record Keeping**

a. Current Status

Each direct protection fire dispatch center may keep a current fire status map, which indicates:

1) Fires - legal in nature.
2) Fires - uncontrolled.
3) Fires - controlled.

A seasonal fire location map will be maintained, showing those fires declared out. This map will assist in determining trends in person-caused fires, allowing a quick prevention response.

[1] George Santayana. *Life of Reason, Reason in Common Sense,* Scribner's, 1905, page 284.

b. Annual and Cumulative Records

Standard

Printouts--A fire history will be maintained on a yearly basis for each Land Office and Unit. The information included on this record should be reviewed and analyzed annually to determine the types of fire problems in the area, and to prepare fire prevention plans to combat these individual problems.

Guideline

The yearly records will be incorporated into a 5-year moving average showing fire activity by unit. This 5-year moving average is calculated by averaging the number of fires over the last 5 years. As each new year's statistics are added, the oldest year's statistics are dropped, thus maintaining a " moving" average.

Standard

Maps--Fire unit base maps will be maintained at each fire unit showing: lightning fire occurrence and person-caused fire occurrence.

2. **Time of Ignition**

An important fire statistic which reveals useful historical fire occurrence trends is when a particular fire was started, i.e., year, month and day. This and the rest of the statistical information is recorded on the F-1000 and the Fire Family Plus Database, and is used to determine patterns which may be broken through specific prevention efforts.

3. **Age Category**

The age of the person responsible for starting the fire is recorded to indicate the type of prevention message or strategy is needed to target that segment of the public. Three categories (Child, Adolescent, and Adult) will allow us to identify these very distinct population segments and reach them more efficiently with our prevention message. A logical breakdown by age would be 0-12 years (0-6th grade) for the Child category, 13-18 years (7th-12th grade) for the Adolescent category, and 19+ years for the Adult category.

4. **Cause Category**

Ignition sources are separated into these major cause categories:

- Lightning
- Campfire
- Smoking

- Debris Burning
- Incendiary/arson
- Equipment
- Railroad
- Power Line
- Miscellaneous
- False Alarms

An attempt should be made to determine if patterns of fire activity are occurring within any of these categories and, if so, to determine how to break the pattern and reduce fire starts.

a. Lightning

From a practical point of view, lightning fires are non-preventable.

b. Campfire

Starts from campfires can be addressed by enforcement, education and engineering. While enforcement is a last resort it can become necessary if educational efforts are not effective. Periodic patrols and personal contacts are a positive reminder to campers to extinguish fires; additionally the proper use of signs can be effective. Starts from campfires, outside of developed recreation site, or improved sitemay indicate a need to add - or relocate campgrounds.

c. Smoking

This is an important category during forest fire restrictions, as the smoking public often does not associate smoking with the extreme fire danger. Additionally Montana Code Annotated (76-13-124) limits smoking in forested zones from May 1st to September 30th of each year to areas that have been cleared of flammable materials

d. Debris Burning

Many of our debris burning fires occur a week to ten days following a burn. This would indicate a lack of follow-up work with a person who has obtained a burning permit. Perhaps a call or a visit to the permittee several days following the burn would ascertain if the fire has been extinguished. A reminder to the landowner may be all it takes to have him extinguish any spots still burning.

The problem with debris burning fires is that we usually know where and when these fires will occur, and yet we continue to experience escaped fires. Coordinate debris burning and burn permit activities with interagency cooperators, to ensure that names and addresses of burners are obtained prior to our permit period (May 1 - September 30).

e. Incendiary/Arson

This includes any deliberate starting of fires and may be best addressed by the enforcement aspect of fire prevention, through cooperation with law enforcement agencies. Another effective tool is concentrated or additional patrols in an area where incendiary/arson activity is being documented or suspected.

f. Equipment

Machine use fires normally occurring on State protection involve woods operations (dozers, loaders, etc.) or the use of recreational vehicles (motor bikes, etc.).

Industrial equipment fires can be addressed through the diligent use of inspections, the use of hoot owl shifts during critical periods, and halting the use of a piece of faulty machinery until it is properly equipped. Recreational vehicles are harder to control. Inspections may be handled through dealers, motorcycle clubs, inspection stations, etc. Be sure and follow-up on vehicles not properly equipped.

g. Railroad

Railroad fires normally can be directly tied to the fire danger. A comparison of fire danger with railroad fire starts may indicate a pattern that can be broken. Track right-of-way cleanup/maintenance, proper spark arresters and fuel additives, and safe maintenance operations (welding, grinding, etc.) appear to be the best system for controlling these starts.

h. Power Line

Power line fires are most generally caused by poor right-of-way maintenance and/or high winds, which result in a tree or branch falling into the lines. Cracked or broken insulators in heavy rains can also start cross arm fires. Informing the utility company of needs for right-of-way maintenance and working with them to ensure it's taken care of is an effective means for preventing this type of fire.

i. Miscellaneous

This includes causes such as spontaneous combustion, tracer bullets, any fire of unknown origin and fireworks, etc. This is a difficult category to target except from a basic fire awareness, common sense approach. However, some of the subcategories, such as Fireworks, can be targeted through Education directed to fireworks consumers and children during that peak Fourth of July period. Enforcement of the

forest closure to fireworks is important, but have alternative locations to offer people where they can shoot their fireworks off safely. Identify potential problem areas ahead of time and intensify your prevention efforts here with signing, public contacts and engine patrols.

j. False Alarms

While this is not an actual fire cause category, these responses do need to be recorded to give an accurate indication of how much time and money are spent on erroneous reports.

5. **Fire Locations**

A review of fire locations, coupled with their source of ignition, may many times indicate what prevention effort is needed and just how much effort should be concentrated into that area. For example, fires occurring near a residential area may indicate a need for a school program, news releases, and mobile patrols.

6. **Suppression Costs**

A review of the cost of suppression for person-caused fires ignited by the nine major sources and false alarms will help set priorities for fire prevention or other corrective actions. Fires which occur in flashy, ready-made fuel beds (i.e., fires in slash) normally result in higher suppression costs because of the uniform and rapid spread.

Although a certain source of fire starts may not result in a lot of fires, it may tie up large numbers of manpower and equipment on one fire, and result in abnormal expenditures to suppress.

Specific attention should be given to these types of fires in an effort to eliminate them, if possible.

7. **Occurrence Trends**

The work of fire prevention is not only preventing fires, but also analyzing those fires that do occur to determine why they occurred and what any future relationships may be. Are you looking at a trend developing? If so, how do you go about reversing it?

C. WEATHER STATISTICS

1. **WIMS**

The weather input from our unit weather stations runs our fire danger rating system, creating fire danger indices and aiding our fire management activities. Our fire prevention activities need to be tied to fire danger, or more specifically, Staffing Level. A mobilization guide for prevention activities will be set up by individual Units and Land Offices to outline specific activities everyone will engage in dependent on the staffing level.

2. **Firefamily+**

Firefamily+ is a computer-based program that conducts an analysis of the relationships of fire danger indices, weather, and fire occurrence or large fire activity by local areas

D. PREVENTION NEEDS IN THE WILDLAND URBAN INTERFACE

Every Unit within the Department of Natural Resources and Conservation is faced with a growing Wildland Urban Interface issue. In the early 1990s the DNRC identified 226,000 acres of WUI in the Northwestern, Southwestern and Central Land Offices. With the continuing expansion of homes into formerly uninhabited or lightly populated areas, the concern about prevention and suppression in these areas is a rapidly growing challenge.

Using the F-701 Home Evaluation Form along with the Fire Protection Guidelines for Wildland Residential Interface Development and Fire Risk Rating for Existing and Planned Wildland Residential Interface Development in Montana data collection, evaluation and quantification can be performed. Using the data and resulting quantified results, the risks and needs can be identified and prioritized.

Once this research is done, the real work of promoting public awareness begins. Our primary goal should be to establish a working relationship with the individual homeowners, homeowner associations, contractors, land developers, local politicians, rural fire councils, emergency planning committees, county fire wardens, and cooperators to develop a program to promote fire prevention measures, which may protect homes from the potential damage of a wildfire.

The national Firewise programs are excellent tools to encourage and focus defensible space efforts. The various Firewise programs work well in applications ranging from a single home site to county-wide and larger applications.

703 FIRE HAZARDS (FUELS)

Hazards are those items which add to the resistance to control of a fire, and from a fire prevention perspective will be considered as fuels.

Standard:

Each protection unit will keep a current hazard map indicating the following information on especially hazardous fuels situations. Currently the type of map is unimportant as long as the data is in a format that is easy to track and is accessible. However it is our goal to develop a GIS system that will allow us to maintain this data in an electronic format.

A. LOCATION

The location identifies the extent of the affected area, its accessibility to human activity, and the type of person-caused fire to expect there.

B. CAUSE

Identify the type of activity (logging, thinning, right-of-way treatments) or natural occurrence (insect and disease mortality, blow down, etc.).

C. QUANTITY

Estimated tons per acre of downed woody fuel, or basal area per acre estimate of standing dead timber.

D. FUEL TYPES

The National Fire Danger Rating (NFDRS) fuel model designation. A review of this information should help prioritize efforts to reduce the fuel loadings and alter arrangement where possible through slash disposal work, prescribed burnings, etc. During periods of high and extreme fire danger, restrictions or even closures may be necessary.

704 RISKS

Risks are the primary target for any prevention program, because these are the human activities that have the potential to start wildfires.

These human activities can be thought of in three categories, residential, recreational or industrial. All categories, though they have the human activity in common, are unique from a prevention standpoint. Therefore, it is important to identify the risks present on the protection unit so as to target these with the appropriate prevention efforts.

A. ANNUAL AND CUMULATIVE RECORDS

A layer for the Fire Unit map should be maintained showing habitual areas of high hazard and risk i.e., campgrounds, railroads, or areas of extended harvesting activities (spanning a year or more), etc. Annual field operations should provide data to keep this map current. The map should be reviewed annually in the light of actual fire ignitions. This overview should help the Land Office\Unit in determining where specific actions need to be taken.

705 WILDLAND URBAN INTERFACE (WUI)

Wildland Residential Interface areas are unique because they represent both a source of risk and hazard and are concentrations of people and private property that can affect the way fire suppression activities are conducted. Concentrated human activity near wildland fuels represents fire risks from debris burning, fireworks, power lines and more. Add to this the common fire hazards associated with structures (i.e., slash from cleared land, shake roofs, stacks of firewood, or fields of weeds or brush), and a potentially catastrophic fire situation exists.

The following four steps outline the foundation for addressing the fire prevention needs in the WUI areas on individual protection areas:

A. IDENTIFYING

The job of locating (in the field) every subdivision, recreational facility, or backwoods cabin may sound easier than it is. It is a critical step, though, because this is what identifies the extent and types of WUI on the protection unit. However, much of this data is available through county and state GIS maps.

B. MAPPING

After wildland structures have been identified and located on the ground, a unit map should be made indicating location, number, and type of structures. An accompanying record will be kept listing the names and addresses of owners or legally responsible parties.

C. RISK RATING

Using the DNRC Risk Rating System, all subdivisions and homes are evaluated for risk of loss to wildfire. It is important to remember that this rating system is designed to rate relative risk between rating areas on a fire prevention basis and should be interpreted in this light. This rating system serves to prioritize the interface areas that have been located and mapped in order to make better use of limited prevention resources.

D. IMPLEMENTING

This is where information gathered in the first three Phases comes together. The problem areas have been identified, mapped and prioritized; the next step is to address them. In most of these areas the biggest impact we can make may be in awareness and education of the property owner on the threat of wildfire. There are many methods to communicate this information. Here are some common ones:

1. Media campaign (radio, TV, newspaper)
2. Billboard campaigns
3. Local fire prevention newsletter
4. Meetings with homeowners, homeowner groups and rural fire councils
5. One on one contacts and home site inspections in target areas.
6. Prevention education programs in local schools
7. CFFP signs and posters
8. Grant projects
9. Demonstration projects
10. Brochures
11. Websites
12. Community and FireWise Workshops

Along with this basic awareness of the WUI issue and wildfire prevention, it is important to promote to the public the safe use of fire, methods for hazard reduction, and ways to decrease their home's vulnerability to wildfire. The "Fire Protection Guidelines for Wildland Residential Interface Development" outline the DNRC standards and guidelines for fire prevention engineering for residences and subdivisions. This document should be referred to on any questions regarding design, or engineering specifications of structures for wildfire risk reduction. (See Appendix E.) This information needs to be presented to the public in a positive light and not in the context of how negligent or deficient they have been to have not done this already. A willing and helpful attitude is critical to the success of this program.

706 FIRE PREVENTION PLANS

A. OBJECTIVES

The fire prevention plan contains the strategy for reducing person-caused fire starts for the area described in that plan. It is established only after a careful analysis of the Unit's/Land Office's person-caused fire situation. The analysis should include not only the current fire problem, but also a look at any expected or potential problem areas. The plan must pinpoint the types of fires that you will attempt to prevent. In other words, target a group of fires with common cause, ~~or~~ location, or fuel type, etc., and focus efforts to eliminate them. The planner then picks one or more prevention tools to do the job. Some types of fires may involve only one tool, such as fuel reduction. Other fires may involve several approaches and attack the fuel loadings and source of ignition both at the same time. Do not

be satisfied with applying one prevention tool; use everything that will be a help in curbing the type of fire you wish to prevent.

1. Standard Format

   Along with the specific tool or action you have chosen, include with it:

   a. Timetables for completion of each project.
   b. Assign someone to be responsible for seeing it through.
   c. Provide space for on going project evaluation.

   This format should include all the action items planned for each targeted cause category.

   Actions fall into three distinct categories: Education, Engineering and Enforcement. Utilize the optimum combination of these three to fit the fire problem you are addressing.

707 EDUCATION

The communications processes used to convey fire prevention messages to forest users.

A. COOPERATIVE FOREST FIRE PREVENTION PROGRAM

Commonly referred to as the "Smokey Bear" or CFFP program, this is a major supplier of posters and many other prevention materials, as well as TV and radio spots and newspaper ads. A plan should be drawn up to show:

1. Poster locations.
2. School packets - by school.
3. News media outlets and amount of material needed.

CFFP catalogs and order forms are available for annual restocking orders for Units and Land Offices. Unit orders are consolidated at the Land Office level and forwarded to the Fire Prevention Section as per schedule.

B. KEEP MONTANA GREEN PROGRAM

The DNRC is a member of the Keep Montana Green Association. KMG is a privately funded wildfire prevention association composed primarily of the private timber industry in Montana. The principal activities of the Keep Montana Green Association include an annual poster contest, which is carried out by the Fire and Aviation Management Bureau (FAMB), Land Offices, and Units. Rules for the contest are published annually and are available from the Prevention Section (see Appendix 2). Duties associated with the promotion of this program should be included in the
prevention action plan.

C. PUBLIC DISPLAYS

The DNRC participates at every available opportunity in fire prevention exhibits at fairs, parades, prevention week activities, etc. The exhibits should be planned in advance and include consideration for manning the booth. Having a DNRC or local fire organization representative present at the booth during peak times reduces ineffective distribution of handout materials. A listing of fairs, parades, etc., that the L.O./Unit annually attends should be a part of the prevention action plan.

D. PUBLIC CONTACTS

The single most effective means of delivering the prevention message is a personal contact. Unfortunately, it is not practical to contact every forest user or resident in your protection unit. Still, an attempt to make as many personal contacts as possible is a worthwhile goal. Every DNRC employee, and especially Field Operations employees, should take the responsibility to make personal fire prevention contacts when the opportunity presents itself.

E. NEWS MEDIA

A planned program for prevention information should be outlined in the Land Office/Unit fire plan. This should spell out:

1. Which news media sources are most effective for the targeted audience?

2. The type/content of media releases anticipated. Have them prepared so as to be timely in getting them out.

3. Tentative time schedule for public service announcements. For example, May-June debris burning, Fourth of July fireworks, July/August camping, etc.

4. Any opportunities for interviews or awards announcements should be taken advantage of, as they are free publicity for your program.

F. ADVERTISING

Paid advertisements can be tailored to reach a wide segment of our public, or can be crafted for and aimed at a very narrow audience. Unlike public service announcements and news releases, paid advertising brings the assurance that your message will be delivered and at the date, and time or page that helps ensure an effective delivery. Additionally most broadcast stations have a special rate (often two for one) for nonprofit and government agencies. While most stations have these special rates, they must be asked for when the ads are being purchased. While print and electronic media have been the choice for the majority of our paid advertising, other forms can be very effective: billboards, direct mail, theater slides and niche magazines, to name a few.

G. PATROLS

Patrols are an integral part of any prevention program; they allow our crews to be seen by, as well as meet and interact with, various members of our public. In addition to putting a human face on the DNRC, patrols serve as a reminder that the DNRC is around and on the job. Additionally these patrols serve as visual reminders that fire season is upon us, and that care needs to be taken with campfires, open flames, cigarettes, etc. Patrols have also proven effective as a deterrent in areas where an arsonist has been working.

H. SIGNS

Portal and birdhouse signs have long been the backbone of the DNRC prevention effort. A well-located sign can deliver a variety of messages during the course of the year, and do so in a very cost-effective manner. Care must be taken to ensure that the signs are located so they are easily read, chosen to deliver the proper message and quickly changed to meet changing conditions. The signs must also be large enough that motorists can easily read them while traveling at the posted speed limit.

I. WORKSHOPS

Workshops can be an effective tool to deliver a complicated prevention message to an interested or motivated audience. Whether these are called public forums, community meetings, or workshops, these gatherings can be used to deliver a message and to scope or gauge the concerns and commitment of a community. The biggest concern when planning a workshop is drawing an adequate audience to justify the time and effort spent in arranging the event.

708 ENGINEERING

The physical altering of fuels, and/or designing of structures etc., to reduce the hazards and risks associated with wildfire.

A study of the fuels at the source of ignition and a cross-check with the current fuels status of the Unit should help determine if measures should be taken to reduce the fuel hazard. Several methods are currently used.

A. PRESCRIBED BURNING

Slash disposal projects should be kept current. A cross-check of slash pockets located in high risk areas should result in some restrictive or immediately corrective actions. This might include disposal, signing of the area, temporary road or access restrictions, daily patrols, etc.

B. GUIDELINES FOR PREVENTING RAILROAD FIRES

See Appendix D.

Management personnel of the railroads and protection organizations will meet when necessary to discuss and analyze fire problems. It is in the best interest of both parties to develop cooperative action to solve these problems; to provide coordinated direction; and to establish adequate communications between railroad companies and protection personnel in order to facilitate local cooperation.

1. **Cooperation of Local Personnel**

Railroad Company and protection personnel will work together and at times that are mutually agreeable will:

a. Inspect railroad rights-of-way to recommend necessary right-of-way cleanup and firebreak establishment.

b. Recommend areas needing patrol after train passage and the conditions where patrol is required.

c. Consider the feasibility of using sprinkler equipped and standby tank cars.

d. Develop recommendations for training and equipping railroad crews for fire control action.

e. Establish procedures for timely exchange of information on burning conditions, defective equipment and fire emergencies.

C. NON-BURNING FUELS MODIFICATIONS/MANIPULATION

1. **Natural Decomposition**

Allows fuels to remain intact and in place and decompose slowly through natural processes. "No treatment" is usually coupled with supplemental protection.

2. **Hand Pile Without Burning**

Breaks up the fuel's horizontal continuity. Fuel moisture is often times decreased.

3. **Lop and Scatter**

Rearranges fuel continuity, increases fuel moisture by bringing slash in contact with the ground, and accelerates decomposition. Both may or may not be done together, i.e., may be lopped without being scattered.

4. **Trample or Crush**

   Accelerates decomposition and changes fuel continuity and moisture content by dozer walking, rolling, etc.

5. **Chipping**

   Changes fuel continuity and fuel size and accelerates decomposition.

6. **Masticating or Shredding**

   Increases fuel deterioration and changes fuel continuity.

7. **Dozer Scarification**

   A site preparation measure to expose a more beneficial seedbed or to aid in planting accessibility.

8. **Utilization**

   The complete utilization of the tree is the "cure all" for our fuels problems. However, problems of economics are paramount. An important consideration is also the effect of complete product removal from the site. With increased utilization, the loss of soil nutrients and organic matter will theoretically increase, thereby reducing site and soil fertility.

D. FUEL BREAKS

A study of the fire locations in relation to fuels, access, and values at risk will help in determining if and where fuel breaks are needed. Possible fuel break systems are:

1. **Railroad Right-of-Way (R/W)**

   Fuel breaks may be established along R/Ws to assist in confining fires to the R/W. Normally these are dozer-plowed lines. These fuel breaks should be checked annually for the need to clean or re-plow. Care should be taken in the location of plow lines to reduce soil erosion, stream siltation, etc.

2. **Thinning Areas**

   Fuel breaks should be established around and through thinning areas to break up fuels and keep a fire from spreading into or out of the thinned area. These fuel breaks should be planned to aid in equipment access in case of fire within the plot.

3. **Subdivisions, Home Sites**

Owners of forest home sites should be encouraged to prepare a fuel break around residences, out buildings, etc. These will aid in confining fires starting near the structures and provide breaks against the movement of fire into the subdivisions. The fuel breaks should be established at a distance from the residences adequate to eliminate the potential of spotting from the surrounding fuels to the structure itself. Refer to Appendix E, Fire Protection Guidelines for Wildland Residential Interface Development, for specific information.

4. **Power Lines**

Transmission line R/Ws many times prove to be effective fuel breaks. An annual check of these areas should be made to find in-growth that will reduce their effectiveness. A contact with the power company can result in a clean-up operation.

5. **Summer Fallow**

Where possible, landowners should be encouraged to plow summer fallow strips parallel to adjoining forest frontage. This will provide an effective fuel break for fires entering, or coming out of, the forested area.

6. **Road Access**

Road access into the forest provides most of the present fuel breaks. Road Construction plans should take this into account and placement, grade, width, etc., considered if possible to aid in providing an effective fuel break.

7. **Campgrounds**

A study of human activity (both type of and amount of) in the protection area, population centers, and past fire occurrence (particularly campfire-caused) will help in determining if developed campgrounds will help in reducing person-caused fires. Normally it is self-defeating to attempt to draw people away from a "normal use" area. A well-planned campground in the area is usually necessary. Consideration for campgrounds should accompany any new opening up of State lands to public access, with roads laid out accordingly. Campgrounds must incorporate other phases of fire prevention such as fuel breaks, prevention signing, etc., to be effective.

709 ENFORCEMENT

The inspections and follow-up necessary to enforce the State fire laws and regulations. Normally, these actions are aimed at governing or restricting the human risk element.

Discretion should be used at all times in conducting law enforcement activities; if ever in doubt, always resolve that doubt in favor of maintaining or establishing a favorable image in the eyes of the public while still carrying out your job.

Public relations has at no other time, been as important as today for the land managing agency. Suffice it to say that each employee must constantly keep public relations in mind when performing any law enforcement function.

A. STATE FIREWARDEN DUTIES

MCA 77-5-104 delineates the duties and responsibilities of the Montana State Firewarden in the following section:

The firewardens shall promptly report all fires to the Department, take immediate and active steps toward their extinguishment, report any violation of forest laws, and assist in apprehending and convicting offenders.

The powers of the Firewarden are listed in 77-5-105. Powers of firewardens. (1) All firewardens have the power of peace officers to make arrests without warrants for violations in their presence of any state or federal forest laws, and a firewarden is not liable for civil action for trespass committed in the discharge of his duties. A firewarden who has information which shows, with reasonable certainty, that a person has violated any provision of those forest laws shall immediately take action against the offender by making complaint before the proper magistrate, or by information to the proper county attorney and shall obtain all possible evidence pertaining thereto.

While employees of the DNRC are not sworn officers, portions of the listed state laws do apply and give us the basis for our actions as Firewardens.

We are responsible for reporting all fires to the Department and taking immediate and active steps toward their extinguishment, reporting any violations of forest laws and assisting in apprehending and convicting offenders. Additionally, when we have information which shows, with reasonable certainty, that a person has violated any provision of those forest laws, we shall immediately take action against the offender by making complaint before the proper magistrate, or by information to the proper county attorney, and shall obtain all possible evidence pertaining thereto.

Because we are not sworn officers we will not make the arrests, but we will work with local law enforcement, the county attorney or a local magistrate to see that the offenders are brought to justice.

Additionally these laws give us the responsibility to suppress fires and protect us from trespass laws while executing our duties.

To this end DNRC employees, permanent and seasonal, involved in fire prevention and suppression will be issued Firewarden Identification Cards, which will certify the holder as a Firewarden.

B. BURNING PERMITS

To make the burning permit system work efficiently, it is important the general public know that State Law 76-13-121 requires a burning permit for any open burning between May 1 and September 30 on classified forest land (and may be longer if the fire season is extended). Additionally, counties often require permits on all lands and often over a longer period of time, or if county air quality restrictions are in effect. This will require some type of sign and/or media campaign every spring as a reminder.

The objectives of the burning permit are:

1. Keep the issuing office informed on the who, what, where, and when of burning activities on their protection unit.

2. Inform the burner of restrictions or special considerations to make based on current and expected weather conditions.

3. Provides an opportunity to educate the burner on safe methods by means of handout literature and/or on-site inspections.

Here are some guidelines to keep in mind when issuing burning permits:

1. Make it clear upon issuance that a burning permit does not relieve them of any liability associated with that fire if it gets away.

2. Inspect the operation in person when possible.

3. Be abreast of current burning conditions and weather forecasts to give the burner accurate guidelines and advice in the special considerations section of the permit.

4. Coordinate the Burn Permit process with interagency cooperators.

C. INSPECTIONS

Periodic inspections should be made of all forest operations. The degree of hazard and risk involved in the forest operation, the past history of the operator, the present condition of his equipment will ~~all~~ help to determine the number of inspections needed throughout the year. An inspection form is available for use with the forestry rules and regulations. Written records should always be maintained of any inspection made and its results. It is imperative that Montana DNRC facilities and forest operations meet the same standards as outlined in the rules and regulations.

An annual inspection schedule may be drawn up and augmented by spot inspections throughout the fire season. Types of forest activities to inspect include:

- Industrial Forest Operations
- Cabin sites & Home sites
- Mill Operations
- Road Clearing/Construction Operations
- Power Line Right-of-way
- Mining Operations

1. Industrial Forest Operations

   There are several points that the fire inspector must be aware of in his inspection of forest operations. These are:

   a. The high turnover of personnel on a logging job.
   b. The wear and tear on logging equipment.
   c. The tendency for loggers to put out an operations fire by burying, and not report it, resulting in an escape fire later.
   d. The feeling by an operator that once he is inspected, he has complied and is free to operate without further regard to fire prevention needs.

   During pre-season inspections, notify the operator in advance and set up a date to inspect his operation. This will give him time to make sure his people are in compliance before you show up, which may save you a follow-up. If violations are uncovered, follow-up and insure that they are rectified within a short and specified period of time. If they are not taken care of, do not hesitate to contact the Area Manager and pursue actions to discontinue the forest operation until they are cleared up. A hesitancy on your part to enforce proven fire prevention measures is your biggest enemy.

2. Cabin Sites, Home Sites

   Inspections of cabin sites and home sites on State-owned lands should be made annually if possible. Inspections of these facilities on private forestlands should be made periodically according to need and according to available manpower. Inspections of cabin sites on federal lands, protected by the State, should be coordinated through the federal agency. The preferred method is to jointly inspect the federal cabin sites.

   An inspection of any facility should be preceded by a contact with the dweller, establishing a time and date for the inspection. Allow the individual time to clean up his property prior to your inspection; this may save you a return trip later.

   Be sure to use a standard inspection form or document the inspection by some similar means. Provide the dweller with a copy.

3. **Mill Operations**

Sawmill operations, particularly those operating within forested areas, are prone to fire problems. Your duty is to ensure that fires originating within these operations will not spread to surrounding forest fuels. These fires could result in natural resource losses, and could jeopardize the owner's livelihood. Try to inspect each of these mill sites within your protection at least once per year. Remember to document all inspections. Inspect specifically any old slab and sawdust piles that may have been ignited the previous fall or that current spring. A thorough cold to the hand test is necessary to determine if a holdover fire exists.

4. **Road Clearing/Construction**

A unique problem exists with this type of operation. These operators are not always aware of forest fire regulations, and they usually attempt to dispose of debris by burning. Since the construction is done using heavy equipment, they are, many times, lulled into a feeling of security and ignite clearing debris regardless of weather, time of year, etc.

Make yourself aware of any clearing operations. Inspect them periodically. Demand they notify you of burn operations prior to ignition. Follow up after ignition to ensure that the fires are extinguished.

5. **Power Line R/W**

A common preventable cause of power line fires is poorly maintained right-of-way. Trees and branches that fall across transmission lines cause arcing and burning material to fall to the ground. Inspection of this R/W is not a responsibility of the DNRC; however, fire prevention is. Generally power lines are most visible around subdivisions and other areas of development. When crews are on patrol they should visually inspect the power line R/W from the road in these and other accessible areas during their regular patrols.

Upon finding a hazard tree in the power line R/W or a tree actually across the line, call the power company and let them remove the tree.

6. **Mining Operations**

Even though mining activity is primarily underground or on mineral soil, many of the same risks are present as with other industrial forest operations. Heavy equipment use, blasting, and welding represent risks that should be addressed by the same industrial inspections as is required by logging or road building operations.