



HIMACHAL PRADESH FOREST DEPARTMENT



MANUAL OF FOREST FIRE PREVENTION AND CONTROL



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March 2018

HIMACHAL PRADESH FOREST DEPARTMENT

हमारा
ध्येय
हरा
भरा
हिमाचल

मुख्य मंत्री हिमाचल प्रदेश
शिमला - 171002



जय राम ठाकुर

संदेश

यह प्रसन्नता का विषय है कि हिमाचल प्रदेश को प्रकृति ने वनों की अपार सम्पदा प्रदान की है, जो यहां के पर्यावरण को स्वच्छ बनाए रखने में महत्वपूर्ण योगदान देते हैं। वन जल स्रोतों को बनाए रखने के साथ-साथ बाढ़ एवं सूखे से हमें बचाते हैं। वन स्थानीय लोगों को रोजमर्रा की बहुत सी आवश्यकताओं, जैसे पशुओं के लिए चारा, ईमारती लकड़ी, बालन व वन औषधियां प्रदान करते हैं।

प्रदेश के वनों को आग की घटनाओं से बहुत बड़ा खतरा रहता है, जिससे वन सम्पदा के अतिरिक्त जंगली जीवों एवं पर्यावरण को नुकसान होता है।

वन विभाग हिमाचल प्रदेश ने वनों की आग से निपटने की जानकारी प्रदान करने के लिए एक मार्गदर्शिका बनाई है। मैं आशा करता हूं कि विभाग के अधिकारियों, कर्मचारियों एवं स्थानीय समुदायों को यह मार्गदर्शिका एक महत्वपूर्ण जानकारी प्रदान करेगी एवं उन्हें वनों की आग से निपटने में मददगार साबित होगी।

मैं कामना करता हूं कि हिमाचल के वन अग्नि से सुरक्षित रहें।

(जय राम ठाकुर)



वन, परिवहन, युवा सेवाएं
एवं खेल मंत्री, हिमाचल प्रदेश
शिमला - 171002

गोविन्द सिंह ठाकुर

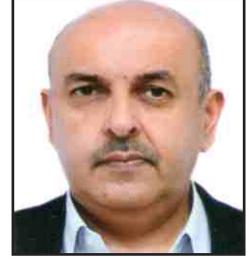
संदेश

हिमाचल प्रदेश एक पर्वतीय राज्य है, यहां के कुल भौगोलिक क्षेत्र को दो तिहाई भाग वर्गीकृत वन है। लगभग 30% क्षेत्र हमेशा बर्फ से ढका या वृक्ष रेखा से ऊपर होने के उपरान्त भी हमारे राज्य का 26.4% भाग हरित आवरण से भरा है। हमारा ध्येय वर्ष 2030 तक हरित आवरण को बढ़ा कर 30% करना है। हमारे वन अन्नत प्रकार की जैवविविधता से भरे पड़े हैं जो स्थानीय लोगों की ईमारती लकड़ी, बालन एवं पशुओं को चारा के अतिरिक्त औषधीय पौधे उपलब्ध करवाते हैं। प्रदेश के वनों को वन अग्नि से हमेशा खतरा बना रहता है। वन अग्नि न केवल जैवविविधता अपितु पर्यावरण को भी क्षति पहुंचाती है।

मुझे आशा है कि वन अग्नि से निपटने में यह मार्ग दर्शिका एक महत्वपूर्ण भूमिका निभाएगी।

(गोविन्द सिंह ठाकुर)

अतिरिक्त प्रधान सचिव वन
हिमाचल प्रदेश, शिमला - 2



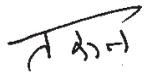
तरुन कपूर

संदेश

ग्रीष्म ऋतु में वन अग्नि की अनेक घटनाएं होती हैं, जिससे वनों के साथ-साथ स्थानीय लोगों के घरों को भी क्षति पहुंच सकती है। वनों को अग्नि से बचाना वन विभाग का प्रमुख कार्य है। इसके लिए दीर्घकालीन एवं अल्पकालीन उपायों की आवश्यकता है जिससे वनों में आग कम लगे और यदि लगे तो अधिक क्षति न हो।

वन विभाग हर वर्ष वन अग्नि रोकथाम के उपाए करता है। वन विभाग में कार्यरत सभी अधिकारियों एवं कर्मचारियों को कार्य करने के लिए उचित मार्गदर्शिका की आवश्यकता थी। यह मार्गदर्शिका इस उद्देश्य से बनाई गई है कि वन विभाग में कार्यरत हर अधिकारी एवं कर्मचारी को यह जानकारी रहे कि उन्हें अग्नि से निपटने के लिए किस समय क्या-क्या कार्य करने चाहिए।

मुझे आशा है कि यह मार्गदर्शिका सभी कार्यरत अधिकारियों, कर्मचारियों एवं इच्छुक जनता के लिए उचित निर्देशिका के रूप में कार्य करेगी।


(तरुन कपूर)

Dr. G. S. Goraya
Principal Chief Conservator of Forests (HoFF)
Himachal Pradesh, Shimla

FOREWORD

This manual seeks to bring together the existing knowledge on forest fires, with special reference to the state of Himachal Pradesh. Earlier, in 1998, a small booklet on the subject was made; the present manual has tried to incorporate its essence and improve it further. The perceived value of forests has increased manifold over last twenty years or so and biodiversity, ecosystem services and carbon sequestration have become seminal and also amenable to quantification. As one of the results, the damage due to forest fires is in sharper focus than ever before. Consequently, the ability of the State Forest Department to prevent and control forest fires, to enroll support of local people and civil society groups in this endeavor and to take appropriate restoration measures are constantly under scrutiny. The vulnerability of our forests to annual fires has also increased due to more frequent dry hot spells on account of climate change. The onus is on us, therefore, to rise to the occasion through timely conduct of forest fire prevention and control measures. We would also need to make honest effort at assessing fire damage and putting the same in public domain.

Professionalism must remain our creed and to that end this manual is a small step. It must be backed up by diligence, hard work and perseverance by all foresters, if it must fulfill its objective.

I would like to congratulate Mr. Alok Nagar, IFS CCF-cum-State Nodal Officer (Forest Fires), Mr. Anish Sharma, HPFS DFO Publicity & Mr. Ashwani Kumar, ACF (Fire Protection) for bringing out this manual in such a short period.

March, 2018



Dr. G. S. Goraya

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1. Introduction

Himachal Pradesh, nestled in the north-western Himalayas, literally means the 'land of snowy mountains'. The extensive and diverse forests in the State endow the landscape with immense natural beauty. The forests also perform very important ecological function of recharging the aquifers ensuring regular flow of water in the Yamuna, Sutlej, Beas, Ravi and Chenab river systems. The forests of Himachal Pradesh, in addition to their crucial role in environmental and ecological functions in the State and outside, provide for economic well-being of the local communities through various provisioning services. Continuous flow of environmental, ecological and economic services, thus, requires maintaining the integrity of the landscape.

The forests of the State are, however, subject to intensive biotic pressure on account of removal of forest produce, grazing and forest fires. The State, receiving precipitation only during monsoons and winter months, experiences 7-8 dry months every year making the forests highly vulnerable to fires. Even a small negligence during these dry months carries the risk of igniting forest fires that spread very fast riding on the wind. The damage caused to the forests by these fires has serious impact on the environmental, ecological and economic services forests provide. The forest field staff and the local communities need to maintain a strict vigil during the dry months to keep the forests safe from fires. This Forest Fire Manual is expected to provide guidance to save forests from fires.

2. Forest Resource of Himachal Pradesh

Forests are an important resource of Himachal Pradesh. The area classified as 'Forest' is 66.52% of the total geographical area of the State, of which large areas are alpine meadows or lie above the tree line, leaving an effective tree cover of 14,696 km².

Geographical Area of State	55,673 km ²	100.00 %
Forest Area (Legal)	37,033 km ²	66.52%
Forest Cover	14,696 km ²	26.40%
Area under Permanent Snow	16,376 km ²	29.40%
Culturable Forest Area	20,657 km ²	37.10%
Area under PA Network	8,391 km ²	15.07%

The State Forest Department is engaged in (a) bringing more area under forests through afforestation to increase the Forest cover in the State from the present 26.40% to 30% by 2030, and (b) to increase the density of forests through enrichment plantations in the existing forests.

The State's forests are characterized by the occurrence of various forest types varying from the Tropical Deciduous Forests to Subtropical Pine and Broad-leaved Forests, Temperate Forests, Sub-alpine Forests, and Alpine Forests. It is the diversity of its forests that makes the State a rich repository of biodiversity, yielding a variety of provisioning services to its people, which sustains their day-to-day household needs.

3. Forest Fires in the State and their Impact

Forest fire is a recurrent annual phenomenon in the State. Even as all the forest types are potentially vulnerable to fires with even temperate forests experiencing ground fires if winters go dry, it is the Sub-tropical Pine Forests (Chir Forests) spread over 1258.85 km² (3.4% of total forest area of the State) that experience the heaviest annual forest fires during the dry months of March to June. A glimpse of the extent of forest fires in the State over the last ten years can be had from the following table:

Year	No. of Fire Cases Reported	Total Area Affected (in ha)	Estimated Loss (Rs.)
2008-09	572	6,586.12	60,05,064
2009-10	1906	24,849.52	255,22,928
2010-11	870	7,837.63	97,69,363
2011-12	168	1,758.15	43,07,878
2012-13	1798	20,773.97	276,82,589
2013-14	397	3,237.52	52,31,011
2014-15	725	6,726.40	113,26,522
2015-16	672	5,749.95	134,77,730
2016-17	1789	19,162.69	327,87,627
2017-18	670	4,586.47	55,11,091

The damage due to forest fires varies from just burning of leaf litter and dry grass in case of ground fires to extensive damage to the trees, biodiversity, and ecology in case the fires turn into crown fires. The forest fires also carry the risk of getting out of control and extending to habitations, posing danger to human life and property. The major damages caused by forest fires are listed below:

Damage to the Forests: The damage caused by fires to the forests is dependent upon the major tree crop of the forest and the time of fire. As a principle, broad leaf trees are more susceptible to fire damage than conifers, and in conifers Chir Pine is the most fire resistant species. The winter fires occurring in the high temperate forests are usually low fires burning the dry grass and leaf litter piled up due to leaves shed by deciduous trees. The summer fires occurring from March to June are more severe as this summer dry season coincides with shedding of needles by Chir Pine trees that are highly combustible. These fires, due to valley wind, spread very rapidly causing extensive damage to the forests. The Chir Pine trees per se are able to largely withstand these fires due to their thick bark and spring back to life as the monsoon arrives.

Damage to Regeneration: The forest fires, including the surface or ground fire, can cause extensive damage to the regeneration in the forests. In case of species having good coppicing power viz. Sal, the seedling coppices emerge. However, repeated burning reduces even the coppicing power.

Impact on Productivity of the Forest: Repeated forest fires have adverse impact on the productive capacity of a forest with the natural ecological succession getting a severe setback. The moist niches become dry and the moisture loving species like Oaks and Deodar tend to give way to species that can come up in dried situations. The repeatedly burnt forests get infested by exotic weeds smothering the regeneration of native species. The increment, crop density and the overall well-being of the forest is badly affected.

Impact on Ecosystem Services: The forests maintain the aquifers and help in continuous flow of water springs and streams. These also form a crucial source of provisioning in the form of firewood, fodder and NTFPs for the

local communities. The capacity of the forests to sustainably provide these provisions gets adversely impacted by the fires.

Effect on Protective Power of Forest: Forest fires expose the soil to the hazards of erosive agencies such as wind and rain, and destroy organic matter which affects the soil structure. The protective functions of the forests, such as protection against accelerated erosion are, therefore, seriously affected due to repeated burning.

Effect on Wild Life: Forest fires also have adverse impact on the wildlife. Fires, in addition to deteriorating the habitat, cause direct damage to wildlife in the form of burning the eggs, killing the young ones and driving the adults from safe havens to outside forests making these vulnerable to poaching or getting killed by other animals.

Adverse Impact on Aesthetic Function of Forests: The forest fires, including the ground fires, leave the forests as burnt patches that remain sore points to the eyes and aesthetics for long. It impacts the recreational and scenic values of the forests.

4. Causes of Forest Fires

The forest fires are caused either due to natural factors or due to human factors.

a. Natural Causes: The natural causes which start a forest fires include lightning or rubbing of dry bamboos with each other. In case of Himachal Pradesh, instances of forest fires on account of natural factors are very rare, with almost all fires attributable to human factors.

b. Human Causes: Almost all forest fires in the State are attributable to human factors - unintentional or intentional.

Unintentional Fires: Such fires are caused due to carelessness on account of any of the following -

- throwing of burning matchstick, live bidi/ cigarette stumps, or torch wood along the roads or in the forests, especially during dry seasons.

- leaving the fires moldering in temporary hearths set up by graziers, labour, NTFP gatherers and travelers to cook food or to keep warm.
- falling of glowing coal pieces from trains speeding through forests.
- falling of dry pine needles or leaves on electric poles giving out sparks.
- escape of fires to forests from burning of stubble in the fields or homestead, or burning of the grasslands adjacent to the forests.
- accidental spread of fire in the forest while burning fire lines departmentally.

Intentional Fires: Such forest fires are caused due to deliberate human actions on account of the following -

- inducing new shoots of grass in summer by burning the dry grass.
- destroying evidence of illicit felling by charring the stumps of illicitly felled trees.
- inducing the gucchi growth by burning the undergrowth and grass.
- making the collection of NTFP easy by burning the undergrowth and dry grass.
- poaching/ trapping of wild animals.
- scaring away wild animals from near villagers.

5. Components of Forest Fire

Forest fires, like any other fire, are caused when the three essential components of the 'fire triangle' i.e. fuel, heat and oxygen, come together in right combination. The earth's atmosphere always has enough oxygen available to combine with the other two components (a fire needs air that contains at least 16% oxygen; the earth's atmosphere contains 21% oxygen). The forests, with multi layered vegetation, usually have good built up of leaf litter on account of some species drying up or shedding leaves and this leaf litter acts as ready fuel. This leaf litter is essential for decomposition into humus adding nutrients to the soil, helps in soil and moisture conservation and acts as habitat for micro flora and fauna.

With two components of the fire triangle i.e. 'oxygen' and 'fuel' naturally available, it is only the third component i.e. 'heat' that needs to be made available to ignite a forest fire. The general temperature in the State, even

during summer months, rarely goes beyond 45°C. As it requires temperature built up of more than 300°C for woody biomass to burn, the forest fires cannot occur without some outside flame. With ample supply of oxygen and fuel already available, it is the temperature that is critical for sustaining a forest fire once it is ignited. In the case of Himachal Pradesh, the dry Chir Pine needles continue to fall from March till June and provide continuous fuel to sustain forest fires. The general relationship between fuel and temperature is simple: the more the fuel, the higher the heat; the more the heat, the faster the fire spreads. When there is plenty of heat and fuel, fires start at their own. It is said that the 'large fires live to feed themselves' as such fires can create their own winds and weather, increasing the flow of oxygen. A large fire can generate hurricane like situations with winds gaining a speed of up to 120 miles an hour.

The key to fire management is, therefore, understanding its nature- how it is created, what it takes to create fire, and more important during difficult fire seasons- what is to be done to control it?

6. Fuels for Forest Fire

For forest fires to occur and sustain, a good supply of fuel is needed. The following form the important sources of fuel for forest fires in the State:

Ground Fuels

Ground fuel is made up of all the combustible material that lies below the loose litter on the forest floor. It includes various decayed stages of the humus, wood, shrubs and roots, and muck and peat. Ground fuel always supports the glowing combustion and not the flame. The ground fuel does not ignite till the moisture content drops very low (less than 20 percent). The combustion becomes very persistent once the ground fuels ignite.

Surface Fuels

All the combustible material on the forest floor forms surface fuel and is the most common type of fuel in the forests. The fallen tree leaves, dry grasses, weeds, ferns and other herbaceous plants, low brushwood, deadwood on the forest floor, logs and stumps, etc. form this type of fuel. In Himachal Pradesh, the major fuel mass during winters is made by dry grass and fallen leaves and during dry summer months is made of falling Chir Pine needles.

These fuels ignite very readily and provide the basic combustible material for the forest fires.

Aerial Fuels

The fallen branches of trees that get trapped in the under storey, dry standing trees, mosses, lichens and dry epiphytic or parasitic plants more than a metre above the ground constitute the aerial fuel. In Himachal Pradesh, the rills made on Chir Pine trees to extract resin also act as aerial fuel. The aerial fuels provide much needed combustible material for the spread of forest fire. The inferno in case of crown fires spreads by consuming aerial fuels.

Once the forest fire starts, the primary factor that helps in its spread is the continuity of fuel. Fuel continuity is also one of the most important factors in controlling forest fire. This is due to the fact that they transfer heat by radiation, conduction and convection. Continuity, a relative term denotes both the forms of continuity i.e. vertical and horizontal. These are very essential for the fire spread and are taken into account while planning forest fire control.

7. Types of Forest Fires

The following types of forest fires are generally come across:

- (i) **Creeping fire:** It is defined as a forest fire spreading slowly over the ground with low flame. Such a fire usually occurs in forest with practically no ground cover or undergrowth in summer night without any strong wind. Usually the ground is covered with a layer of dry leaves which burn slowly in the absence of strong wind.
- (ii) **Ground fire:** It is defined as a forest fire that burns the ground cover only including the carpet of herbaceous plants and low shrubs, which covers the soil. This type of forest fire consumes the organic materials of the forest floor and burns into the underlying soil itself. Such a fire sometimes occurs in deodar forests as a result of slash disposal, when it burns inside the humus for days without giving out flames and then causes a huge conflagration. That is why slash disposal in deodar forests is advised to be carried out after rains and before snowfall so that there may be no chance of ground fire shouldering inside humus.
- (iii) **Surface fire:** It is defined as a forest fire which burns not merely the ground cover but also undergrowth. Most of the forest fires in the plains

are surface fires as they burn the groundcover as well as undergrowth.

(iv) Crown Fire: It is defined as a forest fire which spreads through the crown of trees and consumes all or part of the upper branches and foliage. This usually occurs in coniferous forests and the Chir Pine forests are most vulnerable to such fires. However, in the context of Himachal Pradesh, such fires are very rare.

The above classes of fires are not exclusive, and independent of each other, i.e., once a fire of a particular class starts it will not remain confined to that class. Usually one kind of fire may start and may develop into some other class or combination of two classes depending on the circumstances such as conditions of wind and undergrowth. For instance, in a forest with no undergrowth or ground cover, a fire may, to start with, be a creeping fire but after spreading over some area it may come across patches with ground cover as well as undergrowth. Here it will turn into a surface fire. Similarly a fire in coniferous forests may start as a surface fire but with the help of lichens or dry climbers, it may reach the crown of a tree and then onwards, it may become a combination of surface and crown fire.

8. Protection from Fire Damage

The measures towards protection from damages caused by forest fires can be grouped under two categories i.e. (a) Preventive measures, and (b) Remedial measures.

a. Preventive Measures: Preventive measures are those measures which help preventing the occurrence of fires or significantly reduce the chances of fire occurrence. Such measures can be further divided into:

i. Public Oriented Measures

Since almost all forest fires in the State are caused by human action, participation of the general public and local communities in prevention and management of such fire is very crucial. Such measures usually involve -

- Building goodwill of the locals
- Awareness and education of the masses
- Restrictions on activities that can lead to forest fires
- Putting in place reward/ punishment schemes

ii. Administrative and Technical Measures

Forest fires occur mainly during dry season and the time of their onset can be fairly accurately estimated providing good opportunity to put in place various administrative and technical measures to prevent and manage forest fires. Some of these measures are -

- Forecasting the burning days based on meteorological data.
- Putting in place fire control task teams.
- Reduction of fire hazard on the forest floor: Various actions can be taken for the reduction of fire hazards in the forests. These are-
 - Keeping the camping sites clear of dried biomass.
 - Keeping the roadsides clear of the inflammable material.
 - Undertake early burning of inflammable material on forest floor at the beginning of the dry season to reduce the fire hazard load.
 - Growing fire breaking green strips of fire hardy evergreen species in the forests.
- Clearing and Maintaining Fire Lines: Fire lines are strategically laid strips of pre-decided width in the forests that are kept clear of tree and undergrowth to prevent forest fires from crossing over from one part of the forest to the other and to provide access to the fire fighting teams. Fire lines are generally of two types -
 - Internal Fire Lines: Such fire lines are 10-15 m wide strips laid inside the forest and act as barrier to spread of fire from one part of the forest to the other. In addition to these specially laid fire lines, streams, extraction or inspection paths, compartment boundaries, motor roads, etc. also serve as fire lines.
 - External Fire Lines: Such fire lines are those which are maintained along the boundary or the periphery of the forest, so as to prevent escape of fire from non-forest areas outside a forest to the forests.

b. Remedial Measures: These are the measures taken to control and extinguish fires, which break out despite the preventive measures. The following is the broad outline for such measures:

i. Early Detection: The earlier a fire is detected and reported, the less will be the damage done by it. Measures for early detection include deployment of fire watchers, and establishing fire observation posts at vantage points. The use of technology has come to help early detection of forest fires, and the satellite based information of forest fires

forwarded to field units in the form of fire alerts through mobile apps is of good use.

ii. Quick Communication: The early detection of forest fires needs to be followed up with immediate relay of information to the concerned field units. Wireless set have been the mainstay for relaying such information for long. With the mobile phone technology becoming available, fire alerts are now increasingly been sent through mobile apps.

iii. Early Action: Quick action is needed for suppression of fires. The following must be ensured for this :

- Strategic locating of the fire-fighting squads, so that they may reach the affected area at a short notice.
- Keeping adequate manpower including forest staff, community volunteers, and labour at fire camps; and keeping adequate provision of water, fire fighting tools, etc.

9. Areas Vulnerable to Forest Fires in the State

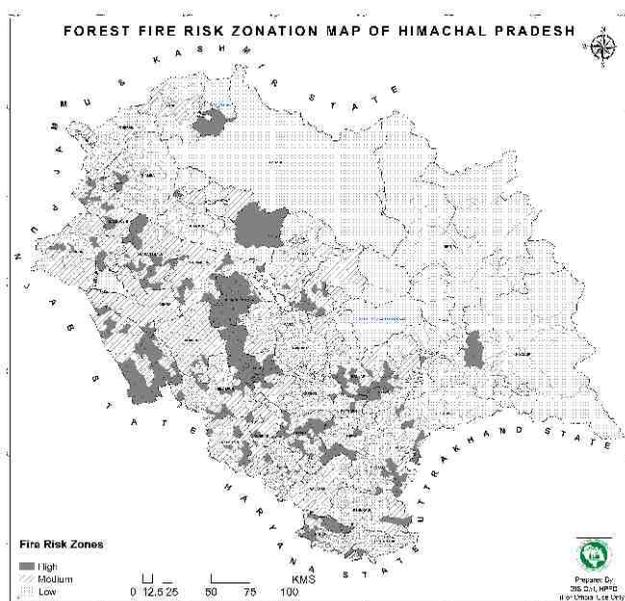
The following 26 Forest Divisions, having Chir Pine forests, are highly sensitive to Forest Fires:

Name of the Forest Circle	Name of the Forest Division				
Chamba	Dalhousie	Chamba	-	-	-
Dharamshala	Nurpur	Dharamsala	Palampur	-	-
Mandi	Joginder Nagar	Mandi	Sundernagar	Nachan	Karsog
Kullu	Parvati	Banjar	-	-	-
Bilaspur	Bilaspur	Kunihar	-	-	-
Shimla	Shimla	-	-	-	-
Nahan	Nahan	Renuka	Paonta	Rajgarh	-
Solan	Solan	Nalagarh	-	-	-
Rampur	Rampur	Ani	-	-	-
Hamirpur	Hamirpur	Dehra	Una	-	-

Even within the Fire sensitive forest divisions, the Himachal Pradesh Forest Department has, based on the past fire incidents, identified forest fire sensitive Beats detailed as follows:

Name of the Forest Circle	Level of Sensitivity to Forest Fires			Total
	High	Medium	Low	
Bilaspur	17	69	27	113
Chamba	18	50	123	191
Dharamsala	37	122	41	200
Hamirpur	9	118	64	191
Kullu	12	44	84	140
Mandi	82	60	150	292
Rampur	35	26	89	150
Nahan	32	50	134	216
Shimla	49	41	141	231
Solan	10	30	61	101
WL Dharamsala	17	8	32	57
WL Shimla	12	0	72	84
GHNP, Shamshi	9	49	2	60
Grand Total:	339	667	1020	2026

Detail of the Sensitive beats is given in Annexure-VII. Based on this information, fire risk zonation map of Himachal Pradesh has been prepared.



10. Strategy to Prevent and Combat Forest Fires in Himachal Pradesh

The Himachal Pradesh Forest Department makes concerted efforts every year to prevent and to combat forest fires in the State. The State Government has also notified Forest Fire Rules, 1999 that prescribe various dos and don'ts in respect of forest fires (Annexure -I), IFA 1927 also have legal provisions regarding forest fires (Annexure-II). Even as various other instructions on the subject have been issued from time to time (Annexure-III), most of the activities remain person dependent due to lack of institutional mechanism for implementation. A need to compile the good practices on forest fire management and the rules and instructions issued on the subject by the State Government and the Ministry of Environment, Forest and Climate Change, Government of India has been long felt. The following section aims to fulfill this gap and provide to the field staff Standard Operational Procedures (SoP) in the form of a manual for preventing and controlling forest fires.

A. Forest Fire Prevention and Control – Administrative Mechanisms

10.1. Forest Fire Nodal Officer: The Forest Department shall designate a senior forest officer as Forest Fire Nodal Officer to -

- (a) plan and coordinate actions to prevent and control forest fires in accordance with this strategy.
- (b) liaise with the Ministry of Environment, Forests and Climate Change (MoEF&CC), GoI, for approval of APOs and release of funds for fire management, scrutiny of APOs received from field units and allocation of scheme funds to field units, obtain physical and financial returns from the field units against funds released, and consolidate the same and submit to the MoEF&CC.
- (c) liaise with the State Government to get funds for carrying out forest fire management measures.
- (d) to liaise with the State's Disaster Management Cell and keep the cell in readiness in case of crisis like situations.
- (e) to coordinate with Deputy Commissioners and Superintendents of Police in every district to provide necessary help to the Forest field staff in cases of forest fires.
- (f) to coordinate with the Panchayati Raj Institutions and seek their support in preventing and control of forest fires.

- (g) to guide the design and implementation of annual forest fire awareness campaigns.
- (h) to monitor the forest fire preparedness at the level of Circle, Division and Range levels and to guide the field units in effective prevention and control of forest fires.
- (i) to gather and compile Circle-wise/ Division-wise/ Range-wise/ Site-wise information on fire incidents and losses due to forest fires.

10.2. State level Central Forest Fire Control Room: The Forest Department shall establish a Central Forest Fire Control Room in the Department's GIS lab with APCCF/ CCF (IT) as its head. This Control Room shall be in operation from 01 December to 30 June every year and its functions shall include -

- (a) to monitor and communicate to the concerned field units satellite based information of fire incidences in the State received from the Forest Survey of India through mobile based fire alert app., email, telephone, etc.
- (b) to gather and register for mobile based fire alerts the mobile phone numbers of the staff posted in sensitive beats.
- (c) to gather and compile on weekly basis information related to the response by field units to the fire alerts.
- (d) to set up a toll free fire alert telephone number/ email.

10.3. Circle level Master Forest Fire Control Room: A Master Forest Fire Control Room shall be set up at the office of every Forest Circle under the overall charge of the concerned Chief Conservator/ Conservator of Forests. Major functions of this unit shall include –

- (a) to approve the Divisional Forest Fire Management Plan.
- (b) to monitor the implementation of the Divisional Forest Fire Management Plan.
- (c) to monitor the efficiency and efficacy of the R4F teams at the Divisional level and guide the Rapid Response Teams at the Range level.
- (d) to gather and compile Division-wise data in respect of all incidents of fires in the Circle in the form of Daily Forest Fire Reports.

10.4. Division level Rapid Forest Fire Fighting Force (R4F): A Rapid Forest Fire Fighting Force (R4F) each shall be set up at headquarters of each fire sensitive Forest Division during the forest fire season every year (01 December to 30 June). These teams shall work under the overall guidance of the concerned Divisional Forest Officer with the Assistant Conservator of Forests of the concerned Division as the immediate incharge. Major functions of R4F shall include -

- (a) to prepare annual Divisional Forest Fire Management Plan that would include Division's strategy for forest fire management including the schedule of fire line clearance and prescribed burning, availability of resources, logistics, details of establishment of R4F at Divisional level and Rapid Response Teams at Range level, crew stations, communication system, details of fire sensitive areas, formation of local committees, assignment of roles and responsibilities at different levels, alerting district administration and health services, requirement of resources, etc. These annual Plans shall be prepared by 30 November every year for next fire season. The concerned Chief Conservator/ Conservator of Forests shall approve the Divisional Forest Fire Management Plan by 15 December.
- (b) to ensure implementation of the approved Divisional Forest Fire Management Plan.
- (c) to immediately communicate to the concerned field units satellite based information of fire incidences in the Division as received directly from the Forest Survey of India or from the Central Forest Fire Control Room through mobile based fire alert app., email, telephone, etc.
- (d) to keep the Central Forest Fire Control Room informed of the latest telephone numbers of the Field units in the Division including the Range Officers, Block Officers and the Forest Guards.
- (e) to set up and appropriately equip Range level Rapid Response Teams to control forest fires.
- (f) to closely monitor the environmental conditions (Forest Fire Danger Rating System) and to keep strict vigil on the areas more prone to fire.
- (g) to keep close liaison with the district administration/ district level disaster management cells to get their support in controlling forest fires and get 'Thikri Pahra' notifications issued from the district administration in respect of sensitive areas. (Annexure - V)
- (h) to establish close liaison with the Fire Brigade Station to secure their services wherever required.

- (i) to monitor the movement of the Rapid Response Teams/ field staff in respect of the reported forest fire cases in the Division.
- (j) to vet the assessment of the damage caused by the forest fires in the Division. (Annexure - VI)
- (k) to transmit on daily basis information pertaining to forest fires to the Circle level Master Forest Fire Control Room.
- (l) to compile weekly information on all the cases of forest fires reported in the Division, including the response time by the field staff in reaching the sites, time taken to completely douse the fire, and damage caused by the forest fires.

10.5. Range level Rapid Response Team: Range level Rapid Response Teams to prevent and control forest fires shall be set up with the following major functions:

- (a) to carry out fire line clearance and prescribed burning as per schedule given in the Divisional Forest Fire Management Plan.
- (b) to liaise with village communities, inform them of the Forest Fire Rules and other instructions, and enroll their support for fighting forest fires.
- (c) to set up and suitably equip fire-fighting crews.
- (d) to arrange water tankers during fire season to fill water holes in the forests and for use in fighting forest fires.
- (e) to assess damage due to forest fires and report the loss to Divisional office.
- (f) to register police complaints of each forest fire incident.
- (g) to enter the incidents of fire and fire damage in the Fire Register and on the Forest Fire Map.
- (h) to ensure that the fire incidents are recorded in the concerned Compartment History Files and the Beat Manual.

10.6. Enrolling Eco-Task Force in Fire Control: The Department has been utilizing the services of Eco-Task Force in plantation activities. It has been noticed that the only major activity with the Eco-Task Force during fire season is maintenance of nurseries and preparation of allocated plantation sites. The Department shall explore possibilities of enrolling the services of some Eco-Task Force personnel during fire season in forest fire control activities.

B. Forest Fire Prevention and Control – Awareness Activities

10.7. Annual Forest Fire Awareness Campaigns: The State Forest Department has been customarily organizing meetings, training workshops and others outreach programs during fire season at various levels to increase awareness about the adverse impacts of forest fires. Most of these activities have been person oriented. To make the forest fire awareness activities as part of a sustained institutional mechanism, to reach out larger populace, and to build a constituency towards prevention and control of forest fires, these activities shall be taken up at two levels.

- a) At the state level, the DFO (Publicity), under the overall guidance of the Forest Fire Nodal Officer, shall design and implement these campaigns, preferably during February-March every year. Enrolment of community volunteers for prevention and control of forest fires shall be part of these campaigns. A specially designed enrolment form shall be used to enroll volunteers for protection of forests from fire (Annexure-VIII). These volunteers shall also be registered on the FSI website so that they may receive forest-fire alert messages. This enrolment of community volunteers is envisaged to connect the volunteers with the overall effort to prevent and control forest fires. The Department shall also develop a documentary showing the damage caused by forest fires and the ways such fires could be contained.
- b) At the Divisional level, the concerned DFOs through the R4F teams shall carry out the awareness programs such as training-cum-awareness programs for different stakeholder groups, rallies, street plays, nukkar natak, meetings at village level involving Panchayat functionaries, training to village communities in safe handling of forest fires, distribution of leaflets, radio talks, use of local TV channels, etc.

C. Forest Fire Prevention And Control – Silvicultural Interventions

10.8. Clearing of Fire Lines: The State Forests have about 2750 km of fires-lines. The fire lines are barriers to escape of fire to the next area and provide a good opportunity to the Raid Response Teams to approach the fire and start counter fire operations. Prescription for clearance of fire lines is

generally included in the Forest Working Plans. The Divisional Forest Officers shall include the schedule of clearance of fire lines in the Divisional Fire Management Plan and implement the prescription in time before the onset of fire season.

10.9. Prescribed Burning of Forest Floor: As has been discussed in detail above, any fire requires good and sustained supply of fuel for its continuance. A reduced fuel load on the forest floor helps in prevention or easy control of forest fires. The prescribed burning, also known as control burning, is a silvicultural method to reduce fuel load on the forest floor. Since prescribed burning is a cost intensive activity, priority shall be given to control burn the areas along roads and paths and along private land from where the fire is likely to spread to forests. Since the fall of dried Chir Pine needles continues over about a month, some areas may need to be control burnt more than once. All prescribed burning as per Divisional Forest Fire Management Plan shall be completed well before onset of fire season.

10.10. Collection of Fire Hazard Material from Forest Floor: The forest floors gather large quantities of fire hazard due to dry grass, fallen leaves, twigs and wood. Chir Pine needles that start falling at the onset of hot season especially act as a big fire hazard in lower hills and contribute the fuel needed for forest fires to occur and sustain. A small part of fallen Chir Pine needles are routinely collected by the local communities for their bonafide domestic use. However, this collection is too little to be of any major advantage in preventing forest fires. Collection of Chir Pine needles from vulnerable points could be a method to safe forests from getting burnt. The Department shall work out a community based strategy for collection of Chir Pine needles from vulnerable points.

D. Forest Fire Prevention And Control – Miscellaneous Field Measures

10.11. Watch Towers: The Department has a network of fire watch towers at many vantage points to keep watch over the forest fires in the surrounding area and to immediately report any incident of fire or smoke from the forest to the R4F at the Divisional level and to the Rapid Response Team at the Range level. This first information helps quick mobilization the Rapid Response Teams to the affected site and under take immediate measures to control the fire. These fire watch towers need to be maintained properly. The

Divisional Forest Fire Management Plan shall include the schedule of maintenance of these watch towers.

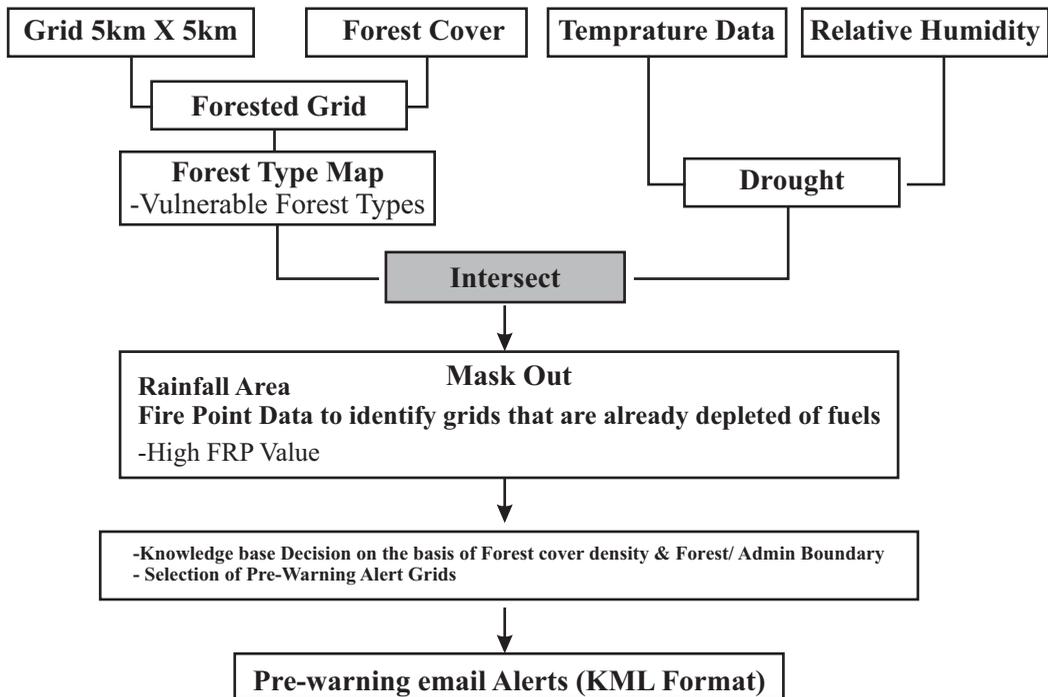
10.12. Deployment of Fire Watchers: The magnitude of work during fire season – both preventive and protective - is too large to be accomplished with the regular manpower available with the Forest Department. It is, thus, inevitable to engage and deploy fire watchers during the fire season for manning the fire watch towers and to be part of the Rapid Response Teams for fighting any incident of fire. The Divisional Forest Fire Management Plan shall include details of fire watchers required for effective management of forest fire in the Division.

10.13. Setting up of Beat level Crew Stations: One of the jobs of the Range level Rapid Response Team shall be to set up temporary forest fire-fighting crew stations under leadership of concerned Forest Guard at vulnerable points, equip these crews adequately, and train these in forest fire control. Each Crew Station, in addition to the Forest Guard, shall have 5-6 other members including 2-3 Forest Workers, 3-4 Fire Watchers. The entire crew shall reside at the crew station and shall be in readiness to move immediately on receipt of information of forest fire. The Crew Stations shall be equipped with fire fighting gear, tools and equipment.

10.14. Satellite-based Forest Fire Alerts: The Forest Survey of India (FSI) has started sharing satellite based information on forest fires in collaboration with NRSC through Fire Alert Messaging System (FAMS) with the registered forest field units upto Beat level. All field staff can register on FSI's website *www.fsi.nic.in* in order to be able to receive this message. In the State, about 1900 forest personnel have already been registered as users of the fire alert SMS facility, and so far the FAMS has served as an important monitoring tool. The GIS/ IT wing of the State Forest Department has started the process of registration of all sensitive field units for the purpose. The GIS/ IT wing has also started relaying the fire alerts directly to the field units. Secondly, the FSI provides the geographical coordinates of the area burnt by forest fires as determined by the satellite instruments. The information, used in combination with public portal BHUVAN that provides administrative boundaries of forest field units, is very useful in precise location of forest fires in the concerned beat. The third service from the FSI is the provision of advanced information

about vulnerability based on prevailing ambient temperatures, forest type, days since last fire and precipitation to help the State in being in readiness to address incidents of forest fire.

The R4F teams at the Divisional level shall ensure that the latest mobile telephone numbers of the field staff are conveyed to the Central Forest Fire Control Room and the field teams make it a habit to check their SMS messages on getting the alert, take immediate measure to mobilize their crews, and take measures to control forest fire. The logic flow for advance alert system of FSI is shown below:



E. Forest Fire Prevention And Control – Assessing Damage

10.15. Assessing the Fire Damage: Detailed protocol for assessing fire damage has already been conveyed to field units (Annexure-V). The forest fire damage shall be assessed by the concerned Range Officer using the given protocol and conveyed to the Divisional level Forest Fire Fighting Force. The Divisional level R4F shall scrutinize the fire damage reports as to adherence to the standard forest fire damage assessment protocol, shall vet the assessed damage due to forest fires, and prepare fire damage reports.

F. Forest Fire Prevention And Control – Facilitating Measures

10.16. Fire Fighting Gear, Tools and Equipment: The three major means by which forest fires are usually doused in the State include beating out the fires, smothering fires by throwing soil, and water spray. The tools and equipment usually used in the exercise include 'darats' to cut tree branches for beating the fire and 'khilnas' to scrap soil that is usually thrown over smoldering pieces of biomass with hands. It puts the fire fighting force at severe risk. The Divisional level R4F shall ensure that each Fire Fighting Crew is provided the following fire fighting gear and equipment:

- (a) proper fire-fighting gear including fire jacket, helmet, fire resistant back pack with water bottle, smoke masks, fire resistant shoes, fire resistant gloves, etc. for every member of the forest fire fighting crew.
- (b) proper tool kit for each forest fire fighting crew including a set of pick axes, spades, shovels, axes, 'darats', jumpers, fire rakes (preferably, 'gorguis' - a multi-action tool), etc.
- (c) one set of first aid kit including a compressed air cylinder with each crew.

The Department shall endeavor to gradually build its inventory of fire-fighting gear, tools and equipment to ensure safety of the fire-fighting crews and to tackle the forest fires more effectively.

The road network in the State has greatly expanded in the recent past, with many roads passing through or close to the forests. It throws up possibility of using fire tenders for extinguishing forest fires. The Department shall explore possibilities of having its own fleet of small water/ foam based fire tenders that can be taken to interior areas to aid forest fire extinguishing actions.

10.17. Communication Facility: The Department does not have any wireless facility of its own. Communication with the field staff is only through telephone, both landline and mobile, and through email. The satellite based fire alert SMS is also based on mobile phones and requires registration of mobile number with the FAMS. The field staff is, thus, required to increasingly use private mobile phones for official work,

especially during forest fire season. The Department shall, therefore, bear part of monthly charges of mobile bills of the forest field staff registered with FAMS during fire season.

10.18. Mobility of the Rapid Response Teams and Fire Fighting Crews: Fast mobility of the forest fire-fighting crews is the prime requirement to efficiently control the forest fires. The Department, with a very limited sanctioned fleet strength of official vehicles, is found wanting in providing appropriate mobility to the fire-fighting crews. Some short term arrangements in the form of allowing use of hired vehicles are made based on availability of funds. (Annexure - IV)

10.19. Awards for Forest Fire Prevention and Control: The role of local communities, especially the joint forest management committees, youth groups, mahila mandals, panchayats, etc. in helping the Department in preventing and controlling forest fires needs no emphasis. Whereas the forest field staff shall make all out efforts to engage the local communities in forest fire management, the community groups making outstanding contribution in helping the Department in preventing and controlling forest fires shall be rewarded.



Annexure - I

HP Government Forest Fire Rules

Government of Himachal Pradesh Forest Department Notification No. FFE-A(C) 7-1/96-II Dated Shimla-2, the 17-11-1999.

In the exercise of the powers conferred by clause (h) of Section 32 of the Indian Forest Act, 1927 (Act No. XVI of 1927), the Governor, Himachal Pradesh is pleased to make the following rules, namely:-

1. Short title, commencement and application:

- (1) These rules may be called the Himachal Pradesh Forests (Protection from Fire) Rules, 1999.
- (2) These rules shall come into force from the date of publication in the Rajpatra, Himachal Pradesh.
- (3) These rules shall be applicable through out the year except for the period from 1st of July to 13th of September.

2. Definitions:

- (1) In these rules, unless there is anything repugnant in subject or context,
 - (a) "Act" means the Indian Forest Act, 1927 (XVI of 1927);
 - (b) "Divisional Forest Officer" means,
 - (i) Divisional Forest Officer of a Forest Division.
 - (ii) Divisional Manager of the Himachal Pradesh State Forest Corporation Ltd., and
 - (iii) Collector (in whose justification in forest lies);
 - (c) "Forest" means a reserved forest or protected forest, duly notified as such under the Act;
 - (d) "Section" means section of act; and
 - (e) "Schedule" means Schedule appended to these Rules. (2) The words and expressions used, but not defined in these rules, shall have the meanings assigned to them in the Act.

(3) Prohibition of Kindling of Fire:-

- (1) Kindling of fire within one hundred meters from a forest without permission of the Divisional Forest Officer, or his authorized representative shall be prohibited.
- (2) Any person lighting a fire even beyond on hundred meter from the boundary of a forest shall take precautions, by clearing a fire path, not

less than 10 meters in width between such place and such boundary, of by employing watchers or otherwise, to prevent the fire from spreading.

(4) Precautions to be taken in burning agriculture residue bushes or “ghasnies” near forest. No person shall ignite agriculture residue or set fire to “ghasnies”, or clear by fire any land, within a distance of one hundred meter from the boundary of the forest, unless;

(a) he gives notice of his intention to burn or clear the land by fire, at least one week before doing so, to the nearest Forest Range Officer under whose jurisdiction such land lies; and

(b) there is between such boundary, and the spot on which such materials are ignited, a space at least ten meters in width which is clear of all vegetation capable of carrying fire from such spot to the forest.

(5) Restrictions on the collection and stacking of inflammable forest produce of inflammable material outside the boundary of or in the forest. Any person collecting such inflammable material, that is to say, forest produce such as grass, dried leaves and pine needles, firewood, timber, bamboo and resin, on a land adjoining a forest, or a holder of a pass or permit issued by a Forest Officer, or a person exercising his privilege or right to collect such forest produce from a forest, shall stack it at, as the case may be, in an open space in the forest as the Divisional Forest Officer may, by general or special order, specify, and shall isolate such stacks in such manner that, if it catches fire, the fire shall not spread to the surrounding area to endanger the forests.

(6) Precautions to be taken at camping places:-

(1) No person shall camp in a forest, except in a camping place specially cleared and set apart and duly notified for the said purpose by the Divisional Forest Officers.

(2) A person camping at such camping place may light fire for the purpose of cooking or for any other purpose in such a manner as not to endanger the forest or any building, shed and property at the camping place.

(3) A person camping at the camping place shall, before vacating it, collect in the centre of the camping place all inflammable material, which is to be left behind, and shall carefully extinguish all fires at the site.

By order
Commissioner-cum-Secretary Forests,
Go HP, Shimla

IFA 1927 legal provisions against forest fire

26. Acts prohibited in such forests. (1) Any person who

- (b) sets fire to a reserved forest, or, in contravention of any rules made by the State Government in this behalf, kindles any fire, or leaves any fire burning, in such manner as to endanger such a forest; or who, in a reserved forest
- (c) kindles, keeps or carries any fire except at such seasons as the Forest-officer may notify in this behalf, shall be punishable with imprisonment for a term which may extend to six months, or with fine which may extend to five hundred rupees, or with both, in addition to such compensation for damage done to the forest as the convicting Court may direct to be paid.

66. Power to prevent commission of offence.-Every Forest-officer and Police officer shall prevent, and may interfere for the purpose of preventing, the commission of any forest-offence.

79. Persons bound to assist Forest-officers and Police-officers.-

- (1) Every person who exercises any right in a reserved or protected forest, or who is permitted to take any forest-produce from, or to cut and remove timber or to pasture cattle in, such forest, and every person who is employed by any such person in such forest, and every person in any village contiguous to such forest who is employed by the Government or who receives emoluments from the Government for services to be performed to the community, shall be bound to furnish without unnecessary delay to the nearest Forest-officer or Police officer any information he may possess respecting the commission of, or intention to commit, any forest-offence, and shall forthwith take steps, whether so required by any Forest-officer or Police officer or not,-
 - (a) to extinguish any forest fire in such forest of which he has knowledge or information;
 - (b) to prevent by any lawful means in his power any fire in the vicinity of such forest of which he has knowledge or information from spreading to such forest,

- and shall assist any Forest-officer or Police-officer demanding his aid
- (c) in preventing the commission in such forest of any forest-offence; and
 - (d) when there is reason to believe that any such offence has been committed such forest in discovering and arresting the offender.
- (2) Any person who, being bound so to do, without lawful excuse (the burden of proving which shall lie upon such person) fails
- (a) to furnish without unnecessary delay to the nearest Forest-officer or Police officer any information required by sub-section (1);
 - (b) to take steps, as required by sub-section (1), to extinguish any forest fire in reserved or protected forest;
 - (c) to prevent, as required by sub-section (1), any fire in the vicinity of such fore.4 from spreading to such forest or
 - (d) to assist any Forest-officer or Police officer demanding his aid in preventing the commission in such forest of any forest-offence, or, when there is reason believe that any such offence has been committed in such forest, in discover and arresting the offender, shall be punishable with imprisonment for a term which extend to one month, or with fine which may extend to two hundred rupees, or with both.

location and telephone contact Nos, both landline and mobile. These details should be also made available at Range, Division and Circle level.

5. Forest Guards shall immediately hold meetings with all the Ghasni owners in their beats and ask them to take all preventive measures and not to set up fires in their Ghasnies due to prevailing continuous dry spell.
6. In the Gram Sabha meetings to be held in the first week of April, 2016, the forest staff shall attend all the Gram Sabha meetings and make the people aware about the devastating & ill effects of forest fires on the environment, the Forest Resources and the Wild Life and request them to help the Forest Department to prevent and control the forest fires.
7. The DFOs shall get the pamphlets prepared on Forest fires and distribute to people on this Gram Sabha day.
8. The ROs, BOs and Forest Guards shall hold meeting in all the JFMCs, especially in the Chil zone forest fire prone/sensitive areas, and set up fire control teams of the local people also.
9. Workshops with the Forest staff up to Range level shall be held in each circle each month to review the preparedness of the staff to control Forest fires. A schedule of these circle workshops be prepared in consultation with this office.
10. A Forest fire control calendar of the activities to be done in the next three months has been sent to you by this office during 2009 and amended from time to time. This calendar is to be followed strictly.
11. DFO publicity to arrange radio talk on prevention of Forest fires, prepare broadcasting of Jingles and radio messages before and after the news both in radio and TV Also, he should give advertisements in local TV channels and news papers appealing the people to prevent Forest Fires. He should seek the budget for these activities from PCCF immediately.
12. In the workshops the preparedness of the Circle/ Divisions shall be reviewed up to Range level. Each DFO shall give details of the preparations made by him to prevent occurrence and control forest fires on the above points and also update the prevailing format A & B

13. The forest fire control shall be monitored by this office. The late/ incorrect reporting of Daily Forest Fire will be viewed very seriously and shall be liable for disciplinary proceedings.
14. No leave of any kind should be granted to the field/ office staff during the fire season.

-Sd-
CCF Projects
-cum-State Nodal Officer (Forest Fires)

Endst No. Fts Misc. Forest Fires Dated : 07-03-2018

Copy is forwarded to:-

1. PCCF, (HoFF) HP, Shimla & PCCF (Wild Life) HP for Information and necessary action. He is requested to immediately release the Forest Fire budget to all CFs and DFOs. Also, the budget to DFO, Publicity is allotted to prepare pamphlets, issues advertisements in newspaper and Radio, local TV channels.
2. PCCF (Projects and Mgt.), Shimla for n/a.
3. APCCF (IT/GIS) Shimla for n/a.
4. DFO, Publicity for n/a.

-Sd-
CCF Projects
-cum-State Nodal Officer (Forest Fires)

Annexure - IV

Instructions regarding Mobility and Communication

No. Fts Misc. Forest Fires / 2017-18 Dated Shimla, the 9/3/2018

OFFICE ORDER

In order to strengthen the capacity of the field staff of the Forest Department to combat and control forest fires, the Beat guards, Block Officers, Range Officers and Asstt. Conservators of Forests having jurisdiction over Forest Beats identified as highly sensitive to forest fires (as per the enclosed list.), are permitted for a period of three months (of fire-season) in a year:

- a) Fixed mobile telephone allowance @ Rs.100/- per month to act upon fire-alert sms messages,
- b) hiring taxies at rates approved by local DCs / SDMs, when necessary, and
- c) use of their private vehicles to reach and return from forest fire sites, reimbursable @ Rs. 5/- per km for four wheelers and @ Rs. 2/- per km for two wheelers.

The expenses would be debitable and restricted to allotment under "Imprest" head of the CSS for Forest Fire Prevention and Management and the appropriate head of the related state scheme.

This issues with prior approval of the Competent Authority.

Encl.: As above

-Sd-

Pr.CCF (HoFF)

Himachal Pradesh

Endst. No.Fts Misc. Forest Fires /2017-18

dt. 9/3/2018

Copy forwarded to all CCFs/CFs of territorial and Wildlife Circles for information and necessary action please.

-Sd-

Pr.CCF (HoFF)

Himachal Pradesh

Annexure - V

THIKRI PEHRA ORDER BY DISTRICT MAGISTRATE ORDER

Whereas the Divisional Forest Officer _____ vide his letter No _____ dated _____ has intimated the commencement of the forest fire season and also occurrence of devastating fires.

And whereas, it is become necessary to check/control and extinguish the forest fire to save precious forest wealth.

And whereas, the village able bodied adult males are required to assist the forest department to check and detect forest fires and organize nightpatrolling in their respective areas.

Therefore, I _____, District Magistrate, District _____ HP in exercise of power vested in me under section 3(I) of HP Rural and Small Town Patrolling Act, 1964 hereby order all PanchyatPardhans to organize night patrolling in their respective Panchayat with the help of all able-bodied adult males to assist the Forest Department to check/ control forest fires.

This order shall remain in force for the period of forest fire season of the year, _____ i.e. up to _____.

District Magistrate,
District _____ HP

Endst. No. _____ Dated _____

Copy for information and necessary action forwarded to:

1. The Superintendent of Police, district _____ HP.
2. The Conservator of Forest, Distt. _____, (HP).
3. The Divisional Forest Officer, _____ Forest Division, _____ w.r.t. his/her letter No. _____ dated _____.
4. The Sub Divisional Magistrate _____ -, District _____ are hereby delegated the powers under section 6&7 of the HP Village and Small towns partrol Act, 1964 (Copy of Act already has been sent to them vide office order endorsement No. _____)
5. The DisrictPanchyat Officer, _____ with _____ spare copies for strict compliance.
6. The BDO _____ with spare copies for strict compliance order to all PanchayatPardhans

Annexure - VI

Methodology for Fire Damage Assessment

Forest fires, depending upon their nature, result in different grades of damage to different types of forests. A broad two-stage methodology to assess such damage caused by the forest fires i.e. (a) immediately after fire (Stage-I) and, (b) after rains (Stage-II) is given below:

S. No.	Type of Loss	Method of Assessment (Loss calculated in Rs.)	
		Immediate Assessment after Fire (Stage-I)	Final Assessment after Rains (Stage-II)
1.	Plantation Areas 1 st year	(Area affected in ha) x (no. of plants planted/ ha x survival %) x (current planting cost/ plant)	(Actual no. of plants dried due to fire) x (current planting cost/ plant)
2.	Plantation Areas 2 nd to 10 th year	(Area affected in ha) x (no. of plants planted/ ha x survival %) x (current planting cost/ plant + cumulative maintenance cost/ plant worked on <i>prorata</i> basis) viz. (cumulative cost of maintenance/ per ha) ÷ (no. of plants planted/ ha x survival %).	(Actual no. of plants dried due to fire) x (current planting cost/ plant + cumulative maintenance cost/ plant)
3.	Area under natural regeneration/ coppice	(Area affected in ha) x (current planting cost/ ha)	(Area affected in ha reassessed) x (current planting cost/ ha)
4.	Area consisting of pole crop and above	(No. of trees completely burnt) x (market rate for the species) Damage to partly burnt trees to be assessed after rains	(Actual no. of trees dried due to fire) x (50% of royalty rates for the species) + Loss assessed at Stage-I

5.	Resin Blazes	(No. of Resin blazes damaged x average annual yield/ blaze in kg.) x (current resin royalty rate/ kg.)	Reassessment of no. of Resin blazes damaged due to fire x average annual yield/ blaze in kg.) x (current resin royalty rate/ kg.)
6.	Fodder & Grasses	(No. of head loads of grass/ tree leaf fodder lost based on ocular assessment) x (Rs. 100/ head load)	Same as loss assessed at Stage-I
7.	Beneficial herbs, shrubs & wild fruits	(Volume, in qtls., of medicinal plants/ wild fruits damaged based on	Same as loss assessed at Stage-I
8.	Environmental and wildlife loss	Notional value / ha	Notional value / ha
9.	Domestic losses	The loss caused due to forest fire to the private property viz. house, cattle sheds, domestic animals, human life to be assessed separately in each case	Same as loss assessed at Stage-I

Note:

- (i) Fire Assessment report shall be prepared by concerned Range Officer.
- (ii) In case of damage area >5 ha concerned DFO will check the area.
- (iii) In case of damage area >10 ha concerned CF will check the area.

Annexure - VII

HIGHLY SENSITIVE BEATS

DIVISION	RANGE	BLOCK	BEATS
BILASPUR CIRCLE			
Bilaspur	Jhandutta	Gochar	Gandhir, Chabola, Gochar
		Samoh	Samoh
	Sadar	Brahmpukhar	Bahadarpur
		Panjgain	Jamthal
		Sadar	Kuddi
	Sh, Nainadeviji	Bhakhara	Jandour
		Sawain	Garamora, Sawain
	Ghumarwin	Harlog	Dhangu
	Swarghat	Swarghat	Baner, Jagatkhana, Swarghat
Kunihar	Arki	Jainagar	Bainjhatti, Materni
	Kuthar	Kuthar	Kuthar
CHAMBA CIRCLE			
Chamba	L/ Chamba	Chamba	Sarodi
		Silla Gharat	Sarol
	Masaroonnd	Pukhari	Kiani
Dalhousie	Bhatiyat	Gola	Gola, Hatali, Kakroti
		Tundi	Tundi
	Chuwari	Manhuta	Manhota
		Chuwari	Lower Chuwari
	Bakloh	Mamul	Mamul
		Naini Khad	Katrohi, Tunuhatti
	Dalhousie	Surkhigalla	Surkhigalla, Sherpur, Nagali, Banikhet, Magzini
		Dradha	Dradha
DHARAMSHALA CIRCLE			
Dharamshala	Kangra	Ranital	Gheen, Ranital, Jassai
		Kangra	Nandrool, Mundla
		Daulatpur	Daulatpur
		Ghurkari	Rajiyana, Ghurkari
	Sahpur	Rirakmar	Rirakmar, Kanol, Boh
		Rait	Rehlu
		Sahpur	Bassa
	Lapiana	Lunj	Lunj, Bhorkawalu, Kotla
		Pandhwar	Pandhwar
	Mallan	Mallan	Mallan, Pathiar
Palampur	Daroh	Thural	Duhak, Mundhi, Balota
		Jaisinghpur	Harshi, Jaisinghpur
		Daroh	Khaira, Daroh
	Bajj Nath	Bajj Nath	Bajj Nath, Chobine
		Deol	Dharer
	Gopalpur	Gopalpur	Gopalpur
Nurpur	Indora	Mangwal	Mangwal, Gohran
		Gangath	Bhallak
	Jawali	Jawali	Jawali
	Kotla	Mastgarh	Chachin

	Nurpur	Minjgran	Minjgran
HAMIRPUR CIRCLE			
Dehra	Dehra	Pir-Salohi	Kuna, Magru, Santla
		Sadwan	Bakral
Hamirpur	Aghar	Aghar	Pundhar, Samtana
	Bijhar	Bijhar	Bijhar
		Chhakmoh	Dharsidh, Ghangot
KULLU CIRCLE			
Parbati	Hurla	Bhuin	Naresh, Bhuin, Shiah, Diyar, Narogi
		Garsa	Garsa
	Jari	Jari	Chhakna, Chhinjra
		Pini	Kashawari
	Bhuntar	Bajaura	Mashgan, Khokhan
Kullu	Bhutti	Tarapur	Dughilag
MANDI CIRCLE			
Suket	Suket	Baggi	Baggi
		Sadar	Sadar, Jadraun, Jarol, Nalni, Trambri
	Kangoo	Dehar	Dehar, Umari, Jayor
		Batwara	Serikothi, Gerhru
	Jai Devi	Jai Devi	Jai Devi, Doldhar, Ghiri
		Nandgarh	Hatgarh, Chhamiar, Nandgarh, Kutachi
	Baldwara	Goverta	Goverta, Batarapandhiri, Amblagalu
		Leda	Leda, Bairkot
		Baldwara	Balhra, Hatli, Triphalghat, Bahanu
		Bhambla	Dhaulkhan, Bhambla, Dhalwan
	Sarkaghat	Sarkaghat	Sarkaghat, Chandrakhary, Gopalpur, Maseran, Bhangoh, Deobaratha
		Thona	Thona, Jamdwar, Tikker
		Durgapur	Kaldu, Bhadarwar, Pingla
Jogindernagar	Jogindernagar	Jogindernagar	Harabag, Chaprot, Bagra, Jogidernagar
		Bhararoo	Bhararoo, Nainpur, Drahal, Drubal
		Chauntra	Ghatta, L/Chauntra, U/Chauntra, Banoun
	Urla	Urla	Gawali, Thorat, Urla
		Chukku	Chukku, Khajri
	Lad Bharol	Daled	Daled, Autpur, Panjalag
		Pandol	Pandol, Golwan, Barnod
		Langna	Langna, Tullah, Aal
	Dharampur	Dharampur	Sidhpur, Bahi, D/ pur
		Mandap	Baroti, Brang
	Kamlah	Kamlah	Kamalah, Serpur, Dodar
		Sandhol	Masot, Sandhol, Tandu
		Tihra	Tihra, Gharwasra, GaddiDhar
NAHAN CIRCLE			
Nahan	Jamta	Panjahal	Dhagera, Patandi, Panjahal, Sanoga, Jaitka
		Jamata	Bohal, Navini, Bharman, Tallon
		Banethi	Banethi, Gaunth, Amta-kthera
	Trilokpur	Trilokpur	Gurudawara, Mainthapal, Kandiwala, Trilokpur
		Kotla	Churan, Nerpm, Gumti, Pulewala, Kotla

	Kolar	Shambhalka	Rampur Gainda
		Lohgarh	Lohgarh-I, II, III,IV,V,VI
		Behron	Jamretva
Renuka Ji	Kaffota	Kaffota	Khajuri, Tatyana, Jamna
RAMPUR CIRCLE			
Kotgarh	Kotgarh	Bhareri	Sainj, Naula
	Kumarsen	Kumarsen	Oddi
Kinnaur	Bhawanagar	Sungra	Choura
	Kalpa	Urni	Urni, Runang
Rampur	Nankhari	Soli	Chakti, Delath
		Ghan	Jahu
	Rampur	Rampur	Rampur, Pashada
		Nogli	Nogli, Dutnagar
		Deothi	Darshal
Ani	Chowai	Chowai	Chowai, Gad, Haripur
		Khanag	Kohila
		Paneo	Peog, Bai, Patrana
		Takrasi	Kuinr
	Nither Arsu	Nither	Nither, Moin, Ghorla, Koil
		Dalash	Luhri, Tandii
		Margi	Ghattu, Nor
		Nirmand	Nirmand, Averi, Brow
		Kharga	Kharga, Tunan
SHIMLA CIRCLE			
Shimla	Masobra	Masobra	Seepur, Panyali, Naldehra
		Shoghi	Tutikandi, Patod
		Kasumpti	Bhatakuffar, Bharari
	Bhajii	Sunni	Mandhorghat
		Khatnol	Khatnol, Thaila, Kadarghat
	Koti	Koti	Karoli
		Junga	Cheora
		Indira	Mindaghat
	Tara Devi	Tara Devi	Tarad Devi, Tavi, Shoghi
		Tutu	Tal, Banoti, Kamayana
		Jubbar Hatti	Kaljun, Kalihatti
	Dhami	Halog	Halog, Saloon
		Ghanatti	Badu
Theog	Theog	Chiyog	Ratesh, Dharech
		Matyana	Dharpur, Balog
	Balsan	Ghorna	Kuthar
	Kotkhai	Ghoch	Himmari
Rohru	Rohru	Rohru	Dalgaon
		Goas	Lower Koti
		Summer Kot	Machhoti
	Sarswati Nagar	Kuddu	Pandranu, Kuddu, Sashan
		Mandal	Jalta
Chopal	Kanda	Sainj	Minus
	Nerwa	Nerwa	Nerwa, Ranjat
		Keirla	Kellog, Halau, Gumma
		Peontra	Peontra, Halau

	Thorach	Thorach	Bharan
		Neol	Kandal
		Lalan	Pujarli
SOLAN CIRCLE			
Nalagarh	Baddi	Sai	Bhalawa, Sai Tallai
		Dharampur	Ambika, Dharampur
	Kahoo	Joghon	Rakh-Raipur
		Nalagarh	Silnoo
	Ramshehar	Ramshehar	Kawarji, Bagheri, Kotkhai
		Diggall	Diggall
W L Hamirpur			
W L Hamirpur	Naina Devi	Kot	Kot, Ghatwal, Lehri, Palshed
		Saloa	Khulwin
	Uhl	Bir	Keori, Bir
		Bara Bhangal	Bara Bhangal, Thamehar, Shahnal
		Swar	Swar, Deot, Anderlimalahan, Baragran
W L Chamba	Khajjiar	Khajjiar	Karangar Rakh
	Bharmour	Tundha	Tundha
	Sechu	Sechu	Sechu
WILD LIFE (SOUTH) SHIMLA			
W L Shimla	Chandi	Kashlog	Chandi, Kangri, Harsang
		Piplu ghat	Piplughat
	Chail	Chail	Shilroo, Binoo
		Gaura	Chaura
		Shilli	Shilli
	Simbalwara	Simbalwara	Marusidh, Kaludev
		Amargarh	Danda, Ghurak
Great Himlayan National Park, Shamshi, Kullu.			
W L Kullu	Sundernagar	Sundernagar	Maloh, Bobar, Khurahal, Soul
		Rewalsar Zoo	Rewalsar Zoo
	Barot	Ropa	Ropa, Hurang, Silbudhani
		Barot	Barot

Annexure -VIII

वन विभाग हिमाचल प्रदेश Rapid Forest Fire Fighting Force (R4F) रैपिड फोरेस्ट फायर फाइटिंग फोर्स Volunteer Enrollment Form

हिमाचल प्रदेश एक पर्वतीय राज्य है। यहाँ के जंगलों में आए वर्ष आग की घटनाएं होती हैं, जिससे राज्य के वातावरण को बहुत नुकसान पहुँचता है। मैं,
.....सुपुत्र श्री
जिम्मेदार नागरिक होने के नाते वन अग्निबुझाने जैसे नेक कार्य में भाग लेना चाहता हूँ तथा स्वयं को R4F के स्वयंसेवक सदस्य के रूप में नामांकित कर गर्वान्वित महसूस कर रहा हूँ। मैं वन विभाग हिमाचल प्रदेश के साथ मिलकर अपने आस-पास के जंगलों को आग से बचाने का हर संभव प्रयास करूँगा। मुझे जब भी मेरे आस-पास के जंगल में आग की सूचना मिलेगी, मैं वन विभाग के साथ आग बुझाने का पूर्ण प्रयास करूँगा। मैं मेरे घर के नजदीक के जंगल की आग की सूचना प्राप्ति के लिए आपने मोबाइल फोन पर मैसेज के लिए वन विभाग को अधिकृत करता हूँ।

हस्ता०

पता
मोबाइल नं ई मेल
नजदीक की वन रेंज वन बीट

Calendar of Fire Season Activities

S No	Activity	Responsibility	Deadline
ADMINISTRATIVE MEASURES			
1	Prepare Division level forest-fire Management Plan	DFO	30 Nov
2	Establishing State level Central Forest fire Control Room	PCCF(HOFF)	30 Nov
3	Establishing Circle level Master Forest fire Control Room	CCF/CF	30 Nov
4	Setting up Division level forest-fire fighting force	DFO	30 Nov
5	Setting up Range level Rapid Response Team	RO	15 Dec
6	Approval of Division level forest-fire Management Plan	CCF/CF	15 Dec
7	Issue of orders regarding duties of the staff to be deployed in sensitive Beats for control of forest fires for high hills/low areas, keep Rapid Response Teams in readiness	CCF/CF DFO	1 Dec/15 Apr
8	Issue of orders regarding Thikri Pehras from Deputy Commissioners	DFO	31 Mar
9	Meetings by CCF/CFs, DFOs with field staff	CCF/CF, DFO, RO	31 Mar
10	Producing Utilization Certificates in r/o CSS	CCF/CF	15 May
11	Scrutiny of APOs from Circles, compiling and conveying to MOEFCC for timely approval	Nodal Officer	31 May
SILVICULTURAL MEASURES			
1	Controlled burning, maintenance of fire-lines	DFO	28 Feb
AWARENESS MEASURES			
1	Devising mass contact/awareness program	Nodal Officer	15 Mar
2	Conducting mass contact/awareness program) i.e. Contact with the Local People, Panchayats, School Children, JFMCs/ VFDCs, NGOs, Tourists, etc. to make them aware about the damages by the Forest Fires to the Forest Resources, Wild Life & the Environment.	CCF/CF DFO	31 Mar
3	Visit of the Publicity Staff to the field for Mass Contacts/ organizing the Film Shows, Workshops and wide publicity through Electronic/ Print Media.	DFO Publicity	31 Mar
4	Distribution of Pamphlets for appeal as part of the awareness campaign. These should also contain the names contact of the Control Rooms, CCF/CFs, DFOs, ROs, etc.	RO	15 Apr
5	Meetings with Panchayat Gram Sabhas	BO Beat Guard	15 Apr
CONTROL MEASURES			
1	Patrolling by the Mobile Units in the Sensitive Areas and contact/ helping the Field Staff.	DFO Hqrs ACF	30 Jun
2	Daily reporting of the Fire Incidences to the Control Rooms, CCF cum Nodal Officer o/o PCCF (HoFF) HP, Shimla by the Field	CCF/CF DFO RO	30 Jun

