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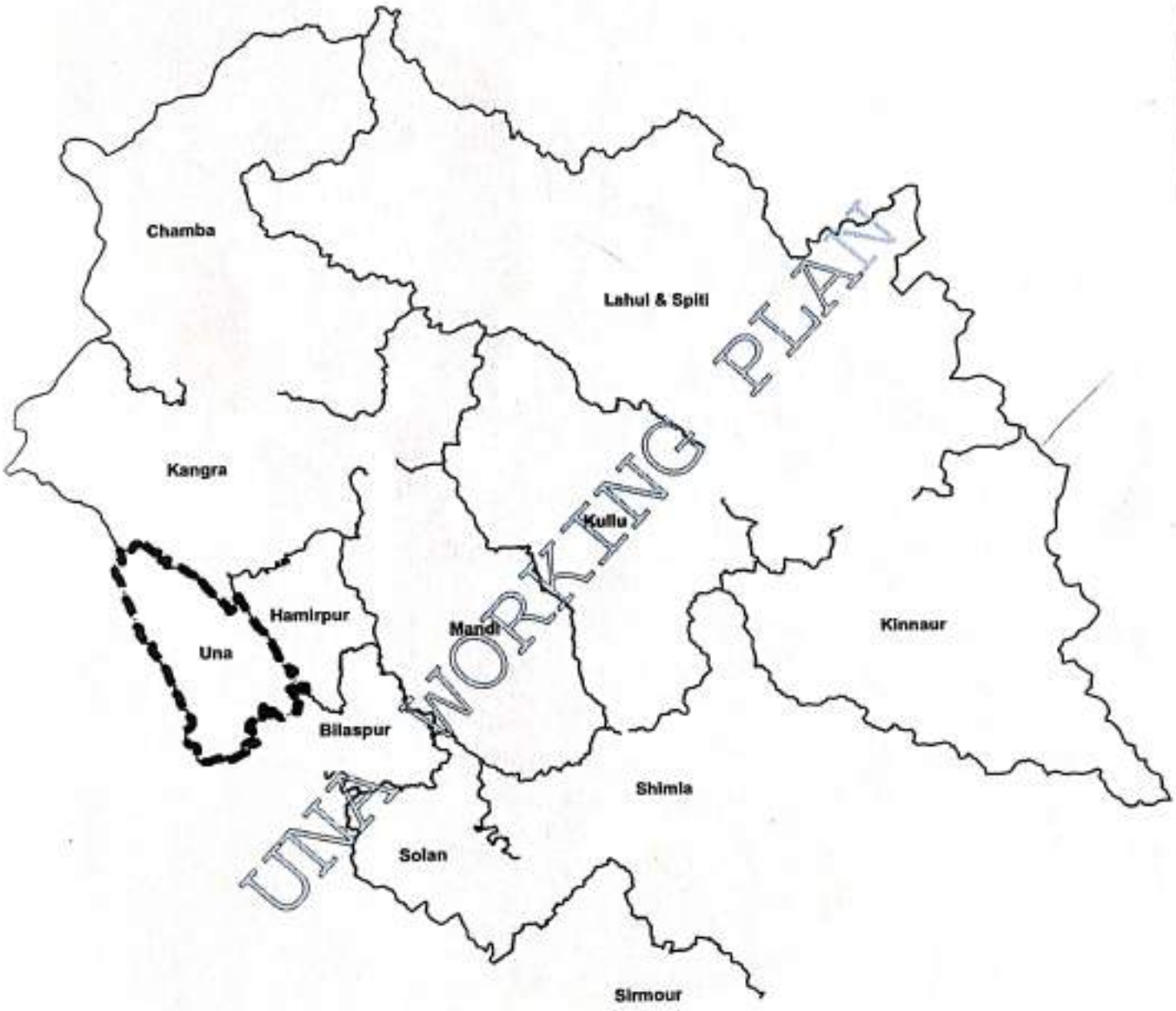

Administrative

District_Boundary_HP

Una District Boundary

0 15 30 60 90

Kilometers

Administrative Map
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Administrative

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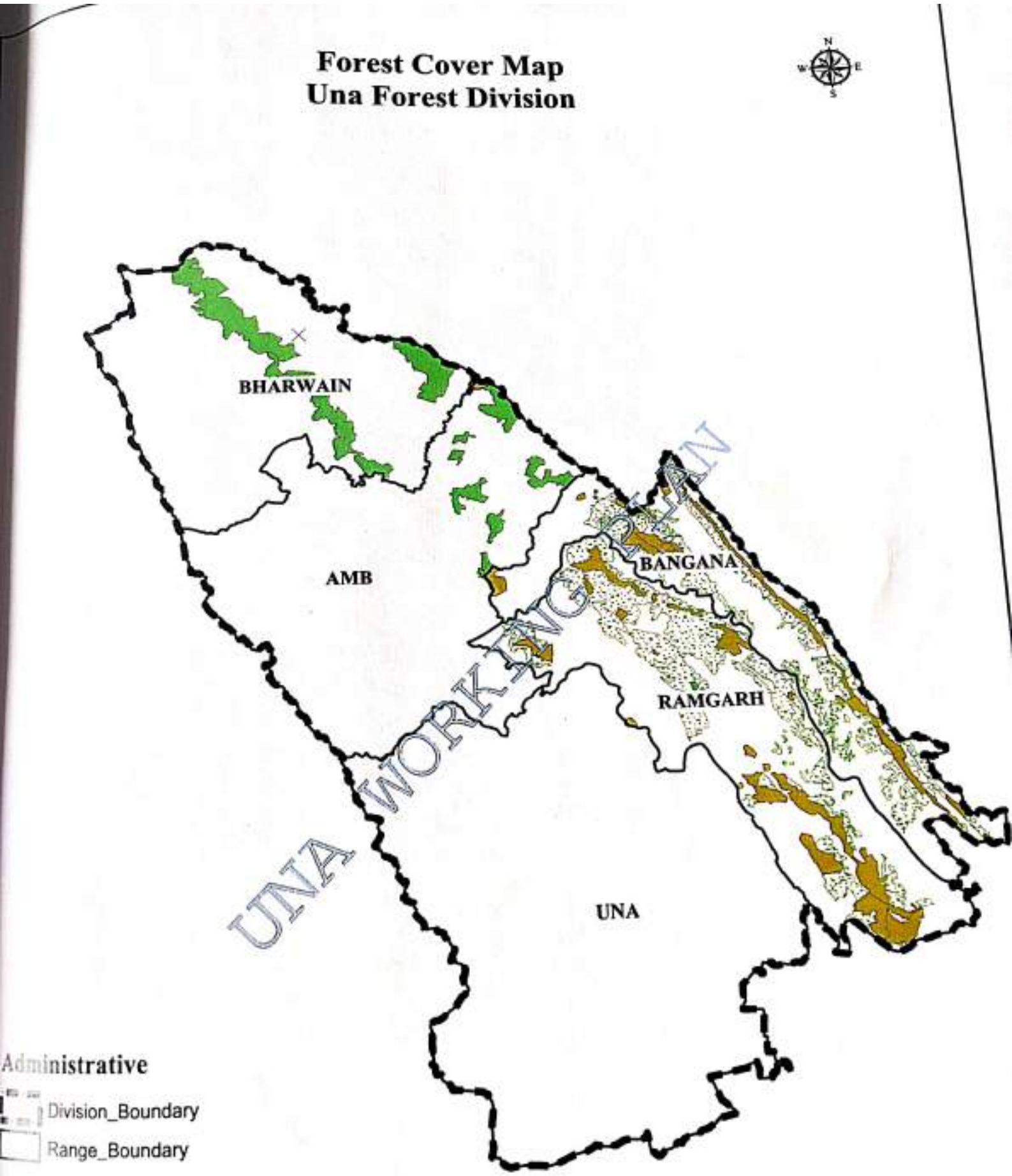
Forest Cover Map
Una Forest Division



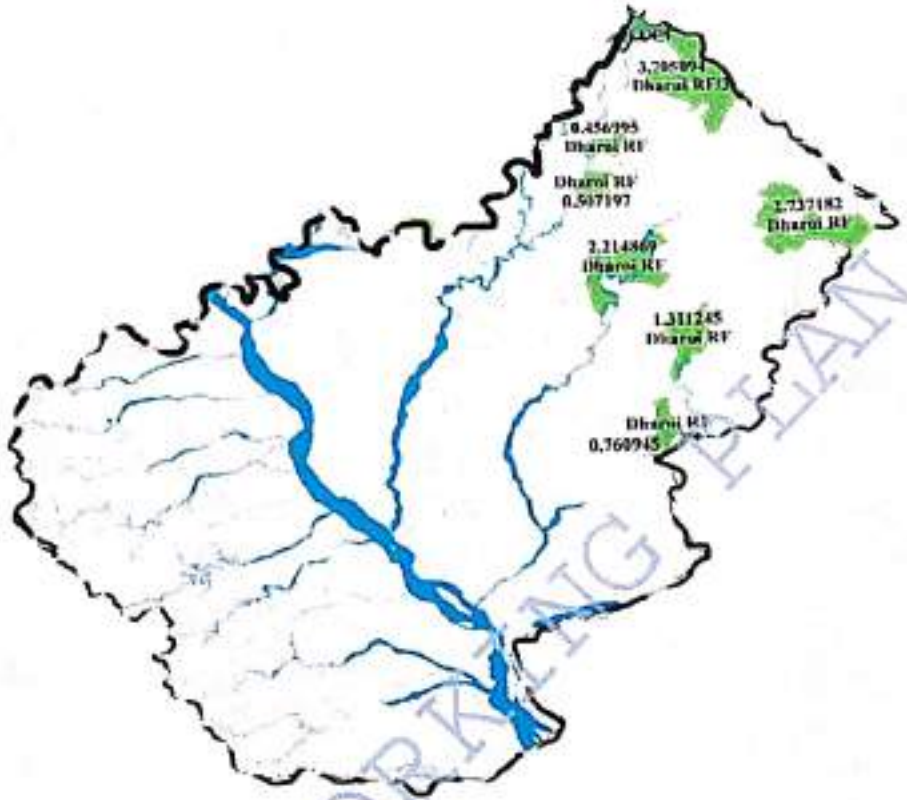
Forest Cover Map
Bharwain Range
Una Forest Division

Forest_Feature

- PF
- RF
- UCF
- UPF

* Area in Square K.M.

Forest Map
Amb , Una H.P.



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* Area in Square K.M.

INTRODUCTION

This Working Plan is a revision of Late Sh. Pradeep Bhardwaj's Plan (1995-96 to 2011-12) and includes all the areas covered under the plan. The H P Government Vide Notification No. FEE-B-F (15)2/10 dated 5.7.2011 has notified that henceforth Working Plans shall be prepared/revised by concerned territorial Divisional Forest Officers. Therefore, Mr. R S Patial, IFS who was DFO Una, has revised this Working Plan as Working Plan Officer. The field work began in December, 2011 and completed in March, 2012.

The emphasis in the present working plan is on conservation and many changes have made in this plan based on the present crop constitution, silvicultural requirement of the crop, guidelines of National Working Plan Code 2004 and lessons learnt from past management. Accordingly chapters on Activities of State Forest Development Corporation Ltd and Five Years Plans have been included. The Chil forests allotted to Chil Working Circle will be managed under Indian Irregular Shelter-wood System with floating blocks. The growing stock in Chil Working Circle is 31.85 M^3/ha which is quite below the normal. Therefore no yield has been prescribed, however salvage marking will continue and removal of chil is estimated to be 1200 M^3/annum. As no sequence of felling is required, a "Regeneration Plan" to re-stock the chil areas has been given. Since PB-I areas are heavily infested with Lantana, the detailed Lantana eradication programme in PB-I areas has been proposed. Keeping in view the guidelines of National Working Plan Code 2004, new mandatory working circles namely, NTFP (overlapping) working circle, Forest Protection (overlapping) working circle and Joint Forest Management (overlapping) Working circle have been added.

The revised Working Plan has been prepared for a period of fifteen years, commencing from 1/4/2012 to 31/3/2027. The Working Plan Officer and his staff deserve all appreciation for completing the revision of the plan in time bound manner despite their engagement in discharging duties of territorial wing.

It is expected that the information provided and the prescriptions suggested in the plan would be very useful in deciding the management practices in future.

(Raghubir Singh Banyal, IFS)
C F Working Plan (North)
Palampur, HP.

ACKNOWLEDGEMENTS

Revision of Working Plan is an important task for the effective management of forests. It is a big task in itself and if this is entrusted to the Territorial DFO, who already has to attend to various other assignments involved in the management of a Division, the work load increases manifolds. To accomplish the job of completing the working plan within stipulated period is not possible without the teamwork and wholehearted devotion of the staff. The revision of Una Working Plan was completed in less than 4 months, which was made possible because the whole staff of division worked as team with full coordination and dedication. I shall be failing in my duty as WPO if I do not acknowledge the efforts and hard work of those whose contribution was beyond their routine duty.

I am grateful to the staff of Una Forest Division for their contribution resulting in timely completion of this Working Plan.

The field staff of Amb and Bharwain Forest Ranges deserve special mention for completing the enumeration work in a time bound manner. Without their efforts and hard work it was not possible to complete this task in time. Not only the economically important timber species were enumerated, but more than 30 other species were also counted and the data gave an overview of the forest composition enabling the WPO to prescribe suitable management practices.

I sincerely thank Shri Sameer Rastogi, IFS, Conservator of Forest, Hamirpur Forest Circle for his valuable support and guidance. His Inputs and suggestions on the topic of Wildlife Management were of immense help.

Shri Lekh Raj, Clerk & Smt. Neeru Rani, Sr.Assistant deserve appreciation for putting in hard work especially in typing of Working Plan. Shri Suresh Mohan, Sr.Assistant, Sh. Ashok Thakur & Shri Som Dutt, clerk, o/o Divisional Manager HPSFDC Lt. Una who provided data to update Part I of the Working Plan also deserves appreciation.

Shri J.K.Dogra, HPFS, DFO (HQ), Hamirpur Forest Circle also deserves mention for extending help in writing chapter on Non-Timber Forest Produce.

Sh. R. S. Banyal, CF (WP) is also thanked for his overall involvement in the completion of this working plan.

I am grateful to Shri Tajinder Singh, IFS, Add. Principal Chief Conservator of Forests (Working Plan) under whose guidance this task was completed. He took great pains and made personal efforts to ensure word to word checking of the draft plan to remove all shortcomings. He also provided very important technical input during the writing of this plan.

(R.S.Patial, IFS)
WPO- cum-Divisional Forest Officer,
Una Forest Division.

GLOSSARY OF BOTANICAL TERMS

Local Name	English Name	Botanical Name
Aisan Sain	Indian laurel	*Terminalia tomentosa*
Ak	Apple of Sodom, rubber bush, swallow-wort	*Calotropis procera*
Akha	Heart leaf raspberry	*Rubus paniculatus*
Am	Mango	*Mangifera indica*
Amaltas, Kaniar, Alis	Golden shower tree	*Cassia fistula*
Amla	Chinese laurel, currant tree	*Antidesma acidum*
Amla	Indian gooseberry	*Emblica officinalis*
Anar-dana	Wild pomegranate	*Punica granatum*
Arjun	Arjuna myrobalan	*Terminalia arjuna*
Badhla	Indian willow	*Salix tetrasperma*
Badrol		*Persea gamblei*
Bahankahar, Gin, agnimanth	Premna	*Premna mucronata*
Bakkar bel	Black creeper	*Ichnocarpus frutescens*
Ban	Beech-wood, goomar tree	*Gmelina arborea*
Ban Basuti	Blue-beard	*Caryopteris odorata* (syn. *C. bicolor, C. wallichiana*)
Ban Malti	Jasmine	*Jasminum multiflorum*
Bana	Five-leaved chaste tree	*Vitex negundo*
Bans Bainj, Sotha	Male bamboo	*Dendrocalamus strictus*
Bantaur		*Atylosia crassa*
Barasol Pan	Winged stalked Flemingia	*Flemingia semialta*
Barnahi,Billan	Elephant apple, wood apple, monkey fruit, curd fruit	*Limonia acidissima*
Barthua	Bridal couch tree, sage plant	*Hymenodictyon excelsum*
Basant	Yellow flax, golden-girl	*Reinwardtia indica*
Basuti	Malabar nut	*Adhatoda vasica*
Batindu		*Stephania elegans*
Behra	Belleric myrobalan	*Terminalia belerica*
Bel	Stone apple, holy fruit tree	*Aegle marmelos*
Ber	Jujube	*Zizyphus mauritiana*
Berna	Three-lived-caper	*Crataeva religiosa*
Bhabar, Bagar	Baib grass	*Eulaliopsis binata*

Local Name	English Name	Botanical Name
Bhadrun		*Gymnosporia royleana*
Bhakara		*Saurauja napaulensis*
Bhang	Hemp, marijuana	*Cannabis sativa*
Bharmela		*Euonymus pendulus*
Bhirang	Shrubby deeringia	*Deeringia celosioidses*
Biul, Dhaman		*Grewia oppositifolia*
Bohar,Barh	Bengal fig, Indian fig	*Ficus bengalensis*
Burkani	Wild-berry	*Maesa indica*
Cha buti	Billygoat-weed, Chick weed, Goatweed, Whiteweed	*Ageratum conyzoides*
Chakunda	Negro coffee, coffee senna	*Cassia occidentalis*
Chamar bel	Bush Grape, fox-grape, three-leaved wild vine, threeleaf cayratia	*Cayratia trifolia*
Chamar Saman	Velvety melon feather-foil	*Glochidion velutinum*
Chamorar		*Ehretia laevis*
Charaki	Charming clematis	*Clematis grata*
Chhittar Chhun	Drooping prickly pear	*Opuntia monacantha*
Chhota Mendhru	Cape-myrtle, African box-wood	*Myrsine africana*
Chil	Chir-pine	*Pinus roxburghii*
Chilla	Downy-leaved false kamela	*Casearia elliptica*
Chirandi	Dandal	*Xylosma longifolium*
Chopar chilla		*Miliusa velutina*
Coibur,machrun		*Clematis nutans*
Dagur	Hairy fig, devil fig	*Ficus hispida*
Damani	Two-lobed cross berry	*Grewia laevigata*
Dargarhi	Himalayan mimosa	*Mimosa himalyana*
Dhakkari	Arni	*Clerodendrum phlomidis*
Dhao, Chhal	Axlewood	*Anogeissus latifolia*
Dhawin,Dhawi	Fire-flame bush	*Woodfordia floribunda*
Dholu		*Chrysopogan montana*
Dhurmalti	Jasmine	*Jasminum arborescens*
Drek, dek, beakin	Persian cedar, white lilac	*Melia azederach*
Dudh bel	Bread-flower	*Vallaris heynei*
Dudla	Willow leaved fig	*Ficus nemoralis*
Dudli	Telegraph Plant or Semaphore	*Desmodium motorium*

Local Name	English Name	Botanical Name
	Plant	
Dura, Dogla, fegra	Wild Himalayan fig	*Ficus palmata*
Dusen	Indian squirrel tail	*Colebrookia oppositifolia*
Faindal	Christmas vine, snow-creeper, bridal-wreath	*Porana paniculata*
Flah, Dhak	Flame of the Forest, Bastard Teak, Parrot Tree	*Butea monosperma*
Gaddi Kuri	Spinous kino tree	*Bridelia squamosa*
Gajal Bel	Cowhage, velvet bean	*Mucuna pruriens*
Gandla	Curry leaf tree	*Murraya koenigii*
Ghanira Ghandheela	Oleander	*Nerium odorum*
Ghas bel	Dodder	*Cuscuta reflexa*
Giddardak	Wild-grape	*Ampelocissus latifolia*
Ginani		*Premna barbata*
Girgithan	Mock buckthorn	*Sageretia parviflora*
Gullhan		*Halmintonia suaveolens*
Gulodan	Buckthorn	*Rhamnus trigaeter*
Handa Bhera	Slow-match tree	*Careya arborea*
Harar	Black myrobalan, gallnut tree	*Terminalia chebula*
Har singar		*Nyctanthes arbortristis*
Hyum Garna	Caperberry, Caperbush	*Capparis sepiaria*
Jagru	Tick-trefoil, tick clover or beggar lice	*Demodium velutinum*
Jaman	Black-plum	*Syzygium cumini*
Jaman Khumb	Indian sarsaparilla	*Cryptolepis buchanani*
Jamnota	Barbados nut, purging nut	*Jatropha curcas*
Japani toot, tutra	Paper mulberry	Broussonetia papyrifera
Jhol	Clematis gouriana, Indian traveller's joy	*Clematis gouriana*
Jindru	Himalayan randia	*Randia tetrasperma*
Jugter bhur bel		*Aspidopterys wallichii*
Jung kinch	Wild yam	*Dioscorea deltoides*
Kachnar Karal	Malabar ebony, mountain ebony	*Bauhinia malabarica*
Kachnar, Karal	Budhist bauhinia, Mountain Ebony, Orchid tree	*Bauhinia variegata*

Local Name	English Name	
Kahi	Asian fodder cane	*Saccharum spontaneum*
Kainth	Wild Himalayan pear	*Pyrus pashia*
Kakal Ber	Jackal jujube	*Zizyphus oenoplia*
Kakrain	Zebra-wood	*Pistacia integerrima*
Kala Akha	Rough fruit-berry	*Rubus lasiocarpus*
Kala Dhao, hira harkinu	Mottled ebony	*Diospyros cordifolia*
Kalan	Kaim	*Mitragyna parvifolia*
Kali basuti	Patchouli	*Pogostemon plectranthoides*
Kamal	Monkey face tree	*Mallotus philippinensis*
Kandroi	Drooping fig	*Ficus Semicordata (syn. Ficus cunia)*
Kangu	Batoko's plum	*Flacourtia ramontchi*
Kante bans	Giant thorny bamboo	*Bambusa arundinacea*
Kao	Wild olive, iron tree, Indian oli	*Olea ferruginea*
Kapur mingar		*Strobilanthes auriculatus*
Karanda		*Ficus clavata*
Kararoi Tila pati		*Roylea cinerea*
Karmaru	black siris, fragrant albizia, Ceylon rosewood	*Albizzia odoratissima*
Karun	Himalayan mulberry	*Morus serrata*
Kasakuri		*Trema politora*
Kathaman		*Eugenia jambolana Var caryophyllifolia*
Kathi	Cassia indigo	*Indigofera besua (syn. Indigofera pulchella, Indigofera leptostachya)*
Kehmal	Indian ash tree	*Lannea coromandelica*
Kendu	Mountain persimmon	*Diospyros montana*
Keor	Bitter oleander	*Holarrhena antidysenterica*
Khair	Cutch tree	*Acacia catechu*
Khajoor	Date-sugar palm, Indian winepalm, sugar palm, wild dat palm	*Phoenix sylvestris*
Khalawa	Woolly dyeing rosebay	*Wrightia tomentosa*
Kikkar	Indian gum-arabic tree	*Acacia Nilotica spp indica*
Kinnu	Persimmon tree	*Diospyros chloroxylon*
Kumbhi		*Cordia vestita*
Kuri,HarShingar	Coral Jasmine, Tree of Sorrow,	*Nyctanthus arbor tristis*

Local Name	English Name	Botanical Name
	Queen of the night	
Lambh	Black spear grass	*Heteropogan contortus*
Lambi	Wire-grass, spear-grass	*Aristida depressa*
Lantana,Ukkal Buti	Spanish flag, lantana	*Lantana camara*
Lasura	Assyrian plum	*Cordia myxa*
Ligga	Daar	*Boehmeria rugulosa*
Lunji	Brown sorghum	*Sorghum nitidum*
Maggar(Cultivated)	Bamboo	*Dendrocalamus hamiltonii*
Mahua	Indian butter tree	*Madhuca indica*
Makora Gha	Indian geranium grass	*Cymobopogan martinii*
Malti	Jasmine	*Jasminum Grandi florum*
Maltiwan	Hiptage	*Hiptage madablota*
Mandhar	Florida hopbush	*Dodonaea viscosa*
Mara	Bishop wood, Java wood	*Bischoffia javanica*
Maror Phalli	East Indian Screw Tree, Nut Leaved Screw Tree	*Helicteres isora*
Masandaru		*Linoceira intermedia*
Mirgu	Thunberg kutzu vine	*Cassine glauca*
Mund Bel	Sneeze Wort, Cotton milk plant Green milkweed climber, Green wax flower, Sneezing silk	*Wattakaka volubilis*
Nargan	Orange jasmine	*Murraya paniculata*
Nim	Indian lilac	*Azadirachta indica*
Ohi	Chinese albizia, silk tree	*Albizzia chinensis*
Padal	Yellow snake tree	*Strereospermum suaveolens*
Padar	False nettle	*Boehmeria platyphylla*
Padari, pilkhan, pakur	White fig	*Ficus Virens (syn. Infectoria)*
Palakh	Rumpf's fig	*Ficus rumphii*
Pansera	Tilki	*Wendlandia heynei*
Panwar	Foetid cassia, The Sickle Senna Wild Senna	*Cassia tora*
Parand	Honey-suckel mistle-toe	*Dendrophthoe falcate (syn. Loranthus longiflorus*
Parara,Paliro	Corky coral tree, flame tree	*Erythrina glabrescens*
Paror	Laurel-leaved snail tree	*Cocculus laurifolius*
Phalai	Amritsar-gum , black sally,	*Acacia modesta*

Local Name	English Name	Botanical Name
	blackwood	*Grewia elastica*
Phalsa	Dhaman	*Ficus religiosa*
Pippal	Sacred fig	*Drypetes roxburghii (syn. Putranjiva roxburghii)*
Putajen	Child-life tree, Indian Amulet Plant, Spurious Wild Olive	*Holoptelea integrifolia*
Rajain,Pardesi	Indian elm, kanju	*Caesalpinia decapetala*
Ralan, Arlu	Mysore thorn, cat's claw	*Agave americana*
Ram ban	Century plant	*Xeromphis spinosa (syn. Randia dumetorum)*
Rara	Emetic nut	*Abrus precatotius*
Rattak	Crab's eye	*Acacia leucophloea*
Reru, riur	White babool, Distiller's acacia	*Litsea chinensis*
Rihan, meda-lakri	Indian laurel	*Sapindus mukorossi*
Ritha	Soap-nut tree	*Ficus sarmentosa*
Rudhar		*Ficus racemesa*
Rumbal	Cluster fig	*Tectona grandis*
Sagwan	Teak	*Ehretia aspera*
Sakar		*Shorea robusta*
Sal	Yellow Balau	*Millettia extensa*
Salangan		*Pueraria tuberose*
Salod	Indian kudju	*Engelhardtia spicata var colebrookia*
Samma		*Moringa oleifera*
Sanan Suhanjua	Drum-stick tree	*Ougeinia oujeinensis*
Sandan , sanan		*Celastrus panicultus*
Sankhiran	Black-Oil tree, Climbing-staff plant	*Jusminum disparmum*
Sarain	Jasmine	*Periploca calophylla*
Sarpri		*Osyris wightiana*
Sason	Wild tea	*Asparagus racemosus*
Satmnlia,Musli	Wild asparagus	*Dalbergia sissoo*
Shisham, Tali	Bombay blackwood, Indian rosewood, sissoo	*Morus laevigata*
Siah toot	Black fruited mulberry	*Morus australis*
Sia-toot	Japanese mulberry, Korean mulberry, Small-leaved mulberry tree	*Bombax ceiba*
Simble	Silk cotton tree	

Siris, Sar...	flea-tree	
Sukhchain	Pongam	*Deriss Indica (syn. Pongmia pinnata)*
Tatpalanga	Broken bones plant, Indian calosanthes, Indian Trumpet,	*Oroxylum indicum*
Terni		*Tylophora hirsuta*
Thor, Choon	Royle's Spurge	*Euphorbia royleana*
Toot	White mulberry	*Morus alba*
Tor	Camel's foot climber, malu-creeper	*Bauhinia vahlii*
Tun	Indian cedar, Indian mahogany Indian toon	*Toona cilata*
Unga	Aramina Fibre, Congo Jute	*Urena lobata*

****

LIST OF COMMON ANIMALS AND BIRDS

Local Name	English Name	Scientific Name
	MAMMALS	
Adjgar	The Viper	*Vipera Russellii*
Bagh	Leopard	*Panthera pardus*
Ban billi	Leopard cat	*Felis bangalensis*
Bejoo	The Honey Badger	*Mellivora expensis*
Chamgadar	The Bat	*Pteropus medina*
Chuchundar	The Gray Musk	*Suncus Caeruleu*
Lamab	The Common Ratsnake	*Bungarus mucosus*
Giddar	Jackal	*Canis aurenus*
Gilehri	The Squirral	*Funanbulus pennanti*
Goh	The Land Monitor Lizard	*Varanus bengalensis*
Jangli billi	Jangle cat	*Felis chaus*
Kachuha	The common Land Tortoise	*Testudo flagans*
Kakkar	Barking deer	*Muntiacus-Muntjak(vaginlis)*
Khargosh	Hare	*Lepus nigricoilis*

Local Name	English Name	
Kirla (Girgit)	The Indian Chamaleon	*Chameleon calcartus*
Kirli	The Common House Lizard	*Hemidactylus gleadovii*
Lal Bandar	Rhesus monkey	*Macaca mulatta*
Langoor	Langoor common	*Preshytes entellus*
Lomari	Lomari	*Vulpie bengalensis Fox*
Nag	The King Cobra	*Naja hamoh*
Nilgai	Blue bull	*Boselaphus tragocamelus*
Para	Para	*Hog deer*
Phaniar	The Common Cobra	*Naja tripudians*
Sambhar	The Sambhar	*Cervus unicoler*
Saup	The Common Warm Snake	*Typhlops braminus*
Seh	Porcupine	*Hystric indica*
Suar	Wild boar	*Sus sacrofa*
	BIRDS	
Bagla	The grey Heron	*Ardea cinera*
Bagla	The little Egret	*Egretta garzotta*
Batair	The common quail	*Cotarnix cotarnix*
Bhojanga or Hojanga	The King Crow	*Dicrurus macrocucus*
Bulbul	The redvented bulbul	*Molpastar cafer*
Chhota Falta	The Indian Spotted Dove	*Stroptapelia shinensis*
Fakta	The Indian ring dove	*Stroptapelia decaocto*
Hudhud	The Hooper	*Upapa epops*
Jangli Murga	The Jungle fowl	*Galus gonnerathi*
Jangli Murghi	The red jungle fowl	*Gallus galus*
Kabutar	The blue rock pigion	*Columberalivia*
Kaikil	The common king fisher	*Aleedo atthis*
Kala Titar	The black partridge	*Framcolinus francolinus*
Koel	The Koel	*Endynamis seolopaceus*
Maina	The Common myna	*Acrdothere tristris*
Mor	The common pea fowl	*Paro cristetus*
Murgabi	The Indian duck	*Anas poeciborhyncha*
Neel Kanth	The Blue Jay or Roller	*Coracia bengalensis*
Pahari Bulbul	The red whiskered bulbul	*Otocompsa jacosa*
Pahari Kowva	The Himalyan Jangle Crow	*Corbus bevaillonti*
Pahari Titar	The hill partridge	*Arborophila forgueola*
Safaid Bagla	The cattle Egret	*Bulbulcus ibis*
Selva kabutar	The eastern stock pigion	*Colamba oena*
Tatiri	The wattled lapuring	*Lobivanallus indicus*
Titar	The gray partridge	*F pondicrianus*

Local Name	English Name	Scientific Name
Tota	The large Indian Parakeet	*Psittacula eupatria*
	REPTILES	
Azgar	Python	
Goh	Monitor Lizard	
Gunther	Pit viper	
Kala Nag	King Cobra	
Lamab	Rat Snake	
Nag	Cobra	
	FISH	
Deola	Murral	
Godh	Ecl	
Karad	Backwa	
Maha-sher	----	

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PART - I

Summary of facts on which proposals are based

CHAPTER I

THE TRACK DEALT WITH

1.1 NAME AND SITUATION

This working plan deals with Reserve Forests of Amb Tehsil of Una District managed under 6th working plan of Una forest division. The track lies between longitude 71°55' to 76°28'(East) and latitude 31°21' - 31°50'(North). It is bounded on north by Kangra District (Dehra Forest Division) east by Bangana tehsil (Erstwhile Kutlehar jagir) south by Ropar District and west by Hoshiarpur District of Punjab State. The erstwhile Kutlehar Jagir Forests which are now a part of Una Forest division managed under separate working plan and are out of purview of this working plan.

The forests are situated in the northern part of the tract. The total geographical area of Una district is 1540 Km^2.The area of the tract dealt with is 1137 Km^2. The reserve forests dealt in this working plan cover about 3.86 of the area dealt with. The head quarter of the division is at Una.

1.2 CONFIGURATION OF THE GROUND

The altitude of the track varies from 335 m (Santoshgarh) to 981 m (Chintpurni temple) above mean sea level. The configuration varies from flat land in major portion of southern half to extra ordinary broken and precipitous slopes along Chintpurni and Katar Dhars. There are two principal ranges:

1.2.1 **Chintpurni Range:** It commences near Ghati on the Beas and runs south east wards forming the boundary of Kangra and Una District from village Pacca-Tiala onwards. On its south wards passage, it increases in width and height and the highest point is Chintpurni Temple. Up to this point, the formation is reasonably uniform; the hills sloping down to the Beas and Swan in a series of undulating valleys. The configuration thereafter is peculiar and the elevation drops steeply and views from above, appears to be a gently sloping table land running down to either side. Actually it is a tangled mass of hills, with tops varying from flat plateaus to sharp ridges, cut up by deep nalas with precipitous sides. The considerable part is inaccessible, the only paths being along the beds of torrents full of quartzite stones and in places hemmed in sheer walls of rock or precipitous slopes.

1.2.2 **Katar Dhar:** - This runs South east wards and generally forms the boundary with Punjab. It is only at a few places that the boundary crosses into side of the dhar. The dhar commences from near Talwara and runs up

to Ropar and so far as the tract dealt within this plan is concerned, the dhar extending from near Marwari to Bathri is in Una Forest Division. The slopes are steep, broken and inaccessible except through the beds of the torrents. The forests along this dhar are either private or erstwhile village common lands vested in Govt under The Village Common Lands (Vesting and Utilization) Act, 1974, however still not handed over to Forest Department for scientific management.

1.3 GEOLOGY, ROCK AND SOIL

In Una District, rocks exposed belong to Shiwalik formations. The rock units are encountered on South-West of Solasinghi Dhar (Choumukhi Dhar) forming low parallel ridges separated by wide valleys. The hill ranges generally run in NW-SE direction that being the strike of the formation with low to medium NE dips. On the South-West side of Solasinghi dhar come almost vertical Pinjor beds, then another strike fault- the Kesori fault separating the Pinjors from asyncline of middle Shiwalik containing an outlier of the Pinjors, followed on the South-West by an asymmetrical anticline which is on the same tectonic line as the Naina Devi flexture.
The various rocks units encountered in the district are described below:

1.3.1 Lower Shiwalik:-These rocks are exposed south West of Sola Singhi Dhar. These consist of coarse grained, grayish, purple, ferruginous micaccous sandstone alternating with purple shales. Shales have usually poor bedding planes whereas sand stone is properly bedded and contains fossil palm wood as well as semi decomposed tree trunks. The rocks encountered south west of Ambota represent Kundlu and Nalagarh formations belonging to this group and are exposed along the border of Punjab. At most of the places the fossil wood beds are absent while following the strike of the beds in NW direction, these are generally overlain by Pinjor boulder conglomerates

1.3.2 Upper Shiwalik:-These formations are encountered on either side of Swan River and run in NW-SE direction starting from its boundary with Kanga District in NW up to boundary with Punjab in SE up to Mehatpur. These formations occupy the major portion of the district and are composed of grey, soft, friable, grained sand stone with bands of grayish, green and purple clay bands. These are interblended with boulder beds. Boulder beds are poorly cemented and quartzitic in nature.

1.3.3 Pinjor Boulder Bed: - These in admixture with conglomerates are between Suri in SE and Gindpur in NW along the boundary with Kangra District. These are also exposed NW of Ambota up to boundary along Kangra and Hoshiarpur District. The boulders consist of white, spotted and ferruginous strained

quartzite. A little percentage of boulders consists of granite and lime stone. The matrix cementing the boulders and loose sand and prone to weathering. The white quartzite boulders are suitable for manufacturing glass and recent surveys conducted in certain streams indicate that white quartzite boulders comprise about 9% of the total boulder material.

1.3.4 **SOIL:** - The soil is mostly alluvial and colluvial and often mixed with gravels and pebbles along Khad/Nala banks. The texture varies from fine sand to sandy loam. Such soil tends to dry up soon with the general deficiency of moisture in dry periods of the year. From the available data, it will be advisable to determine suitability of different sites for rising of soil is important factors to classify these sites. The existing natural vegetation also provides a useful guide to determine site suitably.

1.4 CLIMATE AND RAINFALL:-

1.4.1 **CLIMATE:** - The climate of the area is generally subtropical. Summer months are rather hot and winters are cold. Main drought periods are from May to June and October to mid-December. Drought in May, June is generally acute. Major amount of the precipitation is received from the monsoons during rainy season. The minimum and maximum temperature at Una during winter and summer are as given below:-

Period	Oct.-Mid March	Mid-March-June	July-Sept.
Weather	Cool	Hot	Humid
Humidity	84%	55%	98%
Temperature Max.	33.0c	45.5c	35.0c
Min.	-3.5c	8.0c	14.0c

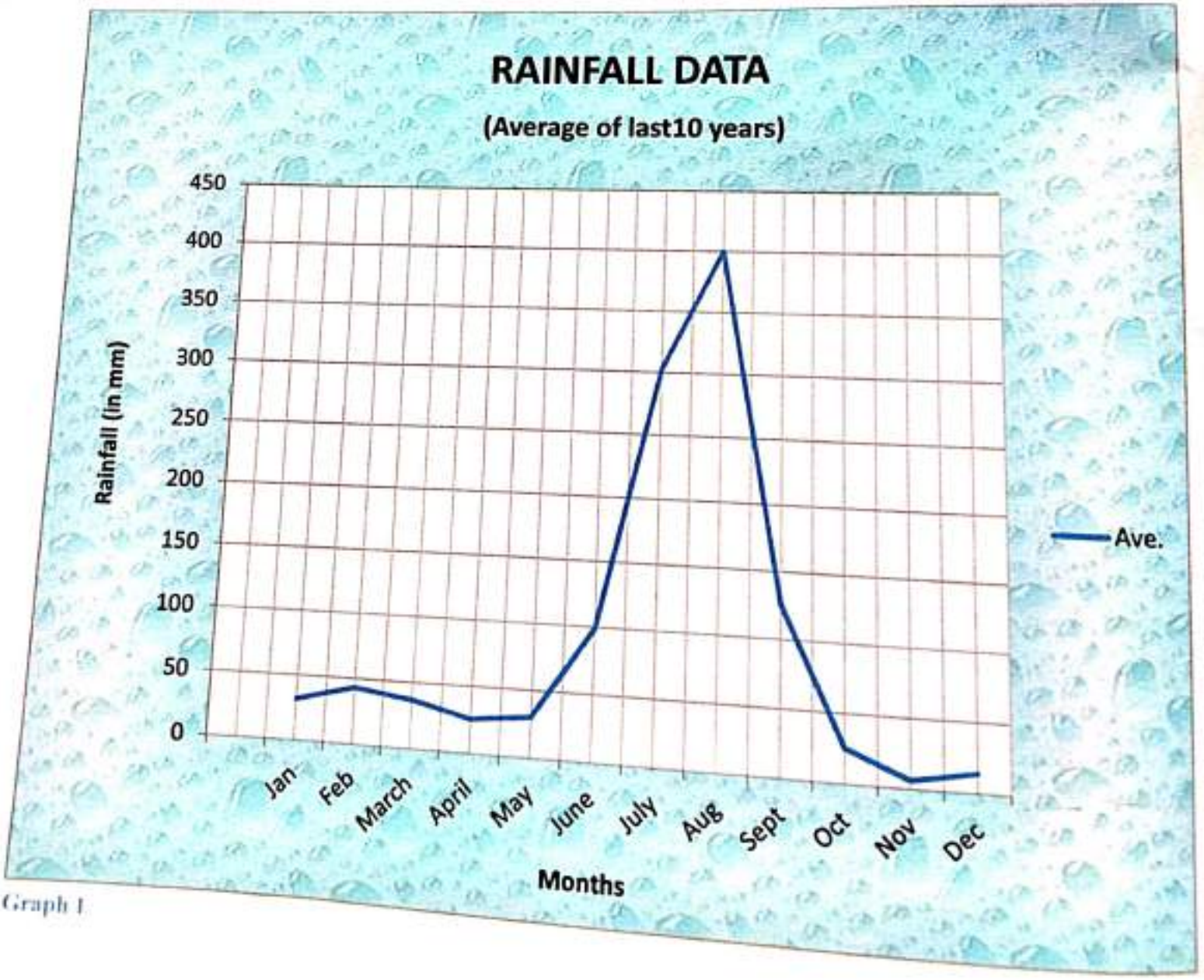
1.4.2 **RAINFALL:** - The tract receives most of the rainfall during monsoon season. A few showers at longer intervals, however, occur in the remaining parts of the year also. The extent rainfall however, decreases with movement towards Una. Rainfall occurs in torrential down pours and causes landslides and severe erosion. Hailstones in the spring are also common occurrences and course considerable damage to the standing wheat crop. Winter rains are scanty. An average rainfall data is as follows for five years as per report of Meteorological Department.

RAINFALL STATISTICS

S.N	Month	Year										Ave
		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	
1	Jan	18.05	46.6	57.06	99.4	41	15.4	0	16.3	14.6	10.8	31.
2	Feb	3.0	21.9	87.4	9.5	116.2	1.3	98.1	14.2	45	38.4	43
3	March	20.01	30.7	66.9	0	57.7	32.8	137	0	21.8	2.4	26

S.N	Month	2001	2002	2003	2004	2005	2006	2007	2008			
4	April	86.03	31.5	14.3	31.2	6.0	14.3	25.3	18	31.2	1.3	25.91
5	May	31.7	29.2	1.6	13.3	39.4	83.6	15.3	12.2	25.3	52.4	30.4
6	June	0	53.5	79.1	104.3	65.4	146.9	127.4	292.8	44.2	79.5	99.31
7	July	307.7	144.9	328.20	248.9	300.7	313.8	244.1	439	430.9	270.4	302.9
8	Aug	359.7	526.7	257.9	187.0	239.8	506.9	506.9	551.4	454.3	409.6	400
9	Sept	44.1	137.63	258.2	98.9	106.9	138.7	86.3	90.4	84.1	217.9	126.3
10	Oct	0	12.1	0	127.2	0	23.8	1.6	36.7	20.6	35.1	25.71
11	Nov	7.3	0	13.5	3.3	0	4.5	0	0	30.2	5.8	6.46
12	Dec	14.8	0	4.3	24.4	0	26.5	12.3	0.5	0	58.7	14.15

Table 1



Graph 1

1.4.2 **SNOWFALL:** - The snowfall in the region is very rare, however this rare occurrence was observed in the area on 7th January, 2012 when 4" snowfall was recorded at Bharwain.

Photograph 1 (Snowfall in the compound of Range Office at Bharwain)

1.5 WATER SUPPLY

The principal stream of the tract constituting Una Forest Division is Swan River which joins Sutlej about 14 km. down Santoshgarh and the Beas River near Sansarpur Terrace, the watershed being near Daulatpur Chowk. The Swan is the Cho par excellence. During the rains it is transformed in to a broad river and abounds in quick sand; but at other times it is a petty stream divided into 2-3 channels almost lost in sandy bed. The water is not more than one metre deep. During summer dearth of water prevails over the greater part of the area even with the implementation of water supply schemes. Recently many big and small water harvesting structures/ Dams have been constructed under Swan Project.

1.6 DISTRIBUTION AND AREA

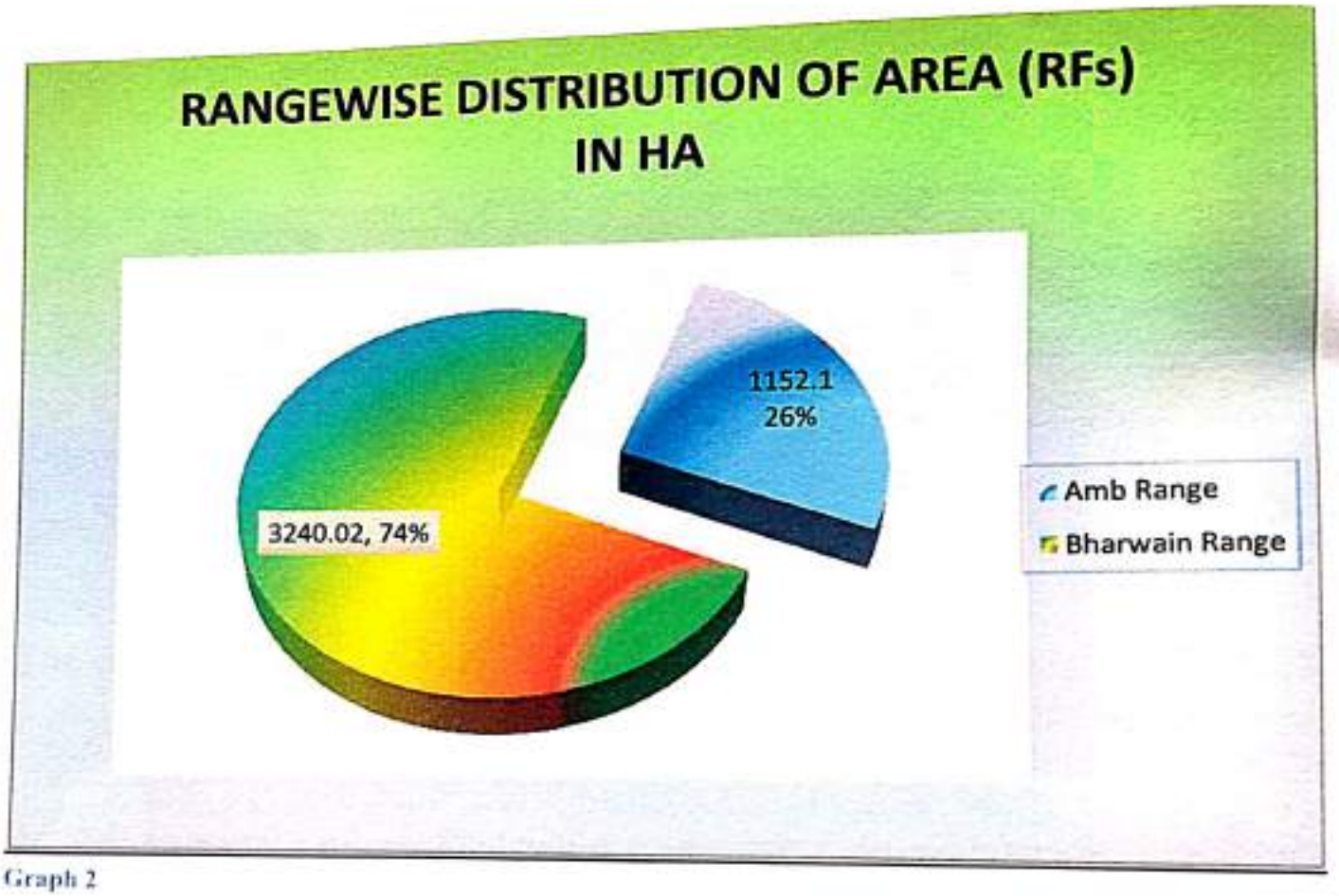
This working plan covers all in the reserved forests falling under Amb and Bharwain ranges of Una forest division. The total area is 4392.1 ha out of which 1152.12 ha falls under Amb range and 3240.02 ha under Bharwain range. The area of included cultivations existing in different compartments and working circle wise allotment are given in Appendix-1.

The area of forest as per

RANGE WISE FOREST AREA

Range	R.Fs	Total
Amb	1152.12	1152.12
Bharwain	3240.02	3240.02
Total	**4392.14**	**4392.14**

Table 2



Graph 2

The area of Forest as per records of Forest Department is compared with that a per Revenue records in the following table.

COMPARATIVE STATEMENT OF FOREST AREA

S.N	Name of Forest	Area(ha) as per record		Variation
		Forest	Revenue	
	RESERVE FORESTS			
1	R-I Panjal	1445.99	1481.96	35.97
2	R-II Lohara-A	1060.71	1191.84	131.13

S.N	Name of Forest	Area(ha) as per record		Variation
		Forest	Revenue	
3	R-II Lohara-B	733.32	736.2	2.88
4	R-III Dharuhi- A	387.7	386.13	-1.57
5	R-III Dharuhi- B	226.63	242.69	16.06
6	R-III Dharuhi- C	79.27	82.74	3.47
7	R-III Dharuhi- D	256.98	276.3	19.32
8	R-III Dharuhi- E	3.24	3.7	0.46
9	R-III Dharuhi- F	114.93	118.7	3.77
10	R-III Dharuhi- G	83.37	87.74	4.37
	Total Area of R.Fs	**4392.14**	**4608**	**215.86**

Table 3

D.F.O will ensure corrections in the area of forests in his record. Compartment se area must be reconciled after joint inspection of each Compartment by the officials of evenue department and Forest department.

Diversion cases w.e.f. 1996-97 to 2011-12 pertaining to area diverted in Una Working Plan

Sr. No.	Name of proposal	User Agency	Extent of forest land transferred (ha)	Status
	2003-04			
1	Construction of VHF Repeater station.	Punjab Police Department	0.0504	Finally approved vide letter No. 9-1641/2003-ROC dated 4.9.03
2	Diversion of 0.2959 ha. of forest land in favour of Radha Soami Satsang Beas Dera Jaimal Singh Society, Bhater.	Radha Soami Satsang Beas, Kalu-di-Barh.	0.2959	Approval in Principle vide No. 9-1838/ 2003 –ROC/1857 dated 2.12.03
	2006-07			
1	Diversion of 10.14.54 ha of forest land for the const. of Railway line from Churaru-Takarla-Amb Aandora section.	Railway	10.14.54	Finally approved vide letter No. 9-HPC2536/ 2004-CHA/4193 dated 15.9.06.

Sr. No.	Name of proposal	User Agency	forest land transferred (ha)	
2.	Widening of Mehatpur to Dhusara portion Km. 5/600 to 31/300)	HPPWD	11.31 Ha.	Finally approved vide letter No. 9-HPC 298/2007-CHA/ 4307 dated 21.5.2008.
	2008-09			
1	Widening of Una to Barnoh road portion (Km. 0/00 to 4/00)	HPPWD	2.00 ha	Finally approved vide letter No. 9-HPB272/ 2007-CHA/2944 dated 4.4.2008.
2.	Widening of Dhusara to Amb portion (Km. 31/300 to 50/300)	HPPWD	3.80	Finally approved vide letter No. 9-HPB297/ 2007-CHA/2895 dated 4.4.2008.
	2009-10			
1.	Construction of Fatehpur to Sanjoi road, KM 2/00 to 4/345	HPPWD	1.40.70 ha.	Finally approved vide letter No. 9-HPB833 /2006-CHA/1825 dated 1.4.2009.
	2010-11			
1.	Addl. widening of Mehatpur to Dhusara (Km. 5/600 to 31/300)	HPPWD	0.502 ha	Finally approved vide letter No. 9-HPB579/ 2010-CHA 13057 dated 5.8.2010.
2.	Addl. widening of Mehatpur to Dhusara road (Km. 5/600 to 31/300)	HPPWD	0.142	Finally approved vide letter No. 9-HPB578/ 2009-CHA 13052 dated 5.8.2010.
	2011-12			
1	Diversion of 0.0685 ha forest land in favour of Northern Railway for construction of Railway line in village Kad.	Railway	0.0685	Approval in principle during 9/2011 vide letter No. 9-HPB668/2011-CHA/8016 dated 28.9.2011

Table 4

1.7 STATE OF BOUNDARIES:

1.7.1 The boundaries of all Reserved Forests are demarcated with large pillars of loose stone masonry erected at re-entrant angles and with smaller intermediate pillars of similar construction. The internal boundaries are also demarcated by small pillars but the included cultivation is not always so demarcated. The routine of clearing boundary lines has not been followed. Some of the boundary pillars need immediate repairs/reconstruction. All boundary pillars of reserve forests of Bharwain range are being replaced with railway girders.

1.7.2 Expenditure incurred on repair of boundary pillars during the year 2006-07 to 2010-11 is given as below:-

EXPENDITURE ON BOUNDARY PILLERS

Year	Expenditure incurred (Rs.)
1996-97	-
1997-98	6597-00
1998-99	15500-00
1999-2000	10162-00
2000-01	7097-00
2001-02	12400-00
2002-03	-
2003-04	10000-00
2004-05	19730-00
2005-06	13895-00
2006-2007	9480-00
2007-2008	23525-00
2008-2009	-
2009-2010	171140-00
2010-2011	-

Table 5

1.8 LEGAL POSITION

The forests were earlier undemarcated and in small bits. The demarcation was first taken up about 1848-49 at the time of first regular settlement (1852). The work of demarcation was taken up during the years 1870-72 when 9 blocks extending over 4376.02 ha in tappas Panjal, Lohara and Dharuhi in the then Una Tehsil of Hoshiarpur district of Punjab were demarcated by Roe and Duff on the principles of 'give and take' and the three forests Panjal, Lohara and Dharuhi were gazetted as reserved forests under section 34 of the Indian Forest Act, 1878 in the

notification No. 110 F dated 6 March, 1879. In addition to this, with the coming in of the HP Village Common land (Vesting and Utilization) Act, 1974, the ownership of land of D.P. and U.P. forests hitherto owned by the proprietors now vests in the State Govt . All trees growing in the protected forests, subject to right of Bartenders.

1.9 RIGHTS AND CONCESSIONS:-

The rights of way and to water cattle during hot weather exist in Reserved Forests. In Lohara-B and Dharuhi-A right to graze 500 goats and sheep was given to two Gaddis. 327 in Lohara-B and 173 in Dharuhi-A in the later on payment of double the ordinary grazing fee.

DETAIL OF ANIMALS GRAZED

Year	Number of Animals					Total
	Sheep	Lambs	Goat	Kids	Others	
1996-1997	261	70	109	148	0	588
1997-1998	261	140	119	154	0	674
1998-1999	261	140	119	154	0	674
1999-2000	261	105	119	156	8	649
2000-2001	261	140	119	156	5	681
2001-2002	261	140	119	151	7	678
2002-2003	261	140	119	74	7	601
2003-2004	391	140	139	154	8	832
2004-2005	436	145	144	159	7	891
2005-2006	436	160	144	159	9	908
2006-2007	436	160	144	159	11	910
2007-2008	436	160	144	145	11	896
2008-2009	436	160	140	145	11	892
2009-2010	436	160	140	145	11	892
2010-2011	436	160	140	145	11	892

Table 6

CURRENT RATE OF GRAZING

Type of Animal	Goat	Sheep	Cow	Buffalo
Rate/Animal (Rs.)	Rs. 1	40 paisa	Rs. 4	Rs. 16

Table 7

The grazing rates be revised and rationalized as the present rates are very much c lower side.

CHAPTER II

FLORA AND FAUNA

CHAPTER II A
Forest Flora

2A.1 TREES

2A.1.1 Occurrence and distribution of species: - The forests are confined to the northern half of Una district. The variation in the vegetation met with in the area mainly due to altitude, edaphic and biotic factors. The forests are essentially low hills or outer Shiwalik type. The forests can be divided into 2 types in general such as:

2A.1.2 The miscellaneous broad leaved species are found throughout the tract. The common miscellaneous broad leaved species are Acacia catechu, Anogeissus latifolia, Lannea coromandelica, Albizzia lebbek, Albizzia odoratissima, Kydia calycina, Carearia elliptica, Cassia fistula, Mallotus phillipinensis, Zizyphus mauritiana, Ougeinia ougeinensis, Limonia acidissima, Diospyros Montana and Shorea robusta etc. But none of these species grows to a size as can yield useful timber. Acacia catechu is the most economic species and the main produce is Katha and fuelwood.

2A.1.3 The Chil (Pinus roxburghii) is found between 500 m to 820 m height above mean sea level. It is found pure and also mixed with miscellaneous broad leaved species. It is next important species and produce timber, resin, pulpwood and charcoal.

AREA BY SPECIES					
Range	Class of forest	Misc. broad leaved	Misc. broad leaved and chil	Misc. broad leaved chil & Sal	Total
Bharwain	Reserved	27.33	2684.48	528.21	**3240.02**
Amb	Reserved	311.63	697.26	143.23	**1152.12**
Total		**338.96**	**3381.74**	**671.44**	**4392.14**

Table 8

2A.2 COMPOSITION AND DISTRIBUTION OF GROWING STOCK:-

In almost all the areas adverse biotic influence like excessive grazing lopping and felling etc. and fires have deteriorated the composition and condition of crop. The entire tract is a state of retrogression. The detailed description of each forest or compartment or sub compartment has been given in the compartment history files along with information regarding locality factors under growth and stock map on 1:15000 scales. The forests of the tract may be broadly classified into the following two types and sub types based on A Revised survey of Forest Types of India by Champion and Seth (1964)'

	Group 5 B: -	**Northern Dry Deciduous Forests**
i)	**Type C2:-**	**Northern Dry Mixed Deciduous**
	Group 9:-	**Sub Tropical Pine Forests**
ii)	**Type C1:-**	**Himalayan Sub tropical Chil Pine Forests**
	A):	**Lower or Shiwalik Chil Pine Forests**

The main floristic of these types are described as under:-

2A.2.1 Type 5 B/C2-Northern Dry Mixed Deciduous Forests (Scrub):- This type of forests is on altitudes from 340m to 900m. They are at their best on sites with deep soil with favourable soil moisture conditions which are available only in pockets. Elsewhere, over major part, the upper canopy has got seriously broken due to biotic influences and thus scattered trees and small groups are now typical. In the climax stage, however, the canopy would be thin but fairly complete most trees having low spreading crowns. The sizable part of tract is occupied almost exclusively by small trees and shrubs such as Mallotus phillipinensis, Diospyros Montana, Acacia catechu, Nyctanthes arbortristis, Carrissa opaca and Mimosa rubiculis. The most important species of this type is Acacia catechu due to increasing demand and consequent high prices of katha. The other commercially important species is Shorea robusta which occurs in sizable pockets. Walters in his working plan of Kangra and Hoshiarpur Divisions (1920-21 to 1929-30) mentioned that Sal occurred in mixture in some of the reserved forests. The descriptions of Sal recorded therein say that Sal crop was composed of badly malformed and often stag headed stems and the saplings were estimated to be 390-40 years old. The old crop was, therefore, cut in hope of obtaining better crop of coppice shoots. Although the present state is transitional, yet the pole crop exhibits better growth.

Floristic:-

2A.2.1.1Trees:--Acacia catechu, Anogeissus latifolia, Lannea coromandelica. Aegle marmelos, Mallotus philipinensis, Flacourtia Indica, Limonia acidissima, Ehretia laevis, Zizyphus mauritiana, Ougeinia ougeinensis, Butea monosperma, Holoptelea integrifolia, Diospyrous Montana, Kydia calycina, Cassia Fistula, Mitragyna parvifolia, Casearia elliptica, Bauhinia variegata, Toona ciliate, Grewia elastic, Albizzia lebbek, Alblzzia odoratissima, Acacia modesta, Acacia nilotica, Acacia leucocephalla, Bombax ceiba, Litsea glutinosa, Syzyzium cuminii, Shorea rubusta, Emblica officinalis, , Erythrina glabrescens, Spondias pinnata,Wendlandia hevnei, Wrightia tomentosa.

2A.2.1.2. Shrubs:-Carissa opaca, Mimosa himalayana, Nycatanthes Arbortristis, Dodonea viscosa, Woodfordia floribunda, Adhatoda vassica, Murraya Koeingii, Zizyphus mauritiana, Holarrhena antidysentrica, Vitex negundo, Indigoferra dosua, Xeromphis spinosa.

2A.2.1.3 Grasses: - Chrysopogon montanus (Dholoo), Hetropogon contortus (lamboo), Chloris incomplete (Takkevmadhana), Themeda anathera (lunji), Bothriochloa pertusa, Mrachiaria spp., Eulaliopsis binata (Bhabbar), Arstida spp.

2A.2.1.4. Climbers: - Pueraria tuberose, Bauhinia vahlii, Acacia tora, Clematis Montana and cuscuta reflexa. The first two completely envelope the trees at places.

The total area under this type is estimated to be 886.25 ha and 20.2% of the total forest area.

2A.2.2 Type 9/Cla Lower or Shiwalik chil pine forests:-These are the most important forests of the tract occurring between 500 m to 820 m. The forests are greatly influenced by geological, geographical and topographical factors of the area. The pine stands singly or in groups with scattered lower deciduous tree storey more numerous in depression or on cooler aspects. There is usually continuous low scrub growth of xerophytic shrubs and trees typically on steep dry slopes on Shiwalik conglomerates and sand stone. It is mixed throughout with scrub which at places becomes dense and completely ousts the chil. In the north eastern part of Una district; the chil and scrub are mixed with scrubby sal which occurs in the form of underwood but sometimes is found in pure patches on flat hill tops or the banks or sides of nalas always on gravel. Most of the sal is stag headed and malformed due to frost damage. Being situated on its western limits it never attains good size. The chil trees are mostly mature, over-mature ,branchy, malformed and of poor quality and growth and often exhibit left handed twist; while occasionally groups of trees of good height and growth are met with on

soft sand stone covered with a thin [illegible] and in sheltered situations. The trees have low crowns and at places so low that a ground fire can easily damage them. This type of forests is in a state of fast retrogression primarily on account of fires and replacement of chil by khair.

Floristic:-

2A.2.2.1. Trees: Pinus roxburghii Terminalia tomentosa, Terminalia chebula, Mallotus philipinensis, Acacia catechu, Zizyphus mauritiana, syzygium cuminii, Diospyros Montana, emblica officinalis, Anogeissus latifolia, Lannea coromandelica, Butea monosperma, Holoptelea integrifolia, Cassia fistula and Shorea robusta etc.

2A.2.2.2 Shrubs: Carissa opaca, Nyctanthes arbortristis, Dodonea viscosa, Rubus ellipticus, Myrsine Africana, Cassia tora, Woodfordia floribunda, Murraya koeingii, Holarrhena antidysentrica, Colebrookia oppositifolia, Indigoferra dosua, Adathoda vassica etc.

2A.2.2.3Grasses: Chrysopogon montanus, Hetropogon contortus, Eulaliopsis binata, Themeda anathera, Aristida spp. etc.

Natural regeneration comes in profusely where there is less bush growth. It is however damaged either by fire or by grass cutters. Consequently, regeneration is scattered and deficient only. This type of forest occupies 3505.89 ha or 79.2% of total forest area.

2A.2.3 The distribution of above two types of forests by Ranges is tabulated below:

AREA BY FOREST TYPES

Kind of forest	Range	Type of forests		
		5B/C2 Northern Dry mixed Deciduous Forests	9/C1a Lower or Shiwalik Chil Pine Forests	Total
Reserved	Bharwain	443.15	2796.87	**3240.02**
Reserved	Amb	443.1	709.02	**1152.12**
Total		**886.25**	**3505.89**	**4392.14**

Table 9

2A.2.4.General description of growing stock:

The chil in Una Forest Division belongs to unstable type as classified by Mohan. Every year a large number of chil trees dry up due to fires and drought which are removed in salvage markings. The premature opening of canopy leads to profuse bush growth and appearance of khair. In case of fires the heat generated is so intense that all seedlings including those of chil are completely wiped out. The potential of such areas for plantations is quite good but repeated fires and consequent heavy removals are responsible for present degraded condition of forests. The other inimical factor inhibiting regeneration is the effect of grass cutting in which the seedlings are either cut or damaged at the base by the grass cutters.

The state of scrub areas is also similar where in addition to fires; the heavy incidence of grazing and soil erosion is degrading the forests. Although originally only 500 goats /sheep were allowed grazing in Lohara-B and Dharui-A forests but increasing number of animals is being grazed every year, often illegally, both by the gaddies and the local residents. The areas have degraded to the extent of becoming recalcitrant to Afforestation.

2A.3 Injuries to which the crop is liable:

The main agencies causing injuries to the crop during various stages of growth can be classified into following sub heads:-

2A.3.1 Natural Causes:-

2A.3.1.1 Drought: - This is most dreaded of all the unfavourable natural factors. The pre monsoon and post monsoon drought periods play an important role in the success of natural as well as artificial regenerations. The variation in natural rain fall influences the growth and development of forest species. The pre-monsoon drought leads to forest fires. In years of severe drought groups of trees on thin soil, spurs and ridges and scattered individual trees dry up. The mortality is not confined to old and resin tapped trees but poles and untapped trees also dry up; this is believed to be due to steady desiccation which is proceeding in this tract. The heavy incidents of grazing and grass cutting aggravate bad effects of drought.

2A.3.1.2.Frost:- The frost is common in the tract and causes severe damage to the young seedlings of khair and sal. The year 1929 and 1945 had very severe frost.

2A.3.1.3.Erosion:-The excessive grazing, browsing and repeated forest fires have caused and continue to cause erosion and denudation to an extent which seriously threatens the welfare of an over whelming agricultural tract. With the gradual opening up of canopy the problem of erosion is becoming severe and many hill sides are being reduced to barren, stony wastes.

Old perennial streams are drying up except during the monsoon when they become raging torrents. Often useless shrubs like Dodonea viscosa and Lantana camera infest the lower denuded areas whereas the ridges remain exposed and

2A.3.1.4.Wind: The wind stones caus... and to road side tress; particularly heavily tapped chil trees which are snapped, trees which are uprooted. The damage to chil trees has become a regular feature.

2A.3.2 Incidental to man:

2A.3.2.1.Fires:- Fires cause maximum damage to forest wealth. The forest fires are generally caused by man to get maximum fodder and grass for their cattle. With low and rugged hills and the low crown of the chil together with the dense under growth on which are suspended the dry and fallen needles, the damage is invariably great, the fire often develops into crown fire and results in the death of large number of trees. In fire burnt areas the exposed soil is more prone to severe erosion in next monsoon. Incendiarism encourages the recession and eradication of chil and stimulates the propagation of scrub. The fires have also caused serious damage to scrubs where Lantana camera is spreading. Fire kills young poles and wipes out seedlings and saplings. These destroy the micro flora and fauna, thus impending the soil forming process.

The chief predisposing causes of forest fires are drought, accumulations of pine needles, thick brushwood growth, abundance of dry grass and felling debris. The majority of the cases, the fires are results of neglect of farmers burning their ghassanies and the passengers who throw the lighted cigarette ends. Sometimes the fires are indicative in origin: at other times the fires are lighted to drive out the pigs from the forests with dense undergrowth. The fires have no become an annual feature.

Fires effect fertilization and seed production to a considerable extent. An early summer fire interferes with fertilization of cones and thus reduces seed production; while a late summer fire burns seed of the year and either kills or reduces the germination power of the seed in the cones of success ding years. Too close resin channels are another aggravating cause for the death of trees by burning of cambium all-round the trees. Following statements indicate the occurrence of fires from 1996-97 to 2010-11.

Sr.No	Year	No of cases	Extent of area affected (ha)
1	1996-97	4	24
2	1997-98	2	8.5
3	1998-99	19	86.95
4	1999-2000	47	1156.52
5	2000-01	3	9

Sr.No	Year		affected (ha)
6	2001-02	-	-
7	2002-03	6	160.5
8	2003-04	4	90
9	2004-05	-	-
10	2005-06	8	108.7
11	2006-07	1	3
12	2007-08	6	30.12
13	2008-09	35	729.90
14	2009-10	26	497.35
15	2010-11	17	258

Table 10

2A.3.2.2. Grass cutting:-Careless grass cutting in chil areas is most harmful. It has been one of the most important causes of general deficiencies of chil regeneration in the reserves of Una forest Division. The seedlings are cut in the process and also the ravages by monkeys and peacocks stimulated.

2A.3.2.3.Loping:- This damage is mostly restricted to the vicinity of villages. There are no loping rights in reserves of Una but the activity goes on due to scarcity of fodder in the lean months. Loping in scrub forests is very heavy during winter. The broad leave species lopped are Anogeissus latifolia, Bauhinia variegata, Bombax ceiba, Acacia Catechu, Albizzia lebbek, Albizzia-procera. The lopping leads to opening up of the canopy and exposure and degradation of soil and poor growth of the crop.

2A.3.2.4.Grazing and browsing: - Unrestricted the grazing by an excessive number of cattle, sheep and goats belonging to both the local people and gaddies has changed the very completion of natural vegetation in the entire tract. The damage has caused the elimination of economic species and their replacement by weeds like Carrissa spinarium, Nyctanthes arbortristis, Adhatoda vasica, Lantana camara and lowering the moisture and contents of the soil, thus making the raising of climax type of vegetation difficult. It has prevented and continuous to prevent any valuable hardwood seedlings, reproduction as the cattle devour the few seedlings that appeared during the closure in the rains.

2A.3.3 Lantana Infestation: Invasive species pose a very serious problem throughout the division. *Lantana camara* and *Ageratum* spp. are actively

growth. The distribution of

Lantana infestation in Reserved Forests

Name of Forest	Compartment No:	Area (in ha)	Infestation of Lantana			
			0-25% (in ha)	26-50% (in ha)	51-75% (in ha)	>75% (in ha)
BHARWAIN RANGE						
R-II Lohara	B.C.	43.52	3	25	15.52	
R-II Lohara	B.C.-2	50.04	15	15	20.04	0
R-II Lohara	B.C.-3	40.28	0	20	20.28	0
R-II Lohara	B.C.-4	34.61	4	10	20.61	0
R-II Lohara	B.C.-5	32.78	8	8	6.00	0
R-II Lohara	B.C.-6	39.26	4	15	10.00	10.78
R-II Lohara	B.C.-7	45.32	6	19	15.00	10.26
R-II Lohara	B.C.-8	62.32	8	24	15.00	5.32
R-II Lohara	B.C.-9	102.6	9	35	40.00	15.32
R-II Lohara	B.C.-10	100.36	11	22	35.00	18.6
R-II Lohara	B.C.-11	66.99	6	20	20.00	32.36
R-II Lohara	B.C.-12	87.00	17	30	40.00	20.99
R-II Lohara	B.C.-13	28.24	4	12	12.24	0
R-II Lohara	A.C.-1	33.99	4	15	6.00	0
R-II Lohara	A.C.-2	59.90	11	22	25.00	8.99
R-II Lohara	A.C.-3	18.62	0	4	10.00	11.9
R-II Lohara	A.C.-4	33.99	3	10	12.00	4.62
R-II Lohara	A.C.-5	30.35	3	8	9.00	8.99
R-II Lohara	A.C.-6	34.40	0.00	14.00	10.00	10.35
R-II Lohara	A.C.-7	40.47	0.00	10.00	15.00	10.40
R-II Lohara	A.C.-8	15.38	0.00	5.00	5.00	15.47
R-II Lohara	A.C.-9	59.90	0.00	15.00	15.00	5.38
R-II Lohara	A.C.-10	17.00	0.00	6.00	6.00	29.90
R-II Lohara	A.C.-11	40.87	0.00	12.00	13.00	5.00
R-II Lohara	A.C.-12	67.99	0.00	17.00	20.00	15.87
R-II Lohara	A.C.-13	39.26	0.00	11.00	9.00	37.99
R-II Lohara	A.C.-14	27.92	0.00	5.00	10.00	19.26
R-II Lohara	A.C.-15	77.70	0.00	25.00	25.00	12.92
R-II Lohara	A.C.-16	17.40	0.00	5.00	7.00	27.70
R-II Lohara	A.C.-17	71.63	0.00	12.00	20.00	5.40
R-II Lohara	A.C.-18	76.89	9.00	25.00	15.00	39.63
R-II Lohara	A.C.-19	71.23	6.00	25.00	20.00	27.89
R-II Lohara	A.C.-20	82.56	12.00	20.00	25.00	20.23
R-II Lohara	A.C.-21	30.76	5.00	12.00	9.00	25.56
R-II Lohara	A.C.-22	112.50	15.00			4.76

Name of Forest	Compartment No.	Area (in ha)	Infestation of Lantana			
			0-25% (in ha)	26-50% (in ha)	51-75% (in ha)	>75% (in ha)
R-I Panjal	C-1	85.50	10.00	25.00	25.00	25.50
R-I Panjal	C-2	47.75	7.00	15.00	15.00	10.75
R-I Panjal	C-3	83.78	8.00	27.00	25.00	23.78
R-I Panjal	C-4	27.11	0.00	7.00	10.00	10.11
R-I Panjal	C-5	21.04	0.00	7.00	6.00	8.04
R-I Panjal	C-6	58.28	0.00	9.00	21.00	28.28
R-I Panjal	C-7	56.66	0.00	16.00	20.00	20.66
R-I Panjal	C-8	54.63	0.00	14.00	20.00	20.63
R-I Panjal	C-9	47.92	0.00	17.00	20.00	10.92
R-I Panjal	C-10	44.52	0.00	14.52	15.00	15.00
R-I Panjal	C-11	27.11	0.00	7.11	12.00	8.00
R-I Panjal	C-12	43.55	0.00	13.00	15.00	15.55
R-I Panjal	C-13	38.08	0.00	12.00	20.00	6.08
R-I Panjal	C-14	78.92	0.00	18.00	30.00	30.92
R-I Panjal	C-15	51.80	0.00	11.00	20.00	20.80
R-I Panjal	C-16	36.42	0.00	9.00	18.00	9.42
R-I Panjal	C-17	38.45	0.00	12.00	12.00	14.45
R-I Panjal	C-18	57.87	0.00	17.00	30.00	10.87
R-I Panjal	C-19	17.40	0.00	7.40	10.00	0.00
R-I Panjal	C-20	31.16	0.00	5.00	20.00	6.16
R-I Panjal	C-21	30.35	0.00	5.00	10.00	15.35
R-I Panjal	C-22	31.97	0.00	12.00	10.00	9.97
R-I Panjal	C-23	22.44	0.00	8.00	10.00	4.44
R-I Panjal	C-24	36.83	0.00	8.00	15.00	13.83
R-I Panjal	C-25	37.43	0.00	7.00	20.00	10.43
R-I Panjal	C-26	23.07	0.00	5.00	8.00	10.07
R-I Panjal	C-27	29.12	0.00	9.00	10.00	10.12
R-I Panjal	C-28	50.99	0.00	25.00	25.99	0.00
R-I Panjal	C-29	30.76	0.00	10.00	20.76	0.00
R-I Panjal	C-30	50.18	0.00	25.00	25.18	0.00
R-I Panjal	C-31	39.36	0.00	19.00	20.36	0.00
R-I Panjal	C-32	47.25	0.00	27.00	20.25	0.00
R-I Panjal	C-33	26.71	0.00	16.00	10.71	0.00
R-I Panjal	C-34	41.68	0.00	20.00	21.68	0.00
TOTAL BHARWAIN RANGE		**3240.12**	**188.00**	**1022.00**	**1172.62**	**874.47**

Table 11

Name of Forest	Compartment No.	Area (ha)	(ha)	(ha)	ha)	(ha)
R.III Dharuhi		35.02	0.00	12.00	20.00	10.49
R.III Dharuhi	DC-3	4.45	20.00	0.00	10.00	5.02
R.III Dharuhi	GC-1	13.35	0.00	4.45	0.00	0.00
R.III Dharuhi	GC-2	28.33	0.00	0.00	8.00	5.35
R.III Dharuhi	GC-3	13.77	0.00	0.00	14.33	14.00
R.III Dharuhi	GC-4	23.47	12.00	5.00	5.00	3.77
R.III Dharuhi	GC-5	46.48	10.00	5.00	3.00	3.47
R.III Dharuhi	DC-4	12.36	8.00	0.00	20.00	16.68
R.III Dharuhi	DC-5	79.10	0.00	0.00	2.36	2.00
R.III Dharuhi	DC-6	33.99	0.00	20.00	40.00	19.13
R.III Dharuhi	BC-I	88.63	30.00	10.00	10.00	13.99
R.III Dharuhi	FC-II	26.30	10.00	20.00	20.00	8.63
R.III Dharuhi	FC-I	49.37	25.00	0.00	13.00	3.26
R.III Dharuhi	AC-2	149.33	20.00	10.00	15.00	29.37
R.III Dharuhi	AC-Ia	189.00	0.00	20.00	50.00	59.33
R.III Dharuhi	AC-Ib	19.42	0.00	50.00	40.00	99.00
R.III Dharuhi	BC-2	61.51	40	5.00	10.00	4.42
R.III Dharuhi	BC-3	28.73	20.00	0.00	15.00	6.51
R.III Dharuhi	BC-4	46.44	15.00	0.00	5.00	3.73
R.III Dharuhi	BC-5	36.83	0.00	10.00	15.00	6.44
R.III Dharuhi	BC-6	16.19	0.00	5.00	20.00	11.83
R.III Dharuhi	CC-I	23.42	0.00	5.00	8.00	3.19
R.III Dharuhi	CC-II	39.66	0.00	6.00	10.00	7.23
R.III Dharuhi	CC-3	3.24	0.00	8.00	20.00	11.66
R.III Dharuhi	EC-I	1068.39	210.00	0.00	0.00	3.24
Total AMB RANGE		**4308.51**	**398**	195.45	373.69	365.04
GRAND TOTAL				**1217.45**	**1546.31**	**1226.21**

Table 12

2A.3.4 ILLICIT FELLINGS: - The damage by illicit felling is very common throughout the tract and quite frequent along the roads. The gist of number of cases detected in the past is given in Table

Incidence of Illicit Fellings in Una since 1996

Year	No of cases detected	Estimated value of timber involved (Rs.)
1996-97	16	66997-00
1997-98	25	80375-00
1998-99	21	63383-00
1999-2000	47	168907-00

2000-01	29	204869-00
2001-02	44	144067-00
2002-03	38	64089-00
2003-04	45	102956-00
2004-05	26	47176-00
2005-06	23	115836-00
2006-07	22	382287-00
2007-08	42	121161-00
2008-09	11	208850-00
2009-10	25	378129-00
2010-11	20	423521-00

Table 13

2A.3.5: INJURY DUE TO FAULTY RESIN TAPPING & CONSEQUENCES:

Faulty resin tapping is the major factor of deterioration of Chil forest in the Division. It is perhaps the biggest threat to the forests. The RILL method was introduced several years ago. This is supposed to be less damaging to the tree if properly carried out. However, inspection of the Chil forests shows that neither the Corporation staff or the Forest staff or the Resin labour of the Contractor has been trained or have a clue of what the Rill method entails. Resin is profitable business for the Corporation which has a vested interest in maximizing yield and in this pursuit the chil trees are virtually being tapped to death, whereas the Rill method was introduced to precisely overcome this problem. In fact there is an incentive for the contractor to maximize resin yield per section as the Corporation pays for resin extracted (by excessive use of acid) even when a limit of 30 quintals per section has been fixed as the maximum permissible yield. There is virtually no checking by the forest staff and damage bills made at the end of the season are more for tokenism than to effectively check faulty tapping.

The result is that the Chil forests are dying. Bad tapping virtually girdles the tree and repeated fires so weaken the stem that sooner than later the tree falls due to wind or in storms. Being a government corporation manned by forest officers on deputation, it is difficult / tricky to take penal action against what are seen as fellow officers / officials. There is no incentive to direct stakeholders to think of sustainable tapping. The Corporation stands to make more money if it properly follows the Rill method by way of many more years of tapping the same tree. Other irregularities like illicit tapping make the scenario worse.

It is clear that many areas like PB I should not be allowed to be tapped a
over tapped areas should be given complete rest for the period of t
Working Plan.

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CHAPTER II B
Forest Fauna

2B.1 Mammals

2B.1.1. The leopard (Panthera pardus):- is a member of the Felidae family and the smallest of the four "big cats" in the genus Panthera, the other three being the tiger, lion, and jaguar. The leopard was once distributed across eastern and southern Asia and Africa, from Siberia to South Africa, but its range of distribution has decreased radically because of hunting and loss of habitat. It is now chiefly found in sub-Saharan Africa; there are also fragmented populations in the Indian subcontinent, Sri Lanka, Indochina, Malaysia, Indonesia, and China. Because of its declining range and population, it is listed as a "Near Threatened" species on the IUCN Red List. It is distributed throughout the Una forest division.

The leopard is so strong and comfortable in trees that it often takes its kills into the branches. By dragging the bodies of large animals aloft it hopes to keep them safe from scavengers such as hyenas. Leopards can also hunt from trees, where their spotted coats allow them to blend with the leaves until they spring with a deadly pounce. These nocturnal predators also stalk antelope, deer, and pigs by stealthy movements in the tall grass. When human settlements are present, leopards often attack dogs and, occasionally, people. The killing of domestic animals like goats, sheep and dogs by leopards is very common throughout the division. However no incidents of attack on human are reported.

Female leopards can give birth at any time of the year. They usually have two grayish cubs with barely visible spots. The mother hides her cubs and moves them from one safe location to the next until they are old enough to begin playing and learning to hunt. Cubs live with their mothers for about two years; otherwise, leopards are solitary animals.

Most leopards are light colored with distinctive dark spots that are called rosettes, because they resemble the shape of a rose. Black leopards, which appear to be almost solid in color because their spots are hard to distinguish, are commonly called black panthers.

The species' success in the wild is in part due to its opportunistic hunting behavior, its adaptability to habitats, its ability to run at speeds approaching 58 kilometers per hour (36 mph), its unequaled ability to climb trees even when carrying a heavy carcass, and its notorious ability for stealth. The leopard consumes virtually any animal that it can hunt down and catch.

Home ranges of male leopards vary from 30 km2 (12 sq. mi) to 78 km2 (30 sq. mi), and of females from 15 to 16.

2B.1.2. The Sambar (Rusa unicolor):- It is a large deer native to southern and southeast Asia. Although it primarily refers to R. unicolor, the

name "Sambar" is also sometimes used to refer to the Philippine Deer (called the Philippine Sambar) and the Rusa Deer (called the Sunda Sambar). The name is also spelled sambur, or sambhur.

The appearance and size of sambar vary widely across their range. In general they attain a height of 102 to 160 centimeters (40 to 63 in) at the shoulder and may weigh as much as 546 kg, though more typically 150 to 320 kg .Head and body length varies from 1.62 to 2.7 m .with a 22 to 35 cm tail.

The shaggy coat can be anything from yellowish-brown to dark grey in colour and, while it is usually uniform in colour, some subspecies have chestnut marks on the rump and underparts. Sambar also have a small but dense mane, which tends to be more prominent in males. The tail is relatively long for deer, and is generally black above with a whitish underside.

Adult males and pregnant or lactating females possess an unusual hairless, blood-red spot located about half way down the underside of their throats. This sometimes oozes a white liquid, and is apparently glandular in nature.

Sambar are found in habitats ranging from tropical seasonal forests (forests and seasonal moist evergreen forests), subtropical mixed forests (conifers, broadleaf deciduous, and broadleaf evergreen tree species) to tropical rainforests. [They are seldom found far from water. Sambar prefer the dense cover of deciduous shrubs and grasses, although the exact nature of this varies enormously with the environment, because of their wide range across southern Asia. Home range sizes are probably equally variable, but have been recorded as 1,500 hectares (3,700 acres) for males and 300 hectares (740 acres) for females in India.

Sambar primarily live in woodland and feed on a wide variety of vegetation, including grasses, foliage, browse, fruit, and water plants, depending on the local habitat.[4] They also consume a great variety of shrubs and trees.

2B.1.3. Wild boar, (Sus scrofa):-is a species of the pig genus Sus, part of the biological family Suidae. The species includes many subspecies. It is the wild ancestor of the domestic pig, an animal with which it freely hybridizes. Wild boar are native across much of Northern and Central Europe, the Mediterranean Region (including North Africa's Atlas Mountains) and much of Asia as far south as Indonesia.

The body of the wild boar is compact; the head is large, the legs relatively short. The fur consists of stiff bristles and usually finer fur. The colour usually varies from dark grey to black or brown, but there are great regional differences in colour; even whitish animals are known from central Asia. During winter the fur is much denser.

Adult boars measure 90–200 cm in length, not counting a tail of 15–40 cm and have a shoulder height of 55–110 cm. As a whole, their average weight is 50–90 kg.

Adult males develop tusks, continuously growing teeth that protrude from the mouth, from their upper and lower canine teeth. These serve as weapons and tools. The upper tusks are bent upwards in males, and are regularly ground against the lower ones to produce sharp edges. The tusks normally measure about 6 cm, in exceptional cases even 12 cm. Females also have sharp canines, but they are smaller, and not protruding like the males' tusks.

Wild boar piglets are coloured differently from adults, having marbled chocolate and cream stripes lengthwise over their bodies. The stripes fade by the time the piglet is about 6 months old, when the animal takes on the adult's grizzled grey or brown.

Adult males are usually solitary outside of the breeding season, but females and their offspring (both sub-adult males and females) live in groups called sounders. Sounders typically number around 20 animals, although groups of over 50 have been seen, and will consist of 2 to 3 sows; one of which will be the dominant female. Group structure changes with the coming and going of farrowing females, the migration of maturing males (usually when they reach around 20 months) and the arrival of unrelated sexually active males.

Wild boar are situationally crepuscular or nocturnal, foraging in early morning and late afternoon or at night, but resting for periods during both night and day. They are omnivorous scavengers, eating almost anything they come across, including grass, nuts, berries, carrion, nests of ground nesting birds, roots, tubers, refuse, insects and small reptiles.

The process of giving birth to a litter lasts between 2 and 3 hours, and the sow and piglets remain in, or close to, the nest for 4–6 days. Sows rejoin the group after 4–5 days, and the piglets will cross suckle between other lactating sows.

Litter size is typically 4–6 piglets but may be smaller for first litter, usually 2–3. The largest litters can be up to 14 piglets. The sex ratio at birth is 1:1. Litter size of wild boars may vary depending on their location.

2B.1.4. The nilgai (Boselaphus tragocamelus):- sometimes called nilgau, is an antelope, and is one of the most commonly seen wild animals of central and northern India; it is also present in parts of southern Nepal. The species has become extinct in Bangladesh. The mature males appear ox-like and are also known as blue bulls. The nilgai is the biggest Asian antelope.

Nilgai stand 1.2-1.5 meters at the shoulder and are 1.8-2 meters long. Their tails are 40-45 centimeters. Mature nilgai typically weigh 120-240 kilograms.

Calves usually weigh 13.6-15.9 kilograms at birth after an 8 month gestation period. Over 60% of births result in twins, though births of 1 or 3 do occur. They reach sexual maturity at around 18 months and can live as long as 21 years.

Nilgai have thin legs and a robust body that slopes down from the shoulder. Their long, narrow heads are topped by two small conical horns which are straight and tilted slightly forward. Horns on trophy males are normally 21.6-25.4 centimeters. They have an erectile mane on the back of the neck and a tubular shaped "hair pennant" on the midsection of the throat. They have a small triangular tail which moves with a very high frequency when they are excited.

Female nilgai have a short yellow-brown coat. Males' coats gradually darken to a grey-blue as they reach maturity. They have white spots on the cheeks and white coloring on the edges of the lips. They also have a white throat bib and a narrow white stripe along the underside of the body that widens at the rear.

Nilgai can be found in single sex or mixed sex herds of 4-20, although old bulls are sometimes solitary.

Nilgai antelopes are found in the north Indian plains from the base of the Himalayas in the north, down to the state of Karnataka in the South, and from the Gir forest and from all along the entire eastern length of Pakistan and over across the border of Rajasthan in the West to the states of Assam and West Bengal in the East; in Nepal, they occur patchily in the southern lowlands.

Nilgai are diurnal and live in grasslands and woodlands where they eat grasses, leaves, buds, and fruit.

In the wild, females and young males gather in herds of about fifteen individuals while older males are often solitary. Individual male or female nilgai may be encountered in cultivated or semi-urban areas.

A blue bull is called a nil gai or nilgai in India, literally from nil meaning blue and gai meaning a bovine animal (literally 'cow'). In fact nilgai were known as the Nilghor (nil = blue, ghor = horse) during the rule of Aurangzeb (Mughal Era) (Gautam Masters dissertation unpubl : Dept. of Wildlife Sciences, Aligarh Muslim Univ). Nevertheless the local belief, that nilgai are a cow and hence sacred, has protected it against hunting.

However, nilgai are a crop menace, causing large-scale damages especially along the Swan River.

Blue bulls mostly live in herds and in winter, male blue bulls form herds of 30 to 100 animals in northern India. They avoid dense forest and prefer the plains and low hills with shrubs. Blue bulls are usually found in their favoured areas of scrub jungle (acacia forests) grazing upon succulent kader grass. They are not averse to crossing marshlands.

A blue bull can survive for days without water, but they live close to waterholes. Blue bulls generally come to the same place to deposit their droppings.

The estimated population of nilgai in India is approximately 100,000. Like many Indian animals, nilgai are often victim to vehicular accidents, and their carcasses are often seen on major highways in northern India. The main threat to this species is the loss of habitat due to human population growth.

2B.1.5. **Indian porcupine (Hystrix indica)**:- This destructive rodent is found in all areas of this division. It adapts itself to any type of land but favours rocky hill sides where it lives in burrows dug by itself. The burrows consist of an entrance gallery and a few bolt holes or emergency exits, the burrows or galleries, sometimes, are 15-18 meters in length. The porcupines are characterized by the spines borne on the neck, back and hind quarters. The porcupines feed on field crops, fruits roots and tubers. They are very much destructive to field crops, and gardens when adequate food is not available in 2B.1.6. the forests. The young ones are born usually in spring.

The Indian Hare (Lepus ruficaudams):-This rufoustailed hare is found all over the area. It likes bushy forest growth and generally lives in the neighborhood of cultivations and villages. Early wheat and other crops in the field are badly nibbled by this animal it is, in general, nocturnal in habit. It weighs from 1.5 to.2.5 kgs. and has a rufous brown coat mixed with black hair on back face. It is believed to give young ones-one to two number, in early winter months.

2B.2. Birds

2B.2.1. The Red Jungle fowl (Gallus gallus):- is a tropical member of the Pheasant family. They are thought to be ancestors of the domestic chicken with some hybridization with the Grey Jungle fowl. The Red Jungle fowl was first raised in captivity at least several thousand years ago in Asia, and the domesticated form has been used all around the world as a very productive food source for both meat and eggs. Some breeds have been specifically developed to produce these.

he range of the true species stretches from northeast India (where the pure species has almost certainly been diluted with cross breeding from domestic breeds) eastwards across southern China and down into Malaysia, The Philippines and Indonesia. Jungle fowl are established on several of the Hawaiian Islands, but these are feral descendants of domestic chickens.

Males make a food-related display called 'tidbitting', performed upon finding food in the presence of a female. The display is composed of coaxing, cluck-like calls and eye-catching bobbing and twitching motions of the head and neck. During the performance, the male repeatedly picks up and drops the food item with his beak. The display usually ends when the hen takes the food item either

from the ground or directly from the ... with copulations and more offspring.

Behaviour, not morphology, is the best predictor of paternity. Specifically, behaviours related to dominance and to signaling are critical, and the single best predictor is the rate at which males produce anti-predator alarm calls. This suggests that male alarm calling is a form of mate investment, increasing the survival of his chicks.

They are omnivorous and feed on insects, seeds and fruits including those that are cultivated such as those of the oil palm.

Flight in these birds is almost purely confined to reaching their roosting areas at sunset in trees or any other high and relatively safe places free from ground predators, and for escape from immediate danger through the day.

2B.2.2. The Grey Partridge, Perdix perdix: - also known as the English Partridge, Hungarian Partridge, or Hun, is a game bird in the pheasant family Phasianidae of the order Galliformes, gallinaceous birds. The species has been successfully introduced to many parts of the world for shooting, including vast areas of North America, where it is most commonly known as Hungarian partridge, or just "Hun". Widespread and common throughout its large range, the Grey Partridge is evaluated as Least Concern on the IUCN Red List of Threatened Species. This partridge breeds on farmland across most of Europe into western Asia, and has been introduced widely into North America. They are quite common in some areas of southern Canada and the northern United States.

The Grey Partridge is a rotund bird, 28–32 cm long, brown-backed, with grey flanks and chest. The belly is white, usually marked with a large chestnut-brown horse-shoe mark in males, and also in many females. Hens lay up to twenty eggs in a ground nest. The nest is usually in the margin of a cereal field, most commonly Winter wheat. The only major and constant difference between the sexes is the so-called cross of Lorraine on the tertiary coverts of females – these being marked with two transverse bars, as opposed to the one in males. These are present after around 16 weeks of age when the birds have moulted into adult plumage. Young Grey Partridges are mostly yellow-brown and lack the distinctive face and underpart markings. The song is a harsh kieerr-ik, and when disturbed, like most of the game birds, it flies a short distance on rounded wings, often calling rick rick rick as it rises. They are a seed-eating species, but the young in particular take insects as an essential protein supply. During the first 10 days of life, the young can only digest insects. The parents lead their chicks to the edges of cereal fields, where they can forage for insects. They are also a non-migratory terrestrial species, and form flocks outside the breeding season.

Though common and not threatened, it appears to be declining in numbers in some areas of intensive cultivation such as Great Britain, probably due to a loss of breeding habitat and possibly food supplies. Their numbers have fallen in these areas by as much as 85% in the last 25 years. Efforts are being made in Great Britain by organizations such as the Game & Wildlife Conservation Trust to halt this decline by creating Conservation headlands. In 1995 it was nominated a Biodiversity Action plan species.

2B.2.3. Indian Peafowl, Pavo cristatus,:- a resident breeder in South Asia. The peacock is designated as the national bird of India and the provincial bird of Punjab.

The male (peacock) Indian Peafowl has iridescent blue-green or green coloured plumage. The peacock tail ("train") is not the tail quill feathers but the highly elongated upper tail coverts. The "eyes" are best seen when the peacock fans its tail. Like a cupped hand behind the ear the erect tail-fan of the male helps direct sound to the ears. The female (peahen) Indian Peafowl has a mixture of dull green, brown, and grey in her plumage. She lacks the long upper tail coverts of the male but has a crest. The female can also display her plumage to ward off female competition or signal danger to her young.

The peafowl are forest birds that nest on the ground but roost in trees. They are terrestrial feeders.

Peafowl are omnivorous and eat most plant parts, flower petals, seed heads, insects and other arthropods, reptiles, and amphibians.

2B.2.4. Kabutar or the Blue Rock Pigeon (Columba livia):- It is the common gray bird with glistening green purple and magenta sheen on the neck and breast. It is found in open and rocky cliffs. It also live in a semi domesticated condition and favours old buildings and rock holes. It generally feeds on cereals, grasses, pulses etc. Nesting season is not well defined.

2B.2.5. Ghugi Dove (Streptopeeelia) This common dove is found in pairs or small parties in open places and cultivated fields. It approaches houses and even verandahs if not scared. Its flight is straight and swift. Its nesting season is also not well defined.

Besides these, the Indian National Bird, the Peacock (Pavo cristatus) is also found in this area. Other birds of common occurrence are house and jungle crows (Corvus spp).tree pies (Dendrocitta spp).the jungle babbler (Turdoides spp).the bulbuls (Chloropsis and pyconotus spp).the magpie robin copsychus) king crow (Dicrurus spp). Golden oriole (orialus spp.).The common myna (Acridothers spp.) the common baya (ploceus spp).red rumped swallow (Hriundo spp.) the wood pecker (Dinopium spp). Parakeets (Psittacula spp).Common king fisher (Aithene spp). Vulchurs (Gyps spp).eagles (Aguila spp). etc. which are equally important from aesthetic, forest cleanliness and health, Farming and bird watching and balance of nature points of views.

2B.3. Reptiles

2B.3.1. Python molurus is a large nonvenomous python species found in many tropic and subtropics areas of Southern and Southeast Asia. It is known by the common names Indian python, black-tailed python, and Indian rock python.

Indian Pythons commonly reach a length of 2.4–3 meters. In India, the nominate subspecies grows to 3 meters on average This value is supported by a 1990 study in Keoladeo National Park, where the biggest 25% of the python population was 2.7–3.3 meters long. Only two specimen even measured nearly 3.6 metre. Because of confusion with the Burmese Python, exaggerations and stretched skins in the past, the maximum length of this subspecies is hard to tell. The longest scientifically recorded specimen hailed from Pakistan and was 4.6 metres in length and weighing 52 kilograms.

Occurs in a wide range of habitats, including grasslands, swamps, marshes, rocky foothills, woodlands, "open" jungle and river valleys. They depend on a permanent source of water. Sometimes they can be found in abandoned mammal burrows, hollow trees, dense water reeds and mangrove thickets.

Lethargic and slow moving even in its native habitat, they exhibit timidity and rarely try to escape even when attacked. Locomotion is usually rectilinear, with the body moving in a straight line. They are very good swimmers and are quite at home in water. They can be wholly submerged in water for many minutes if necessary, but usually prefer to remain near the bank.

These snakes feed on mammals, birds and reptiles indiscriminately, but seem to prefer mammals. Roused to activity on sighting prey, the snake will advance with quivering tail and lunge with open mouth. Live prey is constricted and killed. One or two coils are used to hold it in a tight grip. The prey, unable to breathe, succumbs and is subsequently swallowed head first. After a heavy meal, they are disinclined to move. If forced to, hard parts of the meal may tear through the body. Therefore, if disturbed, some specimens will disgorge their meal in order to escape from potential predators. After a heavy meal, an individual may fast for weeks, the longest recorded duration being 2 years. The python can swallow prey bigger than its diameter because the jaw bones are not connected. Moreover prey cannot escape from its mouth because of the arrangement of the teeth (which are reverse saw-like).

These snakes have often been killed for their fine skin and are endangered. The Indian Python is classified as Lower Risk/Near Threatened on the IUCN Red List of Threatened Species. This listing indicates that it may become threatened with extinction and is in need of frequent reassessment.

2B.4. INJURIES TO WHICH THE FAUNA IS LIABLE, PROTECTION AND MANAGEMENT OF FAUNA

The fauna of the tract is decreasing due to reduction of the habitat as a result of ongoing development activities. The need of growing population is the cause of animal-human conflict. The normal living conditions of the wild life are disturbed which is a matter of concern. The following are the hazardous influences threatening the wild life:-

2B.4.1. Development Activities: - The state is in the development phase and the road, path construction is the main activity which in turn is slowly damaging/destroying the natural habitat. The tendency to expand the cultivations into the forests/ natural habitat of wild life is another cause of animal-human conflict.

2B.4.2. Hunting In spite of complete ban on hunting, the stray incidences of hunting wild animals do take place particularly, when the animals migrate to lower elevations due to unfavorable conditions. The damage to orchards and agriculture crops prompts local people to resort to hunting.

2B.4.3. Fires Forest fires destroy the habitat and the wild animals are trapped, killed. The fires destroy the eggs, young ones in the hollow rocks, dead stumps and nest built in stumps and on ground.

2B.4.4. Climatic Conditions Sometimes the adverse climatic conditions like heavy rains, heavy snow, and prolonged drought affect the wild animals particularly the young ones.

2B.5. MAN ANIMAL CONFLICT

The most of the cases of man -animal conflict pertain to leopard killing livestock at the animal sheds. Habitat degradation, shrinking space and shortage of food often forces the wild animals towards populated areas and it has resulted into the loss of lives of domestic animals as well as property of local people. Due compensations were granted to the grieved family. The cases of killing the domestic animal and cattle are reported every year. For the last 15 years 144 cases of leopard attack on domestic animals were reported and 232 cattle/sheep/goats were killed. An amount of about Rs. 154473 was paid as compensation to the affected.

Compensation paid on account of loss of animal killed by wild animal

Year	No. of cases	No. of animal killed/human being injured by wild animal	Amount of compensation paid
1996-97	4	8	2500
1997-98	9	17	12253
1998-99	14	18	11017
1999-2k	17	17	13877

Year	No. of cases	No. of animal killed/human being injured by wild animal	Amount of compensation paid
2k-2001	19	28	16814
2001-02	26	47	23281
2002-03	13	21	14375
2003-04	10	18	9000
2004-05	9	7	12875
2005-06	7	18	10013
2006-07	1	2	750
2007-08	3	11	8380
2008-09	6	7	6500
2009-10	5	12	7838
2010-11	1	1	5000
Total	**144**	**232**	**154473**

Table 14

2B.5.1. MONKEY – HUMAN INTERFACE:-

The monkey menace in the recent past has increased manifold throughout the state of Himachal Pradesh and District Una is no exception to this. The problem is mainly along the highways and around the religious places, which are many in this district. The major concentration of monkeys is near Bankahandi on Una Hoshiarpur road, Mubarikpur- Chintpurni road, around Dhiunsar Mahadev, Baba Barbhag Singh and Samoor Kalan. The reason behind their congregation in these places is easy availability of food offered by the pilgrims visiting the religious places. Incidents of stray attacks on human beings are also reported from some places. In order to ameliorate the situation, plantation of fruit bearing trees like *Ber, Jamun, Ficus, Bil, Amla, Mango* are generally done in the forest areas.

2B.5.2 MONKEY SURVEYS

Population surveys are of immense value in resolving man-animal conflict. For developing a plan for a species such as monkey we need to answer several basic questions. For example how many rhesus monkeys are in Una Forest Division? Where do they mostly live? What do they eat? What is happening to the habitat of these monkeys? How do rhesus monkeys interact with the human beings?
During the year 2009-10, an effort was made to determine the number of monkeys in Una Forest Division.

- Initially we need to identify different segments in the Core Area (places of monkey concentration in the Una Forest Division) where the survey will be conducted. In these segments, various vantage points will be identified to closely observe the monkeys without interference. If a particular segment

quite big this may be further sub-segmented under a person/forest guard/observer to observe the monkeys from a vantage observation point, in the morning between 7 and 8 AM when monkeys come out to forage. This should be ensured that monkey in line-of-sight of the observer are counted and there is no repetition of count of the same monkeys by the other observers.

- Location and identification of these observation points should be noted/plotted on a map of the area with number of monkey recorded. Data Sheets will be prepared on the Performa given below. Information regarding age and sex of the monkeys, and food provisioning and garbage disposal at surveyed sites need to be kept.
- The survey/population estimation is to be conducted in such a manner that all the monkeys in every observer's domain are counted in a period of half an hour to one hour depending on size of the segment. The period of counting should be such that the level of error of number is avoided due to migration of the animals from one observation point to another.
- The monkey survey is to be conducted by involving various NGOs, professionals and other similar institutions involved with monkeys. Perhaps involvement of Eco-clubs, schools/colleges in the vicinity of identified locations will be also a most desirable component
- The whole exercise is to be repeated during winter (January, March), summer (May, July) and autumn (September, November) at an interval of two months to know the standard variation and error if any.
- Once the results are obtained, the methodology may be improved and then approved to be replicated in different areas of the state to arrive at a figure of population of monkeys.

This technique was used in the year 2009-10, made to determine the number of monkeys in Una Forest Division. Results of the census are tabulated below:-

S.NO	Name of Beat/Range or segment or ward	Total Troops	Total Adults	Total infants	Total
1	Saloh/Una	2	11	3	14
2	Pandoga/Una	5	176	86	262
3	Panjawar/Una	2	135	63	198
4	Lamlehri/Una	4	272	163	435
5	Bangarh/Una	4	273	131	404
6	Bahdala/Una	5	345	97	442
7	Takka/Una	2	122	28	150
	Total Una Range	**24**	**1334**	**571**	**1905**
1	Mo-Maniar/Ramgarh	2	144	57	201
2	Dhiunsar/Ramgarh	5	715	148	863
3	Chowki/Ramgarh	6	996	284	1280
4	Amroh/Ramgarh	2	146	53	199
5	Ban Dhanet/Ramgarh	3	219	71	290
6	Mandli/Ramgarh	3	105	30	135
7	Makrer/Ramgarh	1	52	13	65

	segment or ward	Floor			
		1	81	32	113
8	Kariara/Ramgarh	3	246	95	341
9	Paroian/RAmgarh	1	68	46	114
10	Saily/Ramgarh	2	112	42	154
11	Bohru/Ramgarh	3	195	105	300
12	Raipur/Ramgarh	**32**	**3079**	**976**	**4055**
	Total Ramgarh Range	4	84	27	111
1	Suri/Amb	2	41	10	51
2	Badoh/Amb	4	68	19	87
3	Gagret/Amb	4	464	155	619
4	Rapoh/Amb	2	45	13	58
5	Amb/Amb	2	112	43	155
6	Dhar Gujran/Amb	5	449	173	622
7	Jowar/Amb	1	120	48	168
8	Nehri/Amb	1	230	110	340
9	Lambasail/Amb	3	130	75	205
10	Kotla/Amb	28	1743	673	2416
	Total Amb Range	3	249	91	340
1	Piploo/Bangana	3	84	30	114
2	Arloo/Bangana	5	359	161	520
3	Paniala/Bangana	3	198	81	360
4	Bangana/Bangana	4	258	86	344
5	Kanura/Bangana	2	107	39	146
6	Bharmout/Bangana	11	922	352	1274
7	Chouli/Bangana	9	540	252	792
8	Sarkaru/Bangana	5	352	260	612
9	Akoi-di-dhar	**45**	**3069**	**1352**	**4502**
	Total BanganaRange	5	243	87	330
1	Badhmana/Bharwain	7	254	124	378
2	Guret/Bharwain	18	595	165	760
3	Kinoo/Bharwain	6	194	51	245
4	Saghnai/Bharwain	12	365	189	554
5	Bharwain/Bharwain	33	1020	375	1395
6	Sidhchaler/Bharwain	6	104	217	321
7	Chowar/Bharwain	6	232	59	291
8	Saloh Beri/Bharwain	10	275	71	346
9	Pirthipur/Bharwain	10	480	193	673
10	Joh/Bharwain	6	352	196	548
11	Bhadarkali/Bharwain	10	371	123	494
12	Daulatpur/Bharwain	10	237	87	324
13	Nangal Jarialan/Bharwain	4	80	27	107
14	Rampur Kuthera/Bharwain	**143**	**4802**	**1964**	**6766**
	Total Bharwain Range	**272**	**14027**	**5536**	**19644**
	Grand Total				

Table 15

CHAPTER III

UTILIZATION OF THE PRODUCE

3.1 AGRICULTURAL CUSTOMS AND WANTS OF THE POPULATION: -

The economy of the tract is rural and based primarily on agriculture and animal husbandry. The population of Una District is 521057 (Male 263541 and Female 257516). The area is well populated and the density of population on the basis of censes figures of 2011 is 338 person per square Kilometer. The main crops of the track are wheat, rice, maize, some pulses and some sugarcane. Only maize is exported and a few pulses and candy are imported. As per 2007 cattle census, total population of track is 195398.In addition approximately 15000 migratory cattle from colder regions join in winter grazing. Available grazing land of no standards be termed as good and adequate. These are poor depleted pastures grazed much beyond the carrying capacity. Also no worthwhile efforts have been made for the improvement of these pastures over the past. In nut shell future of animal husbandry is dismal unless cattle population is drastically reduced through progressive programs of animal husbandry. Department and available pasture are scientifically managed and improved to improve their carrying capacity.

Supplementary income of people has significantly improved through a variety of development works undertaken by different Govt. agencies / Projects over the past. As a result of improvement in economy of the tract standard of living of general masses have improved. Majority of the people live in properly designed pucca houses. Education is spreading. Mechanization of agriculture is also coming in though at a slow pace. The tables below gives the statistics of human population on the basis of 2011 census and cattle population on the basis of 2007 census:-

HUMAN POPULATION

Population	Male	Female	Sex Ratio	Density of Population
5,21,057	2,63,541	2,57,516	977/1000	338
As per 2011 Census			Female/Male	Persons/Sq. Kilometers

Table 16

CATTLE POPULATION

Cattle Population	Cows	Buffaloes	Poultry	Sheep	Goats	Horses	Mules	Donke	Came	Pig	Dog
As per 1992 Census	67492	91736	21847	5983	46974	367	156	145	100	66	13830

Table 17

3.2 MARKETS AND MARKETABLE PRODUCTS:-

The principle marketable products are:-

3.2.1 Resin: - Resin blazes are sold annually to H.P.S.F.D.C. at royalty rates fixed by the H.P. Govt. for every year. Earlier the extraction was done by cup and lip method which proves to be disastrous many forests. Now there is complete shift to the Rill method for extraction of resin which gives good yield. The details of extraction of resin for the last fifteen years is tabulated below:-

RESIN YIELD

Year	No. of Resin Blazes Tapped	Total Yield	Yield/000 blazes
1996-97	12353	406.54	32.91
1997-98	35607	1192.48	33.49
1998-99	33303	1233.54	37.04
1999-2000	33228	1110.15	33.41
2000-2001	20963	775.42	36.99
2001-2002	26174	974.72	37.24
2002-2003	50090	1797.23	35.88
2003-2004	46488	1761.43	37.89
2004-2005	42941	1743.83	40.61
2005-2006	71258	2918.73	40.96
2006-2007	70445	2960.10	42.02
2007-2008	72791	3050.67	41.91
2008-2009	65780	2376.63	36.13
2009-2010	52872	1907.09	36.07
2010-2011	26362	932.95	35.39

Table 18

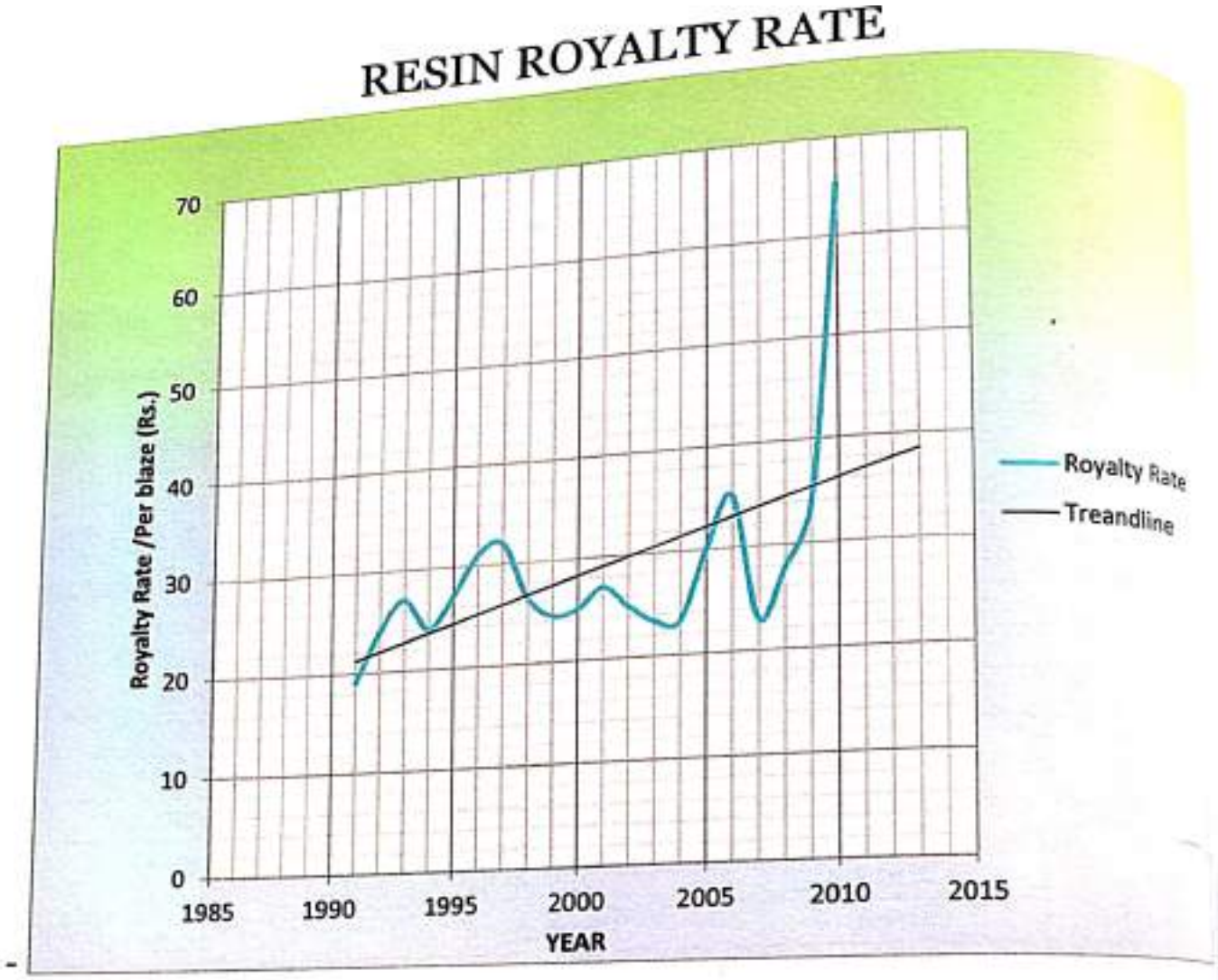
The resin yield from private Forests is appximately 33 Qtl. per section.

3.2.2 Resin Royalty:

Resin royalty fixed by the Pricing Committee per blaze from the year 1991 to 2010 is tabulated below:-

S.No	Year	Date of pricing Committee Decision	Rate fixed Per Blaze
1	1991	05.12.1992	19.00
2	1992	16.04.1993	24.00
3	1993	01.03.1994	27.00
4	1994	25.04.1995	24.00
5	1995	29.05.1995	27.00
6	1996	29.05.1995	31.00
7	1997	24.09.1998	32.00
8	1998	28.10.1998	26.50
9	1999	23.12.2000	24.50
10	2000	18.08.2001	25.00
11	2001	18.08.2001	27.00
12	2002	03.07.2003	25.00
13	2003	13.10.2005	23.38
14	2004	13.10.2005	23.20
15	2005	27.02.2007	30.00
16	2006	11.09.2007	35.00
17	2007	19.08.2008	23.00
18	2008	30.03.2010	27.70
19	2009	30.03.2010	33.70
20	2010	03.05.2011	65.35

Table 19



Graph 3

3.3.1 Chil timber and Pulpwood: - Chil is an important as a source of resin b with the construction of new roads in the tract, every part of Chil is extracted an utilized. The small sized wood down to 10 cms dia. is auctioned as pulpwood f making paper. There has been no green felling of Chil during the period of la working plan. The following quantity of Chil markings in salvage have been do during the period:-

Salvage Marking of Chil

Year	Reserved Forests		Shamlat land		Total	
	Nos.	Vol	Nos.	Vol	Nos.	Vol
1996-97	2181	2995.08	0	0.00	2181	2995.08
1997-98	0	0.00	0	0.00	0	0.00
1998-99	962	1447.44	120	147.57	1082	1595.01
1999-2000	4565	6101.50	63	54.95	4628	6156.45
2000-01	2718	3573.59	42	44.70	2760	3618.29
2001-02	1880	2778.11	23	21.60	1903	2799.71
2002-03	3440	3996.43	35	33.28	3475	4029.71
2003-04	2775	3052.69	34	17.57	2809	3070.26
2004-05	2464	2947.32	2111	9505.27	4575	12452.59
2005-06	1211	1399.98	359	231.07		1631.05

Year	Reserved Forests		Shamlat land		Total	
	Nos.	Vol	Nos.	Vol	Nos.	Vol
2006-07	2118	2228.26	1555	813.72	3673	3041.98
2007-08	1457	1759.13	750	450.21	2207	2209.34
2008-09	3773	3706.43	3548	2016.51	7321	5722.94
2009-10	6142	5825.85	5249	2928.38	11391	8754.23
2010-11	2668	2523.70	2363	1425.94	5031	3949.64
Total	**38354**	**44335.50**	**16252**	**17690.77**	**54606**	**62026.27**

Table 20

Katha: - Katha is extracted from Khairwood. The khairwood extracted by H.P.S.F.D.C from Govt. lots is purchased by private katha manufacturing units. The quantity of khair trees marked during last plan are as under:-

Salvage Marking of Khair

Year	Reserved Forests		Shamlat land		Total	
	Nos.	Vol	Nos.	Vol	Nos.	Vol
1996-97	2906	1715.39	300	163.60	3206	1878.99
1997-98	0	0.00	0	0.00	0	0.00
1998-99	512	59.15	0	0.00	512	59.15
1999-2000	1741	91.30	9	0.82	1750	92.12
2000-01	356	204.01	0	0.00	356	204.01
2001-02	1001	169.16	0	0.00	1001	169.16
2002-03	2612	380.03	0	0.00	2612	380.03
2003-04	2702	1226.95	0	0.00	2702	1226.95
2004-05	1009	155.33	338	20.70	1347	176.03
2005-06	350	33.65	20	2.90	370	36.55
2006-07	1502	312.29	458	140.55	1960	452.84
2007-08	1032	80.08	230	26.36	1262	106.44
2008-09	2213	149.34	769	97.51	2982	246.85
2009-10	2031	158.53	533	41.82	2564	200.35
2010-11	2995	272.03	610	78.97	3605	351.00
Total	**22962**	**5007.24**	**3267**	**573.22**	**26229**	**5580.46**

Table 21

In addition to this, 3500 qtl. of katha is extracted every year from private areas by the Katha Contractors

3.3.2. Charcoal and Fuel wood: - Fuel wood and charcoal are extracted from broad-leaved species of coppice lots. Chil charcoal is extracted from remains of Chil trees in Chil lots. Fuel wood and charcoal are supplied for bonafied domestic use and to Govt departments at fixed rates. The Chil charcoal is sold off for use by goldsmiths and for the manufacture of activated carbon.

Salvage Marking of

Year	Reserved Forests		Shamlat land		Total	
	Nos.	Vol	Nos.	Vol	Nos.	Vol
1996-97	568	976.98	0	0.00	568	976.98
1997-98	0	0.00	0	0.00	0	0.00
1998-99	825	788.96	40	60.48	865	849.44
1999-2000	600	586.77	65	50.49	665	637.26
2000-01	781	980.61	0	0.00	781	980.61
2001-02	847	927.50	0	0.00	847	927.50
2002-03	631	451.27	0	0.00	631	451.27
2003-04	277	282.48	0	0.00	277	282.48
2004-05	542	621.11	54	35.33	596	656.43
2005-06	158	269.58	0	0.00	158	269.58
2006-07	489	465.16	33	4.27	522	469.43
2007-08	85	86.35	0	0.00	85	86.35
2008-09	2907	3796.98	797	1535.15	3704	5332.13
2009-10	152	282.19	115	37.54	267	319.73
2010-11	358	654.00	27	39.75	385	693.75
Total	**9220**	**11169.94**	**1131**	**1763.00**	**10351**	**12932.94**

Table 22

3.3.2. Grasses: - Every year in the autumn grasses are auctioned to local people who cut it and store for the lean months. The department gets revenue of a few thousand rupees. The important grasses are Sacchrum and Bhabbar. Bhabbar grass is the only forest produce item harvesting of which is not nationalized.

3.3.3. MARKETS: - There is no local market for disposal of forest produce surplus to local requirements. Markets for various forest produce item are available chiefly in the plains as in table below:-

MARKETS FOR FOREST PRODUCE

S.N	Name of Forest Produce	Available Markets
1	Chil timber & Pulpwood	Yamuna Nagar, Pathankot, Ludhiana
2	Resin	Nahan, Bilaspur, Una, Gagret & Hoshiarpur
3	Bamboo	Hoshiarpur & Ambala
4	Chil Charcoal	Hoshiarpur, Ludhina & Amritsir
5	Katha	Delhi
6	Bhabbar Grass	Paper Mill at Salakhurd & Yumananagar

Table 23

3.4. DEMAND AND SUPPLY OF FOREST PRODUCE AND PRESSURE ON FORESTS: - With the development and increase of cattle and human population, pressure on the forests is bound to increase in times to come .Major demand of the people include constructional timber, timber for agricultural implements, fuel for daily cooking, marriages and cremations, grass and leaf fodder for cattle, pastures for grazing cattle and construction materials like sand, stone and bajri etc. To cater to all the demands of the people of the tract is one of the objects of Management of Forests.

3.4.1. METHODS OF HARVESTING AND THEIR COSTS

All extraction works in the tract are carried out by the H.P. State Forest Development Corporation. Only traditional methods are used by the HP.S.F.D.C for the extraction of timber, fuel/pulp wood, bamboo and charcoal. Rill method of resin extraction is being used since 1990. Resin tapping is done from 15 march to 15 November. Resin extracted from Govt. Lots are dispatched to R & T Factory Bilaspur where it is further processed. Bansu fuel wood and charcoal are supplied to the bonafide residents for domestic use and to Govt departments at fixed rates. Broad leaved logs/round ballies, Chil charcoal and Chil pulp/fuel wood are disposed off from road side depots by open auction. Chil timber is dispatched to Himkasth sale depot Bhadroya of H.P. State Forest Development Corporation where it is sold in open auction. The specialized labour for katha making is imported from Nepal and Garhwal area of U.P.

3.4.2. LABOUR COST OF FOREST PRODUCTS

S.N	Operation	Year	Upset Price
1	Resin Tapping	2010-2011	1310.06/Qtl
2	Bamboo Extraction	2010-2011	47.02/ Bundles
3	Charcoal Burning	2010-2011	421.21/Qtl
4	Timber Extraction	2010-2011	1192.03/cum
5	Pulpwood Extraction	2010-2011	349.12/cum
6	Khairwood Extraction	2010-2011	1306.36/cum

Table 24 (Source: Forest Working Division Una)

3.5 LINES OF EXPORT: - There has been revolutionary development of network of roads which have significantly in boosting up of export of forest produce from the tract. The trucks/Tractors reach almost every forest through the streams where there are no roads. The manual carriage is minimum. The main lines of export are the following roads:-

LINE OF EXPORT

S.N.	Name of Road	Length in Kms.	Condition
1	Bharwain-Sansarpur	32	Metalled
2	Jour Barh- Nangal chowk	10	Metalled
3	Chintpurni-Daulatpur	18	Metalled
4	Nadaun-Amb	48	Metalled
5	Jowar- Nehri Via Mairi	10	Metalled
6	Nangal-Talwara via Amb	85	Metalled
7	Nandpur -Nehri	11	Metalled
8	Panjoa- Rapoph	13	Metalled
9	Karluhi- Gagret	15	Metalled
10	Karluhi-Kinnu,via Lohara	15	Metalled
11	Una – Hoshiarpur	38	Metalled
12	Una- Samoor-Kalan	8	Metalled
13	Una- Jajjon via Haroli	30	Metalled
14	Una- Daultpur via Gagret	45	Metalled
15	Daulatpur – Marwari	8	Metalled
16	Una- Nangal via Santokhgarh	25	Metalled
17	Santokhgarh- Betan	15	Metalled

Table 25

3.6 PAST AND CURRENT PRICES: - The rates for five years from 2007 to 201 are tabulated below.

PAST AND CURRENT PRICES

S.N.	Forest Produce	Prices obtained for the Year				
		2007	2008	2009	2010	2011
1	Chil Timber (M3)	3400	5000	5000	5000	5836
2	Khair per (M3)	25079	27024	23701	20757	21712
3	Baber Grasses	15550	19950	45954	47900	21600
4	Chil Charcoal (Qtl)	1155	1237	1116	1094	1456
5	Chil Pulpwood(M3)	1921	2048	1401	2495	1956
6	Bamboo/ Bundle	0	0	0	141.33	141.33

Table 26

There has been a marked rise in the prices of Resin, Chil timber, Katha, fuelwood and charcoal during recent years. The prices are increasing every year due to the products being in short supply.

Market Rate of Green Standing Chil Trees (in ` / m^3)

Year	Rate (Rs.)
1988-89	1560
1989-90	1716
1990-91	2111
1991-92	2702
1992-93	2875
1993-94	3163
1994-95	3470
1995-96	3827
1996-97	4200
1997-98	4630
1998-99	5093
1999-00	5603
2000-01	6168
2001-02	6779
2002-03	7457
2003-04	8203
2004-05	9023
2005-06	9925
2006-07	10600
2007-08	10600
2009-10	15372

Table 27

Graph 4

Market Rate of Green Standing Broad leaved Trees

SPP.	Rate per cum (`)		
	2006-07	2007-08	2009-10
Shisham	10100	14492	21663
Sal	8200	9990	10839
Sain	8200	8200	11229
Kokath	3200	4099	5254
Eucalyptus	3200	5481	6076

able 28

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CHAPTER IV

ACTIVITIES OF FOREST DEVELOPMENT CORPORATION

4.1. INTRODUCTION

This Forest Working Division is the district level unit of H.P. State Forest Development Corporation Limited, in Una district, which is under the control of Director (North) located at Dharamsala of Kangra district. Una Forest Working Division came into existence in the year 1991 and started functioning w.e.f. 01.10.1991. Prior to this the area under this division was worked by Forest Working Division Fatehpur.

4.2. JURISDICTION/WORKING AREA

This Forest Working Division covers whole of the Una district and also the total area of Una Forest Division. The Divisional office is located on Una-Santoshgarh road, and is about at a distance of 3.5 Km. from Una town. To have better working system, the division is sub-divided in to four Units namely Amb, Bharwain, Bangana and Una. Working area of Amb, Bharwain and Una units is the same as that of Territorial ranges of similar names of Una Forest Division whereas Bangana Unit covers Ramgarh and Bangana Ranges of Una Forest Division. Due to decrease in work load, proposal, to club the Una and Amb Units has been forwarded to higher authorities. Each unit is under the control of Assistant Manager, who in turn is supported by Block Officers, Forest Guards, Timber Watchers and Field Chowkidar.

4.3 ACTIVITIES

H.P. State Forest Development Corporation has been working out on the salvage lots of Una Forest Division since 1974 and the two main activities in this relation are:-

1. Timber
2. Resin
3. Bamboo

4.3.1. Timber: After nationalization of forests in 1983, standing trees are being handed over to HP State Forest Development Corporation at rates decided by the Himachal Pradesh Government from time to time. Timber lots are handed over before 30th September each year. The H.P. State Forest Development Corporation carries out extraction through conventional methods and there is no sign of any

mechanization being introduced in the future. Felling is done by axe or saw. The trees are cut in to logs different sizes with the help of saws. These logs are further squared with help of axe and then sawn into scantlings by using pharnies. The operations are carried out in the forest.

Timber of Chil, after felling and conversion is being dispatched to Him Kashth Sale Depot Nurpur/Bhadroya/Swarghat for further auction. Apart from felling, conversion and transportation, Timber of Broadleaved spp., pulpwood, khairwood, charcoal, bamboo and fuelwood etc. are being sold from road side depots, which have been duly got registered with the Territorial DFO under relevant Act. Following depots (RSD) exist in Una Forest Working Division: -

1. Sidhchalet, 2.Bhalethi, 3.Tutru Charara, 4.Nugrari, 5. Buhana 6. Bade Rah, 7.Amb-da-kohla, 8. Saloi, 9. Partap Nagar (Amb), 10.Gagret, 11.Kosri Camp, 12.Ramb, 13. Kohdra, 14. Chakserai, 15.Thathoon, 16.Jalgran.

Apart from salvage lots, being handed over by Forest Department, Corporation is also working in private forest areas, which are ordered to be felled by DFO Territorial, as per 10 year felling cycle. Block Samiti lots, lots handed over by other various govt. agencies and BBMB authorities are also being worked and sold out, the sale proceed of which is being provided to the agency concerned, after deductions of Corporation's handling charges.

4.3.2. Resin: Resin blazes are sold annually to H.P.S.F.D .Corporation at royalty rates fixed Himachal Pradesh Government for every year. Earlier the extraction was done by cup and lip method which proved to be disastrous for many forests. Now there is complete shift to rill method of extraction which gives equally good yield as well as obviates the likely damage by fire and wind

During the year 2011, 30193 resin blazes were tapped by the Forest Working Division Una and a total of 1222.45 qtls. resin was extracted which was transported to Bilaspur Rosin & Turpentine Factory for processing. It is worthwhile to mention here that number of blazes being handed over to Corporation is sliding hugely, downwards every year. Private resin is also being purchased at the rate Rs.7000.00 per qtl. by this Division and being processed in R&T Factories Bilaspur/Nahan.

4.3.3. Bamboo: Bamboo (Dendrocalamus strictus) is being extracted from Bangana and Ramgarh Ranges of Una Forest Division, which is being sold in open auction at Dada-Siba. The bundled bamboo is categorized into following types:-

S.No.	Category	Length (M)	Girth (Cm.)	No.of pieces in each bundle
1	Kalan I	5.40	>15	4
2	Kalan II	4.30	>15	5
3	Bahi I	2.10	13-15	10
4	Bahi II	2.10	10-13	15
5	Majhola	2.10	8-10	20
6	Lathi	2.10	6-8	30
7	Chaar	2.80	5	30
8	Pore I	4.50	8	10
9	Pore II	3.70	5-8	15
10	Chatti	2.10	6	40
11	Misc.	Other sizes	-	15

Table 29

The bamboo obtained from Bhakra area of Una division is said to be of the best quality in Northern India and it fetches quite reasonable rates, if processed during season (Oct.-Dec.).

During 2010-11 net sale proceed obtained from bamboo was Rs.30,21,146/-.

4.4. SALE During the year 2010-11 and 2011-12 (up to 23.01.2012) sale realization of this division was:-

S.No.	Spp.	2010-11	2011-12 (up to 23.01.2012)
1	Khairwood	6248716.00	6846464.00
2	Pulpwood	7703075.00	7306520.00
3	Fuelwood	871078.00	12900.00
4	Chil charcoal	1965963.00	2501908.00
5	Other BL Timber	8671203.00	1188584.00
6	Bamboo	3021146.00	983155.00
	G.Total	**28481181.00**	**18839531.00**

Table 30

CHAPTER V
FIVE YEAR PLANS

5.1 GENERAL: - The forests of the Division have been managed for getting sustainable yield, being main source of revenue. The silvicultural fellings were aimed at making the forests uniform and the regeneration achieved through natural means. Till the early seventies, the emphasis was on planting commercially important species such as Chil, Khair, Poplar, Shisham, Eucalyptus etc. The growing demand of forest produce especially timber in the State resulted the focus on large scale plantations. Although the plantation program was started right from 1st 5-years plan but it gained momentum from 3rd Plan onwards. The plan wise management of forests is depicted as under:-

5.2-Five Year Plans:-After the merger of the State in 1949, the forests were densely stocked and exploited commercially. Therefore, Khair and Chil Working Circles were constituted and worked. Fuel and Fodder Working Circle to meet the local demand and Protection & Rehabilitation Working Circle to fulfill conservation objectives were created. There is nothing on record to show the system which was adopted. The year wise revenue and expenditure of the Una Forest Division is tabulated as under:-

Year	Revenue (Rs)	Expenditure (Rs)
1996-1997	1343677	29674695
1997-1998	1214197	20751026
1998-1999	1033716	32181465
1999-2000	1415755	30753861
2000-2001	1879379	27973222
2001-2002	850328	24394279
2002-2003	3551655	23866237
2003-2004	2803647	25124423
2004-2005	3235758	29098693
2005-2006	5407007	36351315
2006-2007	9658978	39469937

Year	Revenue (Rs.)	
2007-2008	1657441	24059264
2008-2009	2681228	57326855
2009-2010	2287316	63635532
2010-2011	1581770	31036125

Table 31

Plantation: - The emphasis had already been shifted to raise plantations on blanks degraded forests. The year wise plantation program was adopted w.e.f. 1996-97 onwards as under:-

Plantations Raised in the last 15 years

S.N.	Year	Area in Ha.	Chil	Khair	others	Total
1	1996-97	179.5	228400	27350	0	255750
2	1997-98	151	179300	43900	800	224000
3	1998-99	30	13300	31700	0	45000
4	1999-oo	125	119100	60100	300	179500
5	2000-01	136	96200	22200	0	118400
6	2001-02	74.2	24500	42534	1300	68334
7	2002-03	63.1	28740	14110	0	42850
8	2003-04	57	31550	19850	100	51500
9	2004-05	47.2	27250	13400	0	40650
10	2005-06	90	25190	38810	18000	82000
11	2006-07	244	33900	86712	142888	263500
12	2007-08	425	80149	251572	135779	467500
13	2008-09	494	70648	142335	116142	329125
14	2009-10	393	33130	74452	169543	277125
15	2010-11	58	995	12869	37606	51470
Total		**2567**	**992352**	**881894**	**622458**	**2496704**

Table 32

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6.1 **STAFF:** - Una Forest Division comprises five territorial ranges out of which three ranges (Amb, Una and Bharwain) are being dealt with under this plan. The following statement shows the present sanctioned strength of various categories of permanent staff:-

Sr No.	Category	Sanctioned strength	Existing	Variation
1	D.F.O.	1	1	0
2	A.C.F.	1	0	-1
3	Forest Rangers	7	4	-3
4	Dy.Rangers	22	17	-5
5	Forest Guards	100	75	-25
6	Superintendent Gr. II	1	1	0
7	Senior Assistants	3	3	0
8	Jr. Asitt./Clerks	7	4	-3
9	Driver	1	1	0
10	Forest Kanungo	1	1	0
11	Patwaris	1	0	-1
12	Peons	6	6	0
13	Malis	6	6	0
14	Chowkidars	6	6	0
15	Poen/Khalasies	3	3	0
16	Peon cum Chowkidars	2	2	0
17	Forest Workers	72	65	-7
18	Timber Watchers	5	5	0

Table 33

6.2. **LABOUR SUPPLY:** - With the developmental activities going on in all th departments, the position of labour supply is becoming acute. However, for routin silvicultural and other forest works sufficient local labour is readily available excep during the crop season. Labour supply mates of Forest Corporation for carrying o exploitation of forests have to import labour from Kangra, Mandi and Chaml

districts. Labour for manufacturing Katha are imported from Uttar Pradesh. In addition, unskilled, semi-skilled and skilled labour is also required for execution of annual forestry operation like raising of nurseries, plantation, cultural operation, enumerations, marking, repair of boundary pillars, construction and repairs of buildings, roads and paths etc. There is no death of local labour of any category for any operation but it is not adequately available during two harvesting seasons in March/April and September/October. Labour is imported from outside very often because local labour mostly remains busy in MNREGA works being carried in the area. Strangely enough, imported labour is cheaper in the long run by virtue of their being more efficient and readily available at work site as compared to local labour. Price index has shot up tremendously and price hike phenomenon may continue in future which might add to the cost of forestry operations in times to come unless the same is kept under check through feasible mechanization.

6.3 **LABOUR RATES**: - Conservator of Forests fixes the labour rate keeping in view the rates of daily waged unskilled labour fixed by the Govt which presently is Rs. 120/- per day. The past and present rates of daily waged unskilled labour are as below:-

S.N.	Category of daily labour	Rates per Day (Rs)	
		Past	Present
1	Un- skilled	60	120
2	Quarry man (Khangir)	60	120
3	Driller(for Air Pump)	60	120
4	Sprayman	60	120
5	Carpenter Ist Class	109	218
6	Carpenter 2nd Class	81	162
7	Mason Ist Class	109	218
8	Mason IInd Class/Stone Chisler	81	162
9	Painter Ist Class/ Distemperer	81	162
10	Painter IInd Class/white washer	66	132
11	Blacksmith	76.50	153
12	Plumber Ist Class	76.50	153
13	Plumber IInd Class	64	128
14	Bar binder	66	132
15	Sawmiller	76	152
16	Assistant Sawmiller	60	120
17	Cleaner	60	120
18	Electrician Ist Class(I.T.I)	96	192
19	Electricial IInd Class	76	152
20	Surveyor	96	192
21	Driver	81	162

S.N.	Category of daily labour	Rates per Day (Rs)	
		Past	Present
22	Feller(Girani)	60	120
23	Logger	60	120
24	Sawyer (Charani)	60	120
25	Dresser (Pachhani)	60	120
26	Chowkidar (Office, Depot,Nursery etc)	60	120
27	Khalasi,Zoo Animal Attendant/Fire Watcher /Grinder forchips flooring /Mate / Calliperman / Mali, Sweeper/ Enumerator /Enclosure sweeper	60	120

Table 34

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CHAPTER VII

PAST SYSTEM OF MANAGEMENT

7.1 **GENERAL HISTORY OF THE FORESTS**:-Before the advent of British rule (1846), the Rajas of the small states into which the tract was divided were sole proprietors of all forests within their territories. The Rajas kept rigid hold on all forests and tree growth which to all intents and purposes, were treated as their personal properties. The history subsequent to the cession to the British can suitably be discussed as under:-

The forests were placed in the control of Deputy Commissioner and as the time of First Regular Settlement (1852), a part of the present Panjal reserve was demarcated (about 1848-49). In 1855' The Rules for the conservancy of forests in hill tracts of Punjab' were sanctioned by the Government of India; under which Melvill (the then Commissioner of Jalandhar) framed a set of rules which were enforced from 1860. On the Ist May, 1866, the forests were transferred to the control of Forest Department. In 1869, the Conservator of Forests represented that management under Melvill's rules was impracticable and suggested that an attempt should be made to obtain certain tracts as the absolute property of the Government and that Government in return should give up or considerably modify its rights in other tracts. These proposals were accepted and the work was started by Roe and Duff in 1870 and completed in 1872 and 9 blocks of forests with an aggregate area of 4390.59 ha (10813 acres) were gazette as reserve forests under section 34 of Indian Forest Act, 1878 vide notification No. 110-F dated 6th March, 1879.

Similarly Kutlehar jagir was transferred from Hoshiarpur district to Kangra district in 1868 and management of the forests of the jagir-tappas entrusted to the Raja and through and erroneous interpretation of the orders 1869, the forests in the remaining twelve khalsa tappas which formed part of Kutlehar taluka got also included. The Raja then started managing orders in sixteen tappas mainly as his game preserve and tried to keep them intact to a greater extent. This was facilitated by the absence of export of timber or charcoal and limited exercise of rights of bartan by the right holders. After the rights of the villagers were clearly defined in 1915, it was not possible to ensure the same protection as was in the past. With increasing population and a rise in the standard of living, there was a corresponding increase in demand for timber and other forest produce. This caused deterioration of the forests except the closed portions of bamboos forests and trihais which escaped the burden of over increasing heavy incidence of rights.

With the annexation of Punjab by the British Lyall carried out settlement, as explained in paragraph 60 of Lyall's Settlement Report, 133 small blocks of trihais covering 1674-15 ha. in 131 tikas had been marked and brought under protection in the year 1859-60. Subsequently, on the report of Stenhouse and

Anderson, Government passed orders for further demarcation in Kutlehar jagir vide their letter No. 567 dated December 26, 1884. In Anderson's fresh demarcation during Kangra Forest Settlement of 1883-87, 23 blocks of demarcated forests were formed by adding other waste land to 98 trihais. The remaining 33 trihais in different tikas were retained as such and kept closed to all rights with the inception of the Rotational Closure Scheme prepared by Aggarwal and Kundan Singh in 1928. However, on account of disappearance of pillars, the actual closure did not extend over full areas notified as closed in 'Sheepshank's Report of 1915.

7.2 PAST SYSTEMS OF MANAGEMENT AND THEIR RESULTS:-

The period from 1846 to 2011 can be suitably divided into three parts for the purpose of review:

1. Management under Deputy Commissioner's from1846 to 1866.This may be termed as the period of evolution.
2. Management under the Forest Department from 1866 to 1903-04. This may be called as period of transition.
3. Management under proper working plans. This may be called the period of scientific management. It can be sub divided into:-
   a) Hart's Working Plan from 1903 -04 to 1922-23
   b) Walter's Working Plan from 1920-21 to 1930-31
   c) Mohan's Working Plan from 1931-32 to 1950-51
   d) Jalmeja Singh's Working Plan from1952-53 to 1980-81
   e) Baldev Singh's Working Plan from1980-81-1995-96
   f) Bhardwaj's Working Plan from 1996-97 to 2010-11

   The Management during each period is described in the succeeding paragraphs.

7.2.1 The Period of Evolution 1846-1866:- The rules for the conservancy of the hill districts of the Punjab were sanctioned in 1855, but the Government of India, while according sanction remarked as to their vague nature and instructed that commissioners should be directed to frame detailed rules for their divisions. Mr.Malwill (the then commissioner of Jullandhar Division) framed in 1860 a set of Rules which were duly sanctioned by the local government. These rules specified the conditions under which the timber might be cut by the villagers and fixed certain penalties for breach of them. The villagers were permitted to cut all inferior trees required for their domestic purpose free of cost on the verb al permission of lamberdar, they were entitled to cut any tree required for building or agriculture purposes on

obtaining Deputy Commissioner's permission and making a payment of annas four(25 paisa)per tree. They were granted a share of four annas in a rupee of all the income obtained by the government. This share was to be divided amongst the village common fund, the lumberdar, the Rakha and the Qatari. After setting aside sufficient land for the fuel and grazing requirement of the villages, the remainder of the forest was to be divided in to 3 blocks one of which was to be closed for three years or so long as might be necessary to enable the young trees to grow up; while the other two third was to remain open for grazing. But these rules were never fully carried out, and their true force or significance was almost forgotten from the very beginning. No attempt was ever made to effect any closure or any conservancy rules that were in force were supposed to have emanated from the Deputy Commissioner. With the transfer of the forests in 1866, the matter soon came to an end.

7.2.2 Period of Transition (1866 to 1903-04):- Difficulties were experienced with the people soon after the transfer. In consequence, the Conservator of Forests represented in 1869 that although Melvill's rules were the law, yet it would be difficult to enforce them in their entirety, and that no real and efficient conservancy could be carried out where grazing or similar rights were admitted and suggested that Melvill's rules b 2 should be modified by mutual consent; and that the new arrangements should proceed on "give and Take" principles; certain tracts should become the absolute property of Government which in return should give up or considerably modify its rights in other tracts. This suggestion was approved; and Roe and Duff acquired 4376.02 ha (10,813 acre) of forests in 9 blocks for government which were gazette as reserved forests in notification No 110-F dated 6th March 1879.

After having settled the boundaries and the rights, the attempts were made to introduce scientific management. Irregular selection felling but without any system or scheme of cutting s were carried out in more accessible areas of the chill forests. Towards the close of period, the system was replaced by improvement felling bearing on age classes in accordance with the silvicultural requirements of crop.

7.2.3 Period of Scientific Management: -

7.3 Hart's Working Plan: - From 1903-04 began the period of scientific management under working plans. Following the completion of forest settlement work in1897, the first working plan was prepared by Hart in 1903-04.the principle objects of the plan were to bring the whole workable area under regular treatment and to provide for the realization of a sustained annual yield primarily in identification of the legitimate requirements of the right holders, any surplus yield being available for sale by Govt. at market prices. In chill area, the need of fire protection was emphasized and endeavors made to work up to the following working circles.

(i). The pine working circle

(ii).The scrub working circle.

The Pine Working Circle:

7.3.1 The pine working

The difficulty of ensuring a closure immediately ... Indian the adoption of a system of concentrated regeneration ... scattered selection system was considered unsuitable on account of small and widely grown areas, otherwise suited for selected fellings, to the deficiency of sound and well grown Ist class trees and above all, involving as it does attempt to obtain regeneration over the whole area under management. Consequently the plan prescribed a system of combined improvement felling and thinning which ranged in intensity from felling of the nature of shelterwood, seeding fellings, to cleanings in very young crops. The felling were prescribed to pass over the whole area twice in twenty years while the exploitable size was fixed at 1.95 m girth, corresponding to an age of some 90 years. In the Sal crop (mixed chill and Sal) which was composed of stag headed and malformed stems, the old trees were prescribed to be cut over to obtain a better crop of coppice shoots.

The yield in chill areas turned out to be of poor commercial value and it proved to be very difficult to get the felling carried out, and thus about the middle of the period felling were largely in areas. It was only possible to get these worked off by allowing the contractor to take out the large size trees. This led to an unfortunate and arbitrary distinction between improvement fellings and thinning; the former tending to degenerate into revenue fellings and the later remaining a strictly silvicultral operation. The results were unfortunate. This, perhaps, unavoidable departure from strict silviculture was rectified to a considerable extent towards the close of the period of plan by making special thinning; the produce when and where not marketable being given to the right holders. These fellings were generally done year by year to meet the demand of the moment with the inevitable result that patches were left unthinned while over the greater part of the area thinning were extremely uneven. In the Sal areas a satisfactory reproduction of coppice shoots was obtained which developed a height of some 6 m and girt 20 cm in the first five years; but thereafter the increment fell off perhaps due to the failure to give complete overhead light.

A number of groups of saplings were freed from suppressions by the removal of malformed Sal by the stag headedness which occurred at an early age.

7.3.2 Scrub working Circle:

In 1904, the out turn from the scrub areas was not marketable. It was, therefore suggested that should any demand arise, the scrub reserves may be felled under a system of coppice with standards with rotation of twenty years and reservation of 25 standers per acre(0.4 ha). Between 1910-11 and 1918-19 some 302 acres (122.22 ha) were felled over. The supply was generally in excess of the demand; and the locality and the size of the coupes were fixed as far as possible to suit the contractors, and less attention was paid to arranging a good series. Felling in generally adequate coppice regeneration but seedling regeneration had been very poor.

7.4 Walters Working Plan (1920-21 to 1930-31):-

The revised working plan of Walters came into force from Ist July 1920.The areas which now fall under Una Forest division were managed under Hoshiarpur Pine Working Circle.

The object in Hoshiarpur Pine working Circle aimed at maintaining the highest possible yield of grass, charcoal, resin and of retaining a sufficient cover for soil to minimize the damage through erosion and desiccation and regard to distribution of age classes, replacement of the then existing irregular crop by even aged crop, the maintenance of trees of all sizes in each block of forest and realization of maximum sustained yield.

7.4.1 Results of Management under Walter's Working Plan:-

Uniform system with natural regeneration on a rotation of 80 years with a period of 20 years was the system applied to obtain an open but homogeneous patches of chil regeneration as it was held that production of timber was not a desired item and that the yield from thinning was unsalable while it was urgent to remove the then existing mal formed and over mature crop. Thinnings and improvement fellings were prescribed in other than P.B.I Areas and tentative provisions were made for the working of sal areas. These provisions amounted to the cutting back of malformed "sal" in untreated areas and the thinning in areas where the sal had already been cut back.

In 1921-22,161.88 ha were felled in seeding felling but lack of demand and unavailability of making heavy seeding felling in a crop which was already too open and in an area where denudation was excessive prevented prescriptions being carried out. In blocks other than P.B.I, the out turn under thinning and improvement felling was always too poor nor were the operations in any way urgent. The prescriptions thus have largely remained in arrears. Dry trees were however, sold from time to time. Sal coupes were regularly worked under coppice felling but no attempt was made to free the tops of the shoots from suppression. Sal in R-III Dharui-A- was burnt in 1930 and this resulted in the vigorous sal shoots of rapid growth. Natural chil regeneration has not been obtained anywhere through artificial reproduction has been established in a few small patches.

7.4.2 SPECIAL WORKS OF IMPROVEMENT TAKEN:-

I) Artificial cultivation of chil:-

Soon after the constitution of the reserves, chil sowings were carried out in about 1873-74 and onwards. The work was generally restricted to the old field included in the reserves and took the form of sowing in ploughed lines. Sowing made in the last 35 years has been restricted to the fire blanks caused by the ever recurring disastrous fires. The area taken up for each plantation was small; it varied between 0.4 ha to 0.6 ha. The work on the artificial cultivation of chil may be classified into following periods.

a) **Sowing during 1879**

These are represented by plantations in R.II ... (f) in RII Lohara A old compartment 2(a) & (b), in R.II Lohara B old compartment 1(a) and (b), in R-II Lohara B old compartment 3 and in R.III Dharui A. The area under plantation has considerably decreased on account of fires and lack of tending.

b) **Sowing during 1889-1902 generally in the fire blanks.**

These are found in plantations C & D in R-II Lohara B old compartment 1.

c) **Sowing during 1907 and 1917 in the fire blanks:**

These are found in R.II Lohara B. The total area represented by all the plantations is small. Their condition is far from satisfactory due to poverty of soil, fire damage and lack of thinning and tending in almost all of them. The worst are found in R-II Lohara A where the poor quality of soil and several fires have resulted in a sparse stock of ill grown poles.

7.4.3 Introduction of exotics:-

Pinus radiate was sown in R.I Panjal in 1926-27 and germination was satisfactory. Transplanting in 1928-29 failed as the growth of roots could not keep pace with the receding moisture in the summer.

7.4.4 Fire Protection:-

Intensive fire protection measures were introduced in 1927-28.Definit blocks were places under selected assistance during the fire season; extensive fire lines burnt in the winter, while look out machines were erected to watch the regeneration areas. A scheme for departmental burning was prepared and enforced through the previous experience did not warrant the introduction of such a measure. When departmental burning was first introduced in other chil forests of Punjab in 1912-13 the Kangra chil was considered to be unsuitable for being departmentally burnt on account of low crowns of the trees and excessive undergrowth. The earliest record of departmental burning in the tract is of 1920-21 when 39.66 ha. of R-III Dharui C compartment 2 were burnt. All the brush wood was first sold to a purchaser and the refuse and needles existing on the ground were burnt. A scheme of departmental burning was prepared in 1924 and some 1500 ha. were burnt but the scorching was found to be very sever and the scheme was abandoned in 1925. A new scheme was prepared in 1930 which prescribed quinquennial burning. The table given below shows the areas burnt departmentally during 1920-21 to 1930-31

Areas control burnt in Ha. (1920-21 to 1930-31)

1920-21	21-22 to 26-27	27-28	28-29	29-30	30-31
39.66	-	402.27	685.16	690.01	729.56

7.4.5 Roads and Buildings:-

During the period covered by Walter's plan, bridal paths and other roads were constructed, the length of which is difficult to ascertain. New Range quarter was built at Bharwain during 1926-27 to 1928-29.

7.5 Mohan's Working Plan (1931-32 to 1950-51)

The forests of the tract dealt with in the plan were managed under the Una Chil Working Circle. The objects of management were to maintain the tree cover, particularly chil trees to keep the resin industry going and reduce erosion and the recession of the water table and to produce maximum quantity of grass. Based on the composition and density of crop ,the forests were classified as (a) Blank or sparsely blocked (b) Scrub (c) Mixed chil and scrub (d) Chil (e) Mixed chil, sal and scrub. The silvicultral system in the chil and scrub types (types b to e supra) was a very conservative selection system with diameter limits combined with the allotment of specific areas for regeneration. No felling cycle was fixed. Felling were prescribed as and when demand arose and trees were available for selection. Selection diameter for chil was fixed at 53 cm and it was indicated that age of chil trees of selection diameter would be about 150 years. The yield was fixed by areas. The areas under regeneration were to be sown with chil only and the mode of reproduction was to be mostly artificial. An area of 12 acres (4.86 ha) was to be artificially stocked with chi annually completing 238 acres (90.30 Ha) during the period of the plan. Thinnings in young chil crops according to fixed programme were prescribed. Sal was to be treated under the simple Coppice system with a rotation of 20 years. Over wood of all species over sal was to be sufficiently lightened to enable the sal to grow vigorously. The exploitable diameter of sal was fixed at 20 cm. Thinnings in young crop and improvement felling for the rest of the scrub forests were prescribed. Chil was to be favored when occurring mixed with other species. Cleaning of stool shoots and removal of deal and dying trees was prescribed. Sal forests were to be departmentally burnt. Grass cutting was to be permitted.

Stocking of the areas had been bettered. Felling was carried out in accordance with the felling rules and the felling program. Leases for grass cutting were sold annually. An area of 238 acre (96.32 ha) was artificially stocked as prescribed. The plantations were thinned in 1936-37 and 1945-46. Bhabhar sowings tried in regeneration areas were given up because they interfered with the growth of chil seedlings. Sal forests were according to the prescriptions. Climber cutting and departmental burning was done according to the programme.

7.5.1 Special works for improvement under taken:-

1). Regeneration works:-

An area of 96.32 ha had been artificially regenerated with khair and other hard wood species like Terminallia tomentosa, Terminalia chebula, Terminalia belerica, Dalbergia sisoo and Eulaliopsis binata (bhabhar) were planted i9n regeneration areas but were found to be interfere with chil regeneration.

2). Fire Protection works:-

Departmental burning was carried out accordingly to biennial programme. Fire lines (48.27 Km length) were properly maintained and fire watchers regularly engaged.

3) Roads:-

28.26 Km long bridle paths and 55.55 Km long inspection paths were constructed in 1944-49 and from 1935-36 to 1950-51 respectively.

4) Buildings:-

Inspection huts at Bhadmana (1935-36) Guret (1936-37),Sidh Chaler(1937-38) Joh (1943-44),Forester quarter at Nehri (1938-39) Pirthipur (1945-46) and servant quarter with Range quarter Bharwain(1937-38,MaliHut at Khopri(1950-51) and resin godown at Sidh Chaler(1942-43) were constructed.

5) Boundaries and Boundary Pillars:-

The quinquennial programme of checking boundaries and boundary pillars was carried out in all ranges satisfactorily.

7.6 Jalmeja Singh's Working Plan (1951-52 to 80-81)

The general objects of management of the plan under revision so far as applicable to the tract being dealt within working plan were as follows:

1. To preserve and improve forest vegetation of all types of the fullest extent possible with a view to satisfy as much as possible of the local demand for timber, fuel, fodder and grass.
2. To arrange for the collection of resin from as large an area as possible of the chil bearing tracts;
3. To provide for the highest possible sustained yield of chil timber primarily with the object of satisfying local demands for timber and fuel and secondarily with a view to selling any surplus supplies of timber in open market.
4. To provide for the exploitation of the very limited area of scrub forests for the produce of which there is at present a demand or for which a demand is certain to arise during the working plan period.

5. To increase proportion of economically important species in the scrub forests by artificial means;

6. To bring the growing stocks as near to the normal state as possible and

7. To protect all forests from fire.

Consequently, the forests covered under the present working plan were managed under the Bharwain chil working Circle. The working circle comprised of all the reserved forests of the then Bharwain Range. These were either stocked with pure chil or scrub or sal in mixture with chil. Total area of the forests allotted to this working circle was 10,489 acres (4390.59 ha)

Based on the composition and density of the crop, the forests were classified as:

a) Blank or sparsely stocked

b) Scrub

c) Mixed chil and scrub

d) Chil and

e) Mixed chil ,sal and scrub

The stocks maps were prepared on scale 1:15840.The areas under regeneration in Mohan Plan and were proposed were shown on the stock of chil enumerated in these areas. The silvicultural system in chil and scrub forest type (a to d) supra was very conservative selection system with diameter limits combined with the allotment of specific areas of regeneration, felling cycle of 15 years of chil,30 years of sal. Age of chil trees of selection diameter 60 cm would be about 150 years. The yield was fixed by area. The areas under regeneration were to be stocked with chil and khair by patch sowing. An area of 203 acres (82.15 ha) was to be stocked during the period of the plan. Thinnings and improvement fellings according to the fixed programme were prescribed. Sal was to be treated under the coppice with standards system retaining 50 standards of sal, khair and other species per ha and a rotation of 30 years for coppice and 60 years for standards. Over wood over all species over Sal was to be sufficiently lightened to let sal grow vigorously. The exploitable diameter for sal was fixed at 20 cm and for standards 30 cms and of miscellaneous species also at 30 cms. Thinnings in young crops and improvement fellings for the rest of scrub forest were prescribed.

Results:-

The fellings were carried out as laid, in a conservative manner, however the fire had further opened the crop at places. The proportion of Khair had increased. Khair came in naturally also. Mohan was therefore, right in prescribing

the stocking with chil only and it was ... ...et to
and khair. An area of 82.15 ha had been stocked, ... The sal
be established because of the earlier attempts having been wiped out by fire. The sal
forests had been worked according to the prescriptions. The sal coupes were felled
as follows:-

COPPICE COUPES FELLED

Year of Prescription	Forests	Old Compt. Number	Coupe No.	Area (Ha.)	Total of the year	Year of Felling
1951-52	R.II.Lohara	2	I	22.66	22.66	1951-52
1952-53	-do-	2	II	24.28	24.28	1952-53
1953-54	R.III Dharui-D	whole	III	15.38	15.38	1953-54
1954-55	R.II Lohara-B	3	IV	12.55	12.55	1954-55
-1955-56	-do-	3	V	25.50	25.50	-1955-56
1956-57-	-do-	2	VI	21.04	21.04	1956-57-
1957-58	-do-	2	VII	13.36	13.36	1957-58
1958-59	-do-	2	VIII	20.64	20.64	1958-59
1959-60	-do-	1	IX	29.54	29.54	1959-60
1960-61	-do-	3	X	21.04	21.04	1960-61
1961-62	-do-	3	XI	10.93	10.93	1961-62
1962-63	-do-	3	XII	11.74	11.74	1962-63
1963-64	-do-	3	XIII	9.71	9.71	1963-64
1964-65	-do-	2	XIV	17.40	17.40	1964-65
1965-66	-do-	2	XV	23.47	23.47	1965-66
1966-67	-do-	2	XVI	18.62	18.62	1966-67
1967-68	-do-	2	XVII	8.50	8.50	1967-68
1968-69	-do-	2	XVIII	20.23	20.23	1968-69

Year of prescription		Number	Coupe No.	Area (Ha.)	Total of the year	Year of Felling
1969-70	-do-	2	XIX	11.33	11.33	1969-70
1970-71	-do-	2	XX	13.76	13.76	1970-71
1971-72	-do-	2	XXI	17.81	17.81	1971-72
1972-73	-do-	2	XXII	11.33	11.33	1972-73
1973-74	-do-	2	XXIII	12.55	12.55	1973-74
1974-75	-DO-	2	XXIV	12.55	12.55	1974-75
1975-76	R.III Dharui-C	1	XXV	11.33	11.33	1975-76
1976-77	-do-	2	XXVI	15.38	15.38	1976-77
1977-78	R.III Dharui-C& E -	2	XXVII	8.09	8.09	1977-78
1978-79	R.III Dharui-A -	2	XXVIII	15.38	15.38	1978-79
1979-80	-do-	2	XXIX	8.09	8.09	1979-80
1980-81	-do-	2	XXX	17.81	17.81	1980-81

Table 35

The thinnings were carried out as follows:-

THINNING AND IMPROVEMENT FELLINGS

Year	Forest	Compt.	Area in ha.	Total area	Year of Felling	Area felled
1966-67	R-II Lohara-A	I.b	95.91			161.88
	R-III Dharui-B	Whole	11.32	371.11	1951-52	
1952-53	R.I Panjal	I.a	22.66			
1967-68	-do-	2.a	19.43			
	-do-	1.b	129.10			
	R-III Dhari-B	(p)	78.11		1952-53	129.10
	R.II.A-Lohara	2.a	14.57	263.86	1956-57	14.57

Year	Forest	Coupe	ha.			
1953-54	R.II Lohara-A	1.b	66.37			
1968-69	-do-	2.b	121.41			
	R.III Dharui-B	Part	32.21	352.09		
	R.I Panjal	1.b	129.10			
1954-55	R.II Lohara-A	2.b(P)	283.29	283.29		
1969-70						
1955-56	R.II Lohara-A	2.b(P)	90.65			
1970-71	R-III Dharui-F	2	88.63			
	R-III Dharui-A	2	49.37	228.66		
1956-57	R-I Panjal	2.b	256.98			
1971-72	R-III Dharui B	2	55.04	312.02		
1957-58	R-III Dharui A	1	338.33	338.33		
1972-73						
1958-59	R-I Panjal	3	352.09	352.09		
1973-74						
1959-60	R-II Lohara-A	3	357.37	357.37		
1974-75						
1960-61	R-I Panjal	4	214.49	214.49		
1975-76						
1961-62	R-III Dharui-D	256.98	256.98			
1976-77						
1962-63	R-I Panjal	5	291.38	291.38		
1977-78						
1963-64	R-III Dharui-C	1	19.19			

1978-79		2	23.47			
		3	39.66			
	R.II Lohara B	1	196.98	276		
1964-65 1979-80	R-II Lohara B	2(P)	293.29	293.29		
1965-66	R.II Lohara B	2(P)	135.98			
1980-81	R.II Lohara B	3	117.36			
	R.III Dharui E	whole	3.24	256.58		
			4308.44	**562.53**		

Table 36

There had been excessive fellings by way of removals of dry fallen and wind broken trees which had become a general feature. The incidence of mortality due to drying up was on the increase which was attributed to faulty resin tapping, repeated fires and recession of water table. Regeneration had been deficient. Due to creation of dry conditions by fires the proportion of khair had been increasing.

7.6.1 Khair (overlapping) Working Circle:

The working circle comprising of khair bearing areas allotted to Bharwain chil working circle was approved by Chief conservator of Forests and approval conveyed by CF WP. Circle to CF Dharamsala vide No C.III (a) 129/4567 dated 23.10.1972. The objects of management were to realize all mature and over mature stock of khair over and above the requirement of right holders for the manufacture of katha and in the process realize maximum revenue to the state from these forests and to increase the proportion of khair by both artificial and natural means followed by cultural operations. No stock maps were prepared but enumerations were done. The silvicultural system was modified selection system without thinning. The exploitable diameter was prescribed by area and the annual coupes sufficient for feeding 2-3 katha bhatties laid.

III) Results:

The felling programme had been carried out, but over inadequate area, mainly because of the problem of closure, the success of which has also been partial.

7.7 Baldev Singh's Working Plan (19

The following working circles were constituted:

1. Una chil working circle
2. Una coppice working circle
3. Khair (overlapping) working circle
4. The protection working circle

7.7.1 Una chil working circle:-

The reserved forest of Bharwain and Amb ranges of Una in which chil occurs either pure or in proportion exceeding 505 were allotted to the working circle. The total area of this working circle was 3300.78 ha.

The forest area is highly remarkable physical configuration consisting of a series of stony nalas and deep ravines generally with precipitous sides and broken irregular ridges with the tree bearing flat and moderately sloping hills interspersed in between, damage by erosion and land slip is significant. The composition and density of crop changes from place to place. The following types of areas are met with in this working circle.

a).Blank or sparsely stocked area:

This type is met with on precipitous grounds.

b).Mixed chil and scrub areas:

In this type, the scrub forms the underwood and chil over wood, khair is the economic constituent of the scrub. The chil crop is open and trees are frequently mature, branchy and malformed.

c).Dominantly chil areas:

This type is constituted by pure chil crop of thin to open canopy. The old trees are frequently branchy and twist is very pronounced whereas the younger ones are of comparatively better quality. The density and quality improves on flat and gently sloping areas. Chil plantations raised from time to time have continuously suffered due to severe and repeated fires and heavy bush growth. The regeneration areas of the plan under revision have not been properly restocked is as under:

Bharwain Range	900.95 ha
Amb Range	202.37ha

The following table shows the areas determined on stock mapping covered by different types.

TYPES OF AREAS IN CHIL WORKING CIRCLE

Blank or sparsely stocked (ha)	Scrub chil(ha)	Chil (ha)	Total area (ha)
1103.32	2130.28	67.18	3300.78

Table 37

The forests had been stock mapped on 4"=1 mile (1:5840) scale. Chil in pure form occupied 2.04% of total area in the circle, rest being predominantly scrub or blanks. The average quality of chil was III/IV to III. The crops are uneven aged. The average crop density varies from 0.2 to 0.6 and the average density of the working circle was taken as 0.4 cm dbh. The detail of growing stock was given in para 63. (IV).

The chil forests were to be managed under the Indian Irregular Shelterwood System or The Punjab Shelterwood system with floating periodic blocks. The method of periodic blocks or single periodic block was adopted in view of the area subject to the repeated forest fires and interspersed blanks.

Quarter Blue Areas:-

All the regeneration areas where regeneration had not established, dense undergrowth of Lantana, open crop bearing areas were allotted. No type of felling was to be done except for removal of bushes. Serious efforts were to be made to establish the regeneration.

Quarter Blanc Areas:-

Rest of the areas were allotted to quarter blank. No felling except for salvage removals were to be carried out. The rotation of 120 years to attain 52 cm dbh was adopted with the regeneration period of 30 years. Two periodical blocks were constituted as per para 69 of the plan.

Yield:

Yield was calculated by volume annually 1800 m3 with the provisions of compensatory plantations for excess yield and curb on green felling for deviation exceeding 20%. In case the yield exceeded compensatory plantation at the rate of 10 ha. For 500 m3 excess felled was to be raised in quarter blanc of working circle. In case deviation exceeded 25%,the working of area was to be deferred. Since the inception of the working plan under revision, no green felling were carried out during the period of the working plan and table of felling as per para 73 was not followed. Only salvage removals were done. Year wise salvage removal is detailed below:

Year wise salvage removal

Year	Reserved Forests	
	Nos.	Vol
1996-97	2181	2995.08
1997-98	0	0.00
1998-99	962	1447.44
1999-2000	4565	6101.50
2000-01	2718	3573.59
2001-02	1880	2778.11
2002-03	3440	3996.43
2003-04	2775	3052.69
2004-05	2464	2947.32
2005-06	1211	1399.98
2006-07	2118	2228.26
2007-08	1457	1759.13
2008-09	3773	3706.43
2009-10	6142	5825.85
2010-11	2668	2523.70
		44335.50
Total	**38354**	**+29335.50**

Table 38

Against prescribed salvage removal of 1000 M³ per annum (15000 M³ during plan period), 44335.5 M³ was removed as salvage.

MARKING IN CHIL WORKING CIRCLE

Year	Volume in M³	Remarks
1981-82	3406.09	Salvage marking
1982-83	1958.25	Salvage marking
1983-84	2023.90	Salvage marking
1984-85	18236.92	Salvage marking
1985-86	17546.82	Salvage marking
1986-87	6922.84	Salvage marking

	Volume in M3	Remarks
1987-88	5129.94	-do-
1988-89	13052.92	Salvage marking
1989-90	7788.76	Salvage marking
1990-91	3740.97	Salvage marking
1991-92	2387.23	Salvage marking
1992-93	2444.27	Salvage marking
1993-94	3449.74	Salvage marking
1994-95	2628.58	Salvage marking
1995-96	7723.26	Salvage marking
		+ 71440 M3 up to 3/96

Table 39

Result of working:-

The areas which were prescribed for felling as per para 73, table 43 were not worked due to ban on green fellings. During the period of plan only salvage markings were done. In salvage markings 98530 m3 volume of chil was removed.

Artificial regeneration carried out has suffered heavily on account of repeated fires. The result of regeneration survey is given as below:-

1. Blank area prescribed for felling = 1103.60 ha.

   During plan period

2. Area felled during plan period = -

3. Position of regeneration

   a) Area of advance growth/standing = 135.40ha. (12.26%)

   b) Fully regenerated area = 21.49 ha. (1.94%)

   c) Partially regenerated area = 30.61 ha. (2.77 %)

   d) Poorly regenerated area = 47.00 ha. (4.25%)

   e) Cultrable blank = 741.75 ha. (67.21%)

   f) Un-culturable blank = 127.38 ha. (1.54%)

Sowing and planting:-

No sowing/planting programme was prescribed and was left to the direction of D.F.O particularly no seeding felling was done and areas were cleared of scrub only. Removal of dry/fallen trees was an annual feature. After clearing off bush growth and felling refuse. If any, the areas were to be taken up for planting immediately. In all 255 ha. area allotted to quarter blue was planted.

Control Burning:

The programme was followed partly and fire lines maintained as per availability of funds.

Critical appraisal:

1. **There** had been excess removal of (+) 71480m3 up to 3/96 on account of salvage markings. This led to further deterioration of growing stock in the forests allotted to this working circle. Growing stock assessed at the time of preparation of working plan was 93.24m3 per ha. and about 22 m3 per ha. has been removed in excess of the prescribed yield.

2. Defective resin tapping and frequent fires in chil areas are the main reasons of drying up of chil trees in this working circle. Fire protection measures such as control burning, maintenance of fire lines, creation of internal fire lines, creation of fire breaks were not followed for want of funds with the result that lot of chil trees dried up in fire. Similarly defective resin tapping both by cup and lip method and rill method also led to dry up of trees. Efforts had been to have maximum yield without caring for quality tapping. Reducing of minimum tappable dia from 35 cm to 30cm further damaged poles.

3. As per para 73 of plan under revision 1103 ha of quarter blue was prescribed for felling and planting from 1985-86 to 1989-90.Only 285 ha area was planted during the plan period. Green felling was not done. The regeneration operations carried out in these areas without carrying out seeding fellings also suffered heavily on account of repeated fires.

4. Subsidiary silvicultural operations such as weeding, bush cutting, pruning etc remained unattended during the plan period. This also led to spread of fire.

5. Inclusion of more areas of transitional belt in the chil working circle and favouring chil over B/L species have not yielded desire results. Such areas bear stunted growth of chil and are not likely to meet the objects of management i.e. resin tapping and timber production on account of short boled, malformed, twisted and branchy chil crop.

6. Regeneration surveys showed that out of 1103 ha, 810 ha. (74%) is yet to be regenerated/plantations carried out in 255 ha.in the past has also failed and the position of regeneration in quarter blue areas is very poor. Poor regeneration is on account of frequent fires and un-hospitable sites for raising chil.

7. The yield removed is in excess of yield prescribed. As per prescription compensatory plantations @ 10 ha. for every 500m3 excess removal was to be done. It was not monitored properly.

Comparison of growing stock:

The growing stock in chil working circle is 32.34m3 per ha. (total 105761.60m3) which is much less than the normal growing stock of 136m3 per ha. (for site quality III and C grade thinning).At the beginning of plan under revision the growing stock was 71.41m3 per ha(total 313631.71m3).Thus there has been a decrease of 207870.12m3.Part of this (98440m3)can be attributed to the fairly heavy salvage removal during the plan period. Rest of it can be attributed to the salvage after the plan period and the rotten /unfit trees which after heaving dried/fallen, being un-economical to remove in salvage, might have just decayed in the forests. The present crop has preponderance of younger age classes (V, IV and III) whereas at the beginning of the plan under revision the crop had [preponderance of middle age classes. This change may be due to removal of middle aged and mature trees in chil salvage during the plan period.

7.7.2 Coppice working circle:

General Character of vegetation:-

Parts of reserved forests of Una district where the proportion of sal is more than 50% were allotted to this working circle. The over wood is of chil. The chil trees are mature, branchy and twisted. Sal is on its western end. Sal trees are small, generally scrubby in nature and stag headed. These have suffered greatly from frost, extensive overhead shade and lack of scientific management. The coppice and natural regeneration of sal has come up sufficiently in areas closed for grazing. The area of this working circle was 549.89 ha. constituted by the reserved forests. Break up of area by ranges is as under:

Bharwain Range = 371.93 ha.

Amb Range = 177.96

Main object of management of this working circle was preservation and expansion of sal by favouring sal against all other species. The forests had been stock mapped on 4"=1 mile (1:15840) scale. Sal occupies 91.74% of total area. The average quality of sal is poor. The crop is more or -less even aged. The average crop density varies from 0.4 to 0.8 and average density as 0.6.

Silvicultral System:-

The forests of the working circle were managed under coppice with standards system. Rotation of 30 years for coppice and 60 years for standards was adopted. The exploitable diameter was fixed as 20cm.for sal coppice and 30 cm and over for sal standards. Regeneration period was 10 years. Felling cycle for sal coppice adopted was 30 years.

Yield:-

Yield was regulated by area. In the working plan under revision, it varied from 9.71 ha.to 34.61 ha. annually. Sequences of fellings:-Out of total area allotted to the working circle, area felled year wise is tabulated below:-

COPPICE COUPES FELLED

Year of of prescription	Name of forest	Compt	Coupe No	Area(ha)	Year of prescription carried out
1981-82	R.III Dharui-A	C2 part	XXX	17.81	1981-82
1982-83	R.II Lohara-B	C9 part	I & II	34.88	1982-83
1983-84	R.III Dharuhi-D	C1 part	III	15.38	1983-84
1984-85	R.II Lohara-B	C1part	IV	26.92	-
1985-86	R.II Lohara-B	C6 part	V	19.26	1985-86
1986-87	R.III Dharui-D	C8 part	VI	21.04	1986-87
1987-88	R.III Dharui-D	C4 part	VII	19.26	1987-88
1988-89	R.II Lohara-B	C4 part	VIII	27.42	1988-89
1989-90	R.II Lohara-B	C4	IX	34.61	1989-90
1990-91	R.II Lohara-B	C5 part	X	21.04	1990-91
1991-92	R.II Lohara-B	C6 part	XI	20.00	1991-92
1992-93	R.II Lohara-B	C5 part	XII	11.74	1992-93
1993-94	R.II Lohara-B	C5 part	XIII	9.71	1993-94
1994-95	R.II Lohara-B	C8 part	XIV	8.26	1994-95
1995-96	R.II Lohara-B	C9 part	XV	11.66	-

Table 40

7.7.3 Comparison of growing stock:-

In the areas of coppice Working Circle the number of chil trees has gone down from 33330 to 14674. This may be due to salvage removals from these areas. The number of khair trees has gone down from 23981 to 16652 which is due to marking of khair in coppice areas.

Critical appraisal:-

The forests allotted to this working circle are mixed sal-scrub and chil forests. Chil is being managed in upper storey, whereas sal, and other B/L in the the under storey. Two storeyed concept of management has done well and produced desired results. Out of 299 ha. area felled in this working circle during plan period 260 ha. (87%) is fully regenerated. Another 31 ha. (10%) is partially regenerated. Only 3% is un-regenerated.

2 Average quality of sal is poor. It had been subjected to frequent fires in the past. This has delayed the establishment of regeneration particularly in fire prone areas. Therefore, more fire protection measures such as creation of internal fire lines, fire breaks in each forest block are required to be taken.

3 Increasing of proportion of chil in such areas is required to be discouraged and the prescription of plan under revision required to be amended accordingly. Increasing the proportion of chil will add to the acidity of soil, degradation and climax vegetation and enhance the risk of fires in these areas. B/L species such as sal, Terminalia, Khair should be preferred, Chil should be encouraged in such a manner so as to have open but uniformly spaced overhead crop. This will help in making maximum production.

4 Subsidiary silviculture operations such as cleaning of coppice shoots, singling of shoots, climber cutting, weeding and bush cuttings have not been attended to in the past.

7.7.4 Khair (Overlapping) Working Circle:-

Special object of management was to harvest mature and over mature stock of khair for the purpose of making katha. The areas in this working circle are those allotted to the Una chil Working Circle. Total area is 3300.78 ha. with the range wise breakup as under:-

Bharwain Range	2744.08ha
Amb Range	556.70ha.

The proportion of khair has been shown by the horizontal and vertical hatches in stock maps prepared for chil forests. Horizontal hatches indicate the percentage of khair mixture with chil from 25% to 50% vertical hatches indicate the %age of khair mixture with chil below 25%.

Khair has been harvested under selection system with the exploitable diameter at 20cm at breast height. Felling cycle of 15 years was adopted.

Yield:-

The yield prescribed was by area and was 220 ha. approximately with the total trees to be felled annually 2000 Nos.

Results:-

As against 3300 ha. and 30,000 trees prescribed for felling during plan period 2947 ha. and 38597 trees of khair were removed. Removal in number of khair trees was in excess by 8592 trees. Similarly by area it was less by 53 ha. Year wise breakup of yield removed is given below:-

Removal of Khair during plan Period

Year	Area proposed as per plan	Area felled	
		Area in ha.	No of trees
1	2	3	4
1981-82	283.11	283.11	2462
1982-83	-	338.31	876
1983-84	226.63	339.42	4699
1984-85	243.46	348.69	3405
1985-86	233.11	291.28	3647
1986-87	232.18	235.84	2288
1987-88	231.85	128.67	1321
1988-89	233.10	239.60	6432
1989-90	232.18	195.68	1404
1990-91	234.07	115.18	1446
1991-92	227.56	227.56	2700
1992-93	235.53	234.07	4155
1993-94	231.08	-	372 salvage marking

Year	Area proposed as per plan	Area felled	
1994-95	230.27	-	334 –do-
1995-96	222.99	-	3151-do-
Total	3300.78	2977.41	38592 (+8592 up to 3/96)

Table 41

Comparison of growing stock:-

In the khair working circle the number of khair trees has gone down from 240311 to 180374. This decrease in number of khair trees is partly due to regular markings of khair in this working circle (38592) and partly, may be, due to natural calamities (Floods of 1988 and fires of 1995).

Critical appraisal: - Yield position as it stood on 31.3.1996, by area is quite satisfactory. Less area has been felled than the prescribed as against yield of 2000 trees per year i.e. 30,000 trees during the plan period, 38592 trees have been removed. The removal is in excess by 8592 trees during the plan period.

The reasons for deviation (+8592 trees) are twofold.

a). The trees of d.b.h less than the exploitable diameter, removed in salvage have also been counted against the prescribed yield, whereas these should not have been.

b). The calculation of yield in the working plan under revision was on conservative side in the sense that only 1/8th of the trees of 10-15 cms class were taken as fit for achieving the exploitable diameter during the plan period. It should have been 7/11th instead of 1/8th.

2. Exploitable diameter had been fixed as 20 cm and it was prescribed that all the trees of 20 cms dbh and above will be remove. This prescription is required to be reviewed with a view to build up of growing stock in the forests.

3. Felling work is not completed in time by HPSFDC, with the result that coppice shoots are damaged during late working of lots. Concerning clauses in the A.D. are required to be amended so as to ensure handing over of worked lots by Ist March of every year positively.

4. Subsidiary silvicultural operations prescribed in the plan also remained un attended.

7.3.54. The Protection Working Circle

Object of management was to protect the areas against denudation and erosion. Almost every type of vegetation except bamboo met with in this tract, is found in the areas allotted to this working circle. Total area of this working circle is 541.47 ha. Range wise break up is as under:-

RANGE WISE BREAK UP OF AREA

Name of range	Area in ha	Class of forests
Bharwain	124.01	Reserved
Amb	417.26	reserved

Table 42

Stock mapping f forests was done on 1:15840 scale

AREA BY SPECIES

Range	Area in ha under			Blank or scrub
	Total area	Chil	Misc BL	
Bharwain	124.31	95.68	22.06	6.27
Amb	417.46	140.56	164.95	111.95

Table 43

Treatment

Areas under this Working Circle are under severe erosion. Afforestation works were not practicable. Only soil conservation measures mainly engineering structures had been taken up as per availability of funds.

Some soil conservation woks and Afforestation works had been carried out by department as well as Kandi Project authorities in the area allotted to this working circle.

The following plantations and protection works were carried out during the plan period.

19878-88	R.II Lohara BC.2	0.8 ha
1987-88	R.I Panjal C.21	0.6 ha

7.8 Bhardwaj's Working Plan

Forests were managed under following working circles:-

1. Chil Working Circle
2. Coppice Working circle
3. Khair (overlapping) Working Circle
4. Protection-cum- Rehabilitation Working Circle

7.8.1 Chil Working Circle

7.8.1.1 **GENERAL HISTORY OF THE FORESTS:** - The first major management intervention in chil forest came from Bailey Rules of 1853 under the Deputy Commissioner Management regime. He introduced a strict system of forest conservancy that provided, inter alia, for the division of all forest land into three parts, for the closure of each part (one –third, trihai) for three or more years in rotation and for strict control in the open two-third. Chil forests were managed under irregular Shelterwood system. The forests continued to be worked spasmodically until only few sound exploitable trees were left in the area.

The first regular working plan of Hart prescribed chil working under improvement as he felt that the then chil areas were unfit for either regeneration (concentrated) or selection felling. Even as far back as that Hart was reluctant to introduce the concentrated regeneration fellings as he felt that it was difficult to get the forests closed to rights. In fact in 1909 looking at the increasing demands of the right holders and excessive grazing, the Government of India imposed a cattle tax and enhanced gaddi grazing dues.

Walter's Plan aimed to convert the irregular chil crop by an even aged crop and to maximize yield and revenue. For this he introduced Uniform System with artificial regeneration in PB I. However, during the period of that Plan only 51% of the total PB I area was subjected to regeneration felling and closed, and only 24 % of it regenerated. The regeneration did not come up in all the areas taken up for seeding felling.

Under Mohan's Plan the chil was worked under Shelterwood System. The precipitous areas were left out as theses were thought to be unfit for concentrated regeneration fellings. Mohan held the view that that chil in this division did not require a very heavy opening of the canopy to induce natural regeneration. All the areas where seeding fellings were carried out were not regenerated leaving majority of the PB I areas still to be regenerated in the remaining 20 years of the block. The general condition of the PB I areas had not been satisfactory. Fires had destroyed the crop.

Bhardwaj's Working Plan continued with the Indian Irregular Shelterwood System to manage chil. The chil crop was generally under stocked, irregular and in lower reaches

invaded by scrub. A large majority of the chil PB I areas of the division being invaded by scrub species were to be patch sown (not wait for natural regeneration) with chil and such sowing were to be further helped by repeated scrub cutting and burning. Also the poor quality of chil (III/IV) typical of division can in no case be relied upon as the source of construction timber". The broadcast and patch sowing of chil in the PB I areas despite repeated efforts had been a total failure. Most PB I areas were invaded by scrub species including Khair. Chil planting was also not very successful. Though the plants showed good survival in the first year but in the second year 80% of them died out possibly due to (i) refractory nature of ground (ii) suppression by weed growth (iii) drought & (iv) forest fires. The yield was in deficit mainly on account of failure of regeneration because of which no secondary or final felling could take place. The deficit was, however, largely made up by the unforeseen large scale salvage removals of dry burnt trees. Regeneration efforts had largely been a failure. Fire took a heavy toll of the growing stock of all ages.

Reserve Forests of Amb and Bharwain ranges in which Chil occurs in proportions exceeding 50% were managed under this Circle. The area was 3270.02 ha. The forest area consisted of numerous Khads and Nalas with steep and precipitous slopes and broken ridges. The crop was sparse on ridges and chil mostly existed on comparatively flatter areas and along the nalas. The density varies from 0.1 to 0.4 in general and at some places up to 0.7. The quality class varied from III, III/IV, and IV.

Area and allotment:

S.No	Name of Range	Area in ha.
1	Bharwain	2713.32
2	Amb	556.70
	Total	**3270.02**

7.8.1.2 Analysis and evaluation

The Chil forests were to be managed under irregular shelterwood system. The method of floating periodic lots was adopted. Two periodic lots Quarter Blue (PB-I) AND Quarter Blank (PB-Unallotted). The rotation of 120 years was fixed by which time Chil attains 52 cm diameter at breast height. The regeneration period was fixed as 30 years.

7.8.1.3 Yield

Since the growing stock in PB-I and PB-Unalloted was 26.21 M^3 and 35.37 M^3 per/ha only which was well below the normal growing stock of chil corresponding to site II/III (136.00 M^3 per/ha), therefore, no yield was prescribed. However, approximate yield

from salvage marking was estimated to be 1000 M^3 per annum. Year wise salvage removal given below:-

7.8.1.4 Sequence of felling

No felling was prescribed. However, five years regeneration programme for PB-I areas was prescribed. The following steps were to be taken to regenerate the PB-I areas:-

1. 6 to 8 hundreds chil plants per hectare were to be planted for which nursery stock was to be raised one year in advance.
2. Nursery stock of genetically superior seed origin was to be raised as per the time table prescribed.
3. Removal of bushes/ useless B/L species was to be done prior to planting
4. Area was to be fenced by erecting B/Wire
5. Only graded seedlings of size more than 9 inches were to be planted and seedlings were to be covered with branches of Garna
6. Weeding and hoeing was to be done twice in Ist year and once for the next year.
7. Failures were to be beaten up for two years

7.8.1.5 Result of Working

No green felling was prescribed. However salvage removal were carried out as per the table 19

In salvage marking, 44335.50 M^3 of Chil volume was removed which resulted in further degradation of growing stock of chil. The total growing stock at the beginning of the plan under revision was 105761.60 M^3 (32.34 M^3 per ha.). The growing stock now is 104138.60 M^3 (31.84 M^3 per ha). Thus, there is a decrease of 1623 M^3.

The Regeneration Plan as envisaged by the WPO were not followed in full and where it was carried out, could not met with much success as a result of which the regeneration in the PB-I areas were failed. The main reasons of failure are:-

1. Most of the areas of PB-I have been invested by Lantana to a great extent and the percentage of other misc. B/L species have also increased due to non-felling of green species(since there is moratorium on green fellings) which have further compounded the problem of non-establishment of regeneration of Chil. Chil being strong light demander could not find enough light and space in the presence of Lantana and other B/L species.

2. Frequent forest fires have further added to this problem.

7.8.2 Coppice Working Circle

Compartments of Reserve Forests of Una Forest Division falling under Bharwain and Amb Range and bearing Sal crop more than 55 % (Volume 43%) were being managed under this Working Circle. The over wood in these areas mainly consists of Chil trees and Sal is the dominant species in the middle storey. Sal trees are generally small in

size and at places stag headedness is there. Though there is preponderance of lower classes Sal trees and regeneration is in abundance, but growth of the trees is very slow. This may be due to forest fires and frost. The area of this Working Circle was 549.8 ha. The main object of management was preservation and expansion of Sal and other valuable broad leave timber species by favouring them against all other species.

7.8.2.1 Silvicultural System

The forests under this Working Circle were managed under Coppice with Standards system. The rotation period was 30 years for Coppice and 60 years for Standards. The regeneration period was fixed for 10 years. Felling cycle of 30 years was fixed and sequence of fellings programme was prescribed as under:-

Year	Name of Forest	Compartment	Coupe No.	Area (ha).
1996-97	R.II Lohara B	C9(P)	XVI	18.62
1997-98	R.II Lohara B	C9(P)	XVII	8.50
1998-99	R.II Lohara B	C10(P)	XVIII	20.23
1999-2000	R.II Lohara B	C8(P)	XIX	11.33
2000-2001	R.II Lohara B	C8(P)	XX	13.76
2001-2002	R.II Lohara B	C8(P)	XXI	17.81
2002-2003	R.II Lohara B	C10(P)	XXII	11.33
2003-2004	R.II Lohara B	C10(P)	XXIII	12.55
2004-2005	R.III Dharui C	C1	XXIV	16.19
2005-2006	R.III Dharui C	C2(P)	XXV	11.33
2006-2007	R.III Dharui C	C2(P)	XXVI	12.09
2007-2008	R.III Dharui A	C2(P)	XXVII	8.09
2008-2009	R.III Dharui A	C2(P)	XXVIII	15.38
2009-2010	R.III Dharui A	C2(P)	XXIX	8.09
2010-2011	R.III Dharui A	C2(P)	XXX	17.81
			Total	**203.11**

Table 44

7.8.2.2 Comparison of Growing Stock:

In the areas of Coppice Working Circle, the number of Chil trees has marginally increased from 14674 to 16940. Similarly, the number of Sal trees has also gone up from 114107 to 224071.

7.8.2.3 Critical Appraisal:

During the Working Plan under revision, only one felling coupe i.e. number XVI was worked as per the prescription of the Working Plan during the year 1996-97. After that no felling was carried out. As a result of this, the growing stock has increased to 145 cum per ha. There is sufficient increase in the number of Sal and Chil trees. 5 % of the growing stock consists of fruiting trees. 3 % of medicinal trees

species. As a result of non-working of the area, the percentage of economically less inferior species such as Mallotus philipinensis (8%) and Lannea grandis (7%) has also increased. Average quality of Sal is poor. The area is prone to frequent fire. Therefore, fire protection measures are required to be taken.

The percentage of Chil has increased in this Working Circle which is required to be discouraged since apart from increasing the acidity of the soil, it also increased the risk of fire in the forest. Therefore, Chil plantations in such areas should be discouraged. Due to negligence of subsidiary silvicultural operations such as climber cutting, weeding and bush cutting, the number of inferior species and weeds has also increased.

7.8.3 Khair (Overlapping) Working Circle

Beginning Hart's Plan khair was worked as part of the scrub working circle. However, he made no definite felling prescriptions as the out turn from the scrub forest at that time was not marketable. But he did indicate that if the demand arises then the forest be worked under Coppice-with-Standards system. It was first under Baldev Singh's Working Plan that a separate Khair Overlapping Working Circle was created. The circle embraced all forest areas of the Chil Working Circle. The special object of management was to harvest the mature to over mature stock of khair trees. The forests were to be managed on Modified Selection System without thinning. The exploitable diameter was fixed at 25cm d.b.h. A felling cycle of 15 years was adopted. The yield was prescribed by trees.

Going by the analyses carried out by the various WPOs and looking at the present status of crop in the field it is felt that Khair responded well to the Selection System of working. However, after 1996-97 no green felling of Khair has been carried out. Presently a large number of mature and over mature khair trees are standing in the forests. These are not only getting affected by the rot and the hollowness of the hard wood but are also a severe protection problem for the staff especially in the border beats adjoining Punjab.

Khair crop present in Chil Working Circle was managed under Selection System. The rotation period of 30 years was fixed for Khair during which it attains a diameter of 20 cm at breast height. The felling cycle of 15 years was adopted. 2500 trees of Khair per annum were to be felled. The year was calculated by using Brandis method.

7.8.3.1 Result

No green felling took place as per prescription of the Working Plan. Against 32500 trees which were to be felled during the Plan period, only 22962 trees of Khair were felled as salvage removal. As a result the number of Khair trees has increased from 180374 to 303588.

Year wise Break up Khair trees removed is given in the table below:-

Year	Reserved Forests	
	Nos.	Vol
1996-97	2906	1715.39
1997-98	0	0.00
1998-99	512	59.15
1999-2000	1741	91.30
2000-01	356	204.01
2001-02	1001	169.16
2002-03	2612	380.03
2003-04	2702	1226.95
2004-05	1009	155.33
2005-06	350	33.65
2006-07	1502	312.29
2007-08	1032	80.08
2008-09	2213	149.34
2009-10	2031	158.53
2010-11	2995	272.03
Total	**22962**	**5007.24**
Deviation	**(-9538)**	

Table 45

7.8.3.2 Critical Appraisal:

Due to non-working of the area, the yield position is very good as against 32500 trees which were to be felled; only 22962 trees were felled as salvage removal. Thus, there is a deviation of (-9538) trees. The reasons for deviation are as following:

1. Green felling as prescribed in the Working Plan under revision was not carried out
2. Calculation of yield in the Working Plan under revision was on conservative side

As a result of non-working, the number of mature and over mature trees has increased which is required to be removed to avoid loss due to rotting of these trees.

Subsidiary silvicultural operations as prescribed in the plan also remained unattended.

7.8.4 PROTECTION CUM REHABILITATION WORKING CIRCLE:-

The reserve forest areas having unstable strata, loose soil, active soil erosion were being managed under this working circle. The total area under this working circle was 572.23 ha. The object of management was to protect hill sides from denudation and erosion by preserving and increasing forest cover. No fellings were prescribed and forests were to be protected. The forest was categorized under three categories depending upon the degree of erosion, and soil conservation works such as gully

plugging, vegetative check dams and spurs were to be constructed. Seed of soil binding species were to be sown by broadcasting.

7.8.4.1 COMPARISION OF GROWING STOCK:-

Partial enumerations were carried out by random sampling technique. Result of enumerations show the growing stock per ha. Is 53 M^3. Though there is increase of broad leave species in the forest but the number of chil trees has drastically decreased. Cost of the soil conservation works remained unattended due to paucity of funds.

7.8.4.2 PAST YIELD, REVENUE AND EXPENDITURE:-

7.8.4.3 PAST YIELD: - The average out- turn % for last four years is as follow (Figures taken from H.P.S.F.D.C.Ltd.)

PAST OUT- TURN

Type of Lot	Out – Turn percentage				
	Timber	Khairwood	Pulp/Fuel wood	Charcoal	Resin
Chil	39.51	0	6.97	15.96	0
Khair	0	58.17	0	0	0
Resin	0	0	0	0	38.71 Qtl per 1000 blazes

Table 46

7.8.4.4 PAST REVENUE AND EXPENDITURE:-The following statement show the annual Revenue and Expenditure of Una Forest Division from the period 1996-1997 to 2010-2011

REVENUE AND EXPENDITURE

Year	Revenue (Rs)	Expenditure (Rs)
1996-1997	1343677	29674695
1997-1998	1214197	20751026
1998-1999	1033716	32181465
1999-2000	1415755	30753861
2000-2001	1879379	27973222
2001-2002	850328	24394279

Year	Revenue (Rs)	Expenditure (Rs)
2002-2003	3551655	23866237
2003-2004	2803647	25124423
2004-2005	3235758	29098693
2005-2006	5407007	36351315
2006-2007	9658978	39469937
2007-2008	1657441	24059264
2008-2009	2681228	57326855
2009-2010	2287316	63635532
2010-2011	1581770	31036125

Table 47

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CHAPTER VIII

STATISTICS OF GROWTH AND YIELD

8.1 GENERAL: - Chil and Khair are the economic species of the tract. Chil is important for the production of the resin and timber. The Chil crop of the tract under the plan corresponds to the site quality III/IV to III. Whereas Khair is important for the production of Katha.

8.2 DIAMETER GROWTH:-

8.2.1 CHIL: - The diameter age relationship as given in the plan under revision has been adopted as such and is reproduced as below:-

DIAMETER- AGE RELATIONSHIP FOR CHIL

DBH(OB) in cms	10	15	20	25	30	35	40	45	50	55	60
No. of Years to dl	18	25	32	39	48	57	67	82	102	130	176

Table 48

8.2.2 LOCAL VOLUME TABLE FOR CHIL:- Local volume table prepared for Nurpur Forest Division from general volume table for Chil has been adopted and same is reproduced as below:-

VOLUME TABLE FOR CHIL

Dia-Class	IV	III	IIA	IIB	IA & above
D.B.H(cms)	20-30	30-40	40-50	50-60	60-70 & above
Volume (cum)	0.19	0.65	1.44	2.60	3.54

Table 49

8.2.3 STUMP HEIGHT DIAMETER & BREAST HEIGHT DIAMETER RELATIONSHIP:-The diameters of 200 trees were measured at stump height (15 cms above ground level)and breast height (135 cms .above ground level) The trees consisted of at least 20 trees of each diameter class and were very well spread over the various forests under the plan. The results have been compiled as below:-

DIA. AT STUMP HEIGHT---DIA AT BREAST HEIGHT RELATIONSHIP

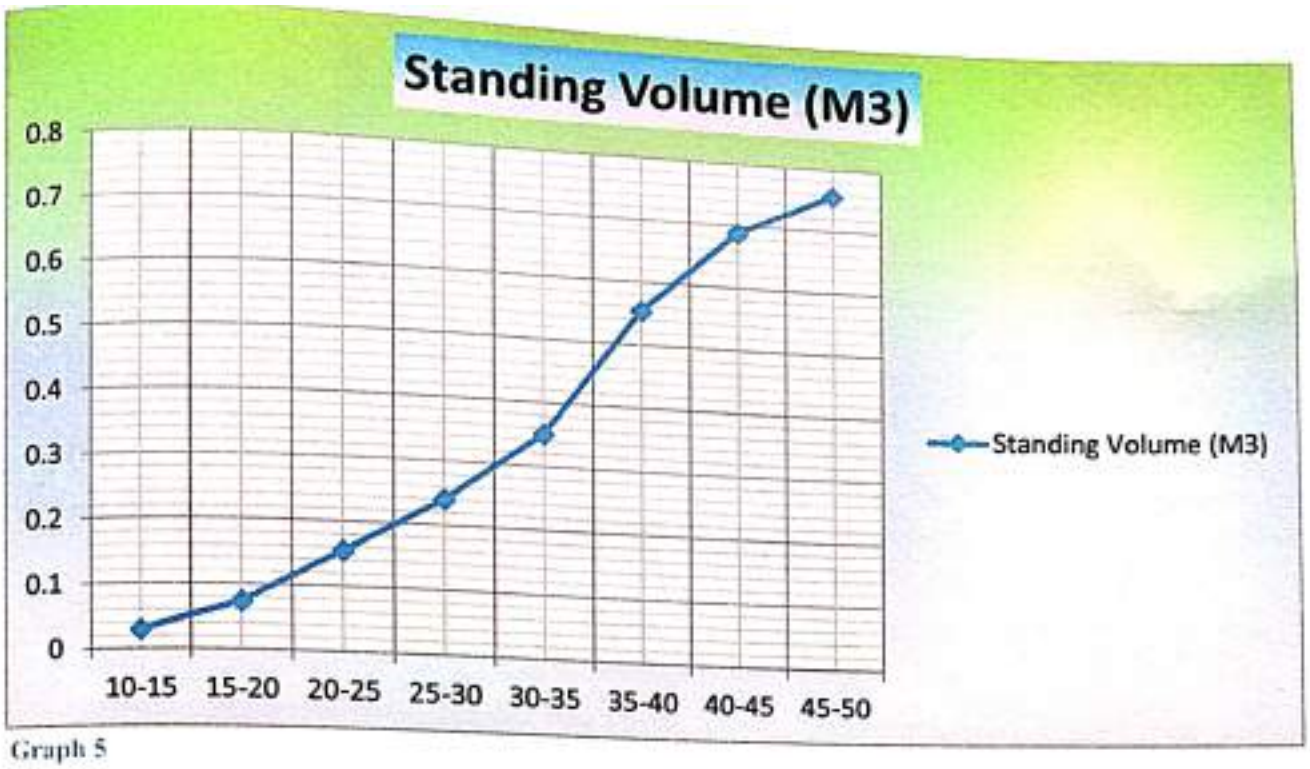
Dia. at Stump Height	Dia. at Breast Height	Dia. at Stump Height	Dia. at Breast Height
10	6	42	37.5
12	8	44	39.5
14	9.5	46	41.5
16	11	48	43.5
18	13	50	45.5
20	15	52	47.5
22	17	54	50
24	19	56	52
26	21	58	54
28	23	60	56
30	25	62	58
32	27	64	60
34	29	66	62
36	31	68	64
34	33	70	66
40	35.5	72	68

Table 50

8.3 KHAIR:-The quality of Khair corresponds to that of adjoining Nurpur Forest Division. Therefore the volume table for khair as used in Nurpur forest division has been adopted and are reproduced below.

Diameter (cms)	Standing Volume (M^3)
10-15	0.0291079
15-20	0.0736398
20-25	0.1550412
25-30	0.2399425
30-35	0.3504998
35-40	0.5530358
40-45	0.6876439
45-50	0.7564082

Table 51



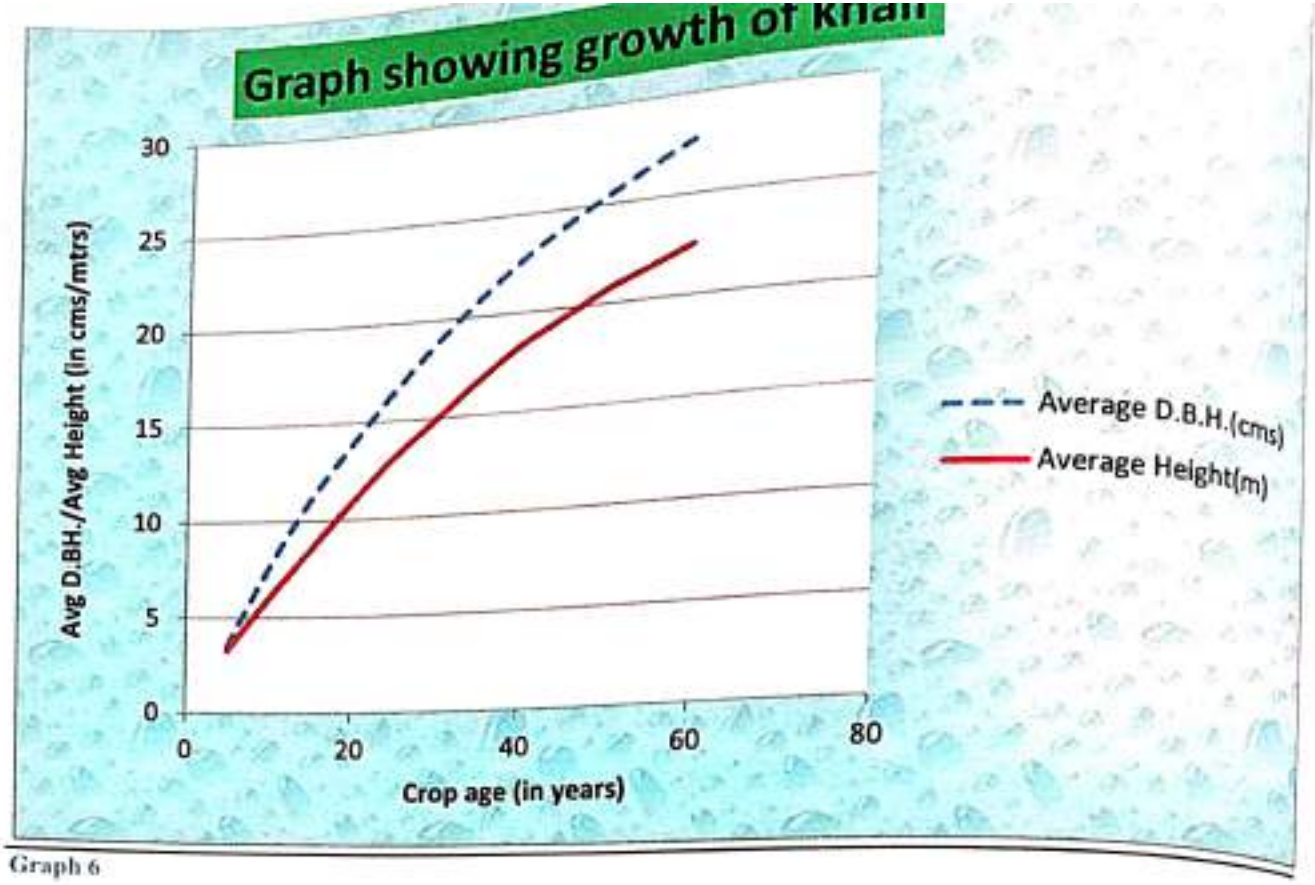
Graph 5

8.3.1 DIA. – AGE RELATIONSHIP: - Diameter-Age relationship as adopted in the plan under revision has been adopted as such. Similarly Diameter- Height relationship has been adopted from the working plan under revision.

GROWTH STATISTICS OF KHAIR

Crop Age (Years)	Average D.B.H. (cms)	Average Height (m)
5	3.5	3.3
10	7.6	6.0
15	11.1	8.5
20	13.9	10.9
25	16.5	13.1
30	18.8	14.9
35	20.8	16.7
40	22.6	18.3
45	24.1	19.5
50	25.4	20.7
55	26.6	21.6
60	27.7	22.5

Table 52



Graph 6

Following table show the average period in years taken by different diameter classes to enter into next higher class as derived from the above table:-

DIAMETER CLASS – AGE RELATIONSHIP

Dia Class (cms)	Total Age on entering the class (years)	Years taken to enter the next higher class	Yearly mortality	Survival %age reaching higher class
25-30	47	-	-	-
20-25	33	14	2	72
15-20	22	11	2	50
10-15	14	8	2	34

Table 53

8.3.2 LOCAL VOLUME TABLE FOR KHAIR: Local volume table for khair and miscellaneous statistics concerning the said species as given below are based on study of 10 khair trees of normal growth form and seemingly normal health in each dia class

felled under different locality factors. However in dia class 4045 and 45-50 cms. 4 number and 2 number of trees respectively could only be available despite all out search in the forests.

8.4 KATHA YIELD:- The relationship established under the working plan for Katha yield has been worked out and reproduced as below:-

YIELD TABLE FOR KATHA

Diameter (cms)	Standing Vol. (cum)	Heartwood (cum)	Wt. of H/wood (kg)	Wt. of dry katha (kg)
10-15	0.0291079	0.012	12.00	-
15-20	0.0736398	0.032	32.39	2.563
20-25	0.1550412	0.068	59.76	5.905
25-30	0,2399425	0.150	107.86	10.964
30-35	0.3504998	0.240	174.81	19.075
35-40	0.5530358	0.387	269.83	28.962
40-45	0.6876439	0.491	321.35	37.442
45-50	0.7564082	0.552	396.78	41.080

Table 54

8.5 BROAD LEAVED SPECIES: - The volume factor has been adopted from Nahan Working plan. The volume factor of Broad leaved species is tabulated below:-

Table No.

VOLUME TABLE FOR BROAD LEAVED SPECIES

D.B.H over bark (cms)	Class	Volume (cum)
10-20	V	0.127
20-30	IV	0.318
30-40	III	0.835
40-50	IIA	1.770
50-60	IIB	3.030
60-70	IA	4.587
70 & over	IB & above	6.385

Table 55

8.6 SAL: - The quality of Sal found in the forests covered by this plan is poor. Most of the crop is of pole size only. A few middle aged trees found here and there are malformed and branchy. The rotation period, exploitable diameter and regeneration period have been adopted as 30 years. 20 cms and 10 years respectively. The felling cycle and yield prescriptions (by area) as adopted in the plan under revision have been modified/ updated.

8.7 QUALITY_CLASS: - Chil is of poor quality and corresponds to quality class III/IV to III.

8.8 DENSITY: - Ocular estimations of density have been made and recorded in the Compartment history file of each Compartment.

8.9 STOCK MAPS: - Two sets of stock maps for all compartments on the scale of 1:15,000 have been prepared and attached in respective compartment history files.

8.10 ENUMERATIONS: - Apart from chil and khair the other broad leaves species which have been enumerated are Sal, Shisham, Chhal, Aisan, Jamun, Simbal, Tun and Siris etc. Khair has been enumerated in 5 cm diameter classes down to 5 cms d.b.h. Other species have been enumerated in 10 cms diameter classes down to 10 cms d.b.h.

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CHAPTER IX
CAPITAL VALUE OF THE FORESTS

9.1 GENERAL It is very difficult to ascertain the exact value of forests especially when intangible benefits derived from these renewable resources are taken into account. However, present capital value has been estimated on the basis of value of land, growing stock of various species and other non-timber forest produce.

9.2 ESTIMATION OF CAPITAL VALUE In case of Chil Working Circle, the degree of estimation can be said to be reasonably accurate as total & partial enumerations were carried out. Capital value of forests allotted to Protection Working Circle and Coppice Working Circle is based on enumeration by sampling and thus the growing stock and estimated value is subject to some degree of variation. The capital value of forests is worked out as under:-

A.VALUE OF FOREST LAND

S.NO.	WORKING CIRCLE	AREA	RATE	VALUE OF LAND
1	CHIL WORKING CIRCLE	3270.02	8,45,000*	2763166900
2	COPPICE WORKING CIRCLE	549.89	8,45,000*	464657050
3	PROTECTION CUM REHABILITATION WORKING CIRCLE	572.23	8,45,000*	483534350
TOTAL		4392.14	8,45,000*	3,71,13,58,300

Table 56

(*NPV rates as fixed by the Hon'ble Supreme Court of India for Eco class V for dense forests i.e. density up to .4 has been applied)

B. GROWING STOCK The present capital value of trees has been estimated by applying market rates for the year 2011-12. The estimation of capital value of growing stock of various species is given on next page.

Total Value of tree species (A) = **4587817161**

Total Capital Value of forests (A+B) = **4,58,78,17,161 +3711358300= 495, 89, 75,461**

The above estimate of the capital value of forests includes only tangible benefits such as production of wood, and value of land. It does not include indirect benefits like their significant role in water conservation, stabilization of terrain, influences on local climate and rainfall, aesthetic value and the benefits conferred on agriculture, socio-economic support for rural communities. It is not possible to reckon these values in monetary terms.

Table 9.1 Value of Trees

Dia Class	Chil (No.)	Rate for 2011-12 (in `)	Value (`)	Sal (No.)	Rate for 2011-12 (in `)	Value (`)	Khair (No.)	Rate for 2011-12 (in `)	Value (`)	Misc. B/L Spp. (No.)	Rate for 2011-12 (in `)	Value (`)
V	36074	1118	40323833	226358	1900	429974932.3	133849	836	111841461	588079	597	351323183
IV	31958	3540	113120492	31901	4756	151729289	79598	2132	169716089	141691	1496	211951662
III	27045	12110	327506976	3990	12489	49833512.99	41294	4466	184419467	32545	3928	127831332
IIA	18895	26827	506887161	781	26474	20663898.6	15659	6915	108285981	6222	8326	51807680
IIB	13643	48438	660832858	53	45320	2401623.284	3918	10085	39511123	1905	14253	27153972
IA	8051	65950	530992156	11	68608	754588.0543	859	15934	13692603	793	21577	17116634
IB	3066	65950	202196475	0	95500	0	42	19823	832524	480	30035	14416777
IC	1501	65950	99009303	0	95500	0	14	21783	304926	712	30035	21384650
Total	**140233**		2480869254	**263093**	95500	655357844	**275234**		628604174	**772428**		822985889

Grand Total=2480869254+655357844+628604174+822985889=4587817161

Table 57

PART-II

FUTURE MANAGEMENT DISCUSSED AND PRESCRIBED

CHAPTER X

BASIS OF PROPOSAL

1.1 Objectives of the Management:-

- To ensure primarily the preservation of the environment and only thereafter derivation of economic benefits, both confessional and commercial.
- To retain as much area as possible under natural cover to fulfill the objective of conservation of ecological diversity of species, watershed protection, recreational values etc.
- To aim at securing the co-operation of the inhabitants through imaginative integrated forestry programme of continuing, but at the same time reorganizing the traditional usufructs in the forests estates benefiting them through egalitarian distributive justice and reorganizing these forests as sources of fuel, fodder food manure, building material and raw material for indigenous crafts and medicines.
- To identify the fauna which is getting extinct or dwindling fast in numbers and suggest measures aiming at preservation/rehabilitation of the natural habitats and gene pools.
- To improve the quality and stocking of existing forests and to manage them to reach the ideal condition of normal forests in the shortest possible period.
- To raise economic plantation in suitable localities like blanks, Shamlats, land ceiling and Pvt. Areas and degraded forests.
- To rehabilitate the existing high level grass land through improved agronomic practices and introduction of suitable high nutritive value local and exotic grasses.
- To arrest environmental degradation and to augment fuel wood, fodder, small timber production for use by local people with the active participation of local people in planning, protection, afforestation judicious use for eco-development of degraded forests.
- To check soil erosion and denudation of forests in the catchments of streams, rivers, reservoirs with a view to ensure an equitable flow of water.
- To increase the productivity of blank areas as also the blanks within the wooded forests and degraded/under stocked less valuable miscellaneous scrub forests by massive need based time bound programs of afforestation and tree planting with particular emphasis on fuel wood, fodder and small timber.

1.2 Method of treatment to be adopted:-

To achieve the above objective of management, the following treatment and methodology shall be followed:-

I. The chil forests will be managed under **Indian Irregular Shelter Wood System.** The mode of regeneration will be both natural and artificial ensuring complete regeneration of the blanks.

II. No definite silvicultural system should be prescribed for broad leaved working circle. These forests are just to preserve, protected, and replenished.

III. The mature and over mature Khair trees shall be felled under selection system against Khair (overlapping) WC.

IV. The cultural blanks and poorly stocked areas shall be taken for planting under plantation (overlapping) WC.

1.3 Constitution of Working Circles:

Following working circles are proposed for the future Working Plan of Una Forest Division.

1. Chil Working Circle
2. Coppice Working Circle
3. Khair (overlapping) Working Circle
4. Protection cum Rehabilitation Working Circle
5. Plantation (overlapping) Working Circle
6. Wildlife Management (overlapping) Working Circle
7. Forest Protection (overlapping) Working Circle
8. JFM Working Circle
9. NTFP(overlapping) Working Circle

1.4 Period of the WP and necessity for intermediate revision: - The period of the revised Working Plan will be 15 years from 1.4.2012 to 31.3.2027.

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CHAPTER XI
WORKING PLAN FOR CHIL WORKING CIRCLE

11.1 Constitution and general character of the vegetation:-

This working circle includes Reserved Forest of Bharwain and Amb Ranges in Which Chil is a dominant species. Blank areas where Chil can come-up have also been included in this working circle. The area of this working circle is 3270.02ha.

Physiographically the area consists of numerous khads and nalas with very steep and precipitous slopes and broken ridges with flat and moderately sloping tops. The density of crop is more on comparatively gentle slopes and in depressions and nala alluvium. Land slips are common along precipitous khad/nala banks.

The composition of crop is such that there is no pure Chil area of sizable extent. Various scrub species are invariably mixed up with Chil in all compartments. There are either patches of B/L species interspersed with patches of Chil or there is clear cut under story of B/L bearing Chil in the top canopy. Based on the composition and density there are mainly two types of vegetation.

11.1.1 Blanks or sparsely stocked areas:-

These types of areas are constituted by very steep or precipitous slopes, rocky portions, eroded and exposed portions in general. Further, this type also includes the P.B.I areas of the plan under revision which could not be regenerated and those of the P.B.U. areas where removals have been particularly heavy under salvage markings of Chil. Such areas now bear moderate to dense bushes such as Lantana and Carrisa etc.

11.1.2 Mixed Chil and scrub areas:-

This type has Chil in the top canopy and scrub in the understorey. Khair is the economic species. The Chil crop is mostly open in general, and fairly dense in some compartments. The density in general varies from 0.1 to 0.4 and at places reaches up to 0.6 to 0.7. The general quality class is III/IV with certain compartments of quality class IV. Trees are generally branchy and twisted. The density and quality improves on flat and moderate slopes. Young crop is subject to damage by repeated fires. Young trees subjected to resin tapping by rill method have shown tendency of drying up after 3-4 year of tapping. Natural regeneration has been highly inadequate.

11.2 Block and Compartments:-

The blocks and compartments have been kept as such as were there in the plan under revision. Based on physical features enough compartments had been created in the last working plan. Crop composition is also not distinctly different within a

compartment so as to warrant division of compartments into further Sub Compartments.

11.3 Special object of management:-

1. To check environment degradation and to increase the productivity of blanks within wooded forests and degraded/under stocked forests by artificial regeneration of Chil.

11.4 Area and allotment:-

All compartments of Chil working circle of plan under revision have been retained in this working circle. The range wise area allotted to this working circle is as follows-

AREA STATEMENT OF CHIL W.C.

Sr.No.	Name of Range	Area (ha.)
1.	Bharwain	2713.32
2.	Amb	556.70
	Total	**3270.02**

Table 58

The areas under this working circle as compared to those in the plan under revision are given below:-

11.5 Analysis and valuation of crop:-

11.5.1 Stock maps:-

The forests have been stock mapped on 1:15,000 scales. Stock map of individual compartments have been placed in respective compartment history files.

11.5.2 Quality and age classes:-

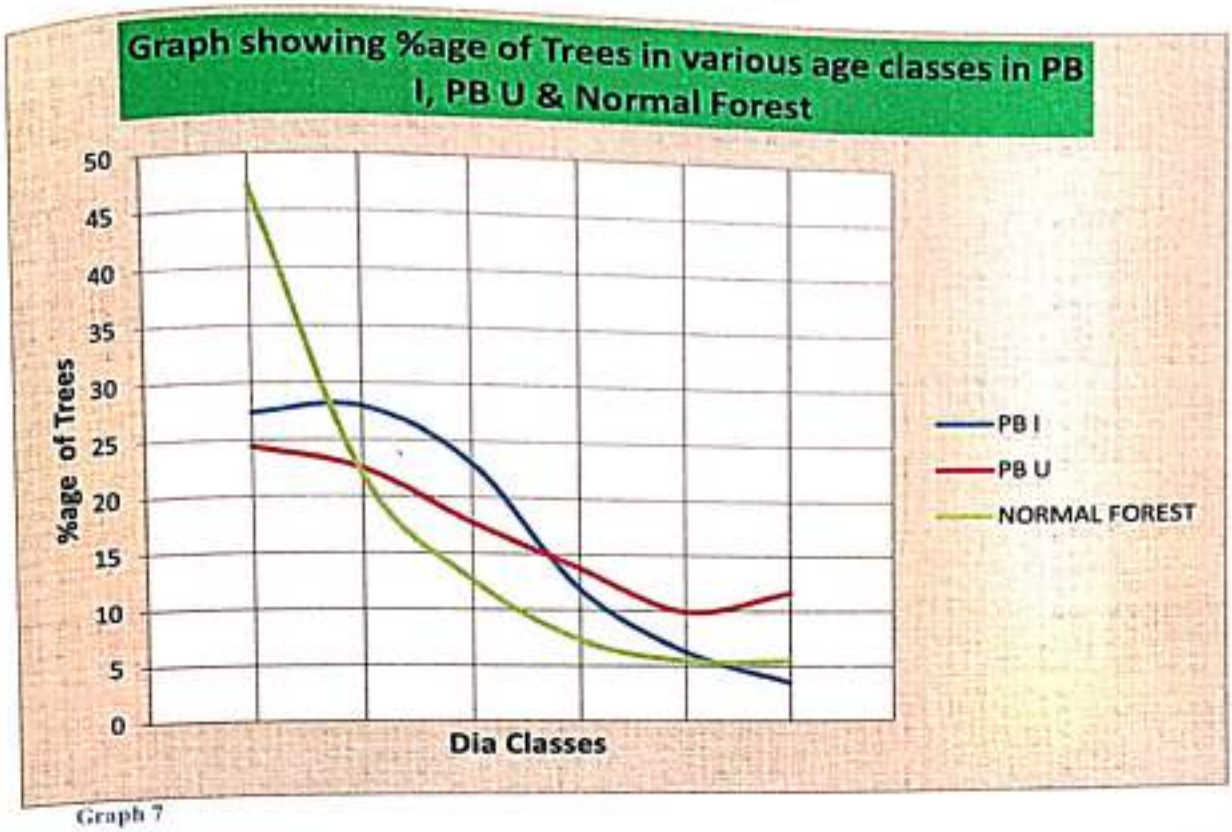
The average quality of Chil is III/IV to III. At places the quality is reduced to IV. Lower age classes (V, IV and III) of trees predominate. Percentage distribution of trees of different age classes according to enumeration results is as under:-

DIAMETER CLASSWISE % AGE OF TREES IN EACH P.B.

Diameter	Classes	%age of trees Q.Blue Q.Blanc		%age of trees in normal growing stock
10-20	V	27.39	24.42	47.21
20-30	IV	27.95	22.49	21.94
30-40	III	23.03	17.76	12.63
40-50	IIA	11.89	13.73	7.31
50-60	IIB	6.29	9.90	5.46
60 & above	I	3.47	11.69	5.45

Table 59

The above table shows that the chil forests are not normal and there is preponderance of higher age classes. The percentage of young age classes is very less as compared to the Normal Forest.



Graph 7

11.5.3 Density:-

The crop density of each compartment, based on ocular estimates, has been recorded in the compartment history files. The crop is mostly open and the density varies from 0.1 to 0.5 and the average density of working circle is taken as 0.3.

11.5.4 Enumerations and their results:-

Total enumerations of Chil, Khair and other B.L. species such as Siris, Jamun, Dhao, Sal, Aisan, Simbal, Tun and Shisham in 10 cm diameter classes down to 10 cms d.b.h. have been carried out in Quarter Blue (P.B.I areas). In Quarter Blanc (P.B. unallotted) areas, 10% random sampling was done and complete enumeration in 10 cm dia classes down to 10 cm D.B.H.was carried out in the randomly selected compartments. In all three compartment were randomly selected and total enumeration was done. The results of these enumerations were proportionately enhanced to get the estimated number of trees. Thus the assessment of Chil stock in P.B.1 areas is exact where as in P.B.unallotted areas, it is estimated. The result of

enumerations has been placed in respective compartment history files and abstract of Chil enumeration is reproduced below:-

RESULTS OF ENUMERATIONS

Name of P.B.	V	IV	III	IIA	IIB	IA	IB	Total	Volume (m3)
Q.Blue	10527	10745	8851	4569	2416	383	46	38440	26002
Q.Blanc	18317	16866	13322	10297	7425	2200	1283	74996	78136
Total	28844	27611	22173	14866	9841	2583	1329	113436	104138

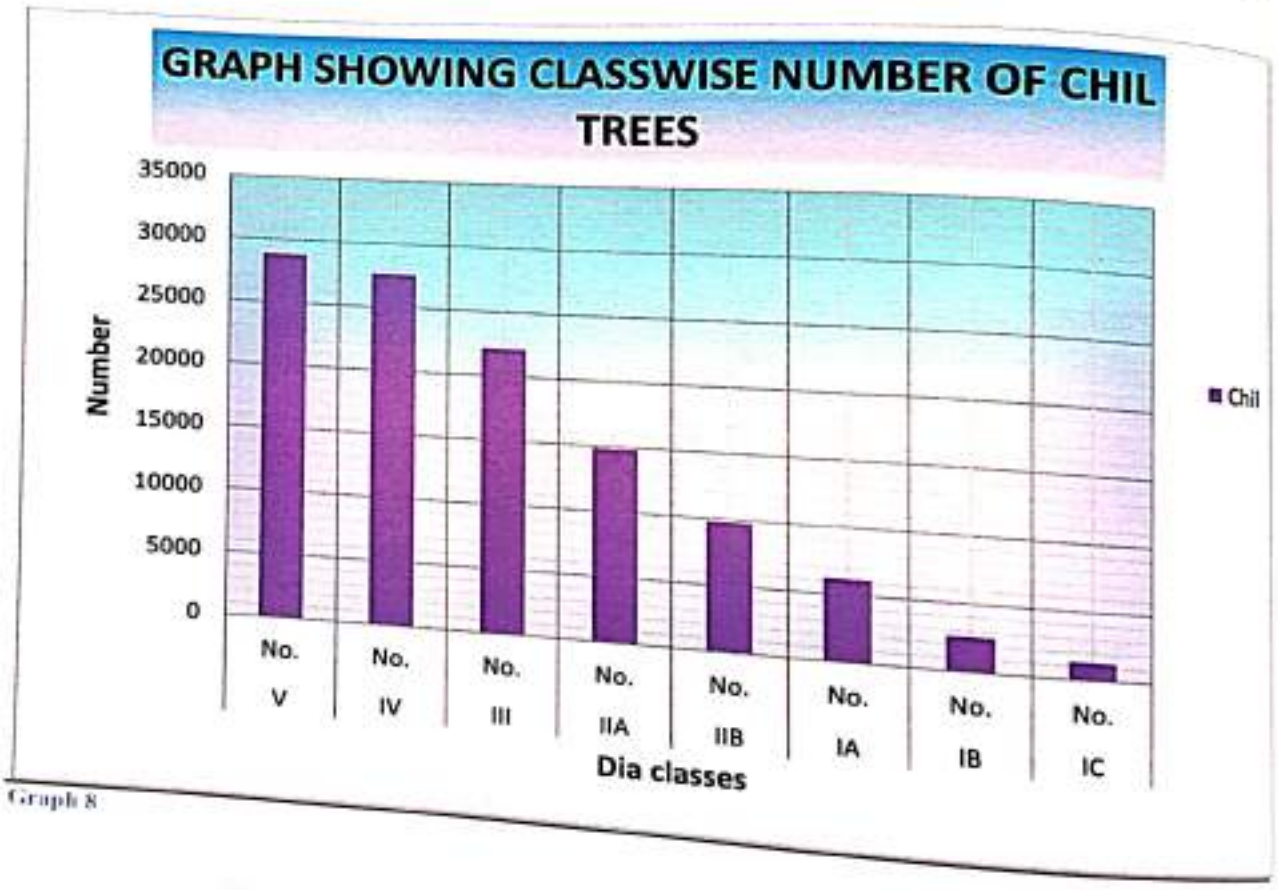
Table 60

Growing Stock per Ha.

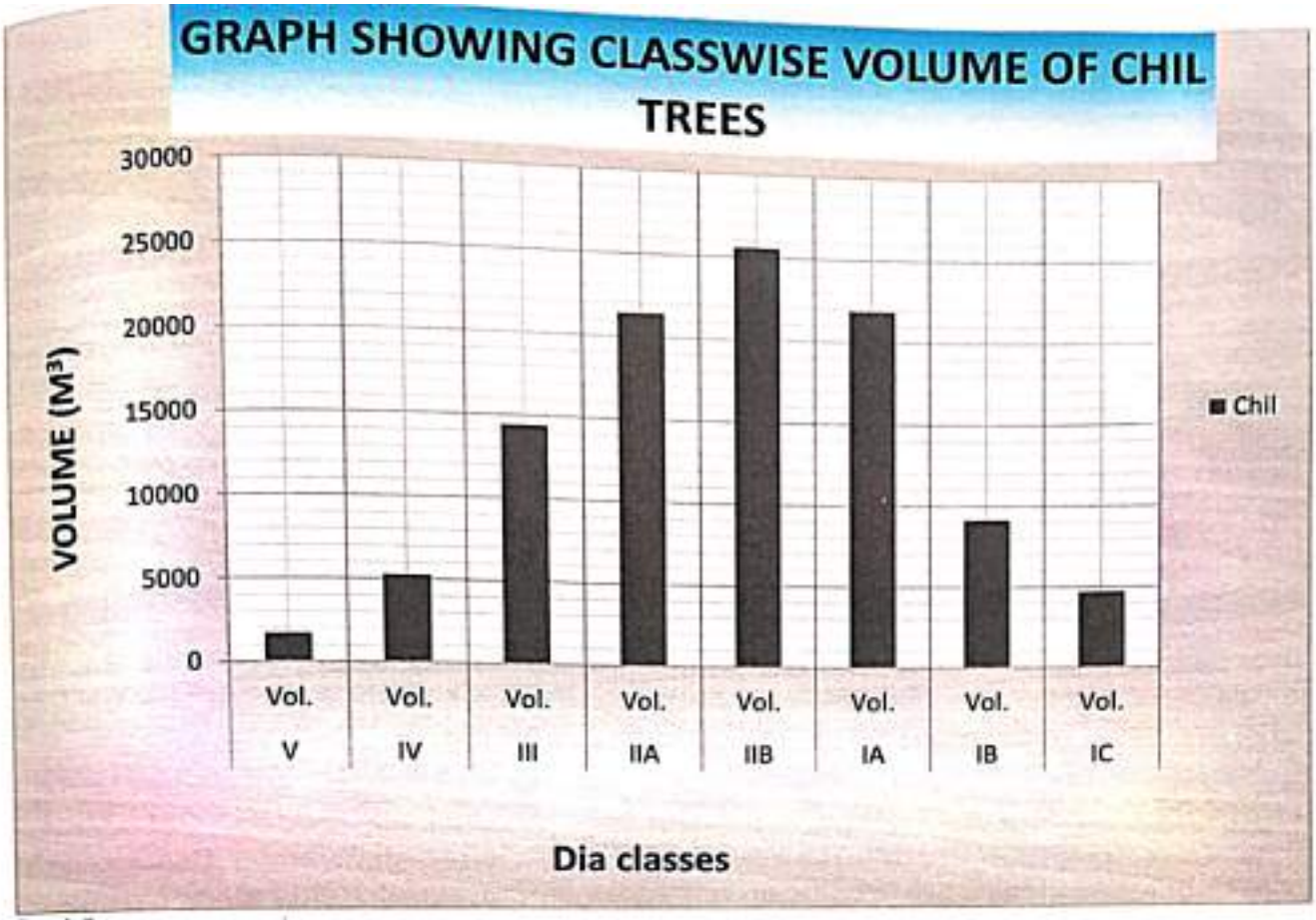
Periodic Block	Total G. Stock (M^3)	Area (Ha)	G. Stock/Ha (M^3)
Q.Blue	26002	1081.29	24.05
Q.Blanc	78136	2188.73	35.70
Total	104138	3270.02	31.75

Table 61

The enumeration results for Khair have been given in the Khair (Overlapping) working circle.



Graph 8



Graph 9

11.6 Method of treatment:-

Although there is blanket ban on green felling since 1980 and regular felling in the P.B.1 areas have not been done during the period of plan under revision, yet there have been fairly heavy removals of Chil because of sizeable salvage markings. The net result has been creation of continuous gradual openings where thick bush growth, mostly economically inferior broad leaved species and some Khair have come up. The growth of shrubs and lack of regeneration in Quarter blanc areas has caused further opening of canopy and most of these blank patches have been badly invaded by the Lantana. Therefore in order to improve the growing stock and regenerate the banks and poorly stocked areas proper scientific management is needed to be prescribed.

11.7 Silvicultural system:-

The Chil forests of this working circle will be continued to be managed under Indian irregular shelter wood system with floating periodic blocks. The method of floating periodic block has been adopted in view of the failures in regeneration attempts because of repeated fires and injuries to young plantations and

natural seedlings/saplings. The allotment of compartments to quarter blue and quarter blanc is given in Appendix –I.

11.8 Quarter Blue areas:-

The quarter blue areas include:-

1) Un-regenerated areas of plan under revision.
2) Degraded/under stocked areas with density less than 0.3
3) Sparsely stocked/blanks areas with or without bush growth where Chil can be raised.

In view of the open canopy and poor growing stock no seeding felling are proposed. There is no question of secondary of felling either.

11.8.1 Status of regeneration of old P.B.I areas:-

The efforts of regeneration of the P.B.I areas have generally been failures. The status of regeneration in P.B.1 areas has been mapped on 1:15000 scale and the tracings have been kept in the respective compartment history files.

11.8.2 Regeneration Plan:-

The regeneration efforts during the period of plan under revision have generally failed. Therefore serious efforts for regeneration of P.B.1. areas have to be made during this plan. The salient feature of regeneration plan will be as follows:-

1. Planning for regeneration of a particular area should be done one year in advance. Since all Chil bearing forests have been very badly invaded by Lantana weed, therefore the first step towards regenerating these areas is to eradicate this weed. The detailed Lantana eradication programme in PB I areas has been proposed in Chapter on Forest Protection from 2012-13 to 2014-15. In the first year the Lantana weed will be eradicated and in the second year the area will be planted with Chil seedlings. All the PB I areas will be artificially regenerated in 5 years period.
    1) Raising of Chil in polythene bags by sowing during 15th September to 15th October so that by 30th June seedlings may attain plantable height of minimum 9 inches. Genetically superior Chil seed from the forests of Bilaspur and Palampur divisions should be introduced in order to improve the quality of Chil.
    2) Removal of Lantana weeds by using CRS method in the month of January-February. Useless broadleaved species like, Kamal, Kembal, Chilla etc. should be completely removed and the produce obtained can be utilized for preparing fence posts for regeneration area and also for other plantation areas of adjoining beats. Remaining produce may be converted into

fuel wood and be handed over to H.P.S.F.C. Ltd or be sold in open auction. This operation must be frequently inspected/monitored by R.O. /A.C.F. Debris should be collected and burnt. However useful broad leaved species should be retained and their natural mix with Chil and Khair be maintained.

3) Fencing and earth work should be done in March-April. Pit size be kept 30cm*30cm*30cm.Three/four strands B/wire fencing be adopted. Pits should be refilled during May-June.
4) Grading of seedlings in nursery should be done in the second fortnight of June. No seedling of size less than 12 inches should be selected for planting.
5) Planting should be done after first shower of monsoons.
6) Seedlings should be covered with branches of thorny spp. such as Garna (Carrissa) and Kangu (Flacourtia spp.) This deters monkeys from uprooting the seedling.
7) Grasses and bushes should be cut in presence of the Forest guard in the month of *October*. Seedlings must be saved from cutting along with grasses and bushes. Strict supervision of forest guard during the grass cutting season is necessary.
8) Weeding and hoeing should be done after grass/bush cutting, twice in first year and once for next 3 year (after plantations).
9) Failures should be beaten up for two years.
10) Bush/grass cutting should continue for six years, twice a year in March and September, or till the plants attain a height of minimum 3 mts.
11) Repair of fencing should be done for six years.

2. The D.F.O. /A.C.F. must inspect the regeneration area first after site clearance and again after ore planting operations are completed and record his comments regarding adequacy/deficiencies in the plantation journal and also guide the field staff regarding corrective measures/improvements. A separate in section note must necessarily be issued on return to headquarters.

3. Similarly the D.F.O. /A.C.F. must also inspect the nursery stock in June and record in nursery journal the suitability or otherwise of the stock for planting.

Five year regenerations programme starting from 2013-14 has been prepared and should be followed strictly.

The regeneration plan follows the sequence of cutting of Lantana weeds in PB I areas given in table No. 18.6 under Chapter on Forest Protection. Care has been taken while framing the regeneration plan to spread the work in maximum possible number of beats so that the work load gets distributed. Phasing of large regeneration areas has been suggested so that enough experience is gathered regarding response of areas/parts there of where regeneration efforts are made.

FIVE YEAR REGENERATION PROGRAMME

YEAR	RANGE	NAME OF FOREST	COMPARTMENT No.	Area	Blanks	AREA to be regenerated (Ha)
2013-14	Amb	R-III Dharui D	5	12.36	2.36	10
		R-III-Dharui G	4	13.77	1	12.77
	Bharwain	R-I-Panjal	19	17.4	15.5	1.9
		R-I-Panjal	3(Part)	25	10	15
		R-I-Panjal	33	26.71	1.71	25
		R-I-Panjal	4	27.11	1.11	26
		R-I-Panjal	1	30	10	20
		R-I-Panjal	8(Part)	30	2	28
		R-I-Panjal	24	36.83	2.83	34
	Total			**219.2**	**46.51**	172.67
2014-15	Bharwain	R-I-Panjal	28(Part)	25	2	23
		R-I-Panjal	18(Part)	27.87	0.87	27
		R-I-Panjal	6(Part)	30	4	26
		R-I-Panjal	7(Part)	30	3	27
		R-II-LoharaA	22(Part)	32.5	2.5	30
		R-I-Panjal	16	36.42	2.92	33.5
	Amb	R-III-Dharui C	3	39.66	4	35.66
	Total			**221.5**	**19.29**	202.16
2015-16	Amb	R-III-Dharui D	2	41.49	4	37.49
	Bharwain	R-I-Panjal	8(Part)	24.63	2.63	22
		R-II-LoharaA	22(Part)	25	0	25
		R-I-Panjal	6(Part)	28.28	3.78	24.5
		R-II-LoharaA	22(Part)	30	0	30
		R-I-Panjal	3(Part)	33.78	5.78	28
		R-I-Panjal	10	44.52	4.52	40
	Total			**227.7**	**20.71**	206.99
2016-17	Amb	R-III-Dharui G	1	4.45	0.45	4
		R-III-Dharui G	3	28.33	3	25.33
		R-I-Panjal	26	23.07	2.07	21

YEAR	RANGE	NAME OF FOREST	COMPARTMENT No.	Area	Blanks	AREA to be regenerated (Ha)
	Bharwain	R-I-Panjal	1(Part)	25	10	15
		R-II-LoharaA	22(Part)	25	0	25
		R-I-Panjal	18(Part)	30	1	29
		R-II-LoharaB	7	45.32	5	40.32
	Total			**181.2**	**21.52**	**159.65**
2017-18	Amb	R-III-Dharui F	1	26.3	4	22.3
		R-III-Dharui D	3	35.02	5	30.02
	Bharwain	R-I-Panjal	3(Part)	25	5	20
		R-I-Panjal	28(Part)	25.99	2.49	23.5
		R-I-Panjal	7(Part)	26.66	2.96	23.7
		R-II-Lohara A	5	30.35	2	28.35
		R-I-Panjal	1(Part)	30.5	4.5	26
		R-I-Panjal	22	31.97	2.67	29.3
	Total			**231.8**	**28.62**	**203.17**
G.Total				**1081.29**	**136.65**	**944.64**

Table 62

Out of the 1081.29 ha. area of PBI 136.65 ha is uncultivable blank and is unfit for regeneration/plantation. Thus only an area of 944.64 ha is to be regenerated during the plan period as per the 5 year regeneration programme during the plan period as given above.

11.9 Quarter Blanc area: - The rest of the areas of Chil working circle have been retained in quarter Blanc. No felling except salvage removals or dry, Fallen and diseased trees will be done.

11.10 Rotations exploitable diameter and regeneration period: - An elaborate calculation of rotation is of little significance in the management of forest under the system adopted and fellings envisaged. Moreover no data is available for calculation of rotation for the species met within the mixed forests of this working circle. Chil trees are so branchy and malformed that statistics based on growth would not be applicable to the conditions under which the new crop will grow. The Chil trees are more important for the production of resin than timber. It is believed that Chil trees will take about 120 years to attain 52 cm.d.b.h. in this locality.

The regeneration period is fixed at 30 years. It is considered sufficient to establish the regeneration.

11.11 Felling cycle:-

As the area under quarter blue are sparsely stocked and blank practically no felling except cleaning, hygienic removals and bush removals have to be done. There is a little scope of seedling felling and thinning. The regeneration areas will be cleared of weeds during the 5 years periods from 2012-13 to 2016-17.There will be no felling except salvage removals in quarter blanc areas. However patches of young and poles will be thinned as per availability and silvicultural requirement.

11.12 Division into periods and allotment to periodic Blocks: - All P.B.1 (Quarter blue) areas of plan under revision have been kept in the same P.B. in this plan also. To these have been added the areas which are very sparsely stocked and need to be regenerated/rehabilitated. Rest of the areas have been kept in P.B.U. (Quarter blanc).R.II Lohara A C 21, having precipitous slopes and broken terrain in major portion, has been taken out from Chil working circle and included in protection cum Rehabilitation working circle.

DISTRIBUTION OF AREA IN PERIODIC BLOCKS

Range	Area (ha.)		
	Quarter Blue	Quarter Blanc	Total
Bharwain	879.91	1833.41	2713.32
Amb	201.38	355.32	556.70
Total:-	**1081.29**	**2188.73**	**3270.02**

Table 63

11.13 Calculation of yield:-

The growing stock of Chil in P.B.1. and P.B.U. areas is 24.05 M^3 and 35.70 M^3 per hectares only which is much less than the normal growing stock for Chil corresponding to site quality III and C grade thinning (136m^3 per ha.). Therefore no yield can be prescribed.

However salvage marking will continue and the approximate salvage removal of chil is estimated to be 1200 M^3 per annum.

11.14 Sequence of fellings: -

The area allotted to quarter blue will be worked in five years period from 1999-2000 to 2003-04 and will be regenerated subsequently as per regeneration plan given in Para 9.8.2

11.15 Method of executing fellings: -

Since no regular are prescribed only salvage markings and thinning of compact patches of Chil poles will be done. In salvage only dead, dry and fallen trees will be removed. In P.B.1 areas only cleanings and hygienic removals will done. The areas will be gone over as per the improvement treatment plan.

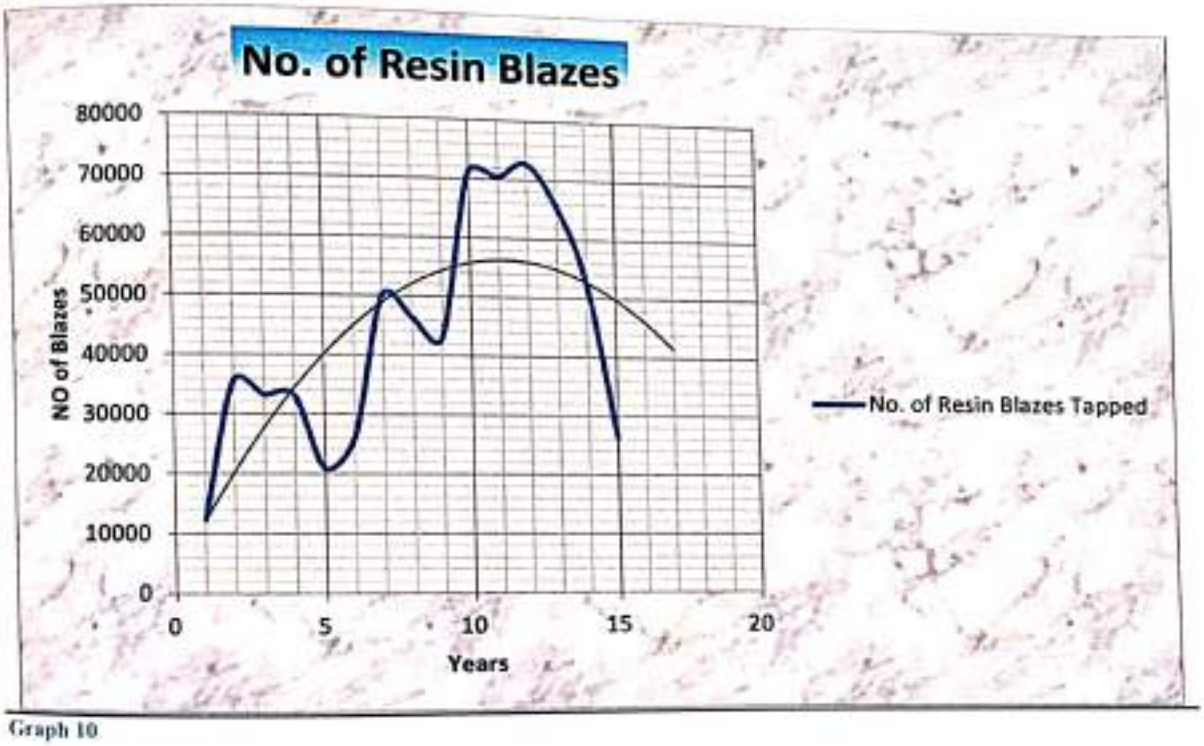
11.16 Subsidiary Silvicultrul Operations:

11.16.1 Cleanings: - Cleanings should be carried out in dense patches of young regeneration comprising mainly of sapling. All material should be burnt as a fire protection measure.

11.16.2 Mechanical Thinning: - When the crop is in the young poles stage 3m to 5 m, it will be subjected to stick thinning.

11.16.3 Control Burning: - The Chil crop will be control burnt when the height is between 2.5 to 3m.Sufficient labour should be engaged to protect seedling and Saplings less this height and to restrict the fire to the regeneration area. The boundaries of regeneration area will also be kept clear of the inflammable material during the fire season.

11.17 Resin Tapping: - Chil forests have suffered heavily due to over tapping of trees for resin during the last 15 years. Frequent forest fires have further made the situation worse. Consequently the number of Chil trees which are fit for resin tapping has reduced very steeply as is evident from the trend line in the Graph No. 4 given below.



Graph 10

Therefore, it is proposed that restriction on resin tapping in PBI areas will continue during the plan period i.e. (2012-13 to 2026-27). However in PBU area resin tapping with rotational rest will be allowed. The resin tapping will be carried out by the **"Rill Method"**. The detailed method is given in Annexure-XXII on page No 277.

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Photograph 2

Sal Forest

Photograph 3

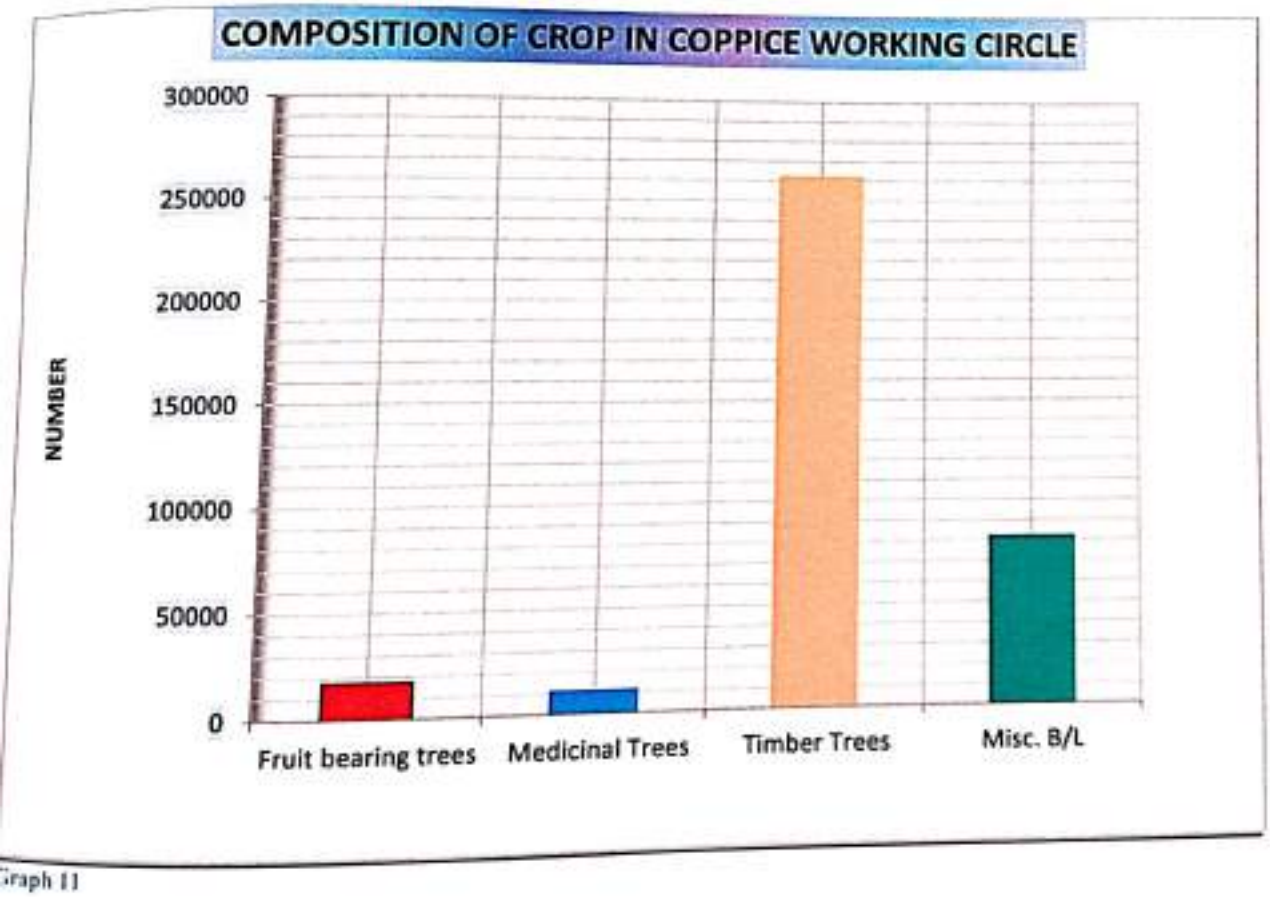
Regeneration of Sal

CHAPTER XII
WORKING PLAN FOR COPPICE WORKING CIRCLE

12.1 Constitution and general character of vegetation:-

This constitutes parts of reserved forest where the proportion of Sal/mixed crop of B/L species is more than 50%. Over wood in such areas is mostly Chil. The total area of this working circle is 549.89 ha.

Flat and gently sloping tops with steep nala/khad slopes form the general topography. The tops carry moderate to densely stocked scrub forests with Chil in the top canopy. The composition and density varies from place to place. Predominant spp. is Sal which constitutes more than 50% of the growing stock. The other important scrub species are Aisan and Chil. Chil trees are generally twisted, branchy and often malformed. Quality of Chil is better along nala/khad banks. Sal is on its western end. The trees are of low height, branchy and stag headed. The crop in general is of pole size with some middle aged trees kept as reserves during previous fellings. Regeneration of Sal, both of coppice and natural origin, is abundant.



Graph 11

12.2 Blocks and compartments:-
Blocks and compartments have been kept same as in the working plan under revision and are tabulated below.

Area Distribution

Range	Block	Beat	Forest	Compartment	Area
Bharwain	Bharwain	Guret	R-II-Lohara-B	C-4	34.61
			R-II-Lohara-B	C-5	32.78
			R-II-Lohara-B	C-6	39.26
			R-II-Lohara-B	C-8	62.32
			R-II-Lohara-B	C-9	102.6
			R-II-Lohara-B	C-10	100.36
Total					371.93
Amb	Jawar	Jawar	R-III-Dharuhi-A	C-2	49.37
		Lamba Sail	R-III-Dharuhi-C	C-1	16.19
			R-III-Dharuhi-C	C-2	23.42
	Kotla	Rapoh	R-III-Dharuhi-D	C-1	42.3
		Suri	R-III-Dharuhi-D	C-4	46.68
Total					177.96
G.Total					549.89

Table 64

12.3 Special objects of management:-
The special objects of management are preservation and expansion of Sal and other valuable broad leaved timber species by favoring them against all other inferior species.

12.4 Area and allotment: - The breakup of area by ranges is as under:-

BREAK UP OF AREA

Sr.No.	Name of Range	Area in ha.
1	Bharwain	371.93
2	Amb	177.96
Total		549.89

Table 65

12.5 Analysis and valuable of crop:-

1) **Stock maps:** - The forests have stock mapped on 1; 15,000 scale. One copy has been placed in the respective compartment history files. Sal predominates the Broad leaved species occupying about 74% of the total area in this working circle.
2) **Quality and age classes:**-General quality of Sal is poor. The crop is more or less even aged with predominance of poles.

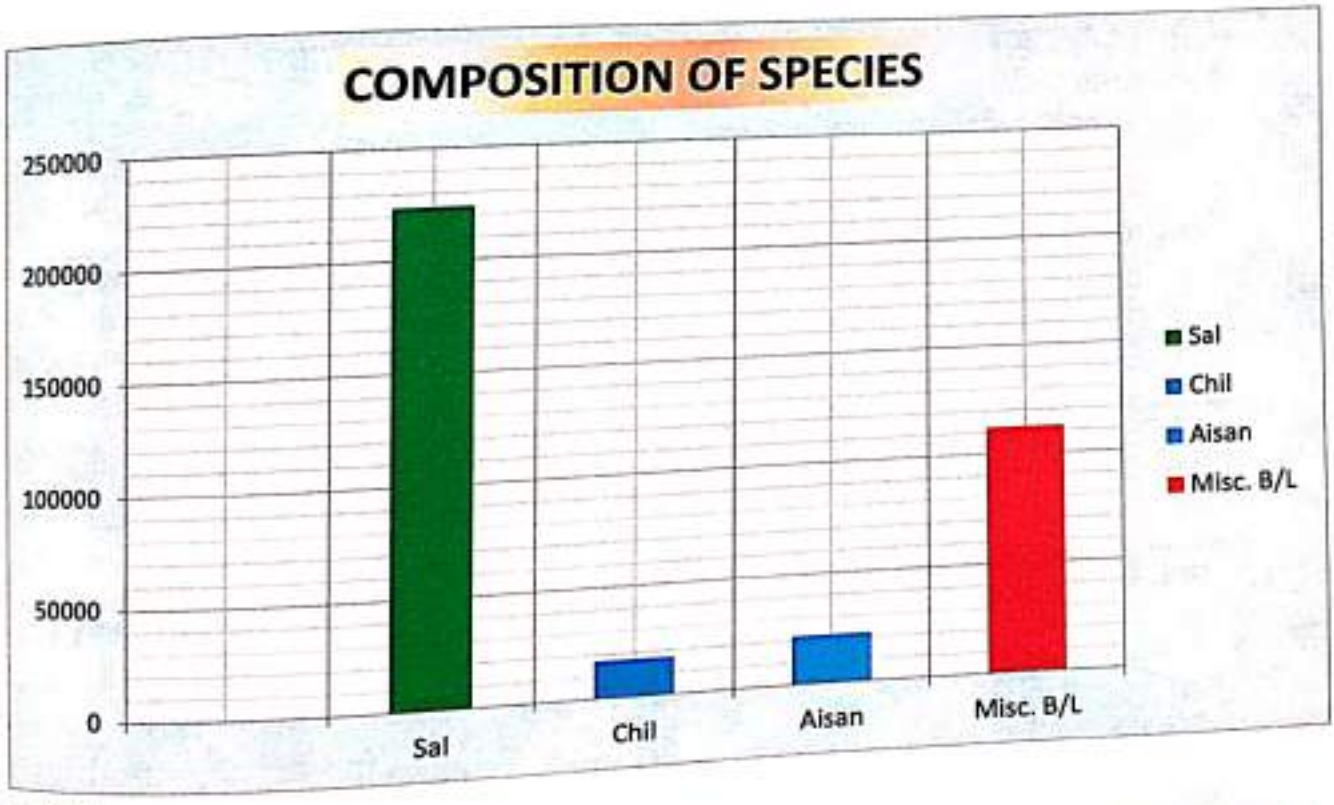
12.6 Enumerations and their results: - Total enumeration of all the species in 10 cm dia classes (5 cm dia classes in case of Khair) in the representative sample

compartments was carried out. In total 91.67 ha area out of total of 549.49 ha of the working circle was enumerated. The results were proportionately enhanced to get the estimate of total growing stock of the working circle. The compartments (Dharuhi AC-2 & Dharuhi DC-1) for enumeration was selected by random sampling. The result of enumeration has been given in Annexure-II. However the abstract is tabulated as under:

Result of Enumeration

S.NO.	COMMON NAME	Dia	V	IV	III	IIA	IIB	IA	IB	IC	TOTAL
1	Sal	No.	201018	21157	1686	174	30	6	0	0	**224071**
		Vol.	25529	6728	1407	308	91	28	0	0	**34091**
2	Chil	No.	5195	2345	2951	2267	2555	1188	300	138	**16940**
		Vol.	312	446	1918	3265	6644	4205	1062	488	**18340**
3	Aisan	No.	16148	3911	1446	246	24	6	0	0	**21781**
		Vol.	2051	1244	1207	435	73	28	0	0	**5038**
4	Misc. B/L	No.	91772	15230	4211	576	198	138	6	42	**112173**
		Vol.	11655	4843	3516	1019	600	633	38	268	**22572**
	Total	**No.**	**314134**	**42643**	**10294**	**3263**	**2807**	**1338**	**306**	**180**	**374965**
		Vol.	**39547**	**13261**	**8045**	**5027**	**7408**	**4894**	**1100**	**756**	**80041**

Table 66



Graph 12

Khair	Dia	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Total
	No.	10204	9658	8860	6065	3065	1014	342	12	6	29022
	Vol.	0	280	656	940	736	355	189	8	5	3164

Table 67

12.7 Silvicultural system: - The forest under this working circle will be managed under coppice with standards system. The standards of valuable broad leaved species will be kept in order to help regeneration by affording shelter to young coppice shoots/seedlings and providing seeds for natural regeneration.

12.8 Rotation, Exploitable Diameter and Regeneration period: - Rotation of 30 years for coppice and 60 years for standards has been adopted.
Growth of Sal is slow. The quality IV trees attain diameter of 25 cm at the age of 30 years. In view of this the exploitable diameters are fixed at 20 cm for Sal coppice and 30 cm for standards. Selected trees of various hardwood species like Aisan, Dhao, Simbal and Jamun may be grown to bigger sizes for production of timber.

The regeneration period will be 10 years.

12.9 Felling cycle and yield: - Felling cycle of Sal coppice will be 30 years. The already existing 30 year cycle has been kept as such after revising the area of coupes no. VI and X to 11.16 ha. and 11.33 ha. respectively. Parts of R.II Lohara-B C 9 and C 10 adjoining Kangra district having precipitous slopes and bearing sparse scrub growth have been excluded from the fellings cycle. Thus the total areas covered by the 30 yr. felling cycle is 464.70 ha. the control of yield has been kept area which various from 8.09 to 20.23 ha. during the period of this plan.

During the plan under revision only felling took place in the year 1996-97 in R.II Lohara BC 9(P) in coup No XVI. Thereafter felling was not carried out as per the plan prescriptions. Hence sequence of felling has been retained as such and is given in the table below:-

SEQUENCE OF FELLINGS

Year	Name of Forest	Compartment	Coupe No.	Area (ha).
2012-13	R.II Lohara B	C9(P)	XVII	8.50
2013-14	R.II Lohara B	C10(P)	XVIII	20.23
2014-15	R.II Lohara B	C8(P)	XIX	11.33
2015-16	R.II Lohara B	C8(P)	XX	13.76
2016-17	R.II Lohara B	C8(P)	XXI	17.81
2017-18	R.II Lohara B	C10(P)	XXII	11.33
2018-19	R.II Lohara B	C10(P)	XXIII	12.55
2019-20	R.III Dharui C	C1	XXIV	16.19
2020-21	R.III Dharui C	C2(P)	XXV	11.33
2021-22	R.III Dharui C	C2(P)		

Year	Name 194.61of Forest	Compartment	Coupe No.	Area (ha).
2022-23	R.III Dharui A	C2(P)	XXVII	8.09
2023-24	R.III Dharui A	C2(P)	XXVIII	15.38
2024-25	R.III Dharui A	C2(P)	XXIX	8.09
2025-26	R.III Dharui A	C2(P)	XXX	17.81
2026-27	R.II Lohara B	C9(P)	I &II	34.88
			Total	**219.37**

Table 68

12.10 Method of executing fellings:-

Sal and other B/L timber species will be favored against other species and the following marking rules will be observed.

1) Annual coupes will be clearly marked on the ground by clearing 1.5m wide strip all around. Notice broads showing coupe No. year of felling and area felled will be in conspicuous places.
2) The Chil trees will not be felled. However, compact group of young Chil regeneration will be thinned.

3) 50 well grown standards of Sal, Khair, and other valuable species per ha. evenly distributed over the area will be retained. A white paint belt will be put around the standards at breast height which will be renewed after 5 years. A record of standards will be maintained in the compartment history files. A greater number of standards may be retained in areas liable to soil erosion. Standards be also retained on vantage points at or near ridges for dissemination of seed.
4) Over head shade near Sal stumps will be removed to let it grow vigorously.
5) All dead, dry and fallen trees will be removed.
6) No green trees, removal of which under any pretext is liable to cause or enhance a blank, will be felled.
7) Malformed Sal stems of size less than 20cm d.b.h. will be cut back.
8) Sal and trees of species of and over selection diameter except those to be retained as standards will be coppiced and stumps made slanting. Stools will be dressed and their height will be 15 cm. above ground level.
9) The working of coppice lots should be fixed in such a manner that the worked areas are handed over to the department by 31st march positively.
10) Dhao, Jamun, Mango and other fruit bearing trees should not be felled. All such trees should be kept as standards/reserves.

1211 Subsidiary Silvicultural Operations:-

1) Disposal of felling refuse :-

Immediately after the fellings are over. Sal coupes will be burnt in F February and March. The lops and tops and other refuse will be collected in small heaps and brunt as laid down in the Punjab forest leaflet No.6 (abstract enclosed as appendix. II.)

2) Sowing and planting:-

The earth work for planting s works should be done during March-April, before 15 April. Temporary nursery of Chil and Khair be raised near to the area where the water is available so as to have seedlings not less than 25 cm. and 45 cm high respectively by 30th June. The pits should be refilled during May and the planting done in July so that the plants get more than a month's period to establish well to with stand the drought of autumn and next summer. In addition Sal need should be collected and immediately thereafter broadcast in the last week of June or July The berating up of failure of Chil broadcast sowing of Sal should be continued till the area is fully stocked which should be possible within a period of 3 years.

3) **Weedings and bush cutting:** - There should be two weedings, one in March and other in September in 1st year and one weeding a year in the subsequent 3 years. There is not much of bush growth, however, where required, the cutting be done to free the young plants from the suppression.

4) **Cleanings:** - It has been observed that growth of Sal coppice shoot ceases after five or six years if cleanings are not done. Cleanings of shoots will be carried out in the 3rd year or earlier following the fellings and one or two vigorous shoots will be left on each stool.
5) **Climber cutting:** - **The** climber cutting will be carried out along with the cleaning so as to keep the coppice shoots free from suppression.
6) **Maintenance of Coupe Lines:** - It is prescribed that the coupe boundary lines may be checked and cleared where required after every five years and the notice boards also repaired.
7) **Regenerations Paths:** - ¾ meter wide regeneration paths traversing over the entire area to facilitate inspection will be constructed and maintained in the coppice coupes.
8) **Protection from fire:** - The slash remaining after the working of coppice lots should be burnt. The fire lines be cleared annually.
9) **Choice of Species:** - The species to be planted in blanks will be Khair, Dhao, Sal and Jamun etc. depending upon the nature of the site. Genetically superior Sal seed from Paonta Division should be introduced in order to improve the quality of Sal.

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CHAPTER XIII

WORKING PLAN FOR KHAIR (OVERLAPPING) WORKING CIRCLE

13.1 Constitution and general of vegetation:-

This working circle overlaps Chil working circle. The area of this working circle is 3270.02ha. Khair occurs as important economic species in Chil areas. The proportion of Khair in Chil areas has increased during the period of the plan under revision because during this period no green felling was carried out and only salvage trees were removed. The quality of Khair of the area is good with trees growing to a height of 10 mts. and d.b.h.25 cm without developing any rot or hollowness. The proportion of Khair in Chil areas varies from 25 to 50 percent in general. Natural regeneration of Khair is sufficient.

13.2 Special objects of management:-

There are two broad objects of managing Khair in this working circle.

i) To harvest mature and over mature Khair trees growing sporadically or in small clusters which are not feasible to be worked in a concentrated manner.

ii) To increase the proportion of Khair in suitable localities through suitable tending of natural crop and also carrying out of planting of Khair in appropriate locations.

13.3 Enumerations:-

Total enumerations in 5 cm diameter classes down to 5 cms d.b.h. have been carried out in P.B.I areas. In P.B. unallotted areas, 10% random sampling was done and complete enumeration in 5 cm dia classes down to 5 cm D.B.H.was carried out in the randomly selected compartments. In all six compartment were randomly selected and total enumeration was done. The results of these enumerations were proportionately enhanced to get the estimated number of Khair trees. Thus the assessment of Khair stock in P.B.1 areas is exact where as in P.B.unallotted areas its estimation should be fairly accurate. The result of enumerations have been placed in respective compartment history files and abstract of Khair enumeration is reproduced below:-

RESULTS OF ENUMERATIONS

ABSTRACT OF ENUMERATION RESULT SHOWING KHAIR IN PB I AREAS OF CHIL WORKING CIRCLE

No./ Vol	5--10	10-- 15	15-20	20-25	25-30	30-35	35-40	41-45	45-50	Total
No.	42721	34818	19254	9678	3986	1331	323	30	8	69428
Vol.	0	1010	1425	1500	957	466	178	20	6	5562

Table 69

ABSTRACT OF ENUMERATION RESULT SHOWING KHAIR IN PB U AREAS OF CHIL WORKING CIRCLE

Name of Forest	Area in Ha	No./ Vol	5--10	10-- 15	15-20	20-25	25-30	30-35	35-40	Total
			No.	No.	No.	No.	No.	No.	No.	No.
Dharuhi BC2	19.43	No.	68	65	71	46	49	5	4	240
		Vol.		2	5	7	12	2	2	30
Dharuhi BC5	46.14	No.	1379	1727	1079	616	201	65	8	3696
		Vol.		50	80	95	48	23	4	301
Lohara AC 15	77.7	No.	3562	3660	1979	905	279	24	0	6847
		Vol.		106	146	140	67	8	0	468
Total	143.27	No.	5009	5452	3129	1567	529	94	12	10783
		Vol.		158	232	243	127	33	7	799
PB U	**2188.7**	**No.**	**76522**	**83290**	**47802**	**23939**	**8082**	**1436**	**183**	**164732**
		Vol.	**0**	**2415**	**3537**	**3711**	**1940**	**503**	**101**	**12207**

Table 70

ENUMERATION RESULT SHOWING KHAIR IN CHIL WORKING CIRCLE

Periodic Block	No./Vol	5--10	10-- 15	15-20	20-25	25-30	30-35	35-40	41-45	45-50	Total
PB I	No.	42721	34818	19254	9678	3986	1331	323	3 0	8	69428
	Vol.	0	1010	1425	1500	957	466	178	2 0	6	5562
PBU	No.	76522	83290	47802	23939	8082	1436	183	0	0	164732
	Vol.	0	2415	3537	3711	1940	503	101	0	0	12207
Total	**No.**	**119243**	**118108**	**67056**	**33617**	**12068**	**2767**	**506**	**3 0**	**8**	**234160**
	Vol.	**0**	**3425**	**4962**	**5211**	**2897**	**969**	**279**	**2 0**	**6**	**17769**

Table 71

13.4 Analysis and valuation of crop:-

The stock maps prepared for Chil forests show the proportion of Khair by horizontal and vertical hatches. The horizontal hatches indicate the percentage of Khair mixture with Chil from 25% to 50% whereas the vertical hatches indicate the percentage of Khair in mixture of Chil below 25%.

13.5 Silvicultural system:-

Khair will be harvested under selection system. Cleaning and singling of young coppice shoots will be carried out.

13.6 Rotation Exploitable diameter:-

The rotation period will be 30 years during which the exploitable diameter of 20 cm at breast height will be achieved.

13.7 Felling cycle:-

The felling cycle of 15 years has been adopted. The felling programme has been framed so as to avoid overlapping with the Mauzas open for felling under 10 year felling programme of private areas.

13.8 Calculation of yield:-

The yield by number of selection trees has been calculated by Brandis method. Brandies method is based on the number of trees in various diameter classes, and time taken to pass from one class to the next.

NUMBER OF SELECTION TREES

Diameter Class (cms)	No. of trees enumerated	Total age on entering class	Years taken losing the class	Survival co-efficient	No. of exploitable trees
More than 20 cm	41996	33	-	72%	35277
15-20	67056	22	11	50%	33528
10-15	118108	14	8	34%	40156
Less than 10	119243	-	-	-	-

Table 72

The annual yield is fixed by the number trees as under

Yield =Average number of trees reaching exploitable size annually plus a fraction of surplus number of trees of over the exploitable diameter, if any.

During the first 11 years of plan period, all the trees of 15-20 cm class will enter into 20 cm and over class and during the remaining 4 years of plan period, 4/11th of 10-15 cm class will also pass on to 20cm dia and above.

Therefore total recruitment in 15 years period = 33528+ (4/11)*40156= 48130 trees.

Therefore average annual recruitment =48130 /15=3208 trees

To harvest 3208 trees in 15 years of the working plan period, working stock of 3208*(15/2) =24060 trees of 20cm and over d.b.h. are needed. However, against this we have 35277 trees of 20cm and over diameter classes. Thus the working stock is in surplus of 35277-24060=11217 trees .These surplus trees are to be harvested during this felling cycle otherwise they make develop some rot. Therefore annual removal of these surplus trees =11217/15=748 trees.

Therefore the total annual period=3208+748=3956 Trees or say 3500 trees.

Total number of trees to be felled during the plan period of 15 years (2012-13 to 2026-27) =3500x15=52500 trees.

13.9 Method of executing fellings:-

1) All Khair above 20 cm d.b.h. will be marked except those removal of which may cause soil erosion or permanent gap.
2) All dead, dry and fallen trees will be marked.
3) No uprooting or chipping of stumps will be allowed and the stumps left should not be more than 15 cm above the ground level so as to ensure production of coppice shoots. However, in addition, the retention of number embossed on the low hill side will be ensured. The fellings must be completed by the end of February every year.

13.10 Control of yield:-

The yield will be prescribed by area and controlled by the number of Khair trees subject to the availability of trees of exploitable diameter. The area will be gone over as per prescription. The Khair trees, marked in salvage, which have the d.b.h. less than the exploitable diameter, should not be taken into account for the purpose of control of yield by numbers. However such number of trees removed under salvage will be indicated in the control forms separately.

At the time of five yearly review of working plan if the yield exceeds +10% further fellings should be deferred till the deviation comes within this limit.

13.11 Sequence of fellings: - Since during the period of plan under revision, no felling took place therefore the sequence of felling has been kept unchanged as was provided in the working plan under revision. However utmost care has been taken to prescribe sequence of felling in such a way that it does not overlap with the areas open for private sale as per ten years felling programme to have effective control over illicit felling in the forest areas.

SEQUENCE OF FELLINGS

Year	Range	Name of Forest	Comp.	Area(ha)	Mauza
2012-13	Bharwain	R-Ii Lohara-B	C1	43.52	Kotli
			C3	40.28	Arnwal
	Amb	R.III Dharui-B	C1	33.99	Kotla
			C2	19.43	Dharui
			C3	61.51	Dharui
			Total	**198.73**	
2013-14	Bharwain	R-II Lohara-B	C11	66.99	Amb Tilla
			C12	87.00	Amb Tilla
	Amb	R-III Dharui-B	C4	28.73	Dharui
			C5	46.14	Dharui
			C6	36.83	Dharui
			Total	**265.69**	
2014-15	Bharwain	R.I Panjal	C25	37.43	Joh
			C26	23.07	Joh

Year	Range	Name of Forest	Comp.	Area(ha)	Mauza
			C27	29.12	Joh
			C28	50.99	Saloh
		R.II Lohara B	C7	45.32	Guret,Chowar
	Amb	R.III Dharui-E	Whole	3.24	Jowar
		R.III Dharui-C	C3	39.66	Mairi
		R.III Dharui-C	C3	35.02	Repoh Muchhalian
			C5	**12.36**	-do-
			Total	**276.21**	
2015-16	Bharwain	R.I Panjal	C6	58.28	D/Sala Mahantan
			C7	56.66	Dangoh
			C22	31.97	Joh
	Amb	R.III Dharui-D	C2	41.49	Repoh Muchhalian
		R.III Dharui-F	C1	26.30	Kotla
			C2	88.63	Kotla
			Total	**303.33**	
2016-17	Bharwain	R.I Panjal	C23	22.44	Joh
			C24	36.83	Joh
			C33	26.71	Saloh Ghangret
			C34	41.68	Saloh Ghangret
	Amb	R.III Dharui-G	C4	13.77	Dhar Gujjran
			C5	23.47	Dhar Gujjran
			Total	**164.90**	
2017-18	Bharwain	R-I Panjal	C3	83.78	D/Sala Mahantan
			C8	54.63	Dangoh
			C9	47.92	Dangoh
			C19	17.40	Joh
			C20	31.16	Joh
	Amb	R.III Dharui-G	C1	4.45	Dhar Gujjran
			C2	13.35	Dhar Gujjran
			C3	28.33	Dhar Gujjran
			Total	**281.02**	
2018-19	Bharwain	R-I Panjal	C1	85.50	Badhmana

Year	Range	Name of Forest	Comp.	Area(ha)	Mauza
			C15	51.80	Pirthipur
			C16	36.42	Pirthipur
			C17	38.45	Pirthipur
			C18	57.87	Joh
			Total	**270.04**	
2019-20	Bharwain	R-I Panjal	C4	27.11	Abheypur
			C10	44.52	Dangoh
		R-II Lohara - A	C5	30.35	Bhaler
			C22	112.50	F/Pur,tunkari
			Total	**214.48**	
2020-21	Bharwain	R-II Lohara - A	C1	33.99	Saloi
			C2	59.90	Saloi
			C3	18.62	Mather
			C4	33.99	Bhaler
			Total	**146.50**	
2021-22	Bharwain	R-I Panjal	C29	30.76	Saloh
			C30	50.18	Saloh,Mallon
			C31	39.26	Saloh Berri
			C32	47.25	Saloh Berri
			Total	**167.45**	
2022-23	Bharwain	R-I Panjal	C2	47.75	Badhmana
			C5	21.04	Abhepur
		R.II Lohara-A	C19	71.23	Rampur Kuthera
			Total	**140.02**	
2023-24	Bharwain	R-I Panjal	C11	27.11	Pirthipur
			C12	43.55	Pirthipur
			C13	38.08	Pirthipur
			C14	78.92	Pirthipur
			Total	**187.66**	
2024-25	Bharwain	R-II Lohara - A	C17	71.63	Duhal,Amlehar
			C18	76.89	Amlehar
			C20	82.56	Rampur Kuthera
2025-26	Bharwain	R-II Lohara - A	C12	67.99	Suhin
			C13	39.26	Aloh
			C14	27.92	Muhali,Chaler
			C15	77.70	Aloh
			C16	17.40	Amlehar
			Total	**461.35**	

Year	Range	Name of Forest	Comp.	Area(ha)	Mauza
2026-27	Bharwain	R-II Lohara - A	C6	34.40	Mandholi
			C7	40.47	Suhin
			C9	59.90	Ghewat Behar
			C10	17.00	Sidh Chaler
			C11	40.87	Sidh Chaler
			Total	**192.64**	

Table 73

13.12 Subsidiary Silvicultural operations:-

This working circle is for the exploitation of existing Khair. The coppice shoots will be protected so far as practicable and cleaned by retaining 2-3 vigorous healthy shoots. The main objectives of management of such areas are as given under Chil working circle Khair overlapping working circle has been constituted only to harvest Khair trees. However, Khair being economic species, the cleaning and singling of shoots coming out of the stumps of felled Khair trees should be done effectively.

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CHAPTER XIV
PROTECTION CUM REHABILITATION WORKING CIRCLE

14.1 General Constitution:- This includes parts of Reserved Forests having unstable strata, loose soil, active erosion and also plantable/unplantable blanks which are not fit for working under any silvicultural system. These forests allotted to this working circle are required to be preserved only for protection of hills from denudation and erosion because of their location on steep/precipitous slopes. The area of this working circle is 572.23 ha.

14.2 General character of vegetation:-Such areas include both mixed *chil* and scrub forests. The growing stock is thinner and of poorer quality as compared to other working circles. The over wood consists of Chil, Sal and Asan. In the middle storey there is preponderance of Lannea grandis, Mallotus phillipinensis, Emblica officinalis, cassia fistula, Moringa olefera and *Diospyros chloroxylon*. The growing stock of all spp. is 54 M^3 per hectare. The percentage wise distribution of main spp is tabulated below.

DISTRIBUTION OF SPECIES

S.NO.	BOTANICAL NAME	COMMON NAME	Total		% AGE	
			No	Vol.(M^3)	No.	Vol.(M^3)
A	**Fruiting Trees**					
1	*Mangifera indica*	*Mango*	46	6	0.05	0.02
2	*Diospyros chloroxylon*	Kinnu	1086	173	1.19	0.58
3	*Ficus bengalensis*	*Bergad*	114	232	0.13	0.77
4	*Syzygium cuminii*	*Jamun*	6232	1384	6.85	4.61
	Total Fruiting Trees		**7478**	**1795**	**8.22**	**5.98**
	Medicinal Trees					
1	*Cassia fistula*	Amaltash	903	185	0.99	0.61
2	*Emblica officinalis*	Amla	1407	216	1.55	0.72
3	*Bauhinia variegata*	Kachnar	57	7	0.06	0.02
	Total Medicinal Trees		**2367**	**408**	**2.60**	**1.35**
	Timber Spp.					
1	*Pinus roxburghii*	Chil	9857	10685	10.84	35.57
2	*Toona ciliata*	Tooni	217	32	0.24	0.11
3	Shorea Robusta	Sal	29904	6780	32.88	22.57
4	Terminalia tomentosa	Aisan	18034	5570	19.83	18.54
	Total Timber		**58012**	**23067**	**63.79**	**76.79**

S.NO.	BOTANICAL NAME	COMMON NAME	Total		% AGE	
			No	Vol.(M 3)	No.	Vol.(M 3)
	Misc. B/L					
1	*Albizzia lebek*	Siris	57	35	0.06	0.12
2	*Albizzia odoratissima*	Kirmiru	343	65	0.38	0.22
3	*Moringa oleifera*	Sanan	6793	1286	7.47	4.28
4	*Lannea grandis*	Kembal	8016	1831	8.81	6.10
5	*Mallotus philippinensis*	Kamal	5237	865	5.76	2.88
6	Anogeissus latifolia	Dhou	229	42	0.25	0.14
7	Other B/L		2424	650	2.67	2.16
	Total Misc. B/L		23100	4774	25.40	15.89
	G. Total		**90958**	**30043**	**100**	**100**

Table 74

14.3 Blocks and compartments:-

No changes have been made in the areas of blocks and compartment allotted to this Working Circle. Range wise/Block wise/ Beat wise area distribution is given below:

AREA DISRTIBUTION

Range	Block	Beat	Forest	Compartment	Area
Bharwain	Panjal	Joh	R-I-Panjal	C-21	30.35
	Lohara	SidhChaler	R-II-Lohara-A	C-8	15.38
	Lohara	Rampur Kuthera	R-II-Lohara-A	C-21	30.76
	Bharwain	Bharwain	R-II-Lohara-B	C-2	50.04
	Bharwain	Guret	R-II-Lohara-B	C-13	28.24
	Total				**154.77**
Amb	Jower	Jower	R-III-Dharuhi-A	C-1a	149.33
	Jower	Jower	R-III-Dharuhi-A	C-1b	189
	Kotla	Suri	R-III-Dharuhi-D	C-6	79.13
	Total				**417.46**

Range	Block	Beat	Forest	Compartment	Area
Grand Total					572.23

Table 75

14.4 Special objectives of management:-

i) To protect the hill sides from further denudation and erosion by preserving and enhancing the forest cover and by undertaking soil conservation works in a planned manner, wherever necessary.

ii) To conserve moisture and streamline the flow of water in streams and *nalas* by protecting and enhancing vegetation cover in the watershed.

iii) To improve the growing stock in quality as well as in quantity by sowing and planting of suitable species.

iv) To protect and preserve the valuable broad leaved forests.

v) To provide a suitable habitat for wildlife and to protect non-timber forest produce naturally growing in these forests.

14.5 Analysis and Valuation of the crop

14.5.1 Stock maps:-The stock maps of all forests have been prepared on 1:15000 scale and placed in respective compartment history files.

14.5.2 Quality Class/ Density:- The general assessment of site quality class and ocular assessment of density have been made during field inspections in respect of each forest compartment or sub-compartment and recorded in the compartment history files.

14.6 **Enumerations: -** Total enumeration of all the species in 10 cm dia classes (5 cm dia classes in case of Khair) in the in the representative sample compartment was carried out. In total 50.04 ha area out of total of 572.23 ha of the working circle was enumerated. The results were proportionately enhanced to get the estimate of total growing stock of the working circle. The compartment (Lohara BC-2) for enumeration was selected by random sampling. Since no felling are envisaged from the areas of this working circle, therefore total enumeration was not required. The result of enumeration has been g tabulated as under:

ACTUAL GROWING STOCK OF R-II-LOHARA BC-2
Area (Ha)-50.04

S.NO.	BOTANICAL NAME	COMMON NAME	V		IV		III		IIA		IIB		IA		IB		IC		Total	
			No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No	Vol.
1	*Albizzia lebek*	Siris	0	0	4	1.272	0	0	1	1.77	0	0	0	0	0	0	0	0	5	3.042
2	*Albizzia odoratissima*	Kirmiru	20	2.54	10	3.18	0	0	0	0	0	0	0	0	0	0	0	0	30	5.72
3	*Cassia fistula*	Amaltash	47	5.969	32	10.176	0	0	0	0	0	0	0	0	0	0	0	0	79	16.145
4	*Pinus roxburghii*	Chil	178	10.68	175	33.25	168	109.2	154	221.76	109	283.4	59	208.86	16	56.64	3	10.62	862	934.41
5	*Toona ciliata*	Tooni	17	2.159	2	0.636	0	0	0	0	0	0	0	0	0	0	0	0	19	2.795
6	Shorea Robusta	Sal	1750	222.25	720	228.96	123	102.705	22	38.94	0	0	0	0	0	0	0	0	2615	592.855
7	*Moringa oleifera*	Sanan	422	53.594	164	52.152	8	6.68	0	0	0	0	0	0	0	0	0	0	594	112.426
8	*Emblica officinalis*	Amla	106	13.462	17	5.406	0	0	0	0	0	0	0	0	0	0	0	0	123	18.868
9	*Lannea grandis*	Kembal	404	51.308	271	86.178	25	20.875	1	1.77	0	0	0	0	0	0	0	0	701	160.131
10	*Mallotus philippinensis*	Karnal	372	47.244	84	26.712	2	1.67	0	0	0	0	0	0	0	0	0	0	458	75.626
11	*Bauhinia variegata*	Kachnar	5	0.635	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0.635
12	*Mangifera indica*	Am	4	0.508	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.508
13	*Diospyros chloroxylon*	Kinnu	79	10.033	16	5.088	0	0	0	0	0	0	0	0	0	0	0	0	95	15.121
14	*Ficus bengalensis*	Bargad	3	0.381	0	0	2	1.67	0	0	3	9.09	2	9.174	0	0	0	0	10	20.315
15	*Syzygium cuminii*	Jamun	355	45.085	160	50.88	30	25.05	0	0	0	0	0	0	0	0	0	0	545	121.015
16	Terminalia tomentosa	Alsan	751	95.377	603	191.754	211	176.185	10	17.7	2	6.06	0	0	0	0	0	0	1577	487.076
17	Anogeissus latifolia	Dhou	14	1.778	6	1.908	0	0	0	0	0	0	0	0	0	0	0	0	20	3.686
18	Misc. B/L		133	16.891	63	20.034	12	10.02	3	5.31		0	1	4.587		0		0	212	56.842
		Total	4660	579.894	2327	717.586	581	454.055	191	287.25	114	298.55	62	222.621	16	56.64	3	10.62	7954	2627.216

Table 76

S.NO.	BOTANICAL NAME	COMMON NAME	5 to 10		11 to 15		16-20		21-25		26-30		31-35		36-40		41-45		Total	
			No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.
1	*Acacia catechu*	Khair	535		532	15.428	322	23.828	141	21.855	46	11.04	12	4.2	1	0.553	0	0	1054	76.90

Table 77

S.NO.	BOTANICAL NAME	COMMON NAME	V		IV		III		IIA		IIB		IA		IB		IC		Total	
			No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No	Vol.
1	*Albizzia lebek*	Siris	0	0	46	15	0	0	11	20	0	0	0	0	0	0	0	0	57	35
2	*Albizzia odoratissima*	Kirmiru	229	29	114	36	0	0	0	0	0	0	0	0	0	0	0	0	343	65
3	*Cassia fistula*	Amaltash	537	68	366	116	0	0	0	0	0	0	0	0	0	0	0	0	903	185
4	*Pinus roxburghii*	Chil	2036	122	2001	380	1921	1249	1761	2536	1246	3241	675	2388	183	648	34	121	9857	10685
5	*Toona ciliata*	Tooni	194	25	23	7	0	0	0	0	0	0	0	0	0	0	0	0	217	32
6	Shorea Robusta	Sal	20012	2542	8234	2618	1407	1174	252	445	0	0	0	0	0	0	0	0	29904	6780
7	*Moringa oleifera*	Sanan	4826	613	1875	596	91	76	0	0	0	0	0	0	0	0	0	0	6793	1286
8	*Emblica officinalis*	Amla	1212	154	194	62	0	0	0	0	0	0	0	0	0	0	0	0	1407	216
9	*Lannea grandis*	Kembal	4620	587	3099	985	286	239	11	20	0	0	0	0	0	0	0	0	8016	1831
10	*Mallotus philippinensis*	Kamal	4254	540	961	305	23	19	0	0	0	0	0	0	0	0	0	0	5237	865
11	*Bauhinia variegata*	Kachnar	57	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	57	7
12	*Mangifera indica*	Am	46	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46	6
13	*Diospyros chloroxylon*	Kinnu	903	115	183	58	0	0	0	0	0	0	0	0	0	0	0	0	1086	173
14	*Ficus bengalensis*	Bargad	34	4	0	0	23	19	0	0	34	104	23	105	0	0	0	0	114	232
15	*Syzygium cuminii*	Jamun	4060	516	1830	582	343	286	0	0	0	0	0	0	0	0	0	0	6232	1384
16	Terminalia tomentosa	Aisan	8588	1091	6896	2193	2413	2015	114	202	23	69	0	0	0	0	0	0	18034	5570
17	Anogeissus latifolia	Dhou	160	20	69	22	0	0	0	0	0	0	0	0	0	0	0	0	229	42
18	Misc. B/L		1521	193	720	229	137	115	34	61	0	0	11	52	0	0	0	0	2424	650
		Total	53289	6631	26610	8206	6644	5192	2184	3285	1304	3414	709	2546	183	648	34	121	90958	30043

Table 78

		5 to 10		10 to 15		15-20		20-25		25-30		30-35		35-40		Total	
		No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.
Acacia catechu	Khair	6118		6084	176	3682	272	1612	250	526	126	137	48	11	6	12053	879.43

Table 79

14.7 Silvicultural System

Since the object of management is to conserve existing forests and to stock under-stocked area, no silvicultural system is prescribed. No commercial fellings be carried out and only salvage marking will be carried out as and when required.

14.8 Rotation and Conversion Period

For obvious reasons these forests will be managed for physical rotation.

14.9 Calculation of Yield

As no silvicultural fellings are proposed, no yield is prescribed.

14.10 Sequences of Fellings

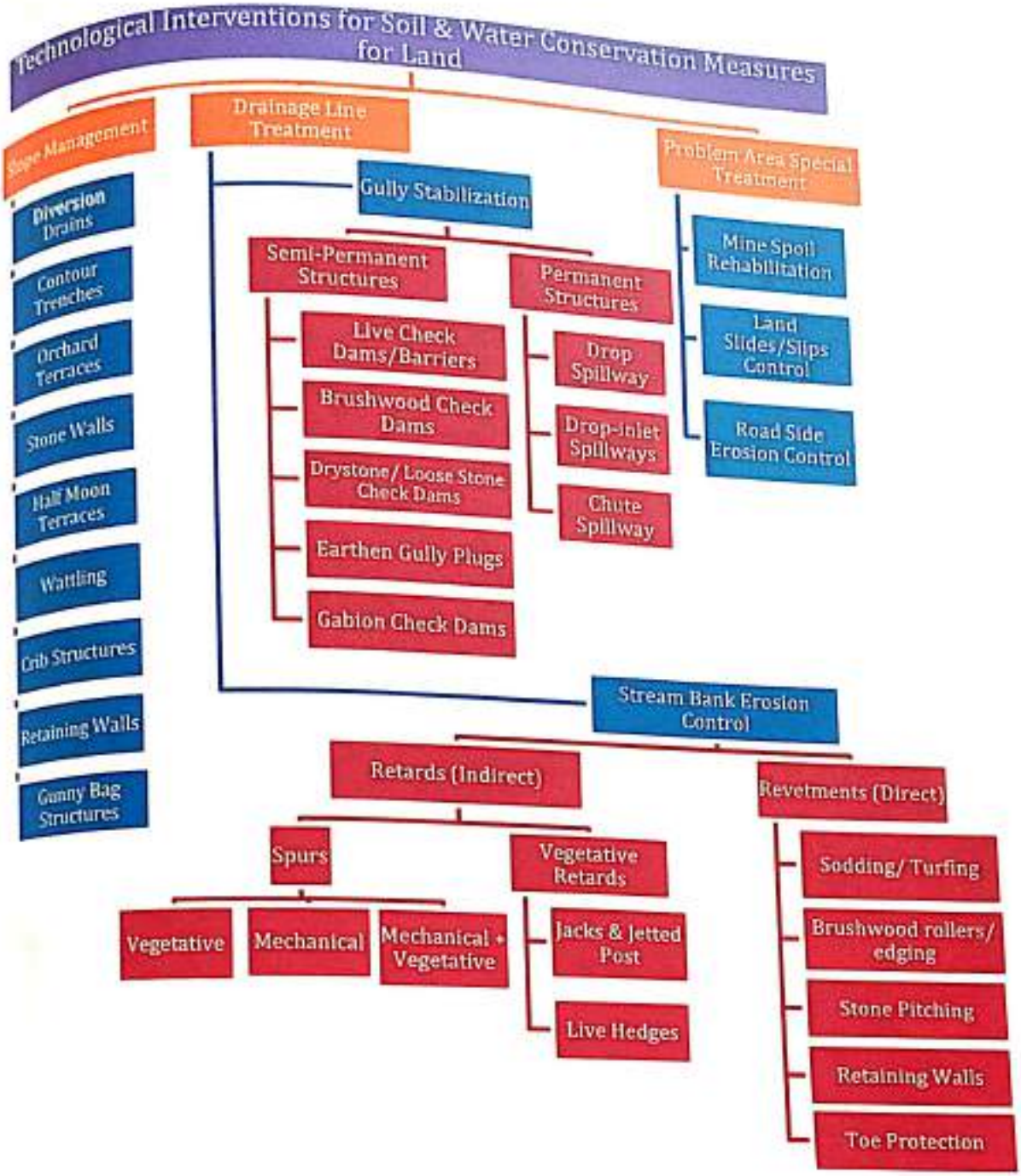
No sequences of felling are required.

14.11 PLANTING OF BLANKS

The chief value of these forests lies in their protective cover against denudation and erosion of hills. All sizeable blanks will be planted with local and suitable species such as chil, khair, kikar, amla etc.

14.12 Other Regulations

14.12.1 SOIL AND MOISTURE CONSERVATION The main objective is to protect hill slopes from further denudation, erosion and to maintain the equitable flow of water in the rivers, streams, *nallas* that originate from these hills, thus constant efforts should be made to maintain and increase the protective vegetative cover in such areas. These forests shall, therefore, be simply protected as such. No fellings shall be carried not even salvage removals as these areas are highly prone to soil erosion owing to steep slopes. Such areas shall be tackled by sowing, planting of suitable species and carrying out soil conservation works.



14.11.2 **Closure:-**The areas taken up for protective and improvement works shall be closed for a period of 15 years or more depending upon the status of regeneration.

14.12.3 **Grazing:-**The areas closed for planting will be strictly protected from grazing.

14.13.4 **Fire Protection:-**The forests are generally at risk of fire during hot and dry summers. Therefore fire prevention cannot be ignored. In the dry season i.e. May- June adequate number of fire-watchers should be employed.

14.14.5 Resin Tapping: - Chil constitute about 11% of the growing stock a its preservation is essential for the overall improvement of the working circ therefore no resin tapping in the working circle is allowed.

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CHAPTER XV
PLANTATION (OVERLAPPING) WORKING CIRCLES

15.1 General Constitution:

Human population has increased manifold and is further increasing day by day. Their requirements for fuel-wood, fodder, timber, NWFP and water has also increased manifold thereby putting pressure on traditional forests which in turn are degrading day by day. Now, time has come when each and every corner of earth (land) is put to use economically as per land capabilities. The owner is using private lands optimally as per present available technology and its requirements. Farm technology is improving very fast with the opening of the area with the market and future seems very bright. Whereas, use of forestland / Govt. land is not improving with the passage of time and is rather deteriorating miserably due to indifferent attitude of Govt. machinery. Scope of improving use of Govt. forests/ Govt. land is magnificent. **Approximate four thousand hectare forestland in the catchments and slopes is in the much depleted condition. These are situated either near habitations or are steep slopes and big blanks.** The Forest cover have been thinned drastically and reduced to minimum.

This working circle comprises such areas which are devoid of tree growth/vegetation, carry open crop or have young plantations or crop which still need protection. Only such areas will be included which have site factor favorable for raising plantations, closure is possible, in view of the fact that not more than one third area of a forest can be closed at a time and where the resultant plantations will be economically viable. The areas adjacent to village habitations where the species of local requirement of fodder and fuel can be raised are also included in this working circle. The depleted scrub forests and the plantations raised in the plan period but not fully established are also included in this working circle. Focus will be on restoring the species composition from timber centric to other useful species for fuel, fodder, NTFPs.

15.2 Special objects of Management:

1. To manage the degraded, sparsely stocked and blank forests on scientific basis to increase the area under forest cover, thereby, reducing the pressure on traditional forests.
2. To augment the resources of timber, fodder and fire wood, to meet the increasing demand of local people in the vicinity of these forests.
3. To check denudation and soil erosion.
4. To raise compact plantation to make available raw material for wood based industries
5. To rehabilitate degraded areas by planting fodder trees and high yielding varieties of grasses.
6. To increase tree cover of valuable species so as to increase supply of fuel-wood and fodder to meet with demand of local community.
7. To increase employment opportunities (wage earning) to rural man folk
8. To make people aware about better management of forest resources and to inculcate habit of tree planting among the masses.
9. To train staff and labour regarding planting techniques and also that of nursery techniques.

15.3 Plantation Series There will be only one plantation series, the division being the unit of control.

15.4 Silvicultural system:

As the main objective is to raise plantations, no specific silvicultural system is prescribed. However, Indian irregular shelter wood system may be followed at few places where crop canopy have been reduced drastically. The plantations will be raised by artificial means with supplementary inputs of natural regeneration at places where seed fall occurs. However, as and when plantations are established, areas as per crop composition will be allotted to respective working circles in next working plans.

15.5 Rotation:

There is no need for prescribing rotation at this stage.

15.6 Choice of species:

The choice of species depends on the various factors, such as climatic, edaphic, topographic and biotic but the surviving indigenous species give a clear indication of the most suitable species. Since the most of the areas included in this working circle are situated at lower elevation, therefore, preference should be given to indigenous, fast growing, hardy, species which can survive under the adverse conditions of the locality such as dryness during summer and frost during winters. Sincere and strenuous efforts should be made to bring the blank areas under forest cover as early as possible. A forester should follow the nature rather than compelling the nature to follow him. So, it is advisable to start with the hardy, species that occur in the earlier stages of succession.

The success of plantation works depends on the choice of species. The correct choice of species would give productive and praise worthy results whereas wrong choice of species always brings adverse publicity for the forester. In short, adequate care must be taken while selecting the species to be planted keeping in view the land capability, terrain and the demands of the local people. The main species will be Chil, Khair and Bamboo in addition other broad leaved species such as Buel, Toon, Darek, Siris, Kachnar, Shisham, Dhau, Amla, Harar, Bahera etc. will be encouraged.

Under the current departmental policy a mixture of species in departmental plantations is required in the following proportion:-

30% medicinal trees suitable for the area, 20% wild fruit trees suitable for the area and the remainder to be the main species of the forest type either conifers or broad leaved. It has, therefore, to be ensured that for plantation programmes sufficient diversity of tree species is grown and available in the nurseries. It is also prescribed that wherever chil is being planted the plants should be at least 2 and a half years old. Similarly broad leaved species should be at least 1.5-2 year old.

15.7 Plantation Programme:

In order to cover up the blank areas expeditiously, the maximum areas have been suggested to be taken up during the initial years of working plan period. Soil Conservation works has also been prescribed along with afforestation measures wherever necessary in swan catchment.

An average of 100 ha can be taken up for plantation in forest of degraded quality. The special emphasis may be given for soil binding species along the nalas and steep slopes.

PLATATION PROGRAMME FOR NEXT FIFTEEN YEARS

Sr. No.		Range	Name of Forest	Area (ha.)
1.	2012-13	Bharwain	R.1.Panjal-33	10 ha.
			S/l Daulatpur	10 ha.
		Amb	**Total**	**20 ha.**
			R.III.Dharuhi AC 1b	10ha.
			R.III.Dharuhi AC 1 a	10ha.
			R.III.Dharuhi CC 1	5 ha.
			R.III.Dharuhi BC 5	5 ha.
			R.III.Dharuhi GC 3	10ha.
			R.III.Dharuhi FC 1	10ha.
			R.III.Dharuhi DC 2	8ha.
			R.III.Dharuhi DC 6	8ha.
			Total	**66ha.**
2.	2013-14	Bharwain	R.1.Panjal-25, 26 & 27.	30 ha.
			R.II.Lohara-A-20 &21.	20 ha.
			R.II.Lohara-B- 1 & 2.	10ha.
			Total	**60 ha.**
		Amb	R.III.Dharuhi AC 2	5ha.
			R.III.Dharuhi AC 1 a	15 ha.
			R.III.Dharuhi CC	5ha.
			R.III.Dharuhi CC 3	5ha.
			R.III.Dharuhi B C 6	5ha.
			R.III.Dharuhi GC 3	10ha.
			R.III.Dharuhi FC II	5ha.
			R.III.Dharuhi DC 4	5ha.
			R.III.Dharuhi DC 1	5ha.
			Total	**60ha.**
3.	2014-15	Bharwain	R.I.Panjal-28, 29 & 30.	15 ha.
			R.II.Lohara-B-3 & 4.	20ha.
			S/l Nangal Jaraylan	10 ha.
			Total	**45ha.**
		Amb	R.III.Dharuhi AC 1b	10ha.
			R.III.Dharuhi AC 1a	10ha.
			R.III.Dharuhi CC 2	5ha.
			R.III.Dharuhi BC 3	10ha.
			R.III.Dharuhi FC 2	5ha.
			R.III.Dharuhi G C 5	5ha.
			R.III.Dharuhi DC 3	5ha.
			R.III.Dharuhi D C 4	5ha.
			Total	**55ha.**
4.	2015-16	Bharwain	R.II.Lohara A-22	25ha.
			R.I.Panjal-6 & 7.	25ha.
			Total	**50ha.**
		Amb	R.III.Dharuhi AC 1b	10ha.
			R.III.Dharuhi AC 1a	10ha.
			R.III.Dharuhi CC 3	5ha.

Sr.No.	Year	Name of Range	Name of Forest	Area (ha.)
			R.III.Dharuhi FC 1	5ha.
			R.III.Dharuhi GC 5	5ha.
			R.III.Dharuhi DC 2	5ha.
			R.III.Dharuhi DC 5	5ha.
			Total	**45ha.**
5.	2016-17	**Bharwain**	R.II.Lohara B-12 & 13.	25ha.
			R.I.Panjal3 & 4.	20ha.
			S/l Deoli	5ha.
			Total	**50ha.**
		Amb	R.III.Dharuhi BC 6	5ha.
			R.III.Dharuhi AC 1b	15ha.
			R.III.Dharuhi CC 2	5ha.
			R.III.Dharuhi BC 1	5ha.
			R.III.Dharuhi DC 2	5ha.
			R.III.Dharuhi DC 4	5ha.
			R.III.Dharuhi GC 4	5ha.
			Total	**45ha.**
6.	2017-18	**Bharwain**	R.II.Lohara A-1 & 2.	25ha.
			S/l Saloh Barni	10 ha.
			Total	**35ha.**
		Amb	R.III.Dharuhi AC 1b	10ha.
			R.III.Dharuhi	5ha.
			R.III.Dharuhi GC 2	5ha.
			Total	**20ha.**
7.	2018-19	**Bharwain**	R.I.Panjal-7 & 8.	25ha.
			S/l Dangoh	5ha.
			Total	**30ha.**
		Amb	R.III.Dharuhi AC 1b	10ha.
			R.III.Dharuhi AC 1a	10ha.
			R.III.Dharuhi BC 3	10ha.
			R.III.Dharuhi BC 6	5ha.
			R.III.Dharuhi GC 3	5ha.
			R.III.Dharuhi FC 2	5ha.
			R.III.Dharuhi DC 3	5ha.
			R.III.Dharuhi DC 4	5ha.
			Total	**55ha.**
8.	2019-20	**Bharwain**	R.II.LoharaB-5, 6&7.	15ha.
			S/l Chowar	10ha.
			Total	**25ha.**
		Amb	R.III.Dharuhi AC 1b	5ha.
			R.III.Dharuhi AC 1a	5ha.
			R.III.Dharuhi BC 5	5ha.
			R.III.Dharuhi GC 1	4ha.
			R.III.Dharuhi DC 1	4ha.
			R.III.Dharuhi DC 4	4ha.
			R.III.Dharuhi FC 2	4ha.

Sr. No.	Year	Name of Range	Name of Forest	Area (ha.)
			Total	**31ha.**
9.	2020-21	**Bharwain**	R.II.Lohara A-3&4.	25ha.
			R.I.Panjal 9&10.	10ha.
			Total	**35ha.**
		Amb	R.III.Dharuhi AC 1a	10ha.
			R.III.Dharuhi AC 2	10ha.
			R.III.Dharuhi CC 3	5ha.
			R.III.Dharuhi GC 5	4ha.
			R.III.Dharuhi DC 1	4ha.
			R.III.Dharuhi DC 4	4ha.
			R.III.Dharuhi FC 2	4ha.
			Total	**41ha.**
10.	2021-22	**Bharwain**	R.II.Lohara B-7&8.	15ha.
			S/l Ganu	5ha.
			E.Area Aloh	5ha
			Total	**25ha.**
		Amb	R.III.Dharuhi BC 3	5ha.
			R.III.Dharuhi BC 5	5ha.
			R.III.Dharuhi AC 1a	10ha.
			R.III.Dharuhi AC 1b	10ha.
			R.III.Dharuhi GC 5	4ha.
			R.III.Dharuhi BC 1	4ha.
			Total	**38ha.**
11.	2022-23	**Bharwain**	R.II.Lohara A-9&10.	15ha.
			R.I.Panjal 16&17.	20ha.
			Total	**35ha.**
		Amb	R.III.Dharuhi AC 1a	15ha.
			R.III.Dharuhi AC1b	10ha.
			R.III.Dharuhi BC 6	5ha.
			R.III.Dharuhi DC 3	5ha.
			R.III.Dharuhi DC 6	5ha.
			Total	**40ha.**
12.	2023-24	**Bharwain**	R.II.Lohara B-11&12.	25ha.
			S/l Nangal Jaraylan	5ha.
			S/l Sagnai	5ha.
			Total	**35ha.**
		Amb	R.III.Dharuhi AC 1b	10ha.
			R.III.Dharuhi BC 3	5ha.
			Total	**15ha.**
13.	2024-25	**Bharwain**	R.II.Lohara A-18&19.	20ha.
			S/l Mandoli	5ha.
			S/l Chowar	5ha.
			R.I.Panjal-17, 18&19.	15ha.
			Total	**45ha.**

Sr.No.	Year	Name of Range	Name of Forest	Area (ha.)
		Amb	R.III.Dharuhi AC 1b	20ha.
			R.III.Dharuhi DC 2	4ha.
			R.III.Dharuhi DC 3	5ha.
			Total	**29ha.**
14.	2025-26	**Bharwain**	R.II.Lohara B-10, 11, 12&13.	20ha.
			R.I.Panjal-20, 21&22.	15ha.
			Total	**35ha.**
		Amb	R.III.Dharuhi AC 1a	10ha.
			R.III.Dharuhi AC 1b	10ha.
			R.III.Dharuhi DC 6	10ha.
			Total	**30ha.**
15.	2026-27	**Bharwain**	R.II.Lohara A-10, 11, 12&13.	20ha.
			R.II.Lohara B-1, 2&3.	15ha.
			S/l Sagnai	5ha.
			Total	**40ha.**
		Amb	R.III.Dharuhi FC 2	10ha.
			R.III.Dharuhi DC 6	10ha.
			R.III.Dharuhi DC 4	5ha.
			Total	**25ha.**
Grand Total				**1160 ha.**

Table 80

15.8 Plantation Technique:

The technique of raising plantations of various species are by now well established and need no elaborate discussion, however general principles are to be followed by the field staff. The pit digging and then filling needs special attention keeping in view the warm season in Una forest division during summer.

15.9 Site Selection:

Specific sites have to be chosen as the area is under constant pressure due to soil erosion and other biotic factors such as Fuelwood and fodder requirements. As the area is devoid of vegetation on ridges and steep slopes, specific models of plantation such as staggered contouring of plants along with grass sowing should be followed. However, if the deviation is absolute necessary, the Divisional Forest Officer can do some changes after spot inspections.

15.10 Total Plantation to be raised during the Plan Period: Approximately 1200 ha area is to be planted during the plan period keeping in view the adverse climatic factors and soil erosion due to floods, etc. apart from that, lantana eradication is one aspect which requires special attention.

15.11 Closure Notification:

Closure notification need not to be done being reserve forest.

15.12 THE CONCEPT OF USER GROUPS :-This has been demonstrated elsewhere in HP and is working well. Essentially a User Group comprises 10-15 local women or a SHG

who are organized to protect the plantations and keep it free of grazing. This User Group is allowed to cut grass from the plantation area (which they divide amongst themselves) for self-use or for sale. The User Group is further incentivized by making them take care of the plantation for three years and funds earmarked for maintenance are transferred to them. The practice of organizing User Groups needs to become necessary for any area taken up for plantation by the department. The User Group will be allowed to harvest grass from the area as long as feasible and thereafter be allowed to take firewood and fodder once the trees are bigger. An active User Group would be invaluable in keeping exotic weeds away and in preventing fires. In order to keep proper care of the plantation, emphasis must be given to form JFMCs in the area.

15.13 PLANTATION JOURNALS It is essential that whenever a site is selected for plantation, a proper hard bound nursery journal is prepared for that site. The plantation journal must have a large sketch may be of the area showing boundaries and other details like nalas, rocky out crops, existing patches of trees etc. It is important that GPS coordinates of at least 6 to 8 points around plantations are recorded and entered in the plantation journal along with the altitude of the area. Details of all works carried out must be entered in the plantation journals and signed by the concerned officials showing date of signature. All inspecting officers are to record their visits and comments/observations in the plantation journals. Once a plantation journal is complete i.e. in the fourth and fifth year of the plantation, it should be kept in the concerned range office.

15.14 Fencing: Fencing needs to be done around plantation sites only where it is necessary. Fencing along their steep slopes cliffs, should be avoided where it serves no purpose. However, it is advisable to plant bio-engineering species suitable for the area along three strand barbed wire fencing especially in areas where grazing incidence is high. Fencing work should be taken up during the rainy season along with live fence support even for area which is to be planted in the ensuing winter. Where economical, and especially along roads, treated bamboo posts should be used for fencing. Where adequate live fence material is planted, only 2 strands of barbed wire may be sufficient. Tall plants of broad leaved species (6 -8 ft high) wherever available can also be planted along the fence.

15.15 Site Clearance:

The site shall then be cleared of bushes and unwanted growth only to the extent absolutely necessary. On hot aspects, staggered bushes of Dodonea, Woodfordia etc. should be left to afford side shade to young plants. Where possible the shrubs be allowed sufficient time and space. The slash should, then be collected in small heaps and burnt in depressions, nalas carefully so as to avoid any damage to existing patches of regeneration. As the lower tracts are heavily infested with invasive alien species such as *Lantana, Ageratum* etc. up to an extent of 4000 ha of valuable forest land, this need special attention for rehabilitation of the area.

15.16 SOIL AND MOISTURE CONSERVATION:

The main objective is to protect hill slopes from further denudation, erosion and to maintain the equitable flow of water in the rivers, streams, perennial *nalas* that originate from these hills, thus constant efforts should be made to maintain and increase the protective vegetative cover in such areas. These forests shall, therefore, be simply protected as such. No green fellings shall be carried out as these areas are highly prone to soil erosion owing to steep slopes.

Comprehensive Catchment Area Treatment Plan has been made for all the catchment which will guide the soil moisture conservation measures to be adopted in Una Division.

The grazing in these forests is required to be regulated. The rotational closures/fencing supplemented with some soil conservation measures in the eroded areas would improve protective vegetative cover. Natural regeneration of BL species shall be encouraged and tended, wherever necessary. Most of the forests in lower elevations are poorly stocked, carry scattered tree growth or are devoid of adequate vegetation cover. Such areas shall be tackled by sowing, planting of suitable species and carrying out soil conservation works. The growing stock of chil forests is on the decline especially near the habitations. These forests can be regenerated by artificial means. Special nursery technique need to be followed up for species with poor germination per cent.

15.17 Preparation of Site:

Pits on standard size 30 cm. deep, 30 cm diameter for Chil and 45 cm deep 45 cm is diameter for broad leaved should be dug well in advance so as to provide an interval of 2-3 months between pit digging and planting for weathering of soil.

15.18 Spacing:

Planting of coniferous/chil/BL at spacing 3m x 3 m is general practice and it should be continued, however, while treating eroded portions suitable broad leaved may be planted at the spacing of 2x2 m. Rocks / over shade should be avoided.

15.19 Sowing and planting:

Planting should be preferred to sowing, though the latter operations may be cheaper. Success is more certain and initial growths more rapid, in case sturdy nursery raised plants are used. Sowing may be carried out on comparatively better site in appropriate mixture of soil/sand/vermi compost, where these are expected to be easily successful. Nursery technique of various species, and artificial reproduction, has been dealt in the detail in technical order Nos. 3 & 4 of Forest Manual Volume III. Every Range Officer and his subordinates should acquaint themselves with these instructions. However, the nursery staff needs to update his knowledge regularly with the passage of time. The seed quality and pretreatment are the main factor that govern the germination and need to be looked upon very carefully.

15.20 NURSERIES: It is axiomatic that the degree of survival of plantations is directly linked to the quality of nursery stock raised in nurseries. More so, when we are faced with increasing swings in seasonal fluctuations, both in terms of erratic rainfall and rising temperatures. These recent changes in weather patterns exacerbate our historical woes of compacted soil, damage by fire and cattle and general lack of interest (and therefore concern) of local communities in our plantations. Vastly improved nursery stock can in a major way address most of these impediments coming in the way of establishing successful plantations in and outside forests.

Few important qualities of any good nurseries would include:

a) It should be large in size (at least 0.5ha) so that it is cost effective and also proper infrastructure including water supply, germination chamber (poly-house), Mali-hut, soil mixing yard, vermi compost etc can be developed.
b) Adequately trained, dedicated staff should be available in each nursery. Mali and labourers should be trained and guided from time to time about raising of quality stock.

c) Each nursery should specialize in 5-6 species suited to the area and have large stock of each species, which is graded from time to time so that only quality stock goes for planting.

d) Soil mixture is most vital component for raising quality stock. Thus, care must be taken not to compromise with quality of soil mixture (ideally 1:1:1 of soil:sand:vermi compost)

There are 3 nurseries in Una (as on 31st Dec 2011) having a stock of 300000 plants. Thus, average number of plants per nursery is 100000, which can further be increased (and the average plant cost reduced) with development of infrastructure in more nurseries. However, more nurseries can be created as per the site requirement depending upon the carriage distance and cost factor. All the nursery stock should be grown in the polybags only. The detail of 3 selected nurseries is as follow:

Name of Nursery	Area (ha.)	Growing Capacity(No.)	Water Supply	No. of vermi compost pits	Poly house	Mali hut
Ghandawal (Una)	1.75		Bore well	Available	Available	Available
Nandpur (Amb)	1		Bore well	Available	Not Available	Available
Saloi (Bharwain)			Perennial Khad	Not Available	Not Available	Not Available

Table 81

15.21 **TALL PLANTING** One of the main reasons for failure of plantations is grazing / trampling by cattle. Also drought, fire hazards contribute to failure. Thus, to overcome pressure of grazing and drought, planting of tall plants (above grazing height) with well-developed root system and good collar girth is desirable. Such plants will be able to cope with droughts owing to their well-developed spread out root system, will be above grazing height and thus will survive grazing pressure and their good collar girth will help them withstand trampling. Such plants can be raised in nurseries for which month-wise operation activity has been given here.

Raising of chil in Nurseries

Month	Activities for Raising chil
Sept-Oct 2012	1. Sow seeds in trays/Poly bags (5x9)" filled with mixture of soil from chil forest & vermi compost. Special care is to be given to collect the disease free soil.
Dec-Feb (1st Year) 2013	1. Special arrangements have to be done to avoid frost damage in lower areas. Locally made grass covers or polythene sheet may be used.
Sept-Oct (2nd Year) 2013	1. Transfer to (9x12)"bag along with ball of earth, add some more soil at bottom and sides with vermin compost.
July 2014 (2nd Year end)	1. Plant 90% of the good quality plants approximately 1 m ht in pit size (45x45) cm. 2. Retain10% best plants from among the quality plants for production of **'Tall Plants'** and shift them in bags of size (10x15)".

Table 82

Tall plants of other deciduous species will also be raised in a similar way as depending upon the seeding time of native species. sowing time and technique will be as per species requirement. For deciduous tall plants, root-shoot cuttings will be raised in production nurseries while sowing will be done in mother nurseries.

Nurseries larger than 0.25 ha but smaller than 0.5 ha, that have been closed can be used as **Mother Nursery** for production of root-shoot cuttings of deciduous broadleaved species. Thus, all deciduous broadleaved species like Robinia, Chulli, Walnut, Horse Chest Nut, Daru, Drek, Ritha etc. will not be grown from seed in production nurseries but their root- shoot cuttings will be made in Mother Nurseries. Month wise activity chart for such nurseries is given in table 3.5.

Mother Nurseries for Production of Deciduous Broadleaved Species

Month	Activities
Nov-Dec	1. Plough the field, add compost and broadcast seeds, level to cover the seeds 2. Flood irrigation to the field
March to June (Next Year)	1. Flood irrigation 2-3 times depending on rainfall and temperature 2. Weeding twice- once before and once during monsoon (these plants will not be shown in nursery return)
Nov' (Next Year)	1. Uproot plants that are >2', transport to production nurseries 2. Make root-shoot cutting retaining 4" of root and 4" of shoot 3. Plant in polybags of size 15"x7" (Now they will be shown in the Nursery Return of May'13 under age group 1.5 years)
Nov-Dec' (2nd Year)	1. Plant 90% of the quality plants 2. Retain10% best plants from among the quality plants for production of 'Tall Plants' 3. Make root shoot cutting of these 10% retained plants by cutting the shoot at 2' height (retaining only one shoot) and shift along with the soil to bags of size 20"x12"
Dec'(3rd Year)	1. Plant out these plants in pits of size 45x45x45cm

Table 83

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CHAPTER XVI
PARTICIPATORY FOREST MANAGEMENT (OVERLAPPING) WORKING CIRCLE

16.1 JOINT FOREST MANAGEMENT IN HIMACHAL PRADESH In 1985, social forestry was given impetus by the National Social Forestry (Umbrella) Project. The project achieved its objective of planting more than 1, 00,000 hectares of plantations, but physical targets took precedence over participatory objectives, and social and equity issues could not be addressed.

In the 1980s the World Bank-supported Social Forestry project (1984-92) and the Indo-German Integrated Dhauladhar project (1982-92) were taken up in HP. Both were more participatory than previous FD projects. In the 1990s both donors switched their focus to the Shiwalik hills with the Indo-German Changer Project that went on till 2005-06, as did the WB IWDP Kandi project.

The framework for JFM in HP is provided by the Government of HP Order of 12 May 1993, which followed the June 1990 Government of India (JFM) Circular enabling the spread of JFM. The HP Order was compiled following study of JFM resolutions issued by other states.

The JFM Order coincided with the development of a donor-led (DFID) project for Mandi and Kullu districts, in which JFM was a key element. This Himachal Pradesh Forestry Project (HPFP) may be seen to have facilitated the introduction of JFM statewide. Donor support to Mandi and Kullu districts continued until March 2001. But as one HPFD officer put it: *"There were no rules and this plagued everything"*.

Table 6.1 Growth of JFM in Kullu and Mandi

Year	No. of VFDCs in Kullu	Area (ha)	No. of VFDCs in Mandi	Area (ha)	Total no.	Total area
1995-96	4	1,870	-		4	**1,870**
1996-97	4	2,685	8	3,110	12	**5,795**
1997-98	12	8,930	13	5,537	25	**14,467**
1998-99	21	12,426	35	7,134	56	**19,560**
1999-00	14	7,000	42	21,174	56	**28,174**
Total	**55**	**32,911**	**98**	**36,955**	**153**	**69,866**

Table 84

In addition in Mandi there are 35 Forest Management Plans (FMPs) covering about 10,500 hectares, and in Kullu there are 21 FMPs covering about 10,000 hectares. While efforts were made to integrate these FMPs into Working Plans and a nascent GIS facility started at FTI, Sundernagar, and talk of using remote sensing for WP writing on the Karnataka model, the whole thing fell through after 2001 with the end of the second phase of the DFID project. At the end of the second phase of the HP Forestry Project in 2001, it was agreed that all the 153 VFDCs formed in Kullu and Mandi would be taken over by the SVY and converted into societies.

Until 1998, JFM in HP was confined to donor-supported pilot activities (DFID, GTZ, World Bank). Then, as in earlier years (see above with illegal timber) the arrival of a new PCCF in 1998 meant the search for a new programme to make a positive public relations impact. Participation was the buzzword from Delhi, and small groups of three or four FD staff were tasked with developing plans for the new scheme. The Chief Minister was persuaded to launch *Sanjhi Van Yojna* (SVY). 'Entry point activities' – such as making pots, water taps, mending temples, small infrastructure developments; all designed to attract people to the project – were given a budget so that DFOs could be seen to be dispensing something worthwhile. To support the state JFM Order, Participatory Forest Management (PFM) Rules were developed for HP, and notified on 23 August 2001. These Rules make provision for increasing the institutional autonomy of Village Forest Development Committees (VFDCs) by registering them as Village Forest Development Societies (VFDSs) under the Societies Registration Act. Importantly, the PFM Rules encourage VFDS formation panchayat ward wise thereby attempting to link these bodies directly with the panchayat structure with each elected panch being on the executive committee of the VFDS, *ex officio*. However, the role of the VFDSs continues to be viewed narrowly, focusing mainly on helping the HPFD to police forests and on wage-based micro-plan activities.

This resulted in the 'New SVY' rules and guidelines being announced by the GoHP in August 2001. They contain provisions for VFDSs to become, in legal terms 'the forest officer' (not notified as on July 2011) for levying fines etc, and for 100 per cent share in intermediate usufructs while on final harvest 75 per cent would go to the VFDS and 25 per cent to the panchayat. The GoHP agreed to completely forgo any share from JFM areas.

Under 'New SVY': entry point activities are abandoned but "income-generating activities" introduced; forest guards will not be the member secretary of the Executive Committee; but local organisers – usually led by a literate woman linked to a local community-based organisation, helps mobilise towards a properly representative VFDS based on a panchayat ward. Several meetings are held before a micro plan is initiated – this shows VFDS maturity. The FD sends a cheque to a local bank account. The VFDS agrees with the FD to furnish an 'utilisation certificate' which can be monitored and checked.

Since January 2001 the Government of India agreed to bring "better" forests under JFM but how many have actually been included under micro plans is not known. Even under FDAs, JFM continues to be restricted to degraded forests.

At the policy level the PFM Rules and SVY Rules and Guidelines of August 2001 are seen as a major step forward, laying the basis for uniformity in approach to community based forest management. It also makes JFM poverty focused and is targeted to the resource dependent.

In 2003, MoEF started the Forest Development Agencies (FDAs) at district level – with DFOs getting direct access to central funding – for forest and plantation work for employment generation objectives. This is an 100 per cent central sector scheme, created to reduce the multiplicity of schemes with similar objectives (it merges four existing central schemes), ensure uniformity in funding pattern and implementation mechanism, avoid delays in availability of funds to the field level and institutionalize peoples' participation in project formulation and implementation. FDAs will be constituted at the territorial/ wildlife forest division level, and JFM committees will be the implementing agencies at grassroots level. FDAs are to work through forest guards / deputy rangers- and thus appear to

conflict with SVY rules which allow for the member secretary to be elected by the JFMC / VFDS.

The growth of FDAs and therefore of JFMCs since 2003 appears to be fluctuating as figures culled out from various departmental reports indicate. In March, 2003, 678 JFMCs were reported covering a forest area of about 1640 km² distributed in RFs, DPFs & UPFs. In March, 2005, 1690 JFMCs are reported covering a forest area of over 4200 km². As of December, 2008, 1381 JFMCs stand listed. However, as per field reports only 986 of these are said to be active. Area covered is not mentioned. In March, 2010, a total of 1109 JFMCs have been reported covering again an area of about 4200 km². In July, 2010, the total number of JFMCs has been pegged at 1270 but how much forest area they cover is not indicated.

16.2 THE LESSONS LEARNT The last three decades of dabbling with JFM / PFM under various EAPs and the homegrown SVY and now the centrally administered FDA do hold some valuable lessons and insights for the future of participatory natural resource management in the state.

1. PFM should focus in and around pockets of poverty i.e. remote, forested areas (better forests) and where livelihood dependence on forests is high. This would entail several genuine joint management activities (other than plantation) like collective protection against illicit felling, fires, poaching and so forth. Issues of Rights, equity and benefit sharing are better addressed and conflicts resolved.

2. In participatory approaches, the *process* is more important than achieving targets. Choosing and regularly training the right persons for the job is therefore critical.

3. Sharing of removals, including resin, intermediate and salvage felling with VFDSs are necessary to establish long term stake of local communities in PFM.

4. Continual policy and Rules adjustment and calibration to promote better market returns for wood and non-wood based enterprises. Example, the recent decontrol of bamboo trade and transit. Next: efficient markets for value added products.

5. Local Leadership – this is a critical role. Successful examples of JFM or CFM show that local leadership roles have been crucial in making the change. It could be an enlightened, accepted local person, an elected representative, a dedicated NGO/ CBO or even a committed forest officer. This is also important for sustainability of groups.

16.3 CONCEPT OF PARTICIPATORY FOREST MANAGEMENT The concept of Joint or Participatory Forest Management(PFM) is an intervention to evolve organized and collective thinking on the issues of forest management keeping in view the fact that the forest resources are limited and the claim over these are varied, no single solution can satisfy the needs of all. The philosophy aims at involving all the stakeholders in resource generation activities through motivation, active involvement in the process of management and sharing of benefits through adequate institutional arrangements.

Joint management of forest lands is sharing of responsibilities, control, decision making authority and products over forest lands between Govt. and local user groups. The primary purpose of PFM is to create conditions at the local level which

enable improvements in forest conditions and productivity. It is a movement towards a more democratic management of natural resources founded on the principle of equity, transparency and social justice.
It is widely acknowledged that the Govt. and development agencies alone cannot solve the growing problem of degradation of forests and natural resource depletion. The traditional approach to management worked satisfactorily in the past when the population was less but depleting natural resources have led to the concept and practice of participatory management.
The framework for JFM in HP is provided by the Government of HP Order of 12 May 1993, which followed the June 1990 Government of India (JFM) Circular enabling the spread of JFM. The HP Order was compiled following study of JFM resolutions issued by other states.

16.4 SPECIAL OBJECT OF MANAGEMENT The basic objects of Joint or Participatory Forest Management are:-

i) To evolve consensus on the basic issues for the conservation of forest resources including soil and water.

ii) To provide an effective treatment for wastelands, degraded forests and forest lands situated near villages through protection, afforestation, pasture development, soil conservation by active participation of local people.

iii) To maintain the environmental stability through preservation of natural resources through involvement of local people in management.
iv) To augment fuel wood, fodder and small timber production for use by local people.

The Govt. of HP has notified Himachal Pradesh Participatory Forest Management Regulations, 2001 and the Sanjhi Van Yojna Scheme, 2001 which have strengthened the JFM approach to a great extent. These regulations are reproduced in Appendix.

16.5 IMPLEMENTATION OF JFM IN UNA DIVISION The JFM approach has been implemented in the division through projects like Overseas Development Administration or DFID & Sanjhi Van Yojna (SVY). The micro plans were prepared in accordance with project philosophy and works executed by VFDC/VFDS. Activities like soil conservation, afforestation, village development activities, fire protection, grazing have been undertaken in the past but almost in all cases, the participation of locals remained up to fund flow only. Most of the committees are totally inactive now. There is a need to revive, activate and involve these rural committees in forest management activities.

16.6 FUTURE SCOPE

6.6.1 There is tremendous scope for the JFM activities in the division. All the forests allotted to the plantation and protection working circles are suitable/ potential sites for afforestation, soil conservation, grassland improvement, NTFP development besides other forests.

6.6.2 IDENTIFICATION OF JFM AREAS The degraded forest areas as well as common village land located in the vicinity of the villages are

potential sites for JFM implementation. The deficiencies and strengths of these areas with regard to soil condition, water availability, grazing pressure, fuel wood production and requirements need to be understood. While touring the division, the following Panchayats, beats have been identified and are recommended for adopting JFM approach in future. The list is indicative only and the DFO is at liberty to include or exclude any area while implementing the JFM approach.

16.6.3 NON TIMBER FOREST PRODUCE JFM can play an important role in collection, marketing and propagation of NTFPs. Many villagers are dependent on the collection of NTFP to sustain their livelihood. They usually collect various medicinal herbs and sell it to the middleman who further sells in the market. The various medicinal herbs that are found or can be introduced in the tract, their method of cultivation, collection, harvesting have been discussed in Chapter V.

16.7 POTENTIAL ACTIVITIES OF JFM COMMITTEES The JFM/PFM committees are the future agencies of forest development, conservation and expansion. The potential activities to be executed through JFMCs can be:-

- Afforestation activity (both departmental and MNREGS)
- Soil & water conservation through treatment of macro and micro watersheds in a catchment.
- Recharging of water bodies like boulies, ponds and underground water.
- Minor construction works of road, paths, and buildings.
- Awareness programme for forest protection, fire protection ,propagation of medicinal herbs on a larger scale
- Livelihood options like bee keeping, mushroom cultivation, vermin composting, collection of chil pine needles and selling to Katha factory and brick kilns.
- Collection, value addition and marketing of NTFP.

16.8 List of JFMCs under FDA scheme in Una Forest Division

Sr.No.	Name of JFMC	Present status	Range	Block	Beat
1.	Dharamsala Mahanta	Closed	Bharwain	Bharwain	Badhmana
2.	Amlehar	Closed	Bharwain	Lohara	Rampur Kuthera
3.	Duhal Bhatwalan	Closed	Bharwain	Bharwain	Kinnu
4.	Kotli	Closed	Bharwain	Bharwain	Bharwain
5.	Sidh Chalehar	Closed	Bharwain	Lohara	Sidh Chalehar
6.	Amb Tila	Closed	Bharwain	Bharwain	Bharwain
7.	Mather	Closed	Bharwain	Lohara	Chowar
8.	Suri	Closed	Amb	Kotla	Suri
9.	Ambota	Closed	Amb	Gagret	Gagret
10.	Basal	Closed	Una	Una	Basal

Sr.No.	Name of JFMC	Present status	Range	Block	Beat
11.	Ghandawal	Closed	Una	Una	Basal
12.	Malahat	Closed	Una	Una	Una
13.	Lamlehri	Closed	Una	Santoshgarh	Lamlehri
14.	Chatara	Closed	Una	Santoshgarh	Bangarh
15.	Kolka	Closed	Ramgarh	Raipur	Mandli
16.	Luder	Closed	Ramgarh	Thanakalan	Mo-Maniar
17.	Moph Khas	Closed	Ramgarh	Thanakalan	Mo-Maniar
18.	Tanda	Closed	Ramgarh	Thanakalan	Makrer
19.	Paroian	Closed	Ramgarh	Raipur	Paroian
20.	Berian	Closed	Bangana	Takoli	Akoi-Di Dhar
21.	Ambehra	Closed	Ramgarh	Talmehra	Ambehra
22.	Behlan	Closed	Bangana	Sohari Takoli	Takoli
23.	Sar	Closed	Bangana	Arloo	Arloo
24.	Dharat	Closed	Bangana	Arloo	Arloo
25.	Nahari Kharal	Closed	Bangana	Arloo	Arloo
26.	Dundla	Closed	Bangana	Bangana	Bangana
27.	Ispur	Existing	Una	Pandoga	Pandoga
28.	Janani	Existing	Una	Kungrath	Polian
29.	Malluwal	Existing	Una	Kungrath	Polian
30.	Jorian	Existing	Una	Kungrath	Polian
31.	Lower Bhadsali	Existing	Una	Pandoga	Bhadsali
32.	Upper Bhadsali	Existing	Una	Pandoga	Bhadsali
33.	Mawan sindhian	Existing	Amb	Gagret	Mawan Sindhian
34.	Nehrian	Existing	Amb	Jowar	Nehrian
35.	Nagnoli	Existing	Amb	Gagret	Jadla
36.	SalohBerri	Existing	Bharwain	Panjal	SalohBerri
37.	Bharmout	Existing	Bangana	Arloo	Bharmout
38.	Nanawin	Existing	Bangana	Bangana	Kanura
39.	Kodra	Existing	Bangana	Bangana	Kodra
40.	Gharwasra	Existing	Ramgarh	Raipur	Bohru
41.	Kushiala	Existing	Ramgarh	Raipur	Saily
42.	Tanda Bhagwan	Existing	Ramgarh	Thana kalan	Makrer
43.	Behdala	Existing	Una	Una	Behdala
44.	Joh	Existing	Bharwain	Panjal	Joh
45.	Kaloh	Existing	Amb	Gagret	Badoh
46.	Raipur	Existing	Ramgarh	Raipur	Raipur
47.	Mandwara	Existing	Bharwain	Daulatpur	Daulatpur

Table 85

16.9 ACTIVITY WISE DETAIL OF PHYSICAL ACHIEVEMENT OF UNA DIVISION

Year	AR	ANR	SILVI PASTURE	BAMBOO PLANTATIOIN	MIXED PLANTATION	TOTAL
2004-05	100ha.	100ha.	50ha.	30ha.	50ha.	330ha.
2005-06	100ha.	100ha.	50ha.	45ha.	50ha.	345ha.
2006-07	85ha.	105ha.	57ha.	15ha.	23ha.	285ha.
2007-08	80ha.	144ha.	80ha.	0ha.	0	304ha.
2008-09	50ha.	29ha.	38ha.	10ha.	80ha.	207ha.
2009-10	14ha.	30ha.	15ha.	0	30ha.	89ha.
2010-11	10ha.	0	0	0	0	10ha.

Table 86

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CHAPTER XVII
WILDLIFE MANAGEMENT WORKING CIRCLE

17.1 General Constitution: - As per the Wildlife Protection Act 1972, wildlife includes both flora and fauna. However in this working circle we will be concentrating on fauna only as flora is being focused in other working circles. This working circle has been constituted for protection and conservation of wildlife found in the forests as well as non-forest areas in the division. This covers the whole of this forest division. The enumeration results of all the working circles have been consolidated and are produced below.

Use Wise Distribution of Species

SNO.	BOTANICAL NAME	V No.	IV No.	III No.	IIA No.	IIB No.	IA No.	IB No.	IC No.	Total No.	%Age
	Fruit Trees										
1	*Mangifera indica*	476	98	110	4	7	3	1	1	700	0.06
2	*Aegle marmelos*	3238	648	176	0	0	0	0	0	4062	0.35
3	*Cordia myxa*	769	163	86	0	1	0	0	0	1019	0.09
4	*Diospyros chloroxylon*	38586	6304	711	41	0	0	0	0	45642	3.88
5	*Ficus bengalensis*	1559	1317	983	428	483	528	452	501	6251	0.53
6	*Ficus religiosa*	250	128	84	23	19	1	0	15	520	0.04
7	*Ficus roxburghii*	2280	855	9	0	0	0	0	0	3144	0.27
8	*Flacourtia ramontchi*	10882	1005	55	17	0	0	0	0	11959	1.02
9	*Syzygium cumini*	23391	10311	2981	1313	788	21	3	0	38809	3.30
10	*Zizyphus mauritiana*	8759	1731	259	79	0	32	2	7	10869	0.92
11	*Grewia elastica*	972	66	30	0	0	0	0	0	1068	0.09
	Total	**91163**	**22626**	**5484**	**1905**	**1298**	**585**	**458**	**524**	**124043**	**10.55**
	Medicinal Trees										
1	*Cassia fistula*	28983	4499	461	19	1	0	0	0	33963	2.89
2	*Terminalia belerica*	991	217	49	36	0	0	0	0	1293	0.11
3	*Holarrhena antidysenterica*	250	26	0	0	0	0	0	0	276	0.02
4	*Emblica officinalis*	26381	3236	319	45	4	0	0	0	29985	2.55
5	*Bauhinia variegata*	628	82	4	0	0	0	0	0	714	0.06

S.NO.	BOTANICAL NAME	V	IV	III	IIA	IIB	IA	IB	IC	Total	%
		No.	No.	No.	No.	No.	No.	No.	No.	No.	
	Total	**57233**	**8060**	**833**	**100**	**5**	**0**	**0**	**0**	**66231**	5.63
Misc. Trees											
1	*Albizzia lebek*	1559	642	221	90	0	0	0	0	2512	0.21
2	*Albizzia odoratissima*	797	415	109	47	0	0	0	0	1368	0.12
3	*Bombax ceiba*	582	137	137	6	2	0	0	0	864	0.07
4	*Moringa oleifera*	8964	2793	279	24	0	0	0	0	12060	1.03
5	*Holoptelea integrifolia*	153	61	0	15	15	0	0	0	244	0.02
6	*Lannea grandis*	73995	39799	9640	1761	255	5	4	3	125462	10.67
7	*Mallotus philippinensis*	194088	29827	4435	942	1	0	0	0	229293	19.50
8	Butea monosperma	2959	1338	315	48	18	0	0	0	4678	0.40
9	Anogeissus latifolia	10579	3973	1283	91	18	0	0	0	15944	1.36
10	*Casearia elliptica*	17651	1707	202	17	1	15	0	0	19593	1.67
11	Misc. B/L	95311	15741	3298	645	225	167	17	185	115589	9.83
	Total	**406638**	**96434**	**19920**	**3687**	**535**	**187**	**21**	**188**	**527610**	44.86
Timber Trees											
1	*Pinus roxburghii*	36074	31958	27045	18895	13643	8051	3066	1501	140233	11.93
2	*Toona ciliata*	3307	1025	1397	2	0	0	1	0	5732	0.49
3	Dalbergia sissoo	34	9	7	0	1	0	0	0	51	0.00
4	Shorea Robusta	226356	31901	3990	781	53	11	0	0	263093	22.38
5	Terminalia tomentosa	29704	13537	4905	528	66	21	0	0	48761	4.15
	Total	**295477**	**78429**	**37344**	**20205**	**13763**	**8083**	**3067**	**1501**	**457870**	38.94
G.Total		**850511**	**205549**	**63581**	**25897**	**15601**	**8856**	**3546**	**2213**	**1175754**	100

Table 87

17.2 Objective of Working Circle: This will be an overlapping working circle to ensure that all silvicultural prescriptions nurture local wildlife and its habitat.

17.3 Specific objectives of this working circle will be:-

1. To identify, preserve and protect the wild life representative of the area.
2. To supplement the existing natural vegetation by planting fruit and fodder species with special emphasis on trees, shrubs and herbs that provide habitat and food to wildlife.
3. To mitigate man-animal conflict especially the ever increasing conflicts with semi commensal rhesus monkeys and leopards.
4. To act as a source of education for the local population, and thereby create awareness about the value of wildlife and its habitat.

17.4 Management of wildlife found in the Division

The responsibility of managing the Protected Areas lie with the Wild Life Wing of the Department and that of managing the wild life falling outside the areas lies with the concerned territorial DFO. As a result the territorial DFO's have been declared Wildlife Wardens within their territorial jurisdictions vide HP Govt letter No.FFE-B-A (10)-1/2005 dated 15th Dec.2011. This working plan is concerned with the management of wild life in Una Forest Division, which is totally outside any protected area.

The forests have limited capacity to hold wild life and at best they provide temporary shelter to birds for roosting and nesting. It is worth mentioning here that the presence of wild life is not abundant in the forests. The heavy biotic pressure like the vehicular traffic along the roads, the habitation areas along such forest areas and the rapid urbanization in many areas also contributes to the negligible presence of wild animals.

Whatever little wild life exists it survives mainly in the bigger forests of miscellaneous broad leaved species. The common wild animals are Nilgai, Canis anureus (Jackal), Herpestes edwerimi (Common Mangoose), Lepus negricollis (Common hare), Felis spp. (Jungle cat), and Rhesus macaque, etc. There are reptiles like Monitor lizard, Garden lizard, Cobras (Naja naja), Rats and other reptiles in the area. A large number of bird species are also found all over the division.

Common birds found in the division are jungle fowl, bulbul, baya, wood pecker, common bee cater, cattle egret, kingfisher, Indian cuckoo, common koel, grey hornbill, tree pie, common Indian kite, doves, pigeons, rose ringed parakeet, crow pheasant, Indian myna, etc.

17.5 Problems human- wildlife interface: The Division faces the problems of animal depredation. Such incidents are consistently increasing and pose a great challenge in Wildlife management. The following problems are the most pressing and demand immediate tackling.

a) **17.5.1 Leopard problem:** There have been many cases of damage to cattle by leopards in the division, who target these cattle in the forests or grazing lands. Instances of cattle lifting from cattle sheds are also no uncommon. Though injury and casualty in case of human beings has not been reported during the last few years, there have been a few instances when a leopard has created panic by venturing into the dwelling houses in villages and had to be captured by setting traps and cages.

b) **17.5.2 Monkey Problem:** Monkey population has increased manifold in the division and there are a lot of complaints of crop depredation by them. All along the highways, monkeys can be seen in herds and pose a threat to tourists and passersby. They have left the interiors of the forests and are seen residing near habitations / roads/ dhabas waiting their time for offerings from tourists, many of whom feed them generously with bread, chanas, bananas, food etc. Some steps to curb and cull the monkey population are urgently required and wildlife management practices need to be enforced.

c) **17.5.3 Wild Boars:** These animals also pose a nuisance both in agricultural fields as well as forests areas, especially plantations. In the forest areas, they dig out the plants, while in the fields they destroy standing crop and vegetables. Sometimes, Wild Bores attack human

beings. A lot of complaints are received for the elimination of this animal.

Some suggestive measures for reduction of this conflict are:

Proactive measures:

- As the present policy of compensating people for damage caused to life and domestic animals doesn't cover crops, farmers are not compensated for loss to their agricultural fields. There is need to develop some mechanism of crop insurance to cover this loss.
- The farmers are already using various methods of scaring away the predators by scare crow, lighting a fire etc.
- A proper census be done of all the species to determine the carrying capacity of the forests and keep the population with normal limits.
- Leave adequate undisturbed space for wildlife to grow and nurture.

Reactive Measures:

- It is imperative that once a damage is done either to life, domestic animals or crops, compensation should be quick, easy and adequate to avoid elimination of the predator by the sufferers.
- Removal of problem animals either by shooting or capturing and release in suitable locations. In this regard a detailed Rescue and release policy has been formulated for the state. In Himachal Pradesh, all Divisional Forest Officers, Wildlife & Territorial Divisions are appointed Wildlife Wardens under section 4 of Wildlife (Protection) Act, 1972. An Amendment to Section 11 of the Wildlife Protection Act states "Provided further that no such captured animal shall be kept in captivity unless the Chief Wild Life Warden is satisfied that such animal cannot be rehabilitated in the wild and the reasons for the same are recorded in writing." Sole responsibility of rescue & release shall rest with Wildlife Wardens in their respective jurisdiction. The Himachal Pradesh Forest Department shall make a rescue team comprising of staff i.e. 2-3 Forest Guards well trained and properly equipped in each division in the state. The Department shall focus on capacity building of these rescue teams by way of imparting hands-on training for rescue teams to develop and enhance their skills. Rescue team shall deal with the calls or receive or gather any information related to the wildlife species which are in dire need of help. Such team shall make proper records of information received or so gathered. Team shall also render advice with regard to safety precautions as per the situations. They shall immediately transfer the received or gathered information to the respective Wildlife Warden. The team shall conduct rescue operation as and when needed under the guidance of respective Wildlife Warden or any other officer authorized by the Wildlife Warden in the Forest or Wildlife Division.

17.6 Controlling Monkey Menace:

The following strategies have been tried in the past:

- **Translocation:**
  Monkeys from problem areas near habitations were caught and released in isolated areas. However it has been noticed that monkeys return back to

their original areas or create nuisance in the new area by migrating to closest habitation. Hence this practice has been stopped.

- **Shooting of crop damaging and other problem causing animals:** Vide letter no 6-2 / 73 -SF- IV dated 21.6.1984 issued by GoHP, the department was permitted to hunt crop damaging for cultivated fields monkeys and 8 other species. However in view of stay imposed by Hon'ble High Court of HP, presently hunting is not being allowed.
- **Sterilization Program:** A Monkey sterilization Centre has been established at Boul on Una Bangana highway. The centre is equipped with modern laser technology for conducting sterilization surgery on both males and females. However as the monkeys are released in the same location from where they were caught, It will take some time before the impact of this program becomes visible.

17.7 Legal Position

The Wildlife (Protection) Act, 1972 is enforced in the HP state to save wildlife both flora and fauna. Under the above Act, the forest officers have been duly empowered for implementation of the policies for protection & conservation of Wildlife. The officers are vested with the powers of detection of illegal wildlife crime. Hunting, shooting and capturing of wild animals and birds are not allowed. However, Chief wildlife warden of the state is empowered under the Act to permit shooting of any animal which become dangerous for the human life or when they became menace to human habitation to avoid man animal conflict.

17.8 Injuries to which Wildlife are liable

- Reduction in habitat: This is as a result of increasing urbanization. The reduction in habitat forces the wild animals to stray into inhabited areas in search of food and shelter.
- Fire: Fire destroys the vegetation and the roosting sites of the wild animals. In the months of March- July fire may sweep through the forests, as the forest floor is very dry. Besides, there is a tendency of adjoining farmer to use to burn the agricultural wastes in the field itself which pose danger to the forest and wildlife.
- Grazing: Grazing is rampant all over the district and reduces the forage available for wild life besides physically trampling their niches.
- Poaching: Poaching is not ruled out. The wild-life as well as the forest department do book the poacher but they have severe limitations of staff to check poaching.

17.9 Maintenance and Improvement of Wildlife Habitat: The maintenance of the habitats of wildlife will be ensured through the provisions in the silvicultural system of all the Working Circles being implemented in the division. In order to protect and herbivores this population of wildlife it should be ensured that:-

1. Plantations for shelters: - The plantations may be raised at some important places for shelter of the animals if such tree covers do not exist. Beside, scattered vegetation covers may be created by raising plantations throughout the forest areas for facility of the extension of the habitat of the wildlife. Some dead dry trees which form nesting places of birds are to be retained.
2. Raising of grass plantations for herbivores: - Palatable Grass Plantations for herbivores may be raised in a scattered manner for keeping such animals inside forest and saving the agricultural crops of the adjoining field.
3. Raising of Fruit Trees for Birds: - Some trees like Jamun, Ber (Zizyphus mauritiana), Ficus species whose fruits are eaten by the birds are to be raised in scattered manner throughout the forests if such trees are found deficit. Fruit trees along strips are to be retained. Naturally growing Ber (Zizyphus Sp) trees must be given special attention and should be protected.
4. Water Holes: - Water is a problem in summers so it is necessary to dig up some pounds or tanks at some important points for the facility of making the drinking water available to the animals in summer months.
5. Salt Licks: - The herbivores suffer from salt deficiency. So it will be better to have some salt Licks at some convenient places for herbivores. The regulated intake of salt will improve the health of the herbivore and other animals.
6. Protection from fire by removing the dry gasses, weeds and other inflammable materials from the surrounding area. Legal actions are to be taken for lighting fire in the forests, which will help in protection of wildlife.
7. Protection from illegal poaching and prosecuting the offenders strictly as per provisions of the Wild Life Protection Act, 1972 and other relevant Acts.
8. Spreading of awareness among the people, especially of the nearby areas regarding the importance of wild life, the responsibility of people towards conservation as well as consequence in case of violations.

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CHAPTER XVIII
FOREST PROTECTION (OVERLAPPING) WORKING CIRCLE

18.1 Introduction The Forest Protection (Overlapping) Working Circle includes areas of Chil Working Circle, Coppice Working Circle and Khair Working Circle comprised in the Amb and Bharwain Forest Ranges. As per Champion & Seth classification, forests in these Ranges are classified into Group 5B and Group 9; in addition to that, adverse biotic influences viz. excessive grazing, lopping and felling etc. and fires have deteriorated the composition and condition of crop. The invasion by alien species has added to the problems already being faced by these forests. Due to abundance of valuable species and bordering of Ranges with the District Hoshiarpur of the State of Punjab, these forests are subjected to pressures of illicit felling and smuggling of timber. The fringe areas of these forests abound in wildly occurring trees of Paper-Mulberry/Japanese-Mulberry (*Broussonetia papyreifera*). The case for exemption of these trees from the HP Land Preservation Act, 2002 occurring on private ownership had already been sent to the HP Government for approval.

18.2 Methods of Treatment The prescriptions in this chapter have been subdivided into following parts

i) Fire Management
ii) Alien Species Management
iii) Encroachments
iv) Illicit Felling
v) Smuggling of timber

18.3 FIRE MANAGEMENT It is estimated that about one to three tons needles fall per hectare per season depending on the density of the forest. Thus taking an average of 1.5 tons per ha the volume of pine needles that fall each season is estimated to be 13350 tons. Dry pine needles are a fire hazard to the forest. Every year thousands of hectares of forest area gets fire because of pine needle accumulation. The decomposition of pine needle is extremely slow. The strategy for fire management will include the following:

18.4 CLEARING OF ROADS Accidental fires in Chil forests are caused by lit cigarettes negligently thrown by passersby. As all Chil forests have sufficient fallen needles during summers (April –June), it easily catches fire and results in forest fires most of which are restricted to ground. To address this, both sides of roads upto10m will be cleared off the pine needles twice a fortnight. The needles thus collected will be either control burnt in presence of forest official (FG/FW) or will be made use of in making check dams/vermin-compost/briquettes.

18.5 NEEDLE COLLECTION Another important and probably the most common reason for fires in Chil forests are the intentional fires lit by locals to get fresh flush of grass from the forests. To combat such fires following strategies may be adopted singly or in combination:

18.6 PARTICIPATION OF LOCAL PEOPLE Since all such fires are caused by local people especially those having cattle, thus involving these stakeholders in fire management may help. Awareness programmes combined with monetary incentives could be tried here. Fire management committees may be constituted at Panchayat level or existing /new JFMCs may be involved. The incentive for protecting 100 ha forest may be fixed as follows:

i) No fire: Rs 10,000
ii) 1 fire: Rs 5000
iii) 2 fires: Rs 2000
iv) More than 2 fires: No incentive

The area chosen for such schemes will thus save on deployment of fire watchers and the amount so saved will be used towards paying the incentive.

18.7 DEPLOYMENT OF FIRE WATCHERS In areas where cooperation from local people is not forthcoming or habitations too far from the forest to keep a vigil against fire, fire watchers may be deployed who will patrol the forests and alert the **Rapid Response Team** specially constituted at Range level during fire seasons.

18.8 USE OF PINE NEEDLES Another way of addressing the issue of fire is to make use of the pine needles. It could be in any form like handicrafts, fire briquettes, check dams etc.

Presently in H.P. handicrafts of Chil needles are being made by Kangra Mahila Sabha, Dharamsala and they have imparted such training to SHGs formed by MHWDP in Salooni, Chamba. After making a study of the economics of the enterprise, the same may be adopted in Una Forest Division. However, as the exercise would involve identification of marketing channel etc, it is better to get it done through an NGO or any local Community based organization that are already into marketing of handicrafts.

Pine briquetting has also been tried in several places. This activity will not only save the forest but also help to improve seasonal livelihood of rural people. State Council for Science Technology & Environment has tried this enterprise in certain Panchayats. After making a study of the economics of the enterprise, the same may be adopted in Una.

Similarly pine needle check dams, *Pirule* have been made in Uttarakhand Forest Department and have also been tried in Kalatop Khajjiar Wildlfe Sanctuary. The collection of needles may be executed through JFMCs .This will result in dual advantage to JFMCs from Chil forests and will help in creating stake in Chil forests which otherwise generally being a mono-crop of timber species (which means no immediate use/ access to resource) are neglected by people.

In forest compartments that are under active resin tapping, HPFDC resin workers or resin agents should get such compartments cleared of fallen pine needles at least twice in the fire season. This condition should be built into the agreement with the Corporation at the time of handing over the forest to them. Failure to comply should attract a penal price to the Corporation.

18.9 **WATCH-TOWERS** The forests of Una Forest Division are in general vulnerable to wild fires during the drought from April to June. For the constant vigil one watch-tower is located in the Lamba-Sail Beat. This tower suffices the need of limited area of forests, whereas the larger part of forests remain unattended during the fire-season. The establishment of another watch-tower at a vantage point (probably near Chintpurni) would supplement facilitates early detection and control of fire incidences in remaining forest areas.

18.10 **CONTROL BURNING** In the absence of tending operations, control burning of forest areas in the RFs during winters would de-escalate the vulnerability to the wild fires in summer season. Therefore, it would play an important role in the conservation of forests as well as it would prevent loss of Government Exchequer.

18.11 **ALIEN SPECIES: STRATEGY FOR CONTROL AND REHABILITATION OF AFFECTED AREAS**

INTRODUCTION:

Biological invasions – one of the anthropogenically mediated ecological perturbations – are threatening native biodiversity, preventing natural ecological succession and changing the community structure and composition, besides impacting ecosystem services. *Lantana camara* is perhaps one of the most important invasive alien plant species (exotic weed) in forest ecosystems of India as also in Una Division. Other alien invasive plant species with significant impact on the forests of Una Division include *Parthenium hysterophorus* and *Ageratum conyzoides*. Whereas the incidence of *Parthenium* popularly known as *'Congress Grass* and that of *Ageratum conyziodes*is largely restricted to degraded and newly opened drier sites along roads and forest fringes, the other three invasive alien species tend to occupy all possible vacant places even under tree canopy. Even as *Eupatorium* and *Ageratum* show a clear preference for moister locales and show gregarious occurrence, at many places these share the niche and grow in an intimate mix with *Lantana*.

A reconnaissance was made during November 2011 to map the distribution of exotic weeds in various compartments in this Division. Whereas, it was possible to record the incidence of *Lantana* fairly accurately, the area infested with the other 3 main invasive alien species could not be recorded comprehensively due to these species being still in dormant condition.

It also comes out that once the lands become degraded and infested with invasive species, these attract apathy of all the stakeholders, further strengthening the invasion process.

In the absence of any record of infestations of forests in the Division by exotic weeds prior to November, 2011, the data presented here will be taken as baseline for the proposed management purposes. Strategy for rehabilitation of forests infested with these four most noxious exotic weeds is dealt in detail as under:

CORE PRINCIPLES OF THE STRATEGY

- **18. 11.1 CONTAIN FURTHER SPREAD**: *A close watch over the spread of exotic weeds will be kept through biennial monitoring mechanism and necessary corrections in the program will be made to remove the recent infestations on priority basis.*
- **18.11.2 COMPLETE REHABILITATION OF INFESTED AREAS**: *It will involve shift from 'one time removal of weeds' to 'complete rehabilitation' of*

the treated areas by competing/ shading out exotic weeds. All noxious exotic weeds on any given area will be tackled simultaneously.

- **18.11.3 RELIANCE ON ONLY MECHANICAL/MANUAL METHODS:** *In view of their environmental/ ecological concerns, the rehabilitation measures will NOT employ any Chemicals/ Biological methods of exotic weed control.*
- **18.11.4 NATURAL RESILIENCE OF NATIVE FLORA TO BE THE BASIS OF REHABILITATION ACTION:** *The natural regeneration of indigenous plant species on treated sites will be encouraged and facilitated to establish towards better environmental and ecological services, including fodder, fuel, water recharge, etc.*
- **18.11.5 NO EXOTIC SPECIES TO BE USED TO REHABILITATE TREATED SITES** *No potentially invasive exotic species – (viz. Leucaena leucocephala, Prosopis juliflora, Jatropha curcus, Tecoma stans, Tectona grandis, etc.) - will be used for plantation in the areas under rehabilitation, because of their deleterious effect on the native flora.*
- **18.11.6 REHABILITATION TO START FROM LOW INTENSITY INFESTATION AREAS AND TO PROGRESS TOWARDS AREAS WITH HEAVY INFESTATION:** *Rehabilitation activities will start from the fringes of infestation zone with lower intensity infestation and will progress towards the heavily infestation areas. This approach will (i) allow tackling larger areas with the given financial resources and result in creating quick visible impact, and (ii) help in containing further spread of exotic weeds.*
- **18.11.7 SELECTIVE PRIORITY REHABILITATION OF HEAVILY INFESTED CRITICAL HABITATS:** *Rehabilitation of heavily infested areas as starting point will be taken up only in limited number of carefully selected **critical habitats** like grazing grounds near habitations. Such sites will then act as nucleus from where rehabilitation activity will radiate to adjoining areas of high infestation.*

With the above mentioned core principles of the strategy, the approach/ plan to implement the strategy will be as under:

(a) MANAGEMENT OF *LANTANA* With the major focus of the management strategy on 'containing further spread', a two pronged approach, as described below, will be followed in tackling *Lantana* menace on forest lands. Table no. 11 & 12 gives spread of Lantana and the intensity of infestation.

➢ **18.11.8 APPROACH-I (FOR AREAS WITH LOW INFESTATION INTENSITY)** More than 60% of the forest areas recorded to be under *Lantana* have been infested with this exotic weed within the past 10 years and have less than 25% intensity of infestation. Under this approach, these areas will be tackled on priority basis for the reasons that (i) with the given financial resources, it would be possible to rehabilitate larger areas for creating significant impact, and (ii) further spread of this exotic weed would be contained.

The rehabilitation activities will be started from the fringes of infestation zone with low intensity infestation and will progress towards the high infestation areas. Major activities under this approach will be manual cutting of *Lantana* bushes and encouraging establishment of local species,

including grasses or augmenting populations of native species through plantation.

18.11.9 APPROACH-II (FOR AREAS WITH HEAVY INFESTATION)

Under this approach, critical areas under heavy infestation, especially the grazing grounds near habitations, will be identified and treated.

The rehabilitation activities will start from the selected critical areas that will act as nucleus, and will radiate from this nucleus to cover adjoining areas of high infestation. Major activities under this approach will be manual cutting of *Lantana* bushes, encouraging establishment of local species, including grasses and planting the areas with tall plants of fast growing species to quickly shade out *Lantana*.

The methodology to implement the above two approaches will be as follows:

- Method of cutting *Lantana* will be Cut Root Stock (CRS) method i.e. cutting the bushes below the soil to prevent coppicing.
- **Forest beat** will be the unit for rehabilitating *Lantana* infested sites. Financial resources available under various schemes will, therefore, be converged towards this end.
- Local people, through existing community groups, will be encouraged to participate in rehabilitation of *Lantana* infested areas. Stake of local people will be built into this initiative under the available JFM instruments.
- The following will be, based on local practices, standardized for effective implementation of *Lantana* management initiative:
  - Cutting tools/ techniques
  - Calendar of rehabilitation activities
  - Cost models
- A three year active maintenance of the treated areas and triennial follow up thereafter will form integral part of the rehabilitation program till the areas gets fully rehabilitated. During this period, constant vigil will be maintained on any opportunistic springing back of sprouts/ seedlings of the invasive alien species and the same will be immediately removed. At the same time, progress of establishment of the native species will be actively monitored and encouraged.
- An average of 150 hectares of *Lantana* infested areas will be taken up for rehabilitation per year.

18.11.10 Removal of *Lantana camera* from the Reserved Forests will be undertaken by the CRS method during the Plan period, as per the programme detailed below:-

YEAR	RANGE	NAME OF FOREST	COMPARTMENT	WC	AREA (Ha)
2012-13	Amb	R-III Dharui D	5	Chil PBI	12.36
		R-III-Dharui G	4	Chil PBI	13.77
	Bharwain	R-I-Panjal	19	Chil PBI	17.4
		R-I-Panjal	3(Part)	Chil PBI	25
		R-I-Panjal	33	Chil PBI	26.71

YEAR	RANGE	NAME OF FOREST	COMPARTMENT	WC	AREA (Ha)
		R-I-Panjal	4	Chil PBI	27.1
		R-I-Panjal	1	Chil PBI	30
		R-I-Panjal	8(Part)	Chil PBI	30
		R-I-Panjal	24	Chil PBI	36.83
					219.18
2013-14	Amb	R-III-Dharui C	3	Chil PBI	39.66
	Bharwain	R-I-Panjal	28(Part)	Chil PBI	25
		R-I-Panjal	18(Part)	Chil PBI	27.87
		R-I-Panjal	6(Part)	Chil PBI	30
		R-I-Panjal	7(Part)	Chil PBI	30
		R-II-LoharaA	22(Part)	Chil PBI	32.5
		R-I-Panjal	16	Chil PBI	36.42
					221.45
2014-15	Amb	R-III-Dharui D	2	Chil PBI	41.49
	Bharwain	R-I-Panjal	8(Part)	Chil PBI	24.63
		R-II-LoharaA	22(Part)	Chil PBI	25
		R-I-Panjal	6(Part)	Chil PBI	28.28
		R-II-LoharaA	22(Part)	Chil PBI	30
		R-I-Panjal	3(Part)	Chil PBI	33.78
		R-I-Panjal	10	Chil PBI	44.52
					227.7
2015-16	Amb	R-III-Dharui G	1	Chil PBI	4.45
		R-III-Dharui G	3	Chil PBI	28.33
	Bharwain	R-I-Panjal	26	Chil PBI	23.07
		R-I-Panjal	1(Part)	Chil PBI	25
		R-II-LoharaA	22(Part)	Chil PBI	25
		R-I-Panjal	18(Part)	Chil PBI	30
		R-II-LoharaB	7	Chil PBI	45.32
					181.17
2016-17	Amb	R-III-Dharui F	1	Chil PBI	26.3
		R-III-Dharui D	3	Chil PBI	35.02
	Bharwain	R-I-Panjal	3(Part)	Chil PBI	25
		R-I-Panjal	28(Part)	Chil PBI	25.99
		R-I-Panjal	7(Part)	Chil PBI	26.66
		R-II-Lohara A	5	Chil PBI	30.35
		R-I-Panjal	1(Part)	Chil PBI	30.5
		R-I-Panjal	22	Chil PBI	31.97
					231.79
2017-18	Bharwain	R-I-Panjal	2	Chil PBU	47.75

		R-I-Panjal	15	Chil PBU	51.80
		R-I-Panjal	25	Chil PBU	37.43
		R-I-Panjal	31	Chil PBU	39.26
		R-II-Lohara B	4	Coppice	34.61
		R-II-Lohara B	8	Coppice	62.32
	Amb	R-III-Dharui B	1	Chil PBU	33.99
		R-III-Dharui G	2	Chil PBU	13.35
		R-III-Dharui A	2	Coppice	49.37
					369.88
2018-19	Bharwain	R-I-Panjal	34	Chil PBU	41.68
		R-II-Lohara A	6	Chil PBU	34.40
		R-II-Lohara A	11	Chil PBU	40.87
		R-II-Lohara A	15	Chil PBU	77.70
		R-II-Lohara B	9	Coppice	102.60
	Amb	R-III-Dharui B	6	Chil PBU	36.83
		R-III-Dharui C	1	Coppice	16.19
		R-III-Dharui D	1	Coppice	42.30
					392.57
2019-20	Bharwain	R-II-Lohara A	19	Chil PBU	71.23
		R-II-Lohara B	11	Chil PBU	66.99
		R-I-Panjal	5	Chil PBU	21.04
		R-I-Panjal	23	Chil PBU	22.44
		R-II-Lohara B	10	Coppice	100.36
	Amb	R-III-Dharui B	2	Chil PBU	19.43
		R-III-Dharui D	5	Chil PBU	12.36
		R-III-Dharui C	2	Coppice	23.42
		R-III-Dharui D	4	Coppice	46.68
					383.95
2020-21	Bharwain	R-I-Panjal	9	Chil PBU	47.92
		R-I-Panjal	14	Chil PBU	78.92
		R-I-Panjal	27	Chil PBU	29.12
		R-II-Lohara B	5	Coppice	32.78
		R-II-Lohara B	6	Coppice	39.26
	Amb	R-III-Dharui B	3	Chil PBU	61.51
					289.51
2021-22	Bharwain	R-I-Panjal	11	Chil PBU	27.11
		R-I-Panjal	20	Chil PBU	31.16
		R-II-Lohara A	1	Chil PBU	33.99
		R-II-Lohara A	7	Chil PBU	40.47
		R-II-Lohara A	13	Chil PBU	39.26
	Amb	R-III-Dharui B	5	Chil PBU	46.14
					218.13
2022-23	Bharwain	R-I-Panjal	12	Chil PBU	43.55
		R-I-Panjal	17	Chil PBU	38.45
		R-I-Panjal	29	Chil PBU	30.76
		R-II-Lohara A	2	Chil PBU	59.90
	Amb	R-III-Dharui B	4	Chil PBU	28.73
		R-III-Dharui G	5	Chil PBU	23.47
					224.86

2023-24	Bharwain	R-I-Panjal	13	Chil PBU	38.64
		R-I-Panjal	30	Chil PBU	50.15
		R-II-Lohara A	3	Chil PBU	18.62
		R-II-Lohara A	14	Chil PBU	27.99
	Amb	R-III-DharuiE	1	Chil PBU	3.24
		R-III-DharuiF	2	Chil PBU	88.03
					226.67
2024-25	Bharwain	R-I-Panjal	32	Chil PBU	47.25
		R-II-Lohara A	4	Chil PBU	33.59
		R-II-Lohara A	9	Chil PBU	59.60
		R-II-Lohara A	12	Chil PBU	67.93
					209.13
2025-26	Bharwain	R-II-Lohara A	10	Chil PBU	17.00
		R-II-Lohara A	17	Chil PBU	71.63
		R-II-Lohara A	20	Chil PBU	82.56
		R-II-Lohara B	3	Chil PBU	40.28
					211.47
2026-27	Bharwain	R-II-Lohara A	16	Chil PBU	17.40
		R-II-Lohara A	18	Chil PBU	76.89
		R-II-Lohara B	1	Chil PBU	43.52
		R-II-Lohara B	12	Chil PBU	87.00
					224.81

Table 88

18.12 ENCROACHMENTS Since no encroachments in the RFs have been witnessed in Una Forest Division, no strategy is planned. But the remedial measures to prevent such incidences would be taken up as discussed below:

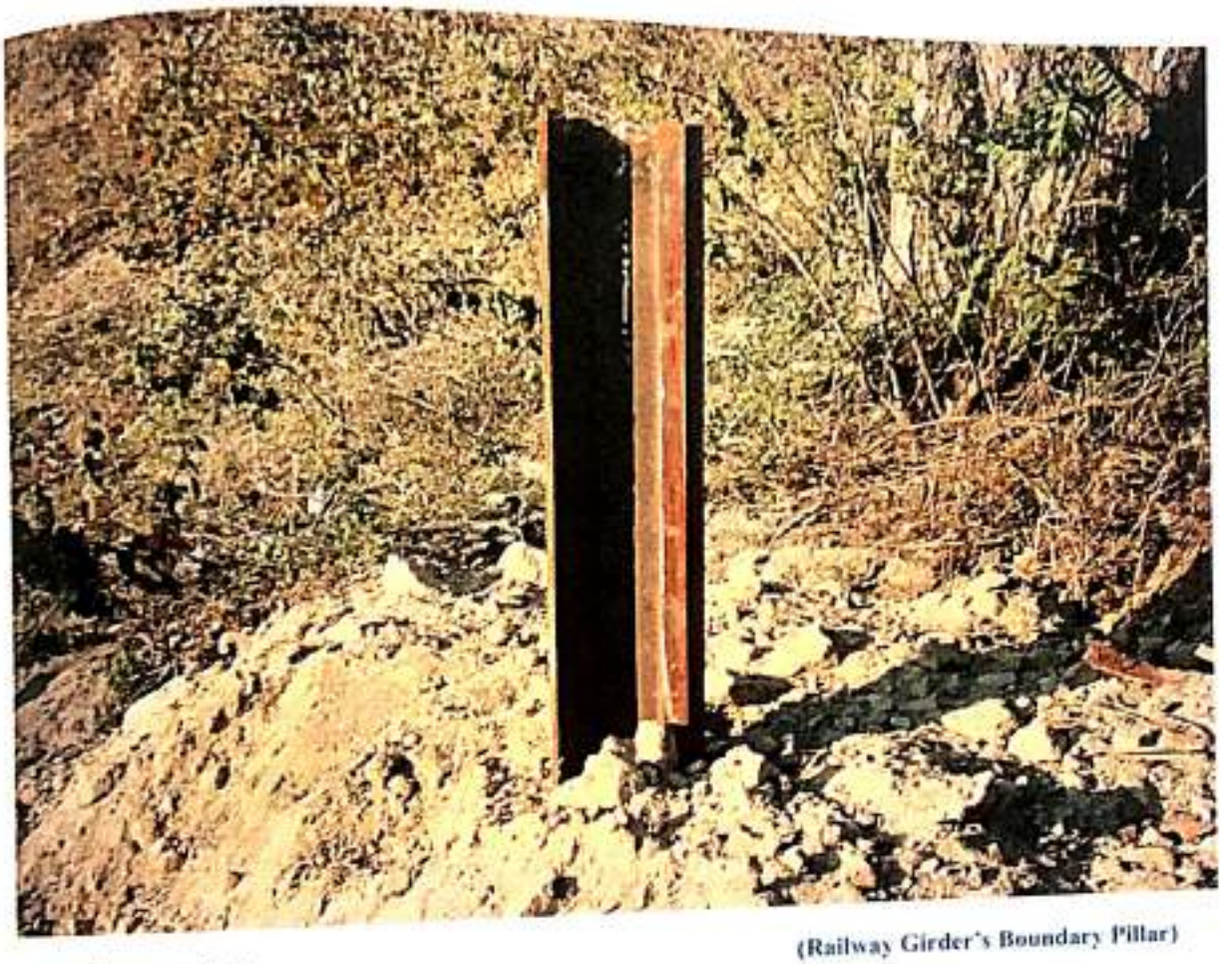
18.12.1 PREVENTIVE REMEDIAL MEASURES

(i) Boundary Pillars Forest officials must be well conversant with boundaries of the forests under their jurisdiction. The range officers, block officers and forest guards must check the boundary pillars frequently and in case of damage to boundary pillars, immediate legal action to punish the guilty and repair work should be undertaken on priority. The repair work of Boundary Pillars in the RFs of Amb Forest Range would be taken up as per given schedule during the Working Plan period, detailed below:

YEAR	FOREST	COMPTT.	BP*(BIG)	BP*(SMALL)
2012-13	R-III-Dharui	A	32	39
2013-14	R-III-Dharui	B	23	53
2014-15	R-III-Dharui	C & G	30	45
2015-16	R-III-Dharui	D	32	27
2016-17	R-III-Dharui	E & F	23	42

Table 89 (BP*- Boundary Pillars)

Boundary Pillars in the Bharwain Range had been replaced by Railway-girders. Therefore no maintenance had been proposed for BPs in the Bharwain Range during the Working Plan period.



(Railway Girder's Boundary Pillar)

Photograph 4

(ii) DFO/ACF should also inspect the boundary pillars while inspecting forests, plantations and other forestry works.

(iii) The old stone masonry pillars should be replaced with cement mortar after proper demarcation. The new boundary pillars of only cement mortar should be constructed in future.

(iv) The field staff should be made accountable and sensitive towards the ever increasing menace of encroachments. The forest guard must initiate legal action as soon as the encroachment is noticed by him. He should chalk out the damage report and report the matter to range officer through block officer. The block officer should immediately seek demarcation and Challan the case in the appropriate court.

Range officer must act quickly to file the case in the court. Any laxity at any level must be dealt with under CCS (CCA) Rules.

(v) All the encroachment cases on forest land are within the jurisdiction of DFO as collector of the division under H.P. Public Premises and Land (Eviction and Rent Recovery) Act, 1971. Range officers should challan all such cases before collector for speedy trial.

(vi) The powers of carrying out demarcation are vested with the revenue officers under H.P. Land Revenue Act, 1954 and as such, many times, the demarcation of forests is delayed due to their pre-occupation. It is therefore, suggested that the Tehsildar, Kanungo who are on deputation with the forest department be delegated the powers of demarcation of forests to process encroachment cases expeditiously.

18.12.2 STRATEGY

(a) Repair all existing boundary pillars and construct more boundary pillars close to habitation. For this areas need to be identified that are prone to encroachments.

(b) Railway girders should be used in encroachment prone areas and all BP s should be depicted in digitized maps of the area which will be maintained a permanent record.

(c) As a deterrent, FIRs should be registered as soon as an encroachment is detected. Court proceedings will then follow.

(d) Latitude, longitude and altitude readings of all Boundary Pillars(old and new) to be recorded in the BP register and database in the Division office

18.13 ILLICIT FELLING With development of good network of roads, there has been an increase in incidences of illicit felling.

18.13.1 SMUGGLING OF TIMBER: - The high price of timber in the market has attracted/created tendency to become rich overnight and hence the smuggling of timber takes place more than often. The illicit felling and smuggling are both related, many times organized. The incidences of smuggling have, however, reduced after the amendment in Indian Forest Act (H.P.2nd Amendment 1991) vide which DFO has been designated as Authorized Officer to hear the cases pertaining to illegal transportation of Govt. property i.e. .timber, resin, khair-wood and katha and may order confiscation of both forest produce and the vehicle involved. The amendment notification is given as **Annexure IX.** The detail of cases admitted and decided in the court of Authorized Officer Una under Section 52A of IFA is given below:

Table 18.8

Detail of cases detected /decided under section 52 A of Indian Forest Act, 1927, Amendment Act, 2001 in the Una Forest Division

Year	Total cases	Total vehicles	Fate of cases		
			Decided in favour of Govt.	Decided in favour of accused	Pending
1996	6	6	0	3	3

Year	Total cases	Total vehicles	Fate of cases		
			Decided in favour of Govt.	Decided in favour of accused	Pending
1997	5	5	0	5	5
1998	9	9	0	4	5
1999	10	10	1	1	8
2000	15	15	6	3	6
2001	5	5	1	4	0
2002	5	5	2	3	0
2003	1	1	0	0	1
2004	5	5	1	2	2
2005	3	3	0	2	1
2006	2	2	0	1	1
2007	1	1	0	1	0
2008	4	4	0	0	4
2009	2	2	0	0	2
2010	3	3	0	0	3
2011	1	1	0	0	1

Table 90 (Source: Office Record, DFO Una Forest Division)

18.14 STRATEGY

i) **RAPID RESPONSE TEAM**: After establishing the *Van Thana* in Una Forest Division, the vulnerable Beats bordering Punjab, will be merged. Thus there will a surplus of Forest Guards. They will work in Van Thana (presently under-construction at Tatehra) as Rapid Response Team (which means they will also be provided with good communication network- mobile allowance, vehicle *etc.*) and will have exclusive responsibilities only of protection works including illicit felling, encroachment, forest fires, wildlife poaching etc.

ii) Stringent action against offender will act as a deterrent.

iii) Whenever any vehicle is apprehended or timber is seized, they should be disposed off immediately (after seeking permission from court) before there is any depreciation in their value. This will save space and time wasted in keeping them in custody.

iv) **CHECK-POSTS** There are six functional Forest Check-Posts existing in the Una Forest Division. Due to ongoing developmental works phenomenal improvement in the road-connectivity had been witnessed. For that reason, the existing Check-Posts had lost their purpose. Therefore, in the present context either the existing Check-Posts need to be shifted at the strategic location or new Check-Posts need to be established, as suggested in the following table:

S.NO.	NAME OF ROAD	RANGE	STATUS	EXISTING CP	RECOMMENDED LOCATION
1)	Haroli-Jaijon	Una	Metalled	Polian	-
2)	Dulehar-Jhungi	Una	Metalled	-	Gondpur-Jaichand

S.NO.	NAME OF ROAD	RANGE	STATUS	EXISTING CP	RECOMMENDED LOCATION
3)	Pandoga-Hoshiarpur	Una	Metalled	Pandoga	-
4)	Una-Nangal	Una	Metalled	Mehatpur	-
5)	Handola-Nangal	Una	Metalled	Marholian	-
6)	Santoshgarh-Nangal	Una	Metalled	-	Ajouli
7)	Tahliwal-Garhshankar	Una	Metalled	-	Bathri
8)	Singan-Binewal	Una	Metalled	-	Singan
9)	Santoshgarh-Saijowal	Una	Metalled	-	Santoshgarh
10)	Janani-Jaijon	Una	Mixed	-	Janani
11)	Daulatpur-Talwara	Bharwain	Metalled	Marwari	-
12)	NangalJarialan-Hoshiarpur	Bharwain	Metalled	-	Piplu
13)	Daulatpur-Hoshiarpur	Bharwain	Kuccha	-	Surang-Dwari
14)	Saloh-Ramgarh	Bharwain	Mixed	-	Saloh-Berri
15)	Bharwain-Terrace	Bharwain	Metalled	-	Jor-Bar
16)	Bahdoh-Hoshiarpur	Amb	Kuccha	-	Pamra
17)	Gagret-Hoshiarpur	Amb	Metalled	Gagret	Asha-Devi Temple on GagretHoshiarpur road
18)	Ambota-Hoshiarpur	Amb	Metalled	-	-do-

Table 91

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CHAPTER XIX

NON TIMBER FOREST PRODUCE

19.1 GENERAL

In good old days, the management of forests was based only on production of timber and earning of revenue. The non-timber forest produce was considered to be of less importance in those days. Almost whole of the revenue generated in the state used to form major part from the Forests of the State. It was during 1980 onwards when need for Conservation of Natural Eco-Systems and propagation of NTFP/MFP was felt keeping in view its contribution and importance for economy of local people/ rural poor and tribal community of coruse. After 1980, the earning of revenue from forests and their management for commercial production of timber has been removed from the policy framework and objects of management revised and it was laid down in the 1988's National Forest Policy which emphasized on in situ conservation of natural eco-systems, Conservation and propagation of non-timber forest products and their contribution towards local/ tribal economy.

The forests covered under this working plan have plenty of species giving minor forest produce/ products like Resin, Katha, material in form of seed, fruit, bark etc. of medicinal importance like tannins, bamboos and grasses etc. and all are the important MFPs.

19.2 OCCURRENCE AND UTILITY

The main species yielding MFPs and their utility are listed below:-

Name	Botanical name	Plant type	Part used	Uses
Chil Pine	Pinus roxburghii	Tree	Resin extract	Rosin, Turpentine
Khair	Acacia catechu	Tree	Heartwood, bark	Katha, Tannin,
Kikar	Acacia nilotica	Tree	Bark	Tannin
Amaltas	Cassia fistula	Tree	Fruit	Ayurvedic Medicine
Amla	Emblica officinalis	Tree	Fruit	Ayurvedic medicine
Daru	Punica granatum	Tree	Seed	Spice
Arjun	Terminalia arjuna	Tree	Bark	Ayurvedic Medicine
Basuti	Adhatoda vasica	Herb	Whole	Alkaloids Essential oils
Behera	Terminalia belerica	Tree	Fruit	Ayurvedic Medicine
Brahmi	Centelia asiatica	Herb	Whole	Ayurvedic

Name	Botanical name	Plant type	Part used	Uses
				Medicine
Safeda	Eucalyptus	Tree	Leaves	Oil extracts
Dhara-phool	Woodfordia-fruiticosa	Shrub	Flower	Ayurvedic Medicine
Harad	Terminalia chebula	Tree	Fruit	Ayurvedic Medicine
Aam	Mangifera indica	Tree	Fruit	Fruit, pickle
Ak	Calotropis procera	Shrub	Leaves	Veterinary Medicine
Jamun	Syzyzium cuminii	Tree	Fruit	Fruit
Sal	Shorea robusta	Tree	Seed	Oil
Kachnar	Bauhinia veriegeta	Tree	Fruit/flower	Vegetable/pickle
Neem	Azadirechta indica	Tree	Leaves/fruits	Ayurvedic Medicine
Khajoor	Phoenix sylvestris	Tree	Fruit	Fruit
Ber	Zizyphus mauritiana	Shrub	Fruit	Fruit
Bel	Aegle marmelos	Tree	Fruit	Ayurvedic Medicine
Gandhla	Murraya koenigii	Shrub	Leaves	Spices
Ritha	Sapindus mukorosii	Tree	Fruit	Detergent
Mahua	Madhuca indica	Tree	Flower/seed	Alcohlic extracts/oil
Bhang	Cannabis sativa	Shrub	Whole	Fibre,medicine, Marijuana

Table 92

Apart from above species, following grasses and bamboos also occur throughout the tract.

Grasses: (Local Name)	**(Botanical Name)**
Lambi	Aristida depressa
Dholu	Chrysopogan Montana
Makora	Cymbopogan maitini
Bagar	Eulaliopsis binata
Lambh	Hetropogan contortus
Kahi	Saccharmu spontaneum
Lunji	Sorghum nitidum
Bamboos:	
Maggar	Bambusa arundinacea
Banns	Dendrocalamus strictus
Mohar	Dendrocalamus hemiltonii

The above NTFP species occur throughout the tract, both in the forests and non-forest areas including land ceiling area and Shamlats etc.

19.3 CONSERVATION AND DEVELOPMENT PLAN OF MFP IN UNA FOREST DIVISION

For the extraction, processing and marketing of resin and Katha, sufficient number of agencies already exists. Forest Department does not need to do much except to ensure enforcement of legal provisions of various acts. For all other MFP species, forest department needs to intervene in following manner:-

i. Every effort should be made for retaining the existing important MFP species as reserves while carrying out the markings of whatsoever nature in the field and suitable instructions/guidelines in this regard is brought to the notice of all the lower field staff right up to the level of forest guard to avoid alarming situation at later stages.

ii. MFP species should be given due importance in various plantation programme. Though more MFP species are being/have been planted recently in the field/Division but nothing is on the record at the moment regarding their success/present status. It is therefore suggested to do some sort of evaluation at division level and status be brought to the book and suitable action be taken accordingly. The MFP plantations should also be raised at suitable sites exclusively. Elsewhere 5 to 10% of the seedlings of MFP species should be planted at suitable locations in plantation areas under other schemes. The main focus of the field staff should be on Healthy nursery stock of such species and the same should also be made available to the private people/public/institutions desirous of planting them in their fields/places. Villagers/People/Mahila Mandals/Yuvak Mandals should be encouraged through various activities/schemes etc. to include MFP species in JFPM/FDA/VFDS /Panchayats micro plans. General House platform should also be utilized for extension purposes by the visiting officers/officials/field staff.

iii. The above listed institutions should also be involved in raising, protection and management of plantations so raised as in the process of resource management, the concept of Joint Forest Management is an intervention to evolve organized and collective thinking on the issue of forest management which cannot be left as such. It must be remembered that the sources to be managed are limited and claim over the resources are varied, no single solution or a particular practice of this management on control can satisfy the needs of all. The philosophy for JFM in essence aims at involving the people in resource generation activities through motivation, active involvement in the process of management and sharing of benefits to adequate institutional arrangements.

19.4 ROLE OF WOMEN AND RURAL POOR IN NTFP

Women and the rural poor in general and those of rural areas in particular play an important role in maintaining the family and thereby improving the village economy. It is often said that if a women is developed, the entire family is developed because it is only women who is most intimately connected with the basic needs. Thus, the woman as a mother in the house-hold assumes the role of efficient manager and undertakes various functions for the welfare of the family. The entire village abutting the forests actually depends on the forests for the tree based needs in the form of NTFP, small timber, fuel, fodder, green leaf manure etc., unlike the women in urban areas, the rural women are solely dependent on the forests for their fuel needs to a very large extent. It is the woman who collects fuel wood and dried sticks for cooking purposes from forests. Many women also bring fuel wood and other forest produce from forests for their sustenance through wage and earning as they do not have any other source of employment. So these two categories are required to be given due care and importance.

Photograph 5

Terminalia chebula Photographed By J.K.Dogra (HPFS)

i. Further suggested that efforts should be made to identify the areas having Harar Plants fit for grafting on private, government and forest land and same be grafted in consultation with officers/officials of Research Centre Jaach. Even grafting can be got done on the plants of Harar raised in Nurseries of division every year. Later on good healthy plants can be planted on identified areas. It is mentioned here clearly that efforts are required to be made only at the level of divisional forest officer and in no case it should be left at lower level.

ii. As far as Marketing Aspect is concerned for NTFP in the division there is no such data available about the production and export and problems about marketing of NTFP produce, however thinking has to be made right now being an important matter and of great concern a survey be conducted at division level and accordingly possibilities of marketing of the forest produce be explored side by side. Further District Administration should also be requested to provide all help to the local people in establishment of small scale processing and marketing units for MFPs as and when needed. It will help in making growing/collection of MFPs remunerative.

Gloriosa spp.

Photograph 6

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CHAPTER XX
MISCELLANEOUS REGULATIONS

20.1 Petty Fellings:-
Felling of the following nature will be treated as petty fellings:
Trees falling in alignment of roads and transmission lines.
Dry and green trees required for departmental use and for special tests at F.R.I. or elsewhere.
These may be allowed by the D.F.O. and accounted towards yield. Such fellings will be entered in the compartment history files.

20.2 Deviations:-
Large scale fellings, which have not been prescribed in the working plan, will constitute deviations. These should be got sanctioned from the competent authority. The classes of removals constituting a deviation are indicated below:-

1. Large scale felling of trees to clear alignments of major roads or electric transmission lines.
2. Extensive removals of wind fallen and dry trees (salvage).
3. Special felling to meet unforeseen industrial or defense requirements.

20.3 Roads, Paths and Bridges:-
The list of existing roads and paths has been given in Appendix-IV. Most of the inspection paths have been covered by Lantana and other bushes. These should be repaired and maintained as per the requirement. Almost every forest is accessible by trucks. There exist sufficient inspection paths. Therefore no new roads inspection paths are proposed to be constructed. However suitable temporary inspection paths may be constructed in the plantation areas as per the requirement.

20.4 Buildings:- List of existing building is appended as appendix some of the buildings like inspection huts at Joh, Pirthipur and Kotla, Forest Guard huts at Badhmana, Pirthipur, Rampur Kuthera and Kotla etc. are in very bad shape and should be dismantled and written off. Remaining buildings be repaired and maintained as per requirements. Following new buildings are required to be constructed during the period of this plan.

20.5 BUILDINGS PROPOSED.

Sr.No.	Type of Buildings	Range	Location
1	B.O. Quarter, Kotla Block	Amb	Kotla
2	B.O.Quarter, Panjal	Bharwain	
3	B.O. Quarter, Lohara	Bharwain	
4	Forest Guard Hut, Badhmana	Bharwain	Badhmana
5	Forest Guard Hut, Chowar	Bharwain	Chowar
6	Forest Guard Hut, Rampur Kuthera	Bharwain	Rampur Kuthera
7	Forest Guard Hut Bhadarkali	Bharwain	Bhadarkali
8	Forest Guard Hut, Pirthipur	Bharwain	Pirthipur
9	Forest Guard Hut, Joh	Bharwain	Joh

Sr.No.	Type of Buildings	Range	Location
10	Forest Guard Hut, Nangal Jarialan	Bharwain	Nangal Jarialan
11	Forest Guard Hut, Saghnai	Bharwain	Saghnain
12	Forest Guard Hut, Suri	Amb	Suri
13	Forest Guard Hut, Repoh	Amb	Repoh Misran
14	Forest Guard Hut, Dhar Gujjran	Amb	Dhar Gujjran
15	Forest Guard Hut Bhaira	Amb	Bhaira
16	Forest Guard Hut, Thathal	Amb	Thathal
17	Forest Guard Hut, Lamba Sail	Amb	Lamba Sail
18	Forest Guard Hut, Jadla	Amb	Jadla
19	Forest Guard Hut, Badoh	Amb	Badoh
20	Forest Guard Hut, Pandoga	Una	Pandoga
21	Forest Guard Hut, Saloh	Una	Saloh
22	Forest Guard Hut, Haroli	Una	Haroli
23	Forest Guard Hut, Kungrat	Una	Kungrat
24	Forest Guard Hut, Dulehar	Una	Dulehar
25	Forest Guard Hut, Palakwah	Una	Palakwah
26	Forest Guard Hut, Singan	Una	Singan

20.6 Water Supply:-

There is enough ground and surface water available in Una District. Only proper planning and investment are needed to create water supply to building and nurseries.

20.7 Telephone/Wireless network:-

Telephone sets have been provided at range headquarters at Bharwain and Amb. However with the spread of mobile network connectivity has increased tremendously.

20.8 Drought Mortality:-

Post spring and autumn are the drought periods. The worst of the two is the post spring. The prolonged post spring drought period increases of fire also. This period is therefore important for fire protection measure by mulching. Drought mortality can also be minimized by strictly adhering to minimum plantable size of the seedlings of various species. Root shoot cuttings be preferred in plantation of broad leaved species.

20.9 Maintenance of Boundaries:-

Boundary registers are available for all the forests. Boundary pillars of the forests of Bharwain range are being replaced by railway steel girders. Some of the boundary pillars of Amb range are damaged to varying degrees and need immediate repairs. All the boundary pillars should be checked by the A.C.F. and Longitude, Latitude and Elevation be also registered alongwth the forward and backward bearings. The boundary pillars should be repaired keeping in view the instructions contained in CCF HP's standing order No. 1 in accordance with the quinquennial programme laid in the Chapter on Forest Protection.

20.10 Rights and Concession:-
Since all the forests are reserved only the rights to way and to water cattle are admissible. Two Gaddies have grazing right in Lohara –B (327 Sheep and Goats) and Dharuhi – A (173 Sheep and Goats).

20.11 Survey and maps:-
Following survey sheets are available:-

(A) On 1:50,000 scale

i) 44M/13
ii) 53A/1
iii) 53A/2

(B) On 1:15,000 scale

i) 53A/1/SW
ii) 53A/1/SE
iii) 53A/2/NW
iv) 53A/2/NE

Following maps have been prepared:-

Forest types map on 1:50,000
Management map on 1:50,000
Stock maps on 1:15,000
Regeneration maps on 1:15000

One copy of stock maps and regeneration maps have been put in the concerned compartment history files.

20.12 Research Plots:-
Khair is a close grained typical hardwood and its growth rings are not distinct. In order to ascertain relationship between age, d.b.h. and height we should have at least six sample plots of Khair (three each for seedling and coppice origin) scattered over the Una Division. Annual measurements of d.b.h. and height should be taken for all Khair plants in these plots.

20.13 Lopping:-
All the forests being reserved there are no lopping rights of either the local people or the Gaddies. However indiscriminate lopping of broad leaved trees is resorted to during winter months by Gaddies and local peoples. The menace of heavy lopping is to be curbed by frequent patrolling and booking of offences by the Forest guards and deputy Rangers.

20.14 Encroachments:-
Presently there are no encroachments in any of the compartments of the forests covered under this plan. Strict vigil by the field staff should be exercised is future to pre-empt any encroachment.

20.15 Development of forest industries:-Una District has good quality Khair and Chil fit for resin tapping in private areas. Large number of Katha Bhatties already exists in the area. One mechanized unit of Katha manufac turing is also situated in Oel near Gagret. Quite a few small scale resin distilleries also exist in the area under this division. The Katha bhatties and mechanized unit at Oel are arranging the raw material from private sources and are also purchasing from H.P.S.F.D.C.Ltd. The resin units are getting resin from

private sellers only. The department needs to do nothing for the existence and development of Katha and Resin industries.

20.16 Rain Gauges:-

Ordinary Rain gauges are being maintained at Bharwain and Jowar. The Range Officer and block officer must check the rain gauges every month during rainy season and give remarks on the rain gauge register. It is suggested that self-recording rain gauges be installed at all the forest inspection huts and rest houses. The data should be compiled in the Divisional Officer every month.

20.17 Biosphere reserves:-

The reserve forests under this plan are situated in strip on Chintpurni range, the reserve of Amb Range are scattered in small groups. There is no scope of creation of any biosphere reserve in view of the small extent of the forests and their closeness to the habitation.

20.18 Settlement Operations:-

The forest settlement operations are going on in Una District.5017 ha. of land celling areas and 36793 ha. of village common lands are available in Una District which after settlement can be declared as protected forests.

Area diverted to non-forestry purposes:-

20.19 Five Yearly Review of the Working plan:-

The conservator of forests to be designated by the state Govt, will review the progress of implementation of all the prescriptions of this working plan in the years 2017, 2022 and 2027 while reviewing the progress following points may be given due importance.

1) Position of yield and related deviations in respect of each working circle. Reasons for deviations may be identified and corrective measures regarding further implementation may be suggested.
2) The progress of regenerations in Chil working circle reasons for deviations/failures may be identified and necessary corrective measures taken.
3) Progress of quinquennial programme of maintenance and checking of the boundary pillars.
4) Position of fires. Preparedness of the sub ordinate staff for firefighting and availability or other wise of enough firefighting equipment.
5) The progress of research in the research plot five yearly reviews will highlight the constraints/failures in the field as well as non-availability of enough funds for carrying out the prescription. A comprehensive review report may be prepared and submitted ti the Pr. C.C.F. for his information and necessary action. Copies of this report may also be sent to the C.C.F. (W.P.) for their record. The Pr.C.C.F. may request the government for timely release of funds so that the prescriptions of the working plan may be carried out timely.

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CHAPTER XXI
FINANCIAL FORECAST AND COST OF PLAN

21.1 **Future Revenue:-**
Based on annual prescribed yield and the current prices, the anticipated annual revenue and expenditure is given below:-

Forest Revenue

Timber and other forest produce

A	**Timber, firewood and charcoal**		
	i) Chil lots		2,80,00,000
	ii) Coppice lots		1,00,00,000
	Khair		2,40,00,000
B	Other Minor Forest Produce		90000
C	**Total**		**6,20,90,000**
	Other Deposits		
	Penalty		180000
1	Compensation under section 68 of I.F.A.		400000
2	Sale of confiscated forest produce and vehicles		70000
3	Rent of buildings		100000
4	Registration fee and export fee etc		600000
5	Miscellaneous		600000
6		**Total**	**19 50 000**
		Grand Total	**6,40,40,000**

21.2	**Future expenditure**		
a)	**Establishment**		
1	**Pay of staff**		5,25,00,000
2	T.A.		5,00,000
3	Office expenses		3,50,000
4	Uniform and liveries		1,20,000
5	Rent and Taxes		70,000
6	Pay of contingent staff		1,00,000
7	Motor vehicle		2,50,000
8	Other charges		5,00,000
		Total	**5,43,90,000**
b)	**Conservancy and development:**		
1	Marking and enumerations		1,00,000
2	Demarcation and maintenance of boundaries		50,000
3	Purchase of store tools and plants		5,00,000
	i) New construction of road and buildings		0
	ii) Repair of Roads and Buildings		4,00,000
4	Protection of Forests		5,00,000
5	Raising of plantations and nurseries		1,00,00,000
6	Regeneration operations		1,00,000
7	Wild Life protection		75,000
8	Others		5,00,000
		Total	**1,22,25,000**
		Grand Total	**6,66,15,000**

21.3 Cost of the plan

The expenditure incurred on the preparation of this plan is as under

1	Pay and allowances	0
2	Travelling allowances	0
3	Cost of enumerations and other field works	7,72,000
4	Wages of Khalasies	0
5	Purchases of store tools and plants	60,000
6	Motor vehicles expenses	35,000
7	Office expenses	10,000
	Total	**8,77,000**

The expenditure on preparation of working plan has been Rs. 200 per ha and on enumerations alone is Rs. 175 per ha.

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Chapter XXII
CONTROL AND RECORD

22.1 Compartment History Files: - The compartment history files have been updated in duplicate for all the forests compartment wise. New stock maps on the scale of 1:15,000 have been prepared and placed in the files.

The compartment history files will be properly maintained and posted up to date and the entries in both the Divisional and Range copies signed by the Divisional Forest Officer. The Range Officer will send the range copy to date and signed by him to the Divisional office before 15th April of the following year, with the help of which the Divisional copy will be posted and the entries in both will be signed by the Divisional Forest Officer. Notes on important silvicultural operations, marking, progress of regeneration and other cultural and subsidiary operations will be recorded in these files by inspecting officers. The proper maintenance of the files will be ensured by the Divisional Forest Officer during field inspections and annual office inspection and likewise by the Conservator of Forests (Territorial) at the time of inspection of the Divisional Office. A Certificate as under will be furnished by the D.F.O. while submitting the Control Forms:-

"Certified that I have personally satisfied myself that all compartment history files are fully ending accurately posted to date and that the control forms for the year agree with the entries in the compartment histories."

22.2 Control Forms: - The D.F.O. will prepare and submit control forms 2(a), 2(b), 4 and regeneration from "C" together with the deviation statement as laid down in Chapter IX of H.P. Government Code for working plan procedure.

Deviation statement: - The summary of deviations requiring sanction of the Pr.C.C.F, H.P. will be submitted along with the control forms. The control forms and the deviation statements should be submitted before 30th April each year. The deviations should be explained in detail particularly with regard to the pace of removals and progress of regeneration.

22.3 Divisional Note Book: - Divisional Forest Officer will maintain a note book for recording important activities such as (i)lease rates for the various categories of forests and resin blazes (ii) out-turn from a section of resin blazes and tree lots and coppice coups (iii) notes on the species new to the area tried and success achieved (iv) results of experiments conducted if any (v) record of seed year (vi) survival percentage in plantations (vii) details of fires, containing information about the cause ,place from where the fire originated and nature of fire, its extent and the extent of damage and (viii) any other important information, regarding divisional working. This record can be helpful at the time of preparing working plan.

22.4 Plantation and nursery journals: - Every beat guard has been provided a Plantation Journal Manual in which record of each plantation raised in his beat will be maintained which will be checked by the Range officer. This journal will contain all information about the plantation like a brief note on site selection and choices of species, source and cost of planting stock. Expenditure on all the activities in plantation area (along with the voucher no of booking in range).This journal will be updated every month and should be made available to all officers

who inspect the area. This journal will help in completing the Regeneration control form "C" at the end of each financial year.

The nursery journal will be maintained so as to have complete record about the origin of seed, date of sowing, germination, plant percentage and cost of the operations. At the end of the season, the cost of raising should be worked out separately for the plants raised as such polythene tubes.

22.5 Fire Records:-
A complete record of fires will be maintained in Range and Divisional Offices. Maps of the forests burnt showing area burnt be filled in the compartment history files along with relevant data such as place from where the fire originated, nature of fire, extent of area burnt and damage and how was it brought under control.

22.6 Boundary registers: - Boundary registers are available for all forests. The condition of boundary pillars is not satisfactory. The quinquennial programme of checking of boundary pillars will follow the quinquennial programme of the repair of boundary pillars. The checking will be duly entered in the boundary registers maintained in the Range and Divisional offices.

22.7 Forest Guard Beat Books:- All forest guards I/C beats shall have a Beat Book containing relevant information about their beats such as map of the forest area, record of rights, prescription's of the working plan, the duties and the powers of Forest Guard etc.

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CHAPTER XXIII
ESTABLISHMENT AND LABOUR

23.1 Establishment: - Staff position as given in Para 15 of Chapter IV of Part -I is not satisfactory. There is shortage of field staff mainly Deputy Rangers and Forest guards. Ministerial staff is also in arrears. Territorial beats are sufficiently small and need no further sub-division. Services of all the permanent forest workers (recently regularized) should be utilize in nurseries and for miscellaneous forest protection and regeneration operations.

23.2 Labour: - All the exploitation and harvesting works are being done by H.P.S.F.D.C.Ltd. Labour for only conservancy and developmental activities needs to be engaged. Enough skilled and unskilled labour for construction of roads and buildings and for various forestry operations is available locally. The present rate of unskilled daily waged mazdoor is Rs.120 per day which is likely to be revised from time to time.

APPENDIX – I

DIVISIONAL AREA STATEMENT

Range	Block	Beat	Forest	Compartment	Area	Present WC	Working Circle		
							Chil	Coppice	Protection
Bharwain	Bharwain	Badmana	R-I-Panjal	C-1	85.5	CWC	85.5	---	---
			R-I-Panjal	C-2	47.75	CWC	47.75	---	---
			R-I-Panjal	C-3	83.78	CWC	83.78	---	---
	Panjal	Baderkali	R-I-Panjal	C-4	27.11	CWC	27.11	---	---
			R-I-Panjal	C-5	21.04	CWC	21.04	---	---
			R-I-Panjal	C-6	58.28	CWC	58.28	---	---
		Prithpur	R-I-Panjal	C-7	56.66	CWC	56.66	---	---
			R-I-Panjal	C-8	54.63	CWC	54.63	---	---
			R-I-Panjal	C-9	47.92	CWC	47.92	---	---
			R-I-Panjal	C-10	44.52	CWC	44.52	---	---
			R-I-Panjal	C-11	27.11	CWC	27.11	---	---
			R-I-Panjal	C-12	43.55	CWC	43.55	---	---
			R-I-Panjal	C-13	38.08	CWC	38.08	---	---
			R-I-Panjal	C-14	78.92	CWC	78.92	---	---
			R-I-Panjal	C-15	51.8	CWC	51.8	---	---
			R-I-Panjal	C-16	36.42	CWC	36.42	---	---
			R-I-Panjal	C-17	38.45	CWC	38.45	---	---
		Joh	R-I-Panjal	C-18	57.87	CWC	57.87	---	---

Range	Block	Beat	Forest	Compartment	Area	Present WC	Working Circle		
							Chil	Coppice	Protection
			R-I-Panjal	C-19	17.4	CWC	17.4	---	---
			R-I-Panjal	C-20	31.16	CWC	31.16	---	---
			R-I-Panjal	C-21	30.35	PWC	---	---	30.35
			R-I-Panjal	C-22	31.97	CWC	31.97	---	---
			R-I-Panjal	C-23	22.44	CWC	22.44	---	---
			R-I-Panjal	C-24	36.83	CWC	36.83	---	---
			R-I-Panjal	C-25	37.43	CWC	37.43	---	---
			R-I-Panjal	C-26	23.07	CWC	23.07	---	---
			R-I-Panjal	C-27	29.12	CWC	29.12	---	---
		Saloh Berri	R-I-Panjal	C-28	50.99	CWC	50.99	---	---
			R-I-Panjal	C-29	30.76	CWC	30.76	---	---
			R-I-Panjal	C-30	50.18	CWC	50.18	---	---
			R-I-Panjal	C-31	39.26	CWC	39.26	---	---
			R-I-Panjal	C-32	47.25	CWC	47.25	---	---
			R-I-Panjal	C-33	26.71	CWC	26.71	---	---
			R-I-Panjal	C-34	41.68	CWC	41.68	---	---
	Lohara	Chower	R-II-Lohara-A	C-1	33.99	CWC	33.99	---	---
			R-II-Lohara-A	C-2	59.9	CWC	59.9	---	---
			R-II-Lohara-A	C-3	18.62	CWC	18.62	---	---

Range	Block	Beat	Forest	Compartment	Area	Present WC	Working Circle		
							Chil	Coppice	Protection
			R-II-Lohara-A	C-4	33.99	CWC	33.99	---	---
			R-II-Lohara-A	C-5	30.35	CWC	30.35	---	---
		SidhChaler	R-II-Lohara-A	C-6	34.4	CWC	34.4	---	---
			R-II-Lohara-A	C-7	40.47	CWC	40.47	---	---
			R-II-Lohara-A	C-8	15.38	PWC	---	---	15.38
			R-II-Lohara-A	C-9	59.9	CWC	59.9	---	---
			R-II-Lohara-A	C-10	17	CWC	17	---	---
			R-II-Lohara-A	C-11	40.87	CWC	40.87	---	---
			R-II-Lohara-A	C-12	67.99	CWC	67.99	---	---
			R-II-Lohara-A	C-13	39.26	CWC	39.26	---	---
			R-II-Lohara-A	C-14	27.92	CWC	27.92	---	---
			R-II-Lohara-A	C-15	77.7	CWC	77.7	---	---
			R-II-Lohara-A	C-16	17.4	CWC	17.4	---	---

Range	Block	Beat	Forest	Compartment	Area	Present WC	Working Circle		
							Chil	Coppice	Protection
		Rampur Kuthera	R-II-Lohara-A	C-17	71.63	CWC	71.63	---	---
			R-II-Lohara-A	C-18	76.89	CWC	76.89	---	---
			R-II-Lohara-A	C-19	71.23	CWC	71.23	---	---
			R-II-Lohara-A	C-20	82.56	CWC	82.56	---	---
			R-II-Lohara-A	C-21	30.76	PWC	---	---	30.76
			R-II-Lohara-A	C-22	112.5	CWC	112.5	---	---
	Bharwain	Bharwain	R-II-Lohara-B	C-1	43.52	CWC	43.52	---	---
			R-II-Lohara-B	C-2	50.04	PWC	---	---	50.04
			R-II-Lohara-B	C-3	40.28	CWC	40.28	---	---
		Guret	R-II-Lohara-B	C-4	34.61	Copp. W.C	---	34.61	---
			R-II-Lohara-B	C-5	32.78	Copp. W.C	---	32.78	---
			R-II-Lohara-B	C-6	39.26	Copp. W.C	---	39.26	---
			R-II-Lohara-B	C-7	45.32	CWC	45.32	---	---
			R-II-Lohara-	C-8	62.32	Copp. W.C	---	62.32	---

Block	Beat	Forest	Compartment	Area	Present WC	Working Circle		
						Chil	Coppice	Protection
		B						
		R-II-Lohara-B	C-9	102.6	Copp. W.C	---	102.6	---
		R-II-Lohara-B	C-10	100.36	Copp. W.C	---	100.36	---
		R-II-Lohara-B	C-11	66.99	CWC	66.99	---	---
		R-II-Lohara-B	C-12	87	CWC	87	---	---
		R-II-Lohara-B	C-13	28.24	PWC	---	---	28.24
			Total	**3240.02**		**2713.32**	**371.93**	**154.77**
Jower	Jower	R-III-Dharuhi-A	C-1a	149.33	PWC	---	---	149.33
		R-III-Dharuhi-A	C-1b	189	PWC	---	---	189
		R-III-Dharuhi-A	C-2	49.37	Copp. W.C	---	49.37	---
	Kotla	R-III-Dharuhi-B	C-1	33.99	CWC	33.99	---	---
	Nehri	R-III-Dharuhi-B	C-2	19.43	CWC	19.43	---	---
		R-III-Dharuhi-B	C-3	61.51	CWC	61.51	---	---
		R-III-Dharuhi-B	C-4	28.73	CWC	28.73	---	---
		R-III-Dharuhi-B	C-5	46.14	CWC	46.14	---	---

Range	Block	Beat	Forest	Compartment	Area	Present WC	Working Circle		
							Chil	Coppice	Protection
			R-III-Dharuhi-B	C-6	36.83	CWC	36.83	---	---
		Lamba Sail	R-III-Dharuhi-C	C-1	16.19	Copp. W.C	---	16.19	---
			R-III-Dharuhi-C	C-2	23.42	Copp. W.C	---	23.42	---
			R-III-Dharuhi-C	C-3	39.66	CWC	39.66	---	---
	Kotla	Rapoh	R-III-Dharuhi-D	C-1	42.3	Copp. W.C	---	42.3	---
			R-III-Dharuhi-D	C-2	41.49	CWC	41.49	---	---
			R-III-Dharuhi-D	C-3	35.02	CWC	35.02	---	---
		Suri	R-III-Dharuhi-D	C-4	46.68	Copp. W.C	---	46.68	---
			R-III-Dharuhi-D	C-5	12.36	CWC	12.36	---	---
			R-III-Dharuhi-D	C-6	79.13	PWC	---	---	79.13
		Lamba Sail	R-III-Dharuhi-E	C-1	3.24	CWC	3.24	---	---
		Kotla	R-III-Dharuhi-F	C-1	26.3	CWC	26.3	---	---
			R-III-Dharuhi-F	C-2	88.63	CWC	88.63	---	---

Range	Block	Beat	Forest	Compartment	Area	Present WC	Working Circle		
							Chil	Coppice	Protection
		Dhargujlan	R-III-Dharuhi-G	C-1	4.45	CWC	4.45	---	---
			R-III-Dharuhi-G	C-2	13.35	CWC	13.35	---	---
			R-III-Dharuhi-G	C-3	28.33	CWC	28.33	---	---
			R-III-Dharuhi-G	C-4	13.77	CWC	13.77	---	---
			R-III-Dharuhi-G	C-5	23.47	CWC	23.47	---	---
				Total	**1152.12**		**556.7**	**177.96**	**417.46**
Total Una Working Plan				**G.Total**	**4392.1**	**0**	**3270**	**549.9**	**572.23**

APPENDIX – II

Abstract of Enumeration- Chil Working Circle PB 1

S.NO.	BOTANICAL NAME	COMMON NAME	V	IV	III	IIA	IIB	IA	IB	IC	Total	Crop
			No.	No.	No.	No.	No.	No.	No.	No.	No.	No
1	Albizzia lebek	Siris	746	126	16	3	0	0	0	0	891	0.38
			94.74	40.07	13.36	5.31	0.00	0.00	0.00	0.00	153.48	0.22
2	Albizzia odoratissima	Kirmiru	247	11	2	1	0	0	0	0	261	0.11
			31.37	3.50	1.67	1.77	0.00	0.00	0.00	0.00	38.31	0.05
3	Bombax ceiba	Simbal	159	34	22	0	2	0	0	0	217	0.09
			20.19	10.81	18.37	0.00	6.06	0.00	0.00	0.00	55.44	0.08
4	Cassia fistula	Amaltash	10672	1537	252	19	1	0	0	0	12481	5.26
			1355.34	488.77	210.42	33.63	3.03	0.00	0.00	0.00	2091.19	2.97
5	Pinus roxburghii	Chil	10527	10745	8851	4569	2416	903	383	46	38440	16.19
			631.62	2041.55	5753.15	6579.36	6281.60	3196.62	1355.82	162.84	26002.56	36.90
6	Toona ciliata	Tooni	150	24	7	2	0	0	1	0	184	0.08
			19.05	7.63	5.85	3.54	0.00	0.00	0.00	0.00	36.07	0.05
7	Dalbergia sissoo	Shisham	34	9	7	0	1	0	0	0	51	0.02
			2.18	1.58	3.27	0.00	1.52	0.00	0.00	0.00	8.55	0.01
8	Shorea Robusta	Sal	5327	2510	898	355	23	5	0	0	9118	3.84
			676.53	798.18	749.83	628.35	69.69	22.94	0.00	0.00	2945.51	4.18
9	Terminalia belerica	Bahera	465	186	49	5	0	0	0	0	705	0.30
			59.06	59.15	40.92	8.85	0.00	0.00	0.00	0.00	167.97	0.24
10	Holarrhena antidysenterica	Keor	250	26	0	0	0	0	0	0	276	0.12
			31.75	8.27	0.00	0.00	0.00	0.00	0.00	0.00	40.02	0.06
11	Moringa oleifera	Sanan	4041	918	188	24	0	0	0	0	5171	2.18
			513.21	291.92	156.98	42.48	0.00	0.00	0.00	0.00	1004.59	1.43

S.NO.	BOTANICAL NAME	COMMON NAME	V	IV	III	IIA	IIB	IA	IB	IC	Total	%age
			No.	No.	No.	No.	No.	No.	No.	No.	No	No
1	Albizzia lebek	Siris	746	126	16	3	0	0	0	0	891	0.38
			94.74	40.07	13.36	5.31	0.00	0.00	0.00	0.00	153.48	0.22
2	Albizzia odoratissima	Kirmiru	247	11	2	1	0	0	0	0	261	0.11
			31.37	3.50	1.67	1.77	0.00	0.00	0.00	0.00	38.31	0.05
12	Emblica officinalis	Amla	11702	1567	234	45	4	0	0	0	13552	5.71
			1486.15	498.31	195.39	79.65	12.12	0.00	0.00	0.00	2271.62	3.22
13	Holoptelea integrifolia	pardesi	0	0	0	0	0	0	0	0	0	0.00
			0	0	0	0	0	0	0	0	0	0
14	Lannea grandis	Kembal	17673	8678	2859	620	123	5	4	3	29965	12.62
			2244.47	2759.60	2387.27	1097.40	372.69	22.94	25.54	19.16	8929.06	12.67
15	Mallotus philippinensis	Kamal	30638	1992	190	10	1	0	0	0	32831	13.83
			3891.03	633.46	158.65	17.70	3.03	0.00	0.00	0.00	4703.86	6.67
16	Butea monosperma	Plah	813	394	86	17	3	0	0	0	1313	0.55
			103.25	125.29	71.81	30.09	9.09	0.00	0.00	0.00	339.53	0.48
17	Bauhinia variegata	Kachnar	571	82	4	0	0	0	0	0	657	0.28
			72.52	26.08	3.34	0.00	0.00	0.00	0.00	0.00	101.93	0.14
18	Mangifera indica	Am	336	61	11	4	7	3	1	1	424	0.18
			42.67	19.40	9.19	7.08	21.21	13.76	6.39	6.39	126.08	0.18
19	Aegle marmelos	Bil	369	67	17	0	0	0	0	0	453	0.19
			46.86	21.31	14.20	0.00	0.00	0.00	0.00	0.00	82.36	0.12
20	Cordia myxa	Lasura	158	71	10	0	1	0	0	0	240	0.10
			20.07	22.58	8.35	0.00	3.03	0.00	0.00	0.00	54.02	0.08
21	Diospyros chloroxylon	Kinnu	6206	973	95	10	0	0	0	0	7284	3.07
			788.16	309.41	79.33	17.70	0.00	0.00	0.00	0.00	1194.60	1.70
22	Ficus bengalensis	Bargad	406	420	372	189	178	129	79	169	1942	0.82
			51.56	133.56	310.62	334.53	539.34	591.72	504.42	1079.07	3544.82	5.03

	bengalensis		51.56	133.56	310.62	334.53	539.34	591.72	504.42	1079.07	3544.82	5.03

S.NO.	BOTANICAL NAME	COMMON NAME	V No.	IV No.	III No.	II No.	I No.	Ia No.	Ib No.	Ic No.	Total No.	% No.
1	Albizzia lebek	Siris	746	126	16	3	0	0	0	0	891	0.38
			94.74	40.07	13.36	5.31	0.00	0.00	0.00	0.00	153.48	0.22
2	Albizzia odoratissima	Kirmiru	247	11	2	1	0	0	0	0	261	0.11
			31.37	3.50	1.67	1.77	0.00	0.00	0.00	0.00	38.31	0.05
23	Ficus religiosa	Pipal	34	22	14	2	4	1	0	0	77	0.03
			4.32	7.00	11.69	3.54	12.12	4.59	0.00	0.00	43.25	0.06
24	Ficus roxburghii	Tiamal	476	52	3	0	0	0	0	0	531	0.22
			60.45	16.54	2.51	0.00	0.00	0.00	0.00	0.00	79.49	0.11
25	Flacourtia ramontchi	Kangoo	6236	474	34	2	0	0	0	0	6746	2.84
			791.97	150.73	28.39	3.54	0.00	0.00	0.00	0.00	974.63	1.38
26	Syzygium cuminii	Jamun	6253	2001	531	125	39	6	3	0	8958	3.77
			794.13	636.32	443.39	221.25	118.17	27.52	19.16	0.00	2259.93	3.21
27	Zizyphus mauritiana	Ber	4603	837	106	18	0	1	2	7	5574	2.35
			584.58	266.17	88.51	31.86	0.00	4.59	12.77	44.70	1033.17	1.47
28	Grewia elastica	Phalsa	300	12	0	0	0	0	0	0	312	0.13
			38.10	3.82	0.00	0.00	0.00	0.00	0.00	0.00	41.92	0.06
29	Terminalia tomentosa	Aisen	2906	897	404	92	19	15	0	0	4333	1.83
			369.06	285.25	337.34	162.84	57.57	68.81	0.00	0.00	1280.86	1.82
30	Anogeissus latifolia	Dhou	2111	761	215	37	6	0	0	0	3130	1.32
			268.10	242.00	179.53	65.49	18.18	0.00	0.00	0.00	773.29	1.10
31	Casearia elliptica	Chilla	5263	440	80	17	1	0	0	0	5801	2.44
			668.40	139.92	66.80	30.09	3.03	0.00	0.00	0.00	908.24	1.29
32	Misc. B/L		37046	6260	1738	306	45	74	2	2	45473	19.16
			4704.84	1990.68	1451.23	541.62	136.35	339.44	12.77	12.77	9189.70	13.04
Total			**166718**	**42187**	**17295**	**6472**	**2874**	**1142**	**475**	**228**	**237391**	100
			20465.74	12038.83	12801.31	9947.67	7667.83	4292.91	1936.86	1324.91	70476.06	100.00

ANNEXURE-II (B)

Abstract of Enumeration- Chil Working Circle PB U

S.NO.	BOTANICAL NAME	COMMON NAME		V	IV	III	IIA	IIB	IA	IB	IC	Total
				No.	No.	No.	No.	No.	No.	No	No.	No
1	Albizzia lebek	Siris	No.	657	428	199	76	0	0	0	0	1360
			Vol.	83	136	166	135	0	0	0	0	520
2	Albizzia odoratissima	Kirmiru	No.	321	290	107	46	0	0	0	0	764
			Vol.	41	92	89	81	0	0	0	0	303
3	Bombax ceiba	Simbal	No.	351	61	61	0	0	0	0	0	473
			Vol.	45	19	51	0	0	0	0	0	115
4	Cassia fistula	Kanyar, Amaltash	No.	11595	1696	107	0	0	0	0	0	13398
			Vol.	1473	539	89	0	0	0	0	0	2101
5	Pinus roxburghii	Chil	No.	18317	16866	13322	10297	7425	5286	2200	1283	74996
			Vol.	1099	3204	8659	14827	19304	18712	7788	4543	78136
6	Toona ciliata	Tooni	No.	2933	978	1390	0	0	0	0	0	5301
			Vol.	373	311	1161	0	0	0	0	0	1845
7	Dalbergia sissoo	Shisham	No.	0	0	0	0	0	0	0	0	0
			Vol.	0	0	0	0	0	0	0	0	0
8	Shorea Robusta	Sal	No.	0	0	0	0	0	0	0	0	0
			Vol.	0	0	0	0	0	0	0	0	0
9	Terminalia belerica	Bahera	No.	412	31	0	31	0	0	0	0	474
			Vol.	52	10	0	54	0	0	0	0	116
10	Holarrhena antidysenterica	Keor	No.	0	0	0	0	0	0	0	0	0
			Vol.	0	0	0	0	0	0	0	0	0
11	Moringa oleifera	Sanan	No.	31	0	0	0	0	0	0	0	31

S.NO.	BOTANICAL NAME	COMMON NAME		V No.	IV No.	III No.	IIA No.	IIB No.	IA No.	IB No.	IC No.	Total No.
			Vol.	4	0	0	0	0	0	0	0	4
12	Emblica officinalis	Amla	No.	9472	917	61	0	0	0	0	0	10450
			Vol.	1203	291	51	0	0	0	0	0	1545
13	Holoptelea integrifolia	Rajain, pardesi	No.	153	61	0	15	15	0	0	0	244
			Vol.	19	19	0	27	46	0	0	0	111
14	Lannea grandis	Kembal	No.	36634	21082	4522	794	0	0	0	0	63032
			Vol.	4653	6704	3776	1406	0	0	0	0	16539
15	Mallotus philippinensis	Kamal	No.	129335	26353	4186	932	0	0	0	0	160806
			Vol.	16426	8380	3495	1649	0	0	0	0	29950
16	Butea monosperma	Plah	No.	1864	932	229	31	15	0	0	0	3071
			Vol.	237	296	191	54	46	0	0	0	824
17	Bauhinia variegata	Kachnar	No.	0	0	0	0	0	0	0	0	0
			Vol.	0	0	0	0	0	0	0	0	0
18	Mangifera indica	Am	No.	76	31	15	0	0	0	0	0	122
			Vol.	10	10	13	0	0	0	0	0	33
19	Aegle marmelos	Bil	No.	2521	581	153	0	0	0	0	0	3255
			Vol.	320	185	128	0	0	0	0	0	633
20	Cordia myxa	Lasura	No.	611	92	76	0	0	0	0	0	779
			Vol.	78	29	64	0	0	0	0	0	171
21	Diospyros chloroxylon	Kinnu	No.	27590	4782	550	31	0	0	0	0	32953
			Vol.	3504	1521	459	54	0	0	0	0	5538
22	Ficus bengalensis	Bargad	No.	351	489	306	137	229	244	367	290	2413
			Vol.	45	155	255	243	694	1121	2341	1853	6707
23	Ficus religiosa	Pipal	No.	168	76	46	15	15	0	0	15	335
			Vol.	21	24	38	27	46	0	0	98	254

S.NO.	BOTANICAL NAME	COMMON NAME		V	IV	III	IIA	IIB	IA	IB	IC	Total
				No.	No.	No.	No.	No.	No.	No.	No.	No
24	Ficus roxburghii	Tiamal	No.	1528	779	0	0	0	0	0	0	2307
			Vol.	194	248	0	0	0	0	0	0	442
25	Flacourtia ramontchi	Kangoo	No.	2307	351	15	15	0	0	0	0	2688
			Vol.	293	112	13	27	0	0	0	0	445
26	Syzygium cuminii	Jamun	No.	7272	5683	1879	1146	749	15	0	0	16744
			Vol.	924	1807	1569	2028	2268	70	0	0	8666
27	Zizyphus mauritiana	Ber	No.	3544	810	153	61	0	31	0	0	4599
			Vol.	450	257	128	108	0	140	0	0	1083
28	Grewia elastica	Phalsa	No.	0	0	0	0	0	0	0	0	0
			Vol.	0	0	0	0	0	0	0	0	0
29	Terminalia tomentosa	Aisan	No.	2062	1833	642	76	0	0	0	0	4613
			Vol.	262	583	536	135	0	0	0	0	1516
30	Anogeissus latifolia	Dhou	No.	0	0	0	0	0	0	0	0	0
			Vol.	0	0	0	0	0	0	0	0	0
31	Casearia elliptica	Chilla	No.	11962	1237	122	0	0	15	0	0	13336
			Vol.	1519	394	102	0	0	70	0	0	2085
32	Misc. B/L		No.	44303	7669	1207	275	168	76	15	183	53896
			Vol.	5627	2439	1008	487	509	350	98	1171	11689
Total			No.	**316370**	**94108**	**29348**	**13978**	**8616**	**5667**	**2582**	**1771**	**472440**
			Vol.	**38955**	**27765**	**22041**	**21342**	**22913**	**20463**	**10227**	**7665**	**171371**

Abstract of Enumeration- Coppice Working Circle

S.NO.	BOTANICAL NAME	COMMON NAME		V	IV	III	IIA	IIB	IA	IB	IC	Total
1	*Albizzia lebek*	Siris	No.	156	42	6	0	0	0	0	0	204
			Vol.	20	13	5	0	0	0	0	0	38
2	*Bombax ceiba*	Simbal	No.	72	42	54	6	0	0	0	0	174
			Vol.	9	13	45	11	0	0	0	0	78
3	*Cassia fistula*	Amaltash	No.	6179	900	102	0	0	0	0	0	7180
			Vol.	785	286	85	0	0	0	0	0	1156
4	*Pinus roxburghii*	Chil	No.	5195	2345	2951	2267	2555	1188	300	138	16940
			Vol.	312	446	1918	3265	6644	4205	1062	488	18340
5	*Toona ciliata*	Tooni	No.	30	0	0	0	0	0	0	0	30
			Vol.	4	0	0	0	0	0	0	0	4
6	Shorea Robusta	Sal	No.	201018	21157	1686	174	30	6	0	0	224071
			Vol.	25529	6728	1407	308	91	28	0	0	34091
7	Terminalia belerica	Bahera	No.	114	0	0	0	0	0	0	0	114
			Vol.	14	0	0	0	0	0	0	0	14
8	*Moringa oleifera*	Sanan	No.	66	0	0	0	0	0	0	0	66
			Vol.	8	0	0	0	0	0	0	0	8
9	*Emblica officinalis*	Amla	No.	3995	558	24	0	0	0	0	0	4577
			Vol.	507	177	20	0	0	0	0	0	705
10	*Lannea grandis*	Kembal	No.	15068	6940	1974	336	132	0	0	0	24450
			Vol.	1914	2207	1648	595	400	0	0	0	6763
11	*Mallotus philippinensis*	Kamal	No.	29861	522	36	0	0	0	0	0	30419
			Vol.	3792	166	30	0	0	0	0	0	3988
12	Butea monosperma	Plah	No.	282	12	0	0	0	0	0	0	294
			Vol.	36	4	0	0	0	0	0	0	40

S.NO.	BOTANICAL NAME	COMMON NAME		V	IV	III	IIA	IIB	IA	IB	IC	Total
13	*Mangifera indica*	Am	No.	18	6	84	0	0	0	0	0	108
			Vol.	2	2	70	0	0	0	0	0	74
14	*Aegle marmelos*	Bil	No.	348	0	6	0	0	0	0	0	354
			Vol.	44	0	5	0	0	0	0	0	49
15	*Diospyros chloroxylon*	Kinnu	No.	3887	366	66	0	0	132	0	0	4319
			Vol.	494	116	55	0	0	605	0	0	665
16	*Ficus bengalensis*	Bargad	No.	768	408	282	102	42	0	6	42	1782
			Vol.	98	130	235	180	127	0	38	268	1682
17	*Ficus religiosa*	Pipal	No.	48	30	24	6	0	0	0	0	108
			Vol.	6	10	20	11	0	0	0	0	46
18	*Ficus roxburghii*	Tiamal	No.	276	24	6	0	0	0	0	0	306
			Vol.	35	8	5	0	0	0	0	0	48
19	*Flacourtia ramontchi*	Kangoo	No.	2339	180	6	0	0	0	0	0	2525
			Vol.	297	57	5	0	0	0	0	0	359
20	*Syzygium cuminii*	Jamun	No.	5807	798	228	42	0	0	0	0	6874
			Vol.	737	254	190	74	0	0	0	0	1256
21	*Zizyphus mauritiana*	Ber	No.	612	84	0	0	0	0	0	0	696
			Vol.	78	27	0	0	0	0	0	0	104
22	Grewia elastica	Phalsa	No.	672	54	30	0	0	6	0	0	756
			Vol.	85	17	25	0	0	28	0	0	128
23	Terminalia tomentosa	Aisan	No.	16148	3911	1446	246	24	0	0	0	21781
			Vol.	2051	1244	1207	435	73	0	0	0	5037
24	Anogeissus latifolia	Dhou	No.	8308	3143	1068	54	12	0	0	0	12585
			Vol.	1055	1000	892	96	36	0	0	0	3079
25	Casearia elliptica	Chilla	No.	426	30	0	0	0	0	0	0	456
			Vol.	54	10	0	0	0	0	0	0	64

S.NO. BOTANICAL NAME COMMON

S.NO.	BOTANICAL NAME	COMMON NAME		V	IV	III	IIA	IIB	IA	IB	IC	Total
26	Misc. B/L		No.	12441	1092	216	30	12	6	0	0	13797
			Vol.	1580	347	180	53	36	28	0	0	2224
Total			No.	314134	42644	10294	3263	2807	1338	306	180	374965
			Vol.	39547	13261	8049	5028	7407	4892	1100	757	80041

Abstract of Enumeration- Protection cum Rehalitation Working Circle

S.NO.	BOTANICAL NAME	COMMON NAME		V	IV	III	IIA	IIB	IA	IB	IC	Total
1	Albizzia lebek	Siris	No.	0	46	0	11	0	0	0	0	57
			Vol.	0	15	0	20	0	0	0	0	35
2	Albizzia odoratissima	Kirmiru	No.	229	114	0	0	0	0	0	0	343
			Vol.	29	36	0	0	0	0	0	0	65
3	Bombax ceiba	Simbal	No.	0	0	0	0	0	0	0	0	0
			Vol.	0	0	0	0	0	0	0	0	0
4	Cassia fistula	Kanyar, Amaltash	No.	537	366	0	0	0	0	0	0	903
			Vol.	68	116	0	0	0	0	0	0	185
5	Pinus roxburghii	Chil	No.	2036	2001	1921	1761	1246	675	183	34	9857
			Vol.	122	380	1249	2536	3241	2388	648	121	10685
6	Toona ciliata	Tooni	No.	194	23	0	0	0	0	0	0	217
			Vol.	25	7	0	0	0	0	0	0	32
7	Dalbergia sissoo	Shisham	No.	0	0	0	0	0	0	0	0	0
			Vol.	0	0	0	0	0	0	0	0	0
8	Shorea Robusta	Sal	No.	20012	8234	1407	252	0	0	0	0	29904
			Vol.	2542	2618	1174	445	0	0	0	0	6780
9	Terminalia belerica	Bahera	No.	0	0	0	0	0	0	0	0	0
			Vol.	0	0	0	0	0	0	0	0	0
10	Holarrhena anitdysenterica	Keor	No.	0	0	0	0	0	0	0	0	0
			Vol.	0	0	0	0	0	0	0	0	0
11	Moringa oleifera	Sanan	No.	4826	1875	91	0	0	0	0	0	6793
			Vol.	613	596	76	0	0	0	0	0	1286
12	Emblica officinalis	Amla	No.	1212	194	0	0	0	0	0	0	1407
			Vol.	154	62	0	0	0	0	0	0	216

S.NO.	BOTANICAL NAME	COMMON NAME		V	IV	III	IIA	IIB	IA	IB	IC	Total
13	Holoptelea integrifolia	Rajain, pardesi	No.	0	0	0	0	0	0	0	0	0
			Vol.	0	0	0	0	0	0	0	0	0
14	Lannea grandis	Kembal	No.	4620	3099	286	11	0	0	0	0	8016
			Vol.	587	985	239	20	0	0	0	0	1831
15	Mallotus philippinensis	Kamal	No.	4254	961	23	0	0	0	0	0	5237
			Vol.	540	305	19	0	0	0	0	0	865
16	Butea monosperma	Plah	No.	0	0	0	0	0	0	0	0	0
			Vol.	0	0	0	0	0	0	0	0	0
17	Bauhinia variegata	Kachnar	No.	57	0	0	0	0	0	0	0	57
			Vol.	7	0	0	0	0	0	0	0	7
18	Mangifera indica	Am	No.	46	0	0	0	0	0	0	0	46
			Vol.	6	0	0	0	0	0	0	0	6
19	Aegle marmelos	Bil	No.	0	0	0	0	0	0	0	0	0
			Vol.	0	0	0	0	0	0	0	0	0
20	Cordia myxa	Lasura	No.	0	0	0	0	0	0	0	0	0
			Vol.	0	0	0	0	0	0	0	0	0
21	Diospyros chloroxylon	Kinnu	No.	903	183	0	0	0	0	0	0	1086
			Vol.	115	58	0	0	0	0	0	0	173
22	Ficus bengalensis	Bargad	No.	34	0	23	0	34	23	0	0	114
			Vol.	4	0	19	0	104	105	0	0	232
23	Ficus religiosa	Pipal	No.	0	0	0	0	0	0	0	0	0
			Vol.	0	0	0	0	0	0	0	0	0
24	Ficus roxburghii	Tiamal	No.	0	0	0	0	0	0	0	0	0
			Vol.	0	0	0	0	0	0	0	0	0
25	Flacourtia ramontchi	Kangoo	No.	0	0	0	0	0	0	0	0	0
			Vol.	0	0	0	0	0	0	0	0	0

S.NO.	BOTANICAL NAME	COMMON NAME		V	IV	III	IIA	IIB	IA	IB	IC	Total
26	Syzygium cuminii	Jamun	No.	4060	1830	343	0	0	0	0	0	6232
			Vol.	516	582	286	0	0	0	0	0	1384
27	Zizyphus mauritiana	Ber	No.	0	0	0	0	0	0	0	0	0
			Vol.	0	0	0	0	0	0	0	0	0
28	Grewia elastica	Phalsa	No.	0	0	0	0	0	0	0	0	0
			Vol.	0	0	0	0	0	0	0	0	0
29	Terminalia tomentosa	Aisan	No.	8588	6896	2413	114	23	0	0	0	18034
			Vol.	1091	2193	2015	202	69	0	0	0	5570
30	Anogeissus latifolia	Dhou	No.	160	69	0	0	0	0	0	0	229
			Vol.	20	22	0	0	0	0	0	0	42
31	Casearia elliptica	Chilla	No.	0	0	0	0	0	0	0	0	0
			Vol.	0	0	0	0	0	0	0	0	0
32	Misc. B/L		No.	1521	720	137	34	0	11	0	0	2424
			Vol.	193	229	115	61	0	52	0	0	650
Total			**No.**	**53289**	**26610**	**6644**	**2184**	**1304**	**709**	**183**	**34**	**90958**
			Vol.	**6631**	**8206**	**5192**	**3285**	**3414**	**2546**	**648**	**121**	**30043**

ENUMERATION RESULT SHOWING KHAIR IN PB I AREAS OF CHIL WORKING CIRCLE

Sr.No.	Forest	Area in Ha.	5--10	10--15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	Total
			No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
1	Dharuhi CC 3	39.66	682	937	778	594	487	281	122	45		3214
				27.17	57.57	92.07	116.88	98.35	67.47	10.32	0	469.83
2	Dharuhi DC 2	41.49	2058	802	741	495	245	158	28	5	1	2475
				23.26	54.83	76.73	58.80	55.30	15.48	3.44	0.76	288.60
3	Dharuhi DC 3	35.02	2117	854	563	216	89	77	11	2	1	1813
				24.77	41.66	33.48	21.36	26.95	6.08	1.38	0.76	156.43
4	Dharuhi DC 5	12.36	1089	235	77	31	25	9	3	0	1	381
				6.82	5.70	4.81	6.00	3.15	1.66	0.00	0.76	28.88
5	Dharuhi FC 1	26.3	3651	966	412	184	56	41	14	0		1673
				28.01	30.49	28.52	13.44	14.35	7.74	0.00	0.00	122.55
6	Dharuhi GC 1	4.45	5	1		1			1	0		3
				0.03	0.00	0.16	0.00	0.00	0.55	0.00	0.00	0.74
7	Dharuhi GC 3	28.33	522	1592	987	379	280	62	41	4	5	3350
				46.17	73.04	58.75	67.20	21.70	22.67	2.75	3.78	296.06
8	Dharuhi GC 4	13.77	1044	838	490	294	142	51	22	0	0.00	1837
				24.30	36.26	45.57	34.08	17.85	12.17	0.00		170.23
9	Panjal C 1	85.5	1022	1647	841	169	22			0	0.00	2679
				47.76	62.23	26.20	5.28	0.00	0.00	0.00		141.47
10	Panjal C 3	83.78	2868	2935	1195	333	47			0	0.00	4510
				85.12	88.43	51.62	11.28	0.00	0.00	0.00		236.44
11	Panjal C 4	27.11	979	1094	659	204	38	5		0	0.00	2000
				31.73	48.77	31.62	9.12	1.75	0.00	0.00		122.98
12	Panjal C 6	58.28	535	1315	1351	903	267	36	5	0	0.00	3877
				38.14	99.97	139.97	64.08	12.60	2.77	0.00		357.52

Sr.No.	Forest	Area in Ha.	5--10	10--15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	Total
			No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
13	Panjal C 7	56.66	1262	934	428	120	30	7	2	0	0.00	1521
				27.09	31.67	18.60	7.20	2.45	1.11	0.00		88.11
14	Panjal C 8	54.63	3085	1522	963	312	138	45		0	0.00	2980
				44.14	71.26	48.36	33.12	15.75	0.00	0.00		212.63
15	Panjal C 10	44.52	3173	1774	832	492	292	84	6	0	0.00	3480
				51.45	61.57	76.26	70.08	29.40	3.32	0.00		292.07
16	Panjal C 16	36.42	1733	1739	1202	487	168	47	14	0	0	3657
				50.431	88.948	75.485	40.32	16.45	7.742	0		279.376
17	Panjal C 18	57.87	3690	3030	1380	1020	320	110	17	0	0.00	5877
				87.87	102.12	158.10	76.80	38.50	9.40	0.00		472.79
18	Panjal C 19	17.4	1871	838	349	272	71	16	4	0	0.00	1550
				24.30	25.83	42.16	17.04	5.60	2.21	0.00		117.14
19	Panjal C 22	31.97	1827	1124	516	206	56	10	2	0	0.00	1914
				32.60	38.18	31.93	13.44	3.50	1.11	0.00		120.76
20	Panjal C 24	36.83	1760	1406	368	233	86	22	4	0	0.00	2119
				40.77	27.23	36.12	20.64	7.70	2.21	0.00		134.67
21	Panjal C 26	23.07	808	888	295	166	60	2		0	0.00	1411
				25.75	21.83	25.73	14.40	0.70	0.00	0.00		88.41
22	Panjal C 28	50.99	823	1159	703	317	257	16	2	0	0.00	2454
				33.61	52.02	49.14	61.68	5.60	1.11	0.00		203.15
23	Panjal C 33	26.71	663	1440	663	208	66	13	2	0	0.00	2392
				41.76	49.06	32.24	15.84	4.55	1.11	0.00		144.56
24	Lohara AC 5	30.35	1305	1479	850	368	177	54	8	4	0.00	2940
				42.89	62.90	57.04	42.48	18.90	4.42	2.75		231.39
25	Lohara AC	112.5	2508	3561	2050	1451	469	166	12	0	0.00	7709

Sr.No.	Forest	Area in Ha	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Total
			No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
	22			103.27	151.70	224.91	112.56	58.10	6.64	0.00		657.17
26	Lohara BC 7	45.32	1643	708	561	223	98	19	3	0	0.00	1612
				20.53	41.51	34.57	23.52	6.65	1.66	0.00		128.44
Total		1081.29	42721*	34818	19254	9678	3986	1331	323	30	8	69428
			0	1009.722	1424.796	1500.09	956.64	465.85	178.619	20.64	6.048	5562.405

*NOTE - Number of trees below 10 cm dia have not being included in the total column.

ENUMERATION RESULT SHOWING KHAIR IN PB U AREAS OF CHIL WORKING CIRCLE

5 to 10		11 to 15		16-20		21-25		26-30		31-35		36-40		41-45		Total	
No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol	No.	Vol.	No.	Vol.
76522*	0	83290	2415	47802	3537	23939	3711	8082	1940	1436	503	183	101	0	0	164732	12207

*NOTE - Number of trees below 10 cm dia have not being included in the total column.

APPENDIX-III

GRAZING ADVISORY COMMITTEE RECOMMENDATIONS

The Grazing advisory Committee recommended following measures in the meeting held on 3.8.1982:-

1. **Charging of double grazing fee in shamlat areas which have been vested with the Government:**

   It was felt that the main cause of charging double grazing fee was non-transfer of revenue entries of Shamlat areas in favour of the Government. The people in the absence of proper mutation in favour of the government were demanding grazing fee on the ground that they still need the area and were paying land revenue. It was decided that the DFO's and Deputy Commissioners must jointly have the mutations in favour of the Government carried out and these mutations should be formally announced to the graziers so that they are not exploited by the erstwhile owners. It was further decided that the order of the Government to the Department of Forest Farming and Environmental Conservation should be implemented without further delay.

2. **Control of Migratory and Nomadic Herds and Flocks:**

   a) **Registration and enumeration:-**

   No legality is attached to the preparation of list of graziers and the areas grazed by them. It was decided that the data collected should be processed and list prepared as recommended by the Grazing Advisory Committee. The list can be at the Forest Division level, but should be by rages.

   b) **Fixation of Routes and the Check Posts:-**

   It was decided that the existing routes should be listed. Difficulties that may arise because of the construction of the dams, raising of orchards and closures of forests etc. Should be removed and in such cases possibilities of alternate routes be provided.

3. **Problems of Gaddies of Kangra District:-** It was decided that a circular be issued at the level of the CCF, H.P. directing all the DFOs to ensure that double grazing fee is not charged and that permit once issued is honoured.

   As regards the excess number over and above the frozen number, it was decided that the compensation at the rate of Rs. 5/-per goat may continue.

4. **Any Other Item**

   1) **Mal Distribution of Migratory Grazing:-**

   It was brought to the notice of the Committee by the Hon'ble Speaker that there is a scope for making available more areas for winter grazing of sheep and goats in Nalagarh and Sirmour areas. It was suggested by him that a systematic and

realistic survey of such grazing areas should be carried out and these areas made available for winter grazing of the sheep and goats to reduce the problem.

2) Nomadic Graziers Settled Away from Home:-

It was pointed out by the Hon'ble speaker that graziers have purchased land in the lower areas and have settled there. They are paying land revenue and should be right holders like any other residents of that village, but they are not being allowed grazing of their flocks of sheep and goats. Such problem also exists in the Kangra District. It was decided that the problem should be analysed, its implications examined and the affected graziers identified before a final recommendation is made by the Committee.

5. Eradication of Lantana:-

Lantana has engulfed a number of grazing areas. The Hon'ble Speaker suggested that some steps, for example breeding of Lantana bug should be taken to eradicate this harmful weed. He informed that even the graziers willing to contribute both, by way of cash at the rate of Rs. 1/- per head of sheep/goat grazed by them and effort. It was also suggested that the F.R.L. should be consultant on the efficiency of lantana bug in eradicating Lantana and measures taken to free vast areas of pastures of this harmful weed.

6. Sub-Letting of Grazing Grounds:-

It was agreed that the practice of sub-letting of the grazing grounds should be stopped and permission given to graze only that number which was frozen in the year 1970-71.

7. Opening of closed Areas to Grazing:-

It was pointed out by the Hon'ble speaker that in some refractory forests there was no success, but efforts to reafforest them are still continuing with the result that the closure period has got prolonged. He was of the view that there should be a time limit to afforest such areas and beyond that efforts should not be continued. He also said that some of the closed areas have been completely regeneration/afforested and these can safely be thrown to grazing again. It was agreed that the suggestion of the Hon'ble speaker, H.P.Vidhan Sabha should be kept in view by the Forest and soil conservation Departments and no closure should be continued beyond the period it is absolutely necessary. Delay, in throwing open closed areas supporting established crop, should be avoided.

2. Recommendations:-

There can be no denying the fact that incidence of grazing is too heavy to be sustained by the forests. In addition the goats play havoc with vegetation. In case the forest cover is to be protected and extended the restrictions have to be imposed on grazing by cattle and browsing by goats. In this behalf, the following suggestions are made:-

1) A Coordination Committee at District level may be constituted under the Chairmanship of Deputy Commissioner and represented by local M.L.A.s,

Department of forest farming and Conservation, Animals Husbandry Department, Agriculture Department agencies and prominent public men to work out the details for achieving the ultimate aim to ban uncontrolled grazing and browsing by goat.

2) The buffaloes which are in appreciable number cause great damage not only by trampling natural seedlings wherever these are established but also accelerating the erosion. Since jersey breed of cows has shown good economic result, buffaloes may be replaced by better breed of cows during the currency of this plan. The stall feeding will automatically, be adopted as a practice by the local people.
3) The local people may be persuaded to eliminate the goats and likewise the migratory graziers.
4) In critical areas, the grazing rights may be acquired by paying compensation.
5) In the farm forestry programmes nutritious species of grass and fodder should be introduced. Seed reserves of such grasses and fodder species should be created for propagation both in govt. forest and private ownerships.

APPENDIX – IV

LIST OF EXISTING ROADS AND PATHS

Range	Kind of path	Particulars	Length (Km.)	Year of const.	Cost(Rs.)
Bharwain	Jeep able Road	Karluhi to Bhalehar	0.19	1970-71	4000
	Bridle Path	Chalehar to Indora	2.40	1944-45	-
		Amb to Guret	12.00	1945-46	-
		Joh to Badhmana	5.89	1947-48	705
		Panjal C2 to Abhepur		1948-49	-
		Panjal C2 to Dangoh	3.22	1948-49	-
		Panjal C2 to Pirthipur	1.62		
		Badhmana to Kunet	3.22		377
Amb	Inspection Path	R.II.a Lohara –A C 2b	0.37	1935-36	-
		Mandholi to Chalehar	2.20	-	-
		R.II.Lohara B1 & C2	13.68		
		R.II.b.Lohara & C3 to C4 & C8 to C13	2.41	-	-
		R.II.Lohara –A C 18 to C22	4.84	1937-38	-
		R.1.Panjal C2 to C12	Do	Do	
		R.1.Panjal C13 to C20	4.83	Do	
		R.1.Panjal C21 to C27	3.82	1943-44	
		R.1.Panjal C4,C28 to C34	1.62	1947-48	
		R.1.Panjal C3,C13 to C20	6.45	1948-49	
		Beh to R.II.Lohara C2 to C9 & C11 to C17	1.61	1948-49	
		R.II.a Lohara A C2 to C10	2.41	1948-49	

Range	Kind of path	Particulars	Length (Km.)	Year of const.	Cost(Rs.)
		R.1.Panjal C3 to Sikri	7.05	1950-51	354
		Mandholi to Bringal	3.42	1950-51	262
	JEEPABLE	Mairi to Polian	6.40	1964-65	20000
	Road	Purohitan			
		Rapoh to Bhindia	8.00	1965-66	40000
		Shihai to Polian Prohitan	2.70	1971-72	25300
	Bridle Path	R.II.a.Dharuhi-A	3.20	1964-65	2000
	Inspection	R.III.b.Dharuhi-B	6.04	1947-48	
	Path	R.III.c.Dharuhi-C	2.01	1947-49	
		R.III.c.Dharuhi-C2	0.80	1947-49	
		R.III.c.Dharuhi-C3	0.81	1947-49	
		R.III.f.Dharuhi-F	1.41	1947-49	
		R.III.d.Dharuhi-D	1.70	1953-54	70
		R.III.f.Dharuhi-F C1 and C2	3.64	1953-54	157
		R.III.g.Dharuhi-C1 to C5	1.60	1955-56	102

APPENDICES – V

SCHEDULE OF RATES

S.N	Name of Item	Unit	Rate(Rs)
	Seed Collection		
1	Chil	Per Kg	218
2	Mulbery	Per Kg	462
3	Bamboo	Per Kg	304
4	Tuni	Per Kg	250
5	Amla	Per Kg	130.80
6	Jamun	Per Kg	38.20
7	Amaltas	Per Kg	92.80
8	Siris	Per Kg	92.80
9	Khair	Per Kg	70.80
10	Shisham	Per Kg	87.20
11	Neem	Per Kg	49
12	Drek	Per Kg	49
	Nursery Works		
1	Earth cutting in spade work	Sqm	44.60
2	Earth cutting in pick work	Sqm	65.40
3	Preparation of nursery beds	Sqm	16.40
4	Mixing of F.W.M.	Sqm	2.20
5	Application of insecticide/pesticides	% plant	1.60
6	Preparation of path	Sqm	5.20
7	Preparation of water channel	Sqm	5.40
8	Line sowing	Sqm	6.60
9	Broadcasting sowing	Sqm	1.40
10	Polythene sheet shade	Sqm	13.60
11	Grass shade	Sqm	16.20
12	Hand watering	Sqm	1.40
13	Flooding of beds	Sqm	0.60
16	Pricking of seedlings in nursery beds	Sqm	8.00
17	Preparation of cuttings 6"	% No.	49
18	Preparation of cuttings 9"	%No	49
19	Preparation of cuttings 12"	%No	49
20	Extraction of entire plants	%No	43.60
21	Packing and mossing of seedlings	%No	262.20
22	Filling of Polythene Bags	%No	185.40

S.N	Name of Item	Unit	Rate(Rs)
23	Lining of P/bags	%No	16.00
24	Sowing of seeds in P/bags	%No	13.60
25	Mulching of P/bags	%No	4.00
26	Watering of plants in P/bags	%No	16.20
27	Weeding and hoeing in P/bags	%No	9.40
28	Singling of plants in P/bags	%No	16.20
29	Shifting of P/bags	%No	19.00
30	Re-sowing of seeds in P/bags	%No	13.60
31	Pricking and setting of seeding in P/bags	%No	43.60
32	Filling of P/bags	%No	437.20
33	Carriage of plants in P/bags(level work)	%No/(per km)	130.80
34	Carriage of plants in P/bags(uphill side)	%No/(per km)	174.40
35	Carriage of plants in P/bags (downhill side)	%No/(per km)	130.80
36	Cutting and preparation of wooden posts 1.8 mtr long and 10 cm dia	% Nos	1036
37	Carriage of fence posts	% Nos	545.40
38	Charring and coal tarring	% No	223.60
39	Preparation/ dogging of holes	% Nos	725.40
40	Fixing of wooden post	%Nos	547.00
41	Stretching and fixing of B/wire with U/Nails	Rmt	3.80
42	Interlacing of thorny bushes with B/wire	Head load	3.20
43	Fixing of angle iron in cement	% Nos	545.40
44	Fixing of B/wire in angle iron fence post	Rmt	3.80
45	Dismantling of old B/wire	Rmt	2.60
46	Repair of b/wire fencing	Rmt	1.40
47	Carriage of B/wire	Qtl/Pkm	109.20
48	Survey and demarcation of plantation area	Ha	81.80
49	Collection of debris	Ha	409.00
50	Burning of debris	Ha	136.40
51	Bush cutting	Ha	954.40
52	Preparation of Inspection path 60 cm wide	Rmt	8.80

S.N	Name of Item	Unit	Rate(Rs)
53	Layout of pits and patches	Ha	136.40
54	Planting of tall plants i/e ramming	%Nos	261.70
55	Line sowing Dcodar	Rmt.	0.90
56	Broad coast sowing in plantation area.	Hac.	196.30
57	Rod planting of plants.	%Nos	68.20
58	Plasnting in Gradonial/trenches/half field 15cm dia.	%Nos.	1.20
59	Preparation of Furrows for live hedgs fencing.	Rmt.	0.55
60	Planting of live hedgs plant species in furrows	Rmt.	4.70
61	Mulching of plants	%Nos	23.90
62	Weeding and hoeing of plants	%Nos	32.70
63	Preparation of strips i/e sowing	%Nos	368.00
64	Preparation mound for vetiver grass	%Nos	68.20
65	Planting of grass strips in mound	%Nos	272.70
66	Bulb & Tuber planting	%Nos	327.10
67	Dibbing of seed.	Hac.	51.80
68	Enumeration of trees	%Nos	70.90
69	Marking of trees Conifers for sale.	%Nos	106.30
70	Hammering of trees in thinning and dead dying.	%Nos	8.10
71	Enumeration of trees for resin tapping	%Nos	70.90
72	Belting of trees with white paint for seed stands.	%Nos	136.30
73	Selection and numbering of superior trees for seed stand.	%Nos	81.80
74	Debris collection & burning	Ha	272.70
75	Cleaning and un-saleable thinning in regeneration area	Ha	709.10
76	Climbers cutting in the Forests plantation area	Ha	343.50
77	Commercial Mechanical thinning all grades	Ha	Class wise rates
78	Hygienic felling	Ha	Class wise rates
79	Kikar felling	Ha	Class wise rates
80	Preparation of fire lines	Sqm	2.10

S.N	Name of Item	Unit	Rate(Rs)
	2.5mtr.4.5.mtr.10mtr.Wide.		
81	Burning maintenance of lines.	Sqm	0.30
82	Control burning of conifer forests.	Ha	73.50
83	Burning of established saplings in plantation 1/3 portion.	%Nos	68.20
84	Marking of standards in B.L.Coupe.	%Nos	136.40
85	Carving of number in marking trees Conifers/Broad leaved	%Nos	169.00
86	Measurement seeding for research work in nursery.	%Nos	81.80

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APPENDIX - VI

LIST OF SHAMLAT & CEILING LAND IN UNA FOREST DIVISION

S.N	RANGE	NAME OF SHAMLAT	AREA IN (Ha.)	NAME OF LAND CEILING	AREA IN (Ha.)
1	Amb	Mubarkpur	15.9	Mubarkpur	5.67
2	Amb	Kanshipur	18.79	Bhanjal	10.93
3	Amb	Shivpur	35.54	Shivpur	0
4	Amb	Ramnagar	13.35	Ramnagar	0
5	Amb	Meranagar	18.81	Meranagar	0
6	Amb	Shankernager	19.41	Shankernager	0
7	Amb	Gokul nagar	110.36	Gokul nagar	0
8	Amb	Karluhi	52.14	Karluhi	8.91
9	Amb	Polian jaswalan	50.25	Polian jaswalan	0
10	Amb	Anduara upper	45.39	Anduara upper	49.42
11	Amb	Anduara lower	32.17	Anduara lower	0
12	Amb	Kuthara	193.21	Kuthara	6.48
13	Amb	Hera nagar	19.36	Hera nagar	0
14	Amb	Araya nagar	17.35	Araya nagar	0
15	Amb	Partap nagar	28.06	Partap nagar	9.31
16	Amb	Ladoli	21.1	Ladoli	5.05
17	Amb	Behar kanshi	93.66	Behar kanshi	5.34
18	Amb	Nakki	17.22	Nakki	0
19	Amb	Bejapur	16.91	Bejapur	8.7
20	Amb	Kathaur Kalan	29.55	Kathaur Kalan	16.65
21	Amb	Panjoa kalan	10.92	Panjoa kalan	3.02
22	Amb	Panjoa khurd	7	Panjoa khurd	0
23	Amb	Chak	42.31	Chak	0
24	Amb	Kuthairi	34.19	Kuthairi	26.73
25	Amb	Ramnagar	36.03	Ramnagar	23.81
26	Amb	Thathal	15.3	Thathal	0
27	Amb	Nandpur	124.35	Nandpur	0
28	Amb	Chururoo	8.83	Chururoo	2.02
29	Amb	Seri	16.7	Seri	0
30	Amb	Baheri	13.46	Baheri	0
31	Amb	Behara	58.13	Behara	2.43
32	Amb	Saluri	146.99	Saluri	0

S.N	RANGE	NAME OF SHAMLAT	AREA IN (Ha.)	NAME OF LAND CEILING	AREA IN (Ha.)
33	Amb	Dhusara-I	28.23	Dhusara-I	0
34	Amb	Dhusara-II	26.9	Dhusara-II	23.62
35	Amb	Delwan	14.56	Delwan	0
36	Amb	Hamboli lower	34.85	Hamboli lower	0
37	Amb	Hamboli Upper	118.42	Hamboli Upper	0
38	Amb	Takarala	266.42	Takarala	15.29
39	Amb	Dhandri	155.31	Dhandri	0
40	Amb	Shiv nagar	51.94	Shiv nagar	0
41	Amb	Karap	37.12	Karap	0
42	Amb	Nanani	24.55	Nanani	0
43	Amb	Sandhari	24.72	Sandhari	0
44	Amb	Ladota	18.94	Ladota	0
45	Amb	Jhaker	34.42	Jhaker	0
46	Amb	Manjhar	16.31	Manjhar	0
47	Amb	Polian prothan	7	Polian prothan	0
48	Amb	Palahar	13.58	Palahar	0
49	Amb	Khawarian	23.45	Khawarian	34.98
50	Amb	Pattaian	23.76	Pattaian	34.43
51	Amb	Jandoh	30.2	Jandoh	0
52	Amb	Jabehar	70.77	Jabehar	4.05
53	Amb	Badoh	63.52	Badoh	0
54	Amb	Basooni	31.83	Basooni	20.15
55	Amb	Dhar Gujarran	62.33	Tyai	8.1
56	Amb	Ladyal chuk	40.07	Ladyal chuk	0
57	Amb	Ramnagar (Gagret)	24.88	Ramnagar (Gagret)	0
58	Amb	Kaloh	81.49	Kaloh	0
59	Amb	Shivbari	31.56	Shivbari	0
60	Amb	Bumbloo	60.84	Bumbloo	6.88
61	Amb	Chatehar	89.95	Chatehar	0
62	Amb	Krishana nagar	86.41	Krishana nagar	0
63	Amb	Pambera	19.35	Pambera	0
64	Amb	Thapala	82.54	Thapala	0
65	Amb	Behatterian Badoh	142.97	Behatterian Badoh	19.44
66	Amb	Tahtera	176.52	Tahtera	20.81
67	Amb	Kuthera Jaswalan-L	76.41	Kuthera Jaswalan-L	0
68	Amb	Kuthera Jaswalan-U	102.36	Kuthera Jaswalan-U	26.75
69	Amb	Mawasindhian-U	660.34	Mawasindhian-U	0
70	Amb	Mawasindhian-L	129.5	Mawasindhian-L	0

S.N.	RANGE	NAME OF SHAMLAT	AREA IN (Ha.)	NAME OF LAND CEILING	AREA IN (Ha.)
71	Amb	Guglehar	161.16	Guglehar	0
72	Amb	Bedhara Rajputan	56.86	Bedhara Rajputan	0
73	Amb	Piploo	53.42	Piploo	0
74	Amb	Labana Majara	29.45	Labana Majara	131.72
75	Amb	Jadala	23.1	Jadala	0
76	Amb	Loharli-U	29.77	Loharli-U	0
77	Amb	Loharli-L	30.94	Loharli-L	0
78	Amb	Koeri	7.33	Koeri	0
79	Amb	Nari	30.62	Nari	0
80	Amb	Jowar	96.96	Jowar	0
81	Amb	Padah	43.64	Padah	0
82	Amb	Duki	16.81	Duki	0
83	Amb	Nehari khalasa	15.46	Nehari khalasa	0
84	Amb	Gujrera	55.59	Gujrera	0
85	Amb	Santu Tila	18.44	Santu Tila	0
86	Amb	Jhot	17.02	Jhot	0
87	Amb	Gathroon	0	Gathroon	12.66
88	Amb	Landehar Tikari	0	Landehar Tikari	4.05
89	Amb	Sar	0	Sar	11.27
90	Amb	Landehar Landian	0	Landehar Landian	17.35
91	Amb	Ambota	0	Ambota	17.82
92	Amb	Oel	0	Oel	24.71
93	Amb	Nagnoli	0	Nagnoli	13.7
94	Amb	Nagnoli Har	0	Nagnoli Har	11.16
Total			**5033.63**		**643.91**
1	Bharwain	Prithipur-U	17.03	Prithipur-U	0
2	Bharwain	Prithipur-L	24.59	Prithipur-L	0
3	Bharwain	Dangoh-U	72.04	Dangoh-U	0
4	Bharwain	Dangoh-Khurd	16.12	Dangoh-Khurd	0
5	Bharwain	Dangoh Khas	7.13	Dangoh Khas	18.91
6	Bharwain	Prithipur Khas	24.54	Prithipur Khas	0
7	Bharwain	Maidangarh	49.93	Maidangarh	0
8	Bharwain	Dangoh Kalan	9.06	Dangoh Kalan	0
9	Bharwain	Joh	52.86	Joh	0
10	Bharwain	Baih	92.8	Baih	0
11	Bharwain	Saloh	244.02	Saloh	5.91
12	Bharwain	Bhadar kali	80.43	Bhadar kali	0
13	Bharwain	Abheypur	133.45	Abheypur	0
14	Bharwain	Fatehpur	69.68	Fatehpur	0
15	Bharwain	Banehera-U	29.4	Banehera-U	0

S.N	RANGE	NAME OF SHAMLAT	AREA IN (Ha.)	NAME OF LAND CEILING	AREA IN (Ha.)
16	Bharwain	Banehera-L	71.58	Banehera-L	0
17	Bharwain	Bharmpur	59.01	Bharmpur	0
18	Bharwain	Ghangert	23.57	Ghangert	0
19	Bharwain	Maloon parla	16.44	Maloon parla	0
20	Bharwain	Koah Devi	90.47	Koah Devi	0
21	Bharwain	Chalet	24.11	Chalet	0
22	Bharwain	Chalet-U	41.33	Chalet-U	0
23	Bharwain	Bari	33.4	Bari	0
24	Bharwain	Mawakaholan-j	18.58	Mawakaholan-j	0
25	Bharwain	Mawakaholan-U	16.77	Mawakaholan-U	0
26	Bharwain	Ganu	18.93	Ganu	0
27	Bharwain	Mandwara	96.8	Mandwara	0
28	Bharwain	Marwari	124.08	Marwari	0
29	Bharwain	Babehar	112.29	Babehar	0
30	Bharwain	Raipur	78.16	Raipur	0
31	Bharwain	Amboa	49.15	Amboa	10.12
32	Bharwain	Ghanari Dadwalan	80.21	Ghanari Dadwalan	10.93
33	Bharwain	Nangal jarialan	74.75	Nangal jarialan	0
34	Bharwain	Chowki (Nangal)	37.01	Chowki (Nangal)	0
35	Bharwain	Mau	40.75	Mau	0
36	Bharwain	Ghanari Brahmana	62.3	Ghanari Brahmana	0
37	Bharwain	Saghnai	39.04	Saghnai	0
38	Bharwain	Matyalka	50.18	Matyalka	117.48
39	Bharwain	Kala Panga	40.72	Kala Panga	0
40	Bharwain	Dhanowal	86.18	Dhanowal	0
41	Bharwain	Jeetpur Behari	64.87	Jeetpur Behari	0
42	Bharwain	Deoli	97.92	Deoli	27.14
43	Bharwain	Deoli Manhansa	65.62	Deoli Manhansa	0
44	Bharwain	Badhamana	15.22	Badhamana	0
45	Bharwain	Gugbarh	14.29	Gugbarh	0
46	Bharwain	Tundkhari	43.13	Tundkhari	0
47	Bharwain	D/shala Mahantan-U	26.52	D/shala Mahantan-U	0
48	Bharwain	D/shala Mahantan-L	56.46	D/shala Mahantan-L	0
49	Bharwain	Godari sidh	40.35	Godari sidh	16.2
51	Bharwain	Chigali Bater	10	Chigali Bater	0
52	Bharwain	Bater khas	13.65	Bater khas	2.02
54	Bharwain	Kinu	11.48	Kinu	0
55	Bharwain	Mawa	21.69	Mawa	5.92

S.N	RANGE	NAME OF SHAMLAT	AREA IN (Ha.)	NAME OF LAND CEILING	AREA IN (Ha.)
56	Bharwain	Lohara khas	6.96	Lohara khas	0
57	Bharwain	Aloh	10.6	Aloh	0
58	Bharwain	Dhalwari Dehlwan	37.06	Dhalwari Dehlwan	93.12
59	Bharwain	Paplehar	22.12	Paplehar	0
60	Bharwain	Sidh Chaler	135.92	Sidh Chaler	0
61	Bharwain	Suhin	45.51	Suhin	45.51
62	Bharwain	Chowar	50.83	Chowar	50.83
63	Bharwain	Mather	44.25	Mather	7.69
64	Bharwain	Bringle	9.94	Bringle	0
65	Bharwain	Ardoh	18.05	Ardoh	18.05
66	Bharwain	Koahchan	9.58	Koahchan	0
67	Bharwain	Saloi	99.27	Saloi	9.58
68	Bharwain	Jijjar	60.48	Jijjar	9.72
69	Bharwain	Bahgdah	13.21	Bahgdah	0
70	Bharwain	Bahelar	13.76	Bahelar	0
71	Bharwain	Takoli	60.31	Takoli	7.31
72	Bharwain	Mandholi	11.92	Mandholi	0
73	Bharwain	Alehar	16.5	Alehar	0
74	Bharwain	Ghawat Behar	124.67	Ghawat Behar	0
75	Bharwain	Rampur kuthara	20.5	Rampur kuthara	20.5
76	Bharwain	Nakroh	23.49	Nakroh	23.49
77	Bharwain	Amlehar	213.37	Amlehar	0
78	Bharwain	Kuneran -U	18.92	Kuneran -U	0
79	Bharwain	Kailash Nagar	59.59	Kailash Nagar	0
80	Bharwain	Kad	29.37	Kad	0
81	Bharwain	Saroh	0	Saroh	3.24
82	Bharwain	Thanikpura	0	Thanikpura	27.26
83	Bharwain	Kotali	0	Kotali	10.21
84	Bharwain	Bagmahoon	0	Bagmahoon	23.27
85	Bharwain	Sarda	0	Sarda	16.98
86	Bharwain	Amb tila	0	Amb tila	36.68
87	Bharwain	Duhal Baghwan	0	Duhal Baghwan	53.1
88	Bharwain	Baruhi	0	Baruhi	2.07
Total			**3946.27**	**0**	**673.24**
1	Una	Arniala	34.94	Arniala	0
2	Una	Kotla	7.2	Kotla	0
3	Una	Kotla khurd	46	Kotla khurd	0
4	Una	Lal singi	20	Lal singi	0
5	Una	Dangera	8	Dangera	0
6	Una	Rampur	129	Rampur	0

S.N	RANGE	NAME OF SHAMLAT	AREA IN (Ha.)	NAME OF LAND CEILING	AREA IN (Ha.)
7	Una	Dangoli	55.51	Dangoli	0
8	Una	Kotla kalan	46.86	Kotla kalan	0
9	Una	Upmahal Malahat	39.65	Upmahal Malahat	0
10	Una	Kuthar khurd	9.61	Kuthar khurd	0
11	Una	Ajnoli	23	Ajnoli	0
12	Una	Malahat	66	Malahat	0
13	Una	Bharolian Khurd	21.64	Bharolian Khurd	0
14	Una	Jankaur khas	13.11	Jankaur khas	0
15	Una	Rampur Bela	130.94	Rampur Bela	13.08
16	Una	Jankaur haar	10.74	Jankaur haar	0
17	Una	Jhalera	11	Jhalera	0
18	Una	Upmahal Bag	32	Upmahal Bag	0
19	Una	Salangri	9	Salangri	0
20	Una	Nari upparli	16	Nari upparli	0
21	Una	Jahamber	109	Jahamber	0
22	Una	Lam	98.86	Lam	0
23	Una	Ghandawal	22.25	Ghandawal	0
24	Una	Bhaloh	74.84	Bhaloh	0
25	Una	Dathwara	46.6	Dathwara	0
26	Una	Dhmandari	39.97	Dhmandari	0
27	Una	Barera	44.22	Barera	5.59
28	Una	Sat leta	48.43	Sat leta	0
29	Una	Thakur dura	35.37	Thakur dura	0
30	Una	Galua basal	25.47	Galua basal	0
31	Una	Kaswa	83.53	Kaswa	19.67
32	Una	Khaduni	19.56	Khaduni	0
33	Una	Raipur upparla	14.7	Raipur upparla	5.48
34	Una	Khanpur	14.35	Khanpur	0
35	Una	Jat pur	12.32	Jat pur	0
36	Una	Santosh garh Swan	23.29	Santosh garh Swan	0
37	Una	Nangran Nichali	48	Nangran Nichali	0
38	Una	Bangarh	34	Bangarh	382.3
39	Una	Jakhera	17.61	Jakhera	0
40	Una	Fatewal	29	Fatewal	24.65
41	Una	Kaswati Mehatpur	50.35	Kaswati Mehatpur	0
42	Una	Upmahal Behdala	8.12	Upmahal Behdala	0
43	Una	Chattra khas	30.4	Chattra khas	56.31
44	Una	Badher Lower	18.24	Badher Lower	0
45	Una	Chattra upparla	80	Chattra upparla	0
46	Una	Pekhubela	175.34	Pekhubela	0

S/N	RANGE	NAME OF SHAMLAT	AREA IN (Ha.)	NAME OF LAND CEILING	AREA IN (Ha.)
47	Una	Rakkar coluny	26.39	Rakkar coluny	0
48	Una	Jalgran	10.72	Jalgran	0
49	Una	Majalian	43.54	Majalian	0
50	Una	Sudowal	15.43	Sudowal	0
51	Una	Bedhar Upparla	8.33	Bedhar Upparla	0
52	Una	Bhadolin gugwara	18.2	Bhadolin gugwara	139.12
53	Una	Lamleri nichali	39.85	Lamleri nichali	0
54	Una	Samoor Kalan-I	27.58	Samoor Kalan-I	0
55	Una	Samoor Kalan-II	43.7	Samoor Kalan-II	0
56	Una	Madan pur	57.72	Madan pur	2.6
57	Una	Basoli upparli	21.19	Basoli upparli	0
58	Una	Basoli nichli	73	Basoli nichli	0
59	Una	Barnoh	102.62	Barnoh	0
60	Una	Lamleri upparli	125.38	Lamleri upparli	0
61	Una	Nangal khurd	28.71	Nangal khurd	0
62	Una	Nangal Kalan	17.17	Nangal Kalan	0
63	Una	Nangal jatpur	42.52	Nangal jatpur	0
64	Una	Kungrat	39.83	Kungrat	0
65	Una	Hiran	70.31	Hiran	0
66	Una	Tharrha	18.54	Tharrha	0
67	Una	Chittran	67	Chittran	0
68	Una	Chand pur	44.79	Chand pur	0
69	Una	Manu wal	36.76	Manu wal	0
70	Una	Dulehar	26.22	Dulehar	0
71	Una	Dulehar upparla	83.93	Dulehar upparla	0
72	Una	Bhadayal	109.19	Bhadayal	0
73	Una	Heeran	81.5	Heeran	0
74	Una	Gondpur Bullan upper	58.6	Gondpur Bullan upper	0
75	Una	Godpur jaichand	55	Godpur jaichand	0
76	Una	Janani	340.2	Janani	0
77	Una	Polian Beet	24.87	Polian Beet	0
78	Una	Kuthar Beet	18.93	Kuthar Beet	0
79	Una	Jorian	61.35	Jorian	0
80	Una	Maluwal	147.78	Maluwal	0
81	Una	Palkwah khas	117.91	Palkwah khas	0
82	Una	Palkwah lower	130.72	Palkwah lower	0
83	Una	Thakaran	141.61	Thakaran	0
84	Una	Karmpura	53.56	Karmpura	0
85	Una	Pubowal	11.73	Pubowal	0

S.N.	RANGE	NAME OF SHAMLAT	AREA IN (Ha.)	NAME OF LAND CEILING	AREA IN (Ha.)
86	Una	Ojley	73.89	Ojley	0
87	Una	Dgughy	255.16	Dgughy	0
88	Una	Singhan suharia	23.84	Singhan suharia	0
89	Una	Bat kalan	18.96	Bat kalan	0
90	Una	Bat khurd	32.3	Bat khurd	0
91	Una	Bathu	121.29	Bathu	0
92	Una	Beetan	179.89	Beetan	0
93	Una	Bathari	14.26	Bathari	0
94	Una	Ispur upper	41.81	Ispur upper	4.36
95	Una	Ispur tanda	39.32	Ispur tanda	293.63
96	Una	Pandoga lower	26.35	Pandoga lower	0
97	Una	Pandoga upper	50.72	Pandoga upper	0
98	Una	Bhadsali jangal	319.21	Bhadsali jangal	106.14
99	Una	Saloh upper	14.9	Saloh upper	244.31
100	Una	Bhoolgarh	18.55	Bhoolgarh	0
101	Una	Ghaluwal	13.08	Ghaluwal	0
102	Una	Saloh lower	33.94	Saloh lower	0
103	Una	Saloh jangal	607.49	Saloh jangal	0
104	Una	Upmahal tholian	31.68	Upmahal tholian	0
105	Una	Badhera	111.13	Badhera	0
106	Una	Kangar	29.62	Kangar	107.35
107	Una	Dharmpur	108.79	Dharmpur	0
108	Una	Haroli -I	146.46	Haroli -I	0
109	Una	Haroli -II	59.02	Haroli -II	0
110	Una	Sansowal	16.85	Sansowal	0
111	Una	Rorabaliwal	209.78	Rorabaliwal	0
112	Una	Haroli Khas	441.92	Haroli Khas	0
113	Una	Panjawar jangal	14.35	Panjawar jangal	25.56
114	Una	Khad	32.99	Jangal Khad	59.48
115	Una	Panjawar lower	22.31	Panjawar lower	0
116	Una	Panjawar Khas	21.74	Panjawar Khas	0
Total			**7508**		**1489.89**
G.Total			**16487.9**		**2807.04**

APPENDIX – VII

RANGES BLOCKS AND BEATS THEIR HEAD QUARTER AND AREA

RANGE		Block		Beat		Area in Ha.
Name of Range	Head Quarter	Name of Block	Head quarter	Name of Beat	Head quarter	
Amb	Amb	Amb	Amb	Amb	Amb	4888.87.00
				Bhera	Bhera	4391.67.76
				Thathal	Thathal	2654.17.93
			Total			**11934.72.69**
		Jowar	Jowar	Jowar	Jowar	1622.69.35
				Lamba Sail	Lamba Sail	1191.72.78
				Nehri	Nehri	1281.98.82
			Total			**4096.40.95**
		Kotla	Kotla	Kotla	Kotla	1001.09.01
				Rapoh	Rapoh	1266.66.84
				Dhar Gujjaran	Dhar Gujjaran	963.10.70
				Suri	Suri	1548.17.69
			Total			**4779.04.24**
		Gagret	Gagret	Gagret	Gagret	3168.41.83
				Badoh	Badoh	1972.32.78
				Mawa Sindhian	Tatehra	2950.11.17
				Jadla	Jadla	3694.86.33
			Total			**11785.72.11**
	G.Total Amb Range					**32595.89.99**
Bharwain	Bharwain	Bharwain	Bharwain	Bharwain	Bharwain	1200.27.35
				Guret	Guret	1042.61.96
				Kinnu	kinnu	2039.92.97
				Badhmana	Badhmana	3030.64.18
			Total			**7313.46.46**
		Lohara	Sidh Chaler	Sidh Chaler	Sidh Chaler	1145.59.86
				Chowar	Saloi	3991.74.66
				Rampur Kuthera	Nakroh	1786.34.05
			Total			**6923.68.57**
		Daulatpur	Daulatpur	Daulatpur	Daulatpur	3228.00.63
				Nangal Jariala	Nangal Jariala	1917.62.44
				Saghnai	Saghnai	2377.21.75
			Total			**7522.84.82**
		Panjal	JOh	Pirthipur	Pirthipur	1632.21.44
				Joh	Joh	811.62.30
				Bhadarkali	Bhadarkali	1738.24.20
				Saoh Beri	Saloh Beri	2168.49.96
			Total			**6350.57.90**
	G.Total Bharwain Range					**28110.57.75**
Una	Una	Una	Una	Una	Una	5171.41.98

RANGE		Block		Beat		Area in Ha.
				Takka	Takka	2467.44.97
				Basal	Basal	3832.60.40
			Total			**11471.47.35**
		Santoshgarh	FRH At Nangal	Bangarh	Bangarh	4903.70.76
				Behdala	Behdala	3812.87.53
				Lamlehri	Lamlehri	2908.65.45
			Total			**11625.24.74**
		Pandoga	Saloh	Panjawar	Panjawar	3060.86.47
				Pandoga	Pandoga	3100.21.30
				Saloh	Saloh	3208.84.61
				Badhera	Badhera	3118.36.87
				Haroli	Haroli	2674.21.17
			Total			**15162.50.42**
		Kungrath	Kungrath	Kungrath	Kungrath	3613.00.99
				Dulehar	Dulehar	2274.75.63
				Polian	Polian	2982.14.91
				Pankwah	Palkwah	2296.13.23
				Singhan	Singhan	3015.39.67
			Total			**14181.44.43**
	G.Total Una Range					**52440.66.94**
Ramgarh	**Khurwai n**	Thanakalan	Thanakal an	Kariara	Kariara	2946.53.93
				Mandli	Mandli	2372.17.06
				Makrer	Makrer	1480.93.67
				Mo Maniar	Khurwain	2820.86.98
			Total			**9620.51.64**
		Talmehra	Talmehra	Dhinsar	Talmehra	1230.86.31
				Chowki	Chowki	2540.73.47
				Amroh	Amroh	2664.14.69
				Ban Dhanet	Dhanet	868.26.91
			Total			**7304.01.38**
		Raipur	Raipur	Raipur	Raipur	744.02.22
				Saili	Saili	1562.49.31
				Paroian	Paroian	1170.53.50
				Bohru	Handola	1584.40.44
			Total			**5061.45.47**
	G.Total Ramgarh Range					**21985.98.49**
Bangana	**Bangana**	**Bangana**	**Bangana**	**Bangana**	**Bangana**	1909.64.61
				Kanura	Kanura	7357.60.13
				Paniala	Lathiani	1432.60.75
				Solasinghi	Solasinghi	1174.43.64
			Total			**11874.29.13**
		Arloo	Arloo	Arloo	Arloo	952.43.86
				Bharmout	Bharmout	501.67.16
				Piploo	Piploo	1764.08.78
			Total			**3218.19.80**
		Sohari Takoli	Sohari	Chauli	Sohari	2395.41.89
				Sarkaru	Talmehra	971.15.09

RANGE	Block		Beat		Area in Ha.
			Akoi Di Dhar	Akoi Di Dhar	1300.96.88
		Total			4667.53.86
	Total Bangana Range				19760.02.79
G.Total Una Forest Division					154893.16.41

APPENDIX - VIII

REST HOUSES AND INSPECTION HUTS

Name of Range	Name of Rest House	No. of Suits	Distance from Road	Elevation in (m)
Una	Rampur	3	50 m (from Una - Santoshgarh Road) near Rampur Bridge	350
Una	Nangal (Punjab)	3	1 km from Railway crossing at Nangal	325
Una	Panjawar (Under Construction)	3	2 kms from village Panjawer	370
Bharwain	Badherkali	2	100 m from village Badherkali	400

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APPENDIX – IX

LIST OF FOREST OFFICERS WHO HOLD THE CHARGE OF UNA FOREST DIVISION SINCE 1-11-1966

S.N	Name of Officer	Period	
		From	To
1	Shri P.S.Chandel	01-11-1966	18-04-1968
2	Shri D.D.Shagoter, IFS	18-04-1968	02-09-1969
3	Sh P.C.Sharma, IFS	02-09-1969	14-09-2011
4	Sh S.L.Sharma	14-09-1969	24-09-1970
5	Shri Bhim Singh	24-09-1970	23-09-1971
6	Shri T.S. Patial, IFS	23-09-2971	31-12-1971
7	Shri Bhim Singh	31-12-1971	12-03-1974
8	Shri Sarvans Singh, IFS	12-03-1974	19-06-1978
9	Shri G.C.Chowdhry, IFS	19-06-1978	27-04-1981
10	Shri Balbir Singh	27-04-1981	20-08-1981
11	Shri P.S.Chandel	20-08-1981	03-11-1983
12	Shri A.C.Karwasra, IFS	03-11-1983	26-02-1984
13	Shri P.S. Chandel	26-02-1984	06-09-1984
14	Shri R.P.Bhardwaj	06-09-1984	25-09-1984
15	Shri P.S.Chandel	25-09-1984	31-08-1984
16	Shri R.S.Rana	01-09-1986	29-09-1986
17	Shr K. Dass, IFS	29-09-1986	21-10-1991
18	Shri H.S.Kanwar, IFS	21-10-1991	15-10-1995
19	Shri Rajeev Kumar, IFS	16-07-1995	03-05-1999
20	Shri H.S.Dogra, IFS	03-05-1999	17-11-2003
21	Shri A.K. Somal, IFS	17-11-2003	20-03-2007
22	Shri Anjani Kumar, HPFS	20-03-2007	09-04-2007
23	Shri Manoj Bhak, IFS	09-04-2007	01-10-2007
24	Shri R.K.Raj, HPFS	01-10-2007	10-06-2010
25	Shri R.S.Patial, IFS	11-06-2010	Till Date

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APPENDIX – X

LIST OF EXISTING BUILDINGS

Range	Particulars of Building	Place	Year of Construction	Expenditure
Una	F.R.H.	Nangal	-	-
	D.F.O. Office	Una	-	-
	D.F.O.Office (upper storey)	Una	1982-83	39250
	D.F.O.Residence	Una	1961-62	10345
	Range Office	Una	1966-67	4000
	Range Office Cum residence(S.F,)	Una	1988-89	175000
	Head clerk quarter	Una	1970-71	7600
	Clerk's quarter Type-II 4 sets	Una	1979-80 81	124498
	Clerk's quarter Type-II 4 sets	Una	1986-87	274000
	Class IV servants qtr.	Una	1962-63	3000
	Forest check post	Pandoga	1967-68	3200
		Mehatpur	1969-70	4958
		Polian	1993-94	167000
	Store Room	Una	1966-67	2000
		Ghandawal	1977-78	8939
	Resin Shed	Una	1966-67	2000
	Mali Hut	Ghandawal	1977-78	8939
	Pump House Building	Ghandawal	1977-78	4101
	B.O.quarter	Una	1991-92	173600
		Kungrath	1991-92	125000
	Fgd. Hut	Una	1991-92	99800
		Polian	1987-88	85000
	Inspection Hut	Polian	1986-87	131000
	Additional one room	Ghandawal	1984-85	13150
	Ghandawal Nursery	-	-	-
Amb	Inspection Hut(transferred from civil department)	Jowar	-	-
	Kotla	1943-44	1000	
Inspection Hut Prohitan	Polian	1985-86	108000	
Range Office Cum residence	Amb	1968-69	20562	

Range quarter	Jowar	-	-	
Forester quarter	Nehri	1945-46	4000	
Forest Guard Hut	Jowar	-	-	
	Jowar	1961-62	3500	
	Mairi	1961-62	450	
	Kotla	1969-70	4358	
	Rapoh	1988-89	80000	
	Amb	1991-92	100100	
	Tetehara	1988-89	80000	
Resin Shed	Nehri	1946-47	1000	
	Rapoh	1956-57	1000	
	Jowar	1957-58	1000	
	Kotla	1957-58	995	
Forester quarter	Gagret	1959-60	4599	
Forest guard Hut	Gagret	1959-60`	2499	
Mali Hut & seed store	Amb	1983-84	18800	
Bharwain	Inspection Hut	Daulatpur	-	-
		Badhmana	1935-36	200
		Guret	1936-37	200
		Joh	1936-37	200
		Chalehar	1937-38	200
		Joh	-	-
		Guret	1993-94	199000
	Out houses	Badhmana	1938-39	60
	Guret		1942-43	200
		Joh	1943-44	100
	Range office	Bharwain	1928-29	1255
	Range quarter	-do-	1927-28	5870
	Servant's quarter	-do-	1937-38	1013
	Attached to Range quarter	-	-	-
	Forester quarter	Gagret	1959-60	4599
	Pirthipur		1945-47	3000
	Forest Guard Hut	Bag Muhan	-	450
		Guret	-	-
		Chalhar	1938-39	414
		Pirthipur	1945-46	2000
		Kinnu	1959-60	2499
		Rampur	1973-74	-
		Kuthera	-	-

		Sidh Chaler	1993-94	91950
	Resin Shed	Badhmana	1935-36	100
		Chalehar	1946-47	450
	Resin Godown	Chalehar	1942-43	100
	Mali Hut	Khopri	1950-51	233

APPENDIX - XI

EXISTING FIRE LINES

Range	Name of Forest	Particulars of fire line	Approx.Length (Km)
Bharwain	R.I.Panjal	Daulatpur-Bharwain Road Pillars 15 to 78 Pillars 14 Daulatpur-Bharwain Road Pillars 19 to 64 Pillars 24 to 58 Pillars 58 to Khad Pirthipur Pillars 32 to Pillars 33 to Pillar 40.	0.80 2.40 0.80 3.25 2.40 2.40 6.60
	R.II Lohara-A	Pillar 29 to 34 Paramb Saloi Road Pillar 21 to 34 Bhalehar Mather Path Bharwain-Hoshiarpur Main Road Chintpurni-Sunkali Daburi Aubor path	0.80 0.80 3.25 1.60
	R.II Lohara-B	Pillars 4 to 5 Arnwal Path Pillar 9 to 12 Pillar 9 to 17	0.80 1.60 1.60
			Total 29.10
Amb	R.III Dharuhi –A	Jowar – Kaloha Road	1.60
	R.III Dharuhi – B	Pillar 13 to 16 Mairi – Nadaun Path Amb – Nadaun Path Pillar 2. Nehri – Naurauga – Nadaun Path Pillar 5	1.60 0.60 0.80
	R.III.Dharuhi - C	Nehri – Jowar Moterable Road	1.60
	R.III.Dharuhi – D	Pillar 12 to 21 Mairi – Nadaun Path Amb – Nadaun Path Pillar 5	0.80
	R.III.Dharuhi – F	Pillar 14 to 18 Mairi Nadaun Path Pillar	0.80 0.80

Range	Name of Forest	Particulars of fire line	Approx.Length (Km)
		3 to 8	
	R.III.Dharuhi – G	Amb Nadaun Path	2.50
			Total :- 11.10

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APPENDIX –XII

Notification No. 110-F dated 06/03/1879

The Lieutenant Governor is pleased under section 34 of the Indian Forest Act.1878 to declare the under mentioned forests to be Reserved Forests.

District –Hoshiarpur **Pargana-Una**

Name of Forest	BOUNDARIES				Remarks
	NORTH	SOUTH	EAST	WEST	
Panjal	Village Lands of Ghangret and Siba territory.	Village Lands of Badhmana and Kunet Ratian.	Village Lands of Gindpur Malon, Kharoh, Patehr Dharmsala , Badhmana & Bheran.	Village Lands of Fatehpur, Alipur, Dangoh Khurd, Pirthipur, Dangoh Khas and Joh Saloh	The boundaries of all the Govt. reserved forest entered in statement are indicated by pillars placed at mainnagles and the forest reserves are shown in the village maps.
Lohara Block I	Village Lands of Badhiarli, Ghanots & boundary of Kangra District.	Village Lands unreserve d forest of Band bakshi Arrah & Chawar.	Village Lands of Amb Tilla & Bandba kshi.	Village Lands and unreserve d forest of Lohara and Chawar.	The forest blocks of Panjal, Lohara & Dharuhi are the sole property of Govt.& are free of all rights of others except a few rights of way and there are also certain grazing rights which are specified in the report of the settlement office Hoshiarpur No 217 dated 13th November 1872 publi ahed in the supplement to the Punjab Gazette of June 19th,1873.
Lohara Block II	Unreserve d forest & village lands of Saloi, Mather, Sahon,	Unreserve d forest & village lands of Saloi,Polia n,Alehr,Pa ramb,Bhal	Unreserve d forest & Village lands Dhul Lohara Sohan Mather &	Unreserve d forest and village lands of Dhul Kunet Ratian,Ali	The arrangement whereby the forest blocks of Panjal Lohara & Dharuhi became the property of Govt. Are described in the settlement officer's report above quoted, and were approved

Name of Forest	BOUNDARIES				Remarks
	NORTH	SOUTH	EAST	WEST	
	Lohara, Dhul, Kunet, Ratian, Fatehpur & part of Panjal reserved forests.	ehr,Lohara,Handoli, Kewather, Chalher Amlher,Kutera,Rampur,Marialan,Kutera Tubndkhari & Fatehpur.	Saloi	pur,Baroh & Part of Panjal reserved forest.	& sectioned by the Govt in their No. 240 F dated 12th June 1873.
Dharuhi Block	Unreserved forests & village lands of Karp,Kudet & Sundhari	Unreserved forests & village lands of Kudet & Goindpur	Unreserved forests & village lands of Kudet & Jabber	Unreserved forests & village lands of Sundhari karp & Goindpur	
Dharuhi Block II	Unreserved forests & village lands of Badoh & Dhar Gujaran	Boundary of Kangra District & village lands of Takarla	Boundary of Kangra District Unreserved forests & village lands of Badoh	Unreserved forests & village lands of Dhar Gujran & Basuni	
Dharuhi Block III	Boundary of Kangra District	Unreserved forests & village lands of Mairi & Jowar	Unreserved forests & village lands of Jowar	Unreserved forests & village lands of Mairi & Jowar	
Dharuhi Block IV	Unreserved forests & village lands of Mairi Nehari Moranga	Unreserved forests & village lands of Khalsa Kotla Nhari	Unreserved forests & village lands of Rapoh & Misran,Karp,la &	Unreserved forests & village lands of Nhari Noranga and Nhari	

Name of Forest	BOUNDARIES				Remarks
	NORTH	SOUTH	EAST	WEST	
	& Rapoh Misran	Noranga	chaksarai	Kot-Khalsa	
Dharuhi Block V	Unreserved forests & village lands of Mairi	Unreserved forests & village lands of Lama Sail Jawar	Unreserved forests & village lands of Lama Sail &	Village lands of Kangoti.	
Dharuhi Block VI	Unreserved forests & village lands of Lama Sail & Jawar	Unreserved forests & village lands of Pather Pather.	Unreserved forests & village lands of Jowar &	Village lands of Mairi & Kangot.	
Dharuhi Block VII	Unreserved forests & village lands of Paloh,Suri ,Rapoh Muchlian	Unreserved forests & village lands of Suri	Boundary of Kangra District	Unreserved forests & village lands of Rapoh.	

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APPENDIX – XIII

Compensation rates in respect of damage caused by wild life

Notification No.Fts. (F) 6-7/82 loose dated 09/04/1996

In supersession of all previous Notifications regarding compensation for the losses being done to animals and human beings by wild Animals, the Governor Himachal Pradesh is pleased to declare the categories of losses being done by wild animals (as defined in wild life protection, Act 1972) and the amount of compensation to a person who on application claims relief for himself or the members of this family or dependents of his own cattle as under:-

In case of death of human beings	Rs. 1,00,000/-
In case of killing of horse/mules (all breeds)by snow leopard in shed	Rs. 4,000/-
In case of killing of horse/mules (all breeds)by now leopard in jungle	Rs. 2,500/-
In case of injury to human beings	1,875/-
In case of permanent Disability to human beings	6,250/-
Loss of buffable,cow jersy cross ox and mule (adults) (special breed) in cowshed	2,500/-
Loss of cow,buffaloe,ox and mule (adults)(special breed) in jungle	1,500/-
Loss of cow (local breed) in cow shed	625/-
Loss of cow (local breed) in jungle	375/-
Loss of ox local breed) in shed	1/250/-
Loss of ox local breed) in jungle	625/-
Loss of young one of buffaloe,cow(jersey) ox and mule (Special breed) in shed	250
Loss of young one of buffaloe,cow(jersey) ox and mule (Special breed) in jungle	188/-
Loss of young one of buffaloe, cow(jersey) ox and mule (local breed) in shed as well as in jungle	125/-
Loss of sheep and goat in shed	375/-
Loss of young ones of sheep and goat in shed	312.50
Loss of sheep and goat in jungle	188/-
Loss of young ones of sheep and goat in jungle	188/-
Loss of yak, horse/mule camel in shed	2,500/-

Loss of yak, horse/mule camel in jungle	1,500/-
Loss of churu/churi in shed	1,250/-
Loss of churu/churi in jungle	625/-
Loss of donkey in shed	675/-
Loss of donkey in jungle	500/-
Loss of pashmina goat in shed	625/-
Loss of pashmina goat in jungle	375/-
Loss of young ones of yak horse camel churu/churi, donkey, pashmina goat in shed	250/-
Loss of young ones of yak horse camel churu/churi, donkey, pashmina goat in jungle	125/-
Pigs in shed	312.50
Pigs in jungle	188/-

The grant of relief as referred to above will be subject to the following conditions:-

1) Production of postmortem report in case of loss of human life or injury/disability certificate from the medical office of a Govt. Institution as the case may be.
2) The verification of loss that the same was actually caused by wild animals will be done by the Pradhan/Up Pradhan of Panchyat/Revenue Lamberdar/President notified area committee/Chairman Municipal Committee Commissioner, Municipal Corporation of the area/elected member of the Cantonment Broad area, and the Range Officer Deputy Range Officer or any other forest officer higher in rank than a Range officer in the Tribal areas and backward areas where the office of Range Officer/Deputy Range Officer/higher in the rank than Range Officer is more than 15 Km.away from the residence of the applicant, in the case by the Forest Guard of the area.
3) All Divisional Forest Officer in H.P. shall be the final authority to sanction cases of claim on account of losses done by the wild Animals up to Rs. 2,000/- in each case and all Conservator of Forest in H.P./Chief Wild Life Warden shall be the final authority to sanction such cases of relief beyond Rs.2000/- in each case.
4) All case of damage done by the Wild Animals should be reported by the applicant to the nearest Range Officer or any officer above of the Forest Department within five days of the event and claims for relief is filed within a month with Dy.Conservator of Forest/Divisional Forest Officer or any other higher officer of the Forest Department both territorial and wildlife.
5) The relief shall be granted in case of loss of cattle to the owner of the cattle.
6) The relief in case of loss of the human being shall be granted in the order of preference given below:-
   a) Wife or Husband, as the case may be.

b) Sons and unmarried or unmarried daughter and children of predeceased sons (equal share).
c) Daughter (equal share).
d) Grand children being children of the sons or daughter who died before him (equal share).
e) Father and Mother.
f) Failing all above any other next of kin entitled to a share in the estate.
g) Brothers or sisters or children of the deceased brothers (equal share).

By order
O.P.Yadav
Commissioner cum Secretary (Forests) to the
Govt. Of Himachal Pradesh.

No.Fts. (F) 6-7/82-Loose Dated Shimla -2 the copy forwarded to:-

1) The Deputy Controller, H.P., printing press Shimla-3 for Publication in Rajpura.
2) All secry. /Joint Secy. /Deputy Secy. /under Secy.to the Govt. Of H.P.
3) All heads of the departments in H.P.
4) All Deputy Commissioner in H.P.
5) The CCF.HP.
6) The CCF. (P& D).Shimla H.P.
7) The Chief Wildlife Warden, H.P. with 60 spare coppices.
8) Guard File 50 Copies.
9) All D.F.Os.in H.P.

Sd/-
Under Secretary (Forests)
to the Govt. Of H.P.

Government of Himachal Pradesh,
Department of Forests,

No.FFE-B-A (10)-1/2005. Dated 15th Dec.2011

Notification:

In partial modification to the department Notification No. Fts (F) 6-7/82-Loose, Dated 9.4.1996 the Governor of Himachal Pradesh is pleased to order that the condition at Sr.No. III in the said Notification shall be read as "**all DFOs in HP shall be the final authority to sanction all cases or claims on account of losses done by the wild animals to domestic/pet animals and human beings is each case"**

Other terms and conditions will remain the same.

By Order

Sudripta Roy
Addl.Chief Secretary (Forests) to the
Govt. Of Himachal Pradesh.

Endst No. As above Dated, Shimla-2, the 15th Dec.2011.

Copy forwarded for information and necessary action to:

1) The Pr.Chief Conservator of Forests, Hp Shimla-1.
2) The pr. Chief Conservator of Forests, (Wildlife) HP Shimla-1, w.r.t. his letter No. WL/Comp./4179,Dated 4-11-2011.
3) All the CCF/CFs in HP.
4) All the D.F.O. in HP.
5) Guard File.

Under Secretary (Forests) to the
Govt. Of Himachal Pradesh.

From

Principal Secretary (Forests) to the
Government of Himachal Pradesh.

To

The Pr. Chief Conservator of Forests (WL)
-CUM-CWLW, Himachal Pradesh, Shimla-1.

Dated: Shimla-2, the 04-01-2011.

Subject: - **Excluding the Black Bear from crops damaging animals.**

Sir,

I am directed to refer to your office UO No.WL/crops Damage, Dated 14.12.2010 on the subject clted above and to convey the approval of the Govt. To exclude the Black Bear from crops damaging animals.

You are therefore, requested to take further necessary action in the matter accordingly.

Yours faithfully,

Deputy Secretary (Forests) to the
Government of Himachal Pradesh.

APPENDICES - XIV

(Authoritative English text of this Department Notification No.FFE-B-F (1)1/2010-II dated 8.2.11 under clause (3) of article 348 of the Constitution of India).

GOVERNMENT OF HIMACHAL PRADESH

DEPARTMENT OF FORESTS

NO.FFE-B-F (I)1/2010-II

Dated Shimla-2, the 3.2.2011

In exercise of the powers conferred by section 41 and 42 of India Forest Act, 1927 (16 of 1927) the Governor, Himachal Pradesh is pleased to make the following rules further to amend the Himachal Pradesh Forest Produce Transit (Land Routes) Rules, 1978 notified vide this department notification No. Fts. (A) 3-1/77 dated 20.11.1978 and published in Rajpatra Himachal Pradesh (Extra ordinary) dated 5-3-1979, namely:-

Short title

1. These rules may be called the Himachal Pradesh Forest Produce Transit (Land Routes) Amendment Rules, 2011.

2. Amendment

2. In rule (1) of rule 11 of the Himachal Pradesh Forest rule -11, Produce Transit (Land Routes) rules1978 for the word 'and' existing before the word "Mulberry" the sign ", " shall be substituted and after the word 'Mulberry' and before the words 'by land routes" the words "and Bamboos growing on private land" shall be added.

By order,

Sudripto Roy

Principal Secretary (forests)

to the Govt. of Himachal Pradesh

Endst. No. As above dated Shimla-2, the

Copy forwarded to the following for information and necessary action:-

1. The Private Secretary to His Excellency Governor HP Shimla-2
2. The Principal CCF HP, Shimla-2.
3. The Pr.CCF(WL) HP
4. The M.D.HP SDFC Kasumpti Shimla-9.
5. All the CCFs/CFs in HP.
6. All the Deputy Commissioners in HP.
7. All the Divisional Forest Officers in HP.
8. All the Sub Divisional Officers (Civil) in HP.
9. The P.S. to the Hon'ble Chief Minister, HP
10. The Deputy Secretary/Under Secy. (Law) to the Govt. of HP Shimla-2.
11. The Controller, Printing and Stationery Deptt. H.P. Govt. Shimla- 5 for publication in the Rajpatra (Extra-ordinary). He is requested to supply 10 copies of the same to this Department.
12. The Director, Information and Public Relations, HP Shimla-2.
13. The Section Officer (Fts-A) HP Sectt. Shimla- 2.
14. Guard File.

Sd/-

Deputy Secretary (Fts) to the
Govt. of Himachal Pradesh.

APPENDICES - XV

(Authoritative English Text of this Department notification No.FFE-B-F (1)1/2010-II dated 8.2.2011 under clause (3) of Article 348 of the Constitution of India.)

GOVERNMENT OF HIMACHAL PRADESH

DEPARTMENT OF FORESTS

NO.FFE-B-F (I) 1/2010-II Dated Shimla-2, the 3.2.2011

In exercise of the powers conferred by section 21 read with section 4 of Himachal Pradesh Land Preservation Act, 1978 (Act No.28 of 1978), the Governor, Himachal Pradesh is pleased to make the following rules further to amend the Himachal Pradesh Land Preservation Rules, 1983 notified vide this Department notification No. Fts. (A)3-1/81 dated 1st June, 1983 and published in Rajpatra Himachal Pradesh (Extra Ordinary) dated 27.8.1983, namely:-

Short title 1. These rules may be called the Himachal Pradesh Land Preservation (Amendment) Rules, 2011.

2. Amendment Rules, 1983 2. In rule (4) of the Himachal Pradesh Land Preservation of rule -4. in sub-rule (2),

(a) From the proviso below clause (d), the word and sign "Bamboo" appearing after the word "Khair" shall be deleted; and

(b) After the proviso to clause (e), the following second provisio shall be inserted namely:-

"Provided further that the owners shall be free to fell bamboos in accordance with the three years felling program to be notified by the Divisional Forest Officer every year".

By order,
Sudripto Roy
Principal Secretary (forests)
to the Govt. of Himachal Pradesh

Endst. No. As above dated Shimla-2, the
Copy forwarded to the following for information and necessary action:

1. The Private Secretary to His Excellency Governor HP Shimla-2
2. The Principal CCF HP, Shimla2
3. The Pr.CCF(WL) HP
4. The M.D.HP SDFC Kasumpti Shimla-9.
5. All the CCFs/CFs in HP.
6. All the Deputy Commissioners in HP.
7. All the Divisional Forest Officers in HP.
8. All the Sub Divisional Officers (Civil) in HP.
9. The P.S. to the Hon'ble Chief Minister, HP
10. The Deputy Secretary/Under Secy. (Law) to the Govt. of HP Shimla-2.
    a. The Controller, Printing and Stationery Deptt. HP Govt. Shimla-5 for publication in the Raj-patra (Extra-ordinary). He is requested to supply 10 copies of the same to this Department.
11. The Director, Information and Public Relations, HP Shimla-2.
12. The Section Officer (Fts-A) HP Sectt. Shimla-2.
13. Guard File.

Sd/-

Deputy Secretary (Fts) to the
Govt. of Himachal Pradesh.

APPENDICES - XVI

HP Forest (Timber Distribution to Right Holders) Rules, 2010:

1. Introduction:

These rules cover the Timber Distribution (T.D.) Rights for construction and maintenance of residential house, cowshed; that too for bonafide domestic use without affecting the other rights contained in the Forest Settlements in operation. Some doubts and misconceptions are uncalled for and are clarified as under.

- The rules are Forest centered based on the principle that if the forests will remain then only people will be able to exercise rights; e.g. Timber distribution (TD). Further these rights are People centered; more so for the rural poor.
- The rights recorded in Settlements other than Timber distribution (TD) like free grant for last rites of the dead, collection of medicinal herbs, grazing etc. have not been touched upon and would remain to be exercised as they were in the past.
- To have greater transparency involvement of people in Timber Distribution through their Gram Sabha has been ensured.

2. Rationalization Process:

Hon'ble High Court before deliberating and deciding the issue under consideration of PIL with them directed the State Govt. to rationalize the timber distribution process which took into account the following aspects:

- TD rights are linked to Land holding in rural areas, specifically for construction of house/ cowshed for bonafide personal use, TD rights in urban areas has been done away with.
- If a Right Holder has land holding at more than one place then TD will be granted at only one place as chosen by the Right holder.
- TD will only be enjoyed by original Right Holder and not by those who have purchased land after taking permission under Section 118 of the HP Tenancy and Land Reforms Act, 1972 from now onwards.
- The ratio of TD rates of Chil, Deodar and Kail at the time of Forest Settlements (over 100 years ago) when their rates of TD were initially fixed was 1:5 to 1:8. This has now gone to 1:88700 in case of Deodar, 1:30000 in Kail, and 1:15000 in Chil, thus necessitating rationalization.
- The people would be given converted timber near their place of residence at rate of 30% and 10% (for BPL) of average weighted average (commercial) rates at which timber is sold by HP State Forest Development Corporation.

3. Legal position:

The various settlement reports mention that '***if the exercise of rights as admitted in any forest, would endanger the existence of forest, the extent to which the rights will be exercisable can be re-determined and should the exercise of rights become detrimental to the exercise of the forests over which these are exercised, the extent to which the rights will be exercisable can be re-determined***'.

Yet this option has seldom been exercised in the past for conservation of forests. H.P. Forest Settlement Rules, 1965 have been framed under Section 76 of IFA, 1927. The guiding principle laid down for determining the rights and concessions under these rules are as under: "***All these rights and concessions are meant for the satisfaction of personal bonafide requirements and subject to condition that forests are to be maintained in perpetuity. The right of user of easement is always a limited one; it can never extend so as to destroy the servient estate. The right exists so long as the (servient) property is safe or continues to exist, because if the (servient) estate cases to exist, the right ceases with it. So while dealing with the claims, the Forest Settlement Officer should see that the forests are not unduly burdened***".

Keeping in consideration the powers delegated to the state Govt. under Section 32 of IFA, 1927, based on the guiding principles under HP Forest (Settlement) Rules, 1965 and the orders passed by Hon'ble HP High Court the HP Forest (Timber Distribution of Right Holders) 2010 have been formulated and notified.

These rules in brief contain the following:

4. Quantity:

(1) Timber Distribution shall be granted in converted form from the depots to be specified separately as per scale fixed below:

For construction of new house	= 3 cubic meters; and
For maintenance	= 1 cubic meter.

(2) Timber Distribution shall be given from salvage (fallen, dry standing) first and then from silviculturally available green trees in that order of preference.

5. Periodicity: The periodicity for grant of Timber Distribution to the Right Holders will be:

(i) For new construction once in a life time or 30 years whichever is later;

(ii) For additions/alterations – once in 15 years; and

(iii) Sufferers of natural calamities/fire sufferers: as per actual requirement as recommended by the Sub Divisional Officer (Civil) and after personal verification by the ACF/DFO concerned subject to the grant not exceeding the maximum limit prescribed under Rule-4.

6. Rates: The rates to be charged from the different types of Right Holders for grant of Timber Distribution will be as under:

(i) Right Holders above poverty line - 30% of the rates at which timber is sold by the HPSFDC, Ltd. Commercially:

(ii) Right Holders below poverty line - 10% of the rates at which timber is sold by the HPSFDC Ltd. Commercially; and

(iii) Right Holders suffering from natural calamities - Free of cost.

The rates in this respect for various species proposed during 2009-10 will be as under: (IN Rs)

Species	Avg weighted sale (commercial) rates in Rs of HPSFDC Ltd.	Rate per Cums at 30%.	Rate per Cums at 10%.	Estimated cost per standard size sleeper	
				Right holders above PL	Right holders BPL
Deodar	27704	8311.20	2770.40	831.12	277.04
Kail	15898	4769.40	1589.80	476.94	158.98
Fir/ Spruce	7639	2291.70	763.90	229.17	76.39
Chil	5507	1652.10	550.70	165.21	55.27

The approval has not yet been received from the Govt.

7. Priority for grant of Timber Distribution: Priority for grant of Timber Distribution shall be given to the Right Holders belonging to Below Poverty Line and then Right Holders above poverty line shall be granted. Timber Distribution on first come first served basis.

8. Procedure for grant of Timber Distribution:

i) Application for grant of Timber Distribution, on the form appended to these rules as 'Annexure-I' shall be submitted by Right Holder (s) to the Panchayat concerned after getting necessary remarks from the Patwari concerned.

ii) The Panchayat after ascertaining genuineness of the requirement of the Right Holder shall pass resolution in the Gram Sabha of the Panchayat indicating actual quantity of requirement of Timber Distribution of the individual(s) concerned.

iii) After resolution recommending grant of TD is passed by the Gram Sabha of the concerned panchayat, right holder shall submit his TD application to the Forest Guard (FG) of the area.

iv) FG shall enter the same in the register maintained for the purpose and issue receipt of the application to the Right Holder.

v) The FG shall send his recommendations to the Block Officer after ascertaining the genuineness of demand, who in turn shall submit his recommendations to the Range Officer.

vi) After receipt of TD applications from the Range Officer, the DFO shall sanction the application and convey the same to the Right Holder concerned on the proforma appended to these rules as 'Annexure II'.

vii) A Schedule for grant of TD shall be framed and publicized among all panchayats and other functionaries in the Forest Division by the DFO.

9. Time schedule for grant of Timber Distribution:

i) The TD application duly approved by the Panchayat reaches the FG: by 31st March;

ii) The application is processed and approved as under Rule 8 above and TD granted to Right holders between September and 31 December of that year.

10. Depots: The depots from where TD in converted form shall be supplied to the right holders shall be notified by the DFO every year. Any change during the next year in the place of these depots shall also be notified. These notifications shall be widely circulated up to the Panchayat level by the DFO.

Government of Himachal Pradesh

Department of Forests.

No.FFE-B-E (3)-43/2006-Vol-11-Loose Dated: Shimla -2, the 06-01-2012.

Notification

In exercise of the powers vested in her under clause (L) of section 32 of the Indian Forest Act, 1927(16 of 1927), the Governor, Himachal Pradesh is pleased to fix the T.D. rated of different species in respect of eligible rights holders in accordance with the provisions contained in Himachal Pradesh Forests (Timber Distribution to the right holders rules, 2010 notified vide this Department's Notification No. FFE-B-E (3)-43/2006-Vol-1, dated 2nd January, 2010 for the year 2011-2012 in the following manner:-

Sr.No.	Species	Weight average sale rates of converted timber per Cum obtained by the HPSFC in open auction during the year 2010-11	Per Cum rate of TD timber for Apl right holders (i.e.)@30%of weighted average sale rates.	Per Cum rate of TD timber for BPL right holders (i.e.)@10%of weighted average sale rates.	Cost per sleeper standard size for right holders above poverty line	Cost per sleeper standard size for right holders below poverty line
1.	Deodar	23889	7167	2389	717	239
2.	Kail	14951	4485	1495	449	150
3.	Fir	9924	2977	992	298	99
4.	Chil	6674	2002	667	200	67
5.	Sal	9687	2906	969	291	97
6.	Sain	7433	2230	743	223	74
7.	Kokath	3703	1111	370	111	37
8.	Walnut	12870	3861	1287	386	129
9.	Eucalyptus	5670	1701	567	170	57
10.	Shisham	9758	2927	976	293	98
11.	Neem	4806	1442	481	144	48
12.	Mango	4125	1238	413	124	41
13.	Poplar	6746	2024	675	202	67
14.	Siris	4704	1411	470	141	47
15.	Khair	24928	7478	2493	748	249
16.	Tuni	6479	1944	648	194	65
17.	Sagwan	17317	5195	1732	520	173
18.	Ohi	6185	1856	619	186	62

Further the Governor, Himachal Pradesh is also pleased to accord sanction to the following effect:-

1) That for fixing of rates of TD Timber, specie-wise weighted average sale rates of converted timber per cum (average gross auction rates) obtained by the HP.States Forest Development Corporation Ltd.in the open auction during the preceding year will be made the basis for calculating TD rate for a year.
2) In case, weighted average sale rate (s) of any species are not available,TD rate of that species will be calculated by taking into account the TD rate (s) or weighted average sale rate(s) of species which is nearer in utility and quality to that species.

By Order,

Addl.Chief Secretary (Forests) to the
Govt. Of Himachal Pradesh.

Endst No. FFE-B-E (3)-43/2006-Vol-1 Dated: Shimla-2, the 6-1-2012.

Copy forwarded to:-

1) All administrative secretaries to the Government of H.P.
2) The special Secretary (GAD-Cabinet Branch) to the Govt. Of H.P. with reference to item No. 1of Cabinet meeting held on 27.12.2011
3) All Deputy Commissioners in Himachal Pradesh.
4) The Pr. Chief Conservator of Forests (Territorial), H.P.Shimla-1 for immediate necessary action.
5) The managing Director, H.P. State Forest Development Corporation Ltd.SDA Complex, Kasumpti, Shimla – 171009 for necessary action.
6) All Conservator of Forests in Himachal Pradesh for necessary action.
7) All Divisional Forest Officers in Himachal Pradesh for immediate necessary action.
8) The Controller, Printing & Stationary, H.P.Shimla – 4 for publication in the Rajpatra.
9) Guard File.

Under Secretary (Forests) to the
Govt. Of Himachal Pradesh.

Endst No. Ft.29-93/90(Mgt.) Vol.IV Dated Shimla-1 the 18 Jan 2012
Copy is forwarded to all CFs (T & W.L.)In H.P.for information and necessary action.

Principal Chief Conservator of Forests (T).
Himachal Pradesh.

APPENDICES - XVII

Notifications of Khudro Darakhtan Malkiat Sarkar; Compact Wooded Block;

(Authoritative English Text of this Department notification No.Rev.D (D) 12-16/94 dated 11.3.99 as required under clause (3) of Article 348 of the Constitution of India.)

Government of Himachal Pradesh

Revenue Department

No.Rev.D (D) 12-16/94 Dated 11.3.99.

NOTIFICATION

Whereas it appears to the Governor of Himachal Pradesh that existing record-of-rights with respect of Private Lands in the State of Himachal Pradesh requires special revision by deleting the entry "Khudrao Drakhtan Malkiyat Sarkar" appearing in Khanna Kafiat (Remarks Column) of Jamabandi,

Now therefore, in supersession of all previous notifications, if any, issued in this behalf, in exercise of the powers conferred by Sub Section (1) of Section 33 of the Himachal Pradesh Land Revenue Act, 1953 (Act No.6 of 1954), the Governor of Himachal Pradesh is please to direct the special revision of record of rights by deleting the entry "Khudrao Drakhtan Malkiyat Sarkar" appearing in Khanna Kafiat (Remarks Column) of Jamabandies with respect to Private Lands in the State of Himachal Pradesh,

Governor of Himachal Pradesh is further pleased to direct that notwithstanding the deletion of the entry "Khudrao Drakhtan Malkiyat Sarkar" forthwith, the felling of trees shall continue to be regulated under the prevailing Forest Laws.

By Order

Financial Commr.cum- Secretary (Revenue)

To the Government of Himachal Pradesh

No. As above. Dated

Copy forwarded for information and necessary action to:

1. The Commission-cum-Secretary, Forest Deptt. To Govt. of Himachal Pradesh, Shimla-171 002.
2. The Principal Chief Conservator of Forests, Shimla-1.

FinancialCommr.cum- Secretary (Revenue)

To the Government of Himachal Pradesh

APPENDICES - XVIII

Government of Himachal Pradesh

Department of Forests

From

The Commissioner-cum-Secretary (Fts.) to the

Government of Himachal Pradesh.

To

The Principal Chief Conservator of Forests,

Himachal Pradesh, Shimla-171001.

Dated Shimla-2, hthe 16th December, 1999.

Sub: Change of Classification of land recorded as "Khudro-Drakhtan-Malkiyat Sarkar".

Sir,

Jai Hind.

I am to refer to your office letter No.Ft.785-13/63-(M)-Van-Sarkar dated 30th June, 199 and 26th July, 1999 on the above subject and to say that from the Notification No. Rev-D(A)-12-16/94 dated 11.3.1999 by the Revenue Department it is clear that by deletion of entries of "Khudro Drakhtan- Malkiyat Sarkar" from the Khanna Kafiat of the Jamabandis by special revision, the land owners also become the owners of the trees standing thereon for all intents and purposes. In view of this in order to implement the Government decision in letter and spirit the requests of the owners of the trees for extraction of the same may be dealt as under :-

i) The Provision of the Himachal Pradesh Land Preservation Act, 1978 and Rules made thereunder shall apply in cases which are not covered under paras (ii) and (iii) below.

ii) The cases where the classification of the land on which the trees are standing is "DPF" extraction of trees shall not be allowed.

iii) In cases where the classification of land, in the revenue record, on which the trees are standing is "Van" and it is expected that land use shall change after extraction of trees, provisions of section 2 of the Forest (Conservation) Act, 1980 shall apply.

2. Please acknowledge receipt of this communication.

Yours faithfully,
SD/-

Commissioner-cum-Secretary (Fts.) to the
Government of Himachal Pradesh.

Endst. No. As Above Dated Shimla-2, the 16th December, 1999.

Copy forwarded for favour of information and necessary action:-

1. The Conservator of Forests, Dharamshal/Bilaspur Circle, HP.
2. The Officer-on-Special Duty-cum-Private Secretary to the Hon"ble CM, Himachal Pradesh, Shimla-2.
3. The Senior Private Secretary to the Hon'ble Forest Minister, Himachal Pradesh, Shimla-2.
4. Guard File.

Endst. No. Ft.785-13/63(M) Ban Sarkar Dated 23.12.1993

Copy forwarded to:

1. CFs Dharamshal and Bilaspur.
2. DFOs Dharamshala, Palampur, Nurpur, Dehra, Una and Hamirpur
   for information and further necessary action as per the clarification given by the Administrative Department. It should be ensured that the clarification may be clearly understood to all concerned functionaries of the Deptt. down to Forest Guard.

Sd/-

Pr. Chief Conservator of Forests,

Himachal Pradesh.

APPENDIX-XIX
10 YEARS FELLING PROGRAMME

H.P. Forest Department
Una Forest Division, Una

Approved 10 years felling programme for felling of trees except Bamboos for sale from private lands within the jurisdiction of Una Forest Division, Una framed under section 4 of H.P. Land Preservation Act, 1978 for the period 2009-10 to 2018-19 as per approval conveyed by Addl. Chief Secretary (Forests) to the Govt. of H.P. vide letter No. FFE-B-F(13)-8/2009 dated 31.7.2009 copy received through C.F. Dharamshala endst. No. TYFP/Dharamshala/6018-20 dated 20.8.2009

Year	Name of Range	Name of Block	Name of Mauza/Tika/Village.
2009-10	Bharwain	Panjal	**Malon Parla & Malon Awarla** (Sub tikas of Kharoh), Ban Sarkar, Gindpur, Ghangret, Saloh, **Joh & Joh Beh** (Sub tikas of Joh), Sikri, **Pirthipur Nichla and Pirthipur Khas** (Sub tikas of Pirthipur), **Dangoh Khas, Dangoh Uperla & Dangoh Kalan** (Sub tikas of Dangoh), Dangoh Khurd, Bhaderkali , Brahmpur, Abheypur, Fatehpur, **Gondpur Banehra Uperla, Gondpur Banehra Nichla** (Sub tikas of Gondpur Banehra), Maloun
		Bharwain	Jawal, Dalwari, Kunet Rattian, **Dharamshala Mahanta, Dharamshala Mahanta Jhikli, Godri Sidh** (Sub tikas of Dharamshala Mahanta), Baret, **Bhater Khas, Bhater Parli, Bhater Jhikli** (Sub tikas of Bhater), Behran, **Gugbarh, Badhmana** (Sub tikas of Badhmana), Nari, Tundkhari
		Lohara	**Kuneran Uperla , Kuneran Nichla** (Sub tikas of Kuneran), **Nakroh, Kailash Nagar** (Sub tikas of Nakroh), Kuthera Harialan, Kuthera Rampur, Amlehar
	Bangana	Bangana	Chillian, Hatli Patialan, Saloh, Bangana, Bout, Rit Satrukha, Kotla, Kusan Ranautan, Kusan Brahmana, Jamnoti, Behal, Kanura, Amrera, Soharla Uperla, Sarsoli, Solasingi, Sukhnehra, Dhabiani, Jandhol, Budhan Jhikla, Dhebra, Naloot, Kharota
		Arloo	Aisan
2010-11	Amb	Amb	Pramb, Alehar, Pollian Jaswalan, Mansoh, Tikri, Kuthera Kherla, Bhawaran urf Ghangroohi, Athwan, Katohar Khurd, Bedan, **Amb, HIra Nagar, Adarsh Nagar, Partap Nagar** (Sub tikas of Amb) **Andora, Upper Andora, Lower Andora** (Sub tikas of Andora), Tibbi, Kadh, Karluhi, **Mubarkpur, Rampur, Shivpur** (Sub tikas of Mubzarkpur), **Ram Nagar, Maira Nagar, Gokal**

Year	Name of Range	Name of Block	Name of Mauza/Tika/Village.
			Nagar, Shanker Nagar, Shiv Nagar, Bhanjal (Sub tikas **of** Bhanjal), Behar Bittal, Behar Jaswan, Behar Kanshi, Talwal, Panjoa Kalan, Panjoa Khurd, Ladoli, Chak, Thathal, Kuthiari, Bijapur, Nandpur, Akrot, **Takarla, Dhandri** (Sub tikas of Takarla) Haler, Kataur Kalan,
	Bangana	Bangana	Jatehri, Pandtehri, Kanehra, Jarola, Sihana, Khairi, Nanawin, Kangru, Bag, Tamlet,
		Sohari Takoli	Rounkhar, Deehar, Bahi, Rajpura
2010-11 contd	Ramgarh	Talmehra	Pallian, Panjora, Umri-di-Behar, Bhaloun, Bahi Lalshah, Balkhun, Sarnoti, Kharrian, Chamboa, Thathun, Nalwari.
		Raipur	Androli, Handola, Jagatkhana, Khaned, Manjiari, Kosar, Chadiar,
		Thana Kalan	**Tanda, Tanda Uperla, DPF Tanda** (Sub tikas of Tanda) **Boul Uperli, Boul** (Sub tikas of Boul), **Ludher, Moukhas** (Sub tikas of Moukhas), Samoor
2011-12	Una	Kungrat	Palkawah, Pubowal
		Pandoga	Pandoga, Ispur, Bhadsali, Saloh, Badhera, Kanger, Dharampur, Sainsowal, Rora Baliwal, Samnal, Haroli, Bhadauri
	Amb	Gagret	**Gagret, Krishna Nagar, Dev Nagar, Ram Nagar** (Sub tikas of Gagret), **Kaloh, Inder Nagar, Shashtri Nagar, Bumbloo Nagar (Sub tikas of Kaloh),** Pambra, Badoh Bhatian Wala, **Thaplan, Oel** (Sub tikas of Oel), Tatehra, Mawa Sindia, Kuthera Jaswalan, Kouri, **Jadla Pratham, Jadla Second** (Sub tikas of Jadla) **Upper Loharli, Lower Loharli, Loharli** (Sub tikas of Loharli), Guglehar, **Nagnoli , Nagnoli Har** (Sub tikas of Nagnoli), Badhera, , Ambota
	Bangana	Bangana	Tarkal, Rajli Banialan, Rajli Jattan, Aliana, Rajli Uperli, Baliara, Chehroo, Marhot Rajputan, Marhot Brahmana, Gharoh, Tahi, Mehar
		Piploo	Aura, Dhagrun, Bhabha, Sar Purohitan, Chaplah Kutlehrian
		Sohari Takoli	**Sohari, Baderah, Nandgran** (Sub tikas of Sohari)
	Ramgarh	Talmehra	Baduhi, Jol, Mayor, Palata,
			Harsa Jandoura,
		Raipur	Badour, Changarpattian (Kamoon), Ubhar
		Thana Kalan	Makrer, Kathoh, Koharu,
		Pandoga	Panjawar, Daulatpur, Khad
2012-13	Una	Kungrat	Polian, Kuthar, Lamlehri, Nangal Khurd, Nangal Kalan, Tahliwala, Kungrat, Bat Kalan, Bat Khurd, Bathu, Bathri, Beetan, Singa, Dulehar, Gondpur Bullan, Gondpur Jai Chand.
		Santosh-garh	Fatehwal, Bangarh, Jakhera, Mehatpur, Basdehra, Raipur, Bhatoli, Chattara, Tabba, Bedehar alias Dehlan, Behdala,

Year	Name of Range	Name of Block	Name of Mauza/Tika/Village.
			Barsara, Bharolian Kalan, Lamlehri, Barnoh, Madanpur, Basoli
		Una	Dangoli, Ajnoli
	Bangana	Arloo	Rirkoo, Chokoni, Hatli Kesru, Danoh, Rewar, Arloo Kundu, Arloo Gurmukh, Baggi, Paproli, Balh, , Heru Khas
		Bangana	Nayli Uperli, Nayli Jhikli, Muchhali Khas, Jandoor, Lathiani, Kehalwin, Tureta, Kattal, Sihana, Matoh
	Ramgarh	Talmehra	Baslehar, chhatehar, Kaint
		Thana Kalan	Maidan, Doh, Gulehar, Har, Dal, Doli, Behar, Dharoon
2013-14	Bangana	Arloo	Karor Rajputan, Karor Brahmana, Dhagroon, Sari, Talpi
		Bangana	Dhatol, Amjar, Jakhula , Gugal, Pansai, Budhan Uperla, Dharet, Kainday, Mangal Jattan, Mangal Mian, Berri Mian, Jawal, Kharrian.
2013-14 contd.	Amb	Jowar	Patehar, Baga Barota, Ado, Santo Tilla, Jhot, Nehri Khalsa, Duki, Dharu, Noun, Gangoti, **Januhi, Gujrehra, Nehri Noranga** (Sub tikas of Nehri), **Mairi, Rajpur Jaswan, Gawalsar, Billa-da-Thapal, Sanoh, Salana, Dulain** (Sub tikas of Mairi), **Jowar, Parah, Pangloo** (Sub tikas of Jowar), Maslana,, Mukho, Karour Behar, Nari
		Kotla	Kotla, Manjher, Kudet, Jhager, Nunyai, Chak Sarai, Gondpur, Paplehar, Larruta, Muchlehar, Repoh Misran, Repoh Muchlian, Repoh Man Manyari, Dangoohi, Gathroon, **Polahar,Repoh Upper, Repoh Lower, Repoh Kuchha** (Sub tikas of Repoh), Polian Purohitan, Naloh, **Suri, Saroi, Jabehar, Probar** (Sub tikas of Suri), **Chatehar Behar, Dhar Gujjran** (Sub tikas of Dhar Gujjran), Tiai, Ghungrala, Girgir, Badoh Sant Barma, Ladial Chook, Basuni, Paloh, Lander Tikri, Lander Santoo, Jandoh, Rakkar, Lander Ladian, Karap, Mughal, Sundhari.
	Ramgarh	Talmehra	Atia, Bhagnal
		Raipur	Kusiala, Matehati
		Thana Kalan	**Tihra khas & DPF Tihra** (Sub tikas of Tihra), Kattal, Bihru Kalan, Bihru Khurd, Kedbar, Tikkar, Chouli, Chuhni, Kiarian, Ghaneti
2014-15	Una	Una	Ghandawal, Bhalola, Batuhi, Teuri, Panoh, Badoli, Basal, Badsala, Dathwara, Barana, Satleta, Dhamandhri, Jhamber, Surjehra, Kuriala, Dadial, Sanjhot, Salangri, Nangal, Nari, Takka, Chalola, Lam, Lal Singi, Kotla Khurd, Kotla Kalan, Arniala, Dangehra, Rainsary, Jhalera, Una, Malahat, Bharolian Khurd, Rampur, Kuthar Khurd, Sunehra, Kuthar Kalan, Abada Barana, Jankaur, Samoor Kalan, Bhaloh
	Bangana	Bangana	Awhar, Nargaru, Bhaleth, Tamlet, Marhoon, Jandana, Daroh, Soharli, Tiasar, Badehar Uperla, Badehar Jhikla, Soharla Jhikla.
		Arloo	Sukrial, Bhiambhi

Year	Name of Range	Name of Block	Name of Mauza/Tika/Village.
	Amb	Amb	Bhaira, Churaru, Dilwan, Baheri, Satothar, Hamboli, Saloori, Diara, Sehri, Dhusara I & II,
	Ramgarh	Talmehra	Dumkhar, Matiana, Buhana
		Thana Kalan	Changrehri, Dulehri Brahmana, Dulehri Rajputan, Dain, Baral, Budhwar, Aghlour, Nargota, Paned, Gehra , Kawari, Chakroa, Khurwain, Tiar, Tanda Khurd,
		Raipur	Raipur, Jawalapur, Kakroti, Dobar.
2015-16	Bharwain	Lohara	Suhin, Ghewat Behar, **Sidh chaler, Kharyali** (Sub tikas of Sidh Chaler), Band Bakhshi , Takoli , Muhali
		Bharwain	Kotli, KInoo, Aloh, Bagmuhan, Guret, Sarara, Mawa, Thanikpura, Bhatolan Patehar, Jhollan, Lohara, Behar Bangwalan, Lamba Panga (Sub tikas of Lohara), Kotli Dharu, Chhaproh, Haripur, Ram Nagar, MIrgu, Rahi (Sub tikas of Chhaproh), Amokala Sadhu, Ban Bansera, Duhal Bangwalan & Paplehra (Sub tikas of Duhal Bangwalan). Amokala Pritam, Amb Tilla, Dalwari Dehalwan & Chalol Behar (Sub tikas of Duhal Bhatwalan)
2015-16 contd.		Daulatpur	**Saghnai, Dhanowal, Kala Panga, Matialka, Jeetpur Behri** (Sub tikas of Saghnai),**Deoli, Deoli MInhasa** (Sub tikas of Deoli), **Ghanari Brahmana Chang, Ghanari Dadwalan** (Sub tikas of Ghanari), **Harwal, Nangal Jarialan, Moh Dharie, Khan Tilla, Chowki** (Sub tikas of Nangal Jarialan), **Mawa Kohlan Uperla, Mawa Kohlan Nichla, Tarali, Laloti** (Sub tikas of Mawa Kohlan), **Amboa, Lambi** (Sub tikas of Amboa), **Chalet Uperla, Chalet Nichla** (Sub tikas of chalet), Daulatpur, **Bari, Kuha Devi** (Sub tikas of Babehar), Marwari, Raipur, Ganu, Mandwara, Babehar
	Bangana	Arloo	Thana Uperla, Hatwana, Alsan, Chhatehar, Jasana, Hathloun, Hatli Sultanu, Samlara, Arloo Khas,
		Bangana	Jalgran, Bhalwani, Sohari, Bajwar Kundu, Bajwar Jattan, Neri, Alsoha, Chaman, Seri Manhasan, Sangholi, Dathoon, **Karsai, Dadiar** (Sub tikas of Karsai)
		Sohari Takoli	Bharmar, **Barrian, Krishna Nagar, DPF Barrian** (Sub tikas of Barrian), **Chouli, Bhindla** (Sub tikas of Chouli), **Takoli, Behlan, DPF Behlan, DPF Dhiunsar-I & Dagrah** (Sub tikas of Takoli)
	Amb	Jowar	Lamba Sail, Sapouri, Dharooin
	Ramgarh	Talmehra	Kukhera Jattan, Kukhera Rajputan, Ambehra Ram Krishna, Ambehra Dhiraj, Amroh, Harsan Lathan, Bhur
		Chowki	Harsa Jandoor,
		Thana Kalan	Ghugan Kakrana, **Thana Kalan, Hari Nagar, Thana Khas, Jharkhar, Manjher, Rachhol** (Sub tikas of Thana Kalan), Garloon, Chhaproh Khurd, Sakon, Kothi, Chhaproh Kalan, Busal, **Balh, Balh Rehre, Balh Kholi** (Sub tikas of Balh), Dohak, **Talehra Sunhal, Malonia**

Year	Name of Range	Name of Block	Name of Mauza/Tika/Village.
			Sunhal, parnolian Sunhal, Karwalian Sunhal (Sub tikas of Talehra Sunhal), Ambe-de-Behar,
		Raipur	Gharwasra, Lidkot, Dhiungli, Baircha, Samuthal, Saniohrian,
2016-17	Bangana	Sohari Takoli	**Baduha, Ram Nagar** (Sub tikas of Baduha), Tokerian, Chaplah, Garlan,
		Arloo	Karmali, Kharol, Behrar, Galoon, Samma, Charara, Mangiani , Sai
		Bangana	Saroh, Kot, Basatar, Chamiari, Dolu, , Kharuhi, Malanger Mian, Padiola, Dehan, Sepra, Kohdra, Khadwin Kheran, Khadwin Sasan, Rachho, Khadwin Diotan, Pathliar
	Ramgarh	Talmehra	Talmehra, Baroa, Charoli, Kokra, Harot, Chowki,
		Raipur	Bohru, Chulari, Maidan, Kandi, Chokath
		Thana Kalan	Kud, Nurgari, Sherpur, Tanda Bagwan, Badoh Brahmana, Badoh Purohitan,
	Una	Santosh-garh	Sasan, Nangran, Fatehpur, Charatgarh, Khanpur, Chhattarpur, Ajouli, Malookpur, Binewal, Punna, Jatpur, Santoshgarh, Takhatpur, Majara, Sanoli, Udheypur
2017-18	Bharwain	Lohara	Chowar, Jijjar, Koharchhan, Ardoh, Behal
	Bangana	Arloo	Nahri Devi Singh, Nahri Dhian Singh, Bharmout, Sar Rajputan, Jhagrot, Thana Jhikla,
		Bangana	Phakhlug, Bhaleti Pathian, Bhagrian Brahmana, Bhagrian Chamaran, Sasan, Garla Uperla, Garla Jhikla
2017-18 contd..	Ramgarh	Thana Kalan	Mandli, Sasan, Bhagol, Bagdhar, Ogal
		Raipur	Balh Khalsa, Ramgarh, Ramgarh parla, Kolka, Paroian Kalan, Paroian Khurd , Matartee,
2018-19	Bharwain	Lohara	Saloi, Mather, Bhalehar, Mandholi, Bringal, Bhagrah, Aghar
	Bangana	Arloo	Damod, Lakhroon,
		Bangana	Chabrani, Dohgi Uperli, Dohgi Jhikli, Kotla, Berri, Sarda, Dhundhla, Bhalethi Mian, Bhalethi Pathian, Malanger Brahmana, Narhoon, Dughar, Gatti, Tanoh, Banjal.

Divisional Forest Officer,
Una Forest Division, Una (HP)

APPENDIX-XX
METHOD FOR REMOVAL OF LANTANA

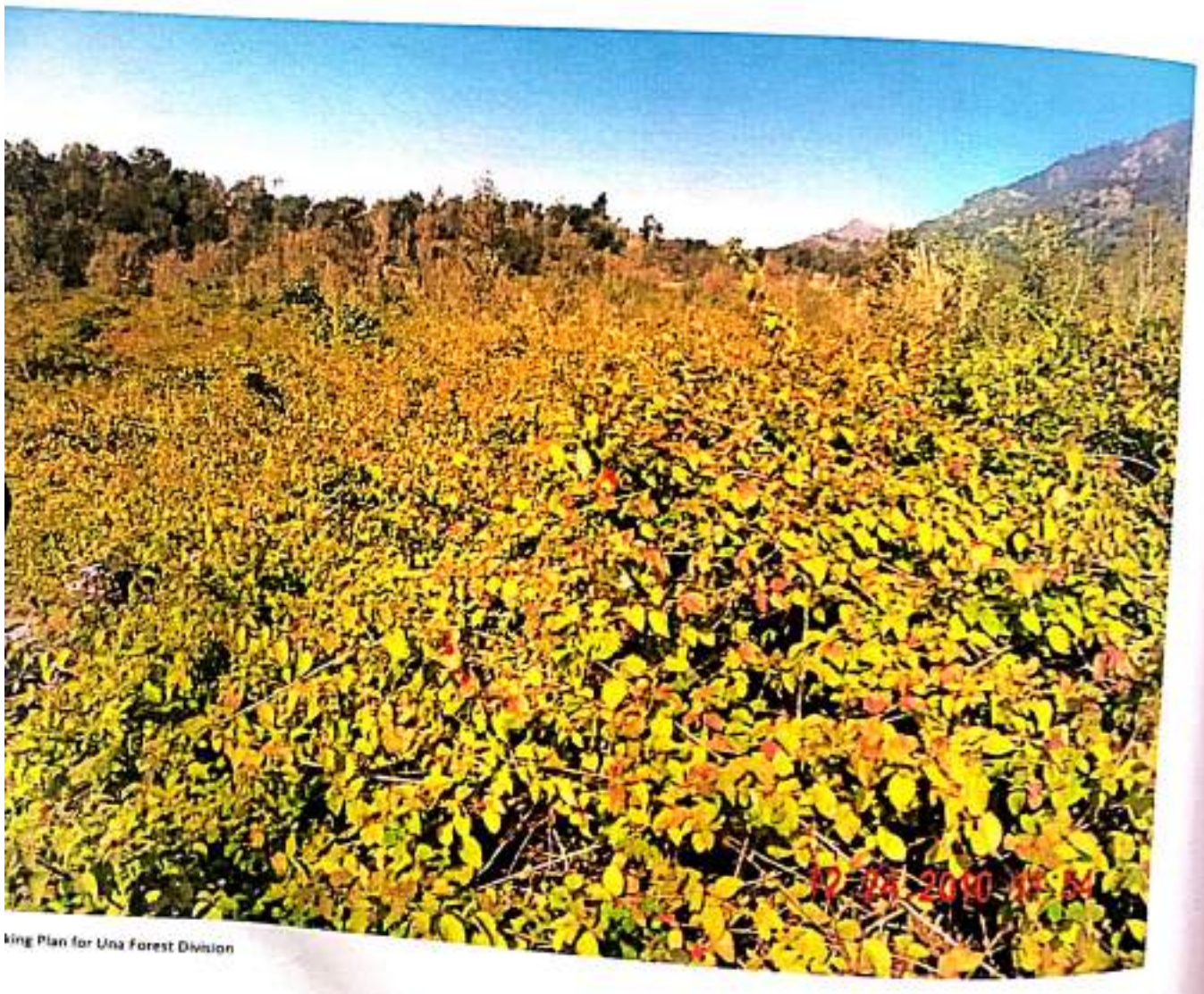
Removal of adult clumps using 'Cut Root Stock' (CRS) method: This method involves cutting the main tap root of *Lantana* plant beneath the 'coppicing zone' (transition zone between stem base and rootstock) (Figure 1). This method of removal involves engagement of 2–3 individuals to work in a group for the removal of *Lantana* if the clumps are too large to be handled by one individual after the rootstock is cut. The steps involved in the cut rootstock method are:

(i) The person, who engages in removal of *Lantana*, is positioned in a way that he stands near centre of the *Lantana* clump with his back facing the clump and holding the handle of digger (kudal)

(ii) Using the specially designed digger, the person cuts the main rootstock of *Lantana* 3–5 cm below the soil surface by hitting the rootstock 3 or 4 times; while hitting the rootstock the blade of the digger gets lodged into the main tap root, and at this point it is useful to move the handle of the digger in the forward direction away from the body of the person so as to severe the connection of the clump with the main tap root. In case the clumps of *Lantana* form impenetrable thickets, it is advantageous to cut the rootstocks of 3–4 contiguous clumps to make the removal operation convenient. It may be noted that the branches of *Lantana* clumps should not be slashed/cut to gain access to the centre of the clump for its removal by cut rootstock method. The branches of *Lantana* thicket formed by more than one clump should be lifted and tipped over from one end by using a wooden or bamboo pole of about 1.5–2.5 m long and diameter 5–6 cm which is inserted just below the branches from one side and rolled over easily by two workers holding the pole at either end and pressing it so as to reach the centre of the clump Such manual handling of impenetrable thicket is possible because of the umbrella type of canopy which makes it difficult to reach the centre of clump easily. Such physical maneuvers minimize or prevent regeneration from rooted cut branches when they fall on the ground.

(iii) Lift the clump/s and place the clump/s upside down. If the clump is not placed upside down, the prostrate rooted branches and the aerial old branches having aerial roots at nodes may develop into adult plants when they come in contact with the soil. Therefore, the upside–down orientation of cut clumps is critical in the prevention of regeneration of *Lantana* from cut clumps. It may be noted that *Lantana* does not produce root suckers.

(iv) After drying the clumps, the clumps may be used as fuel or burnt at the same site or all the dried clumps may be collected at one place and then burnt. The best time for removal of *Lantana* is just before rainy season, i.e. when the plants are not in flowering and fruiting.



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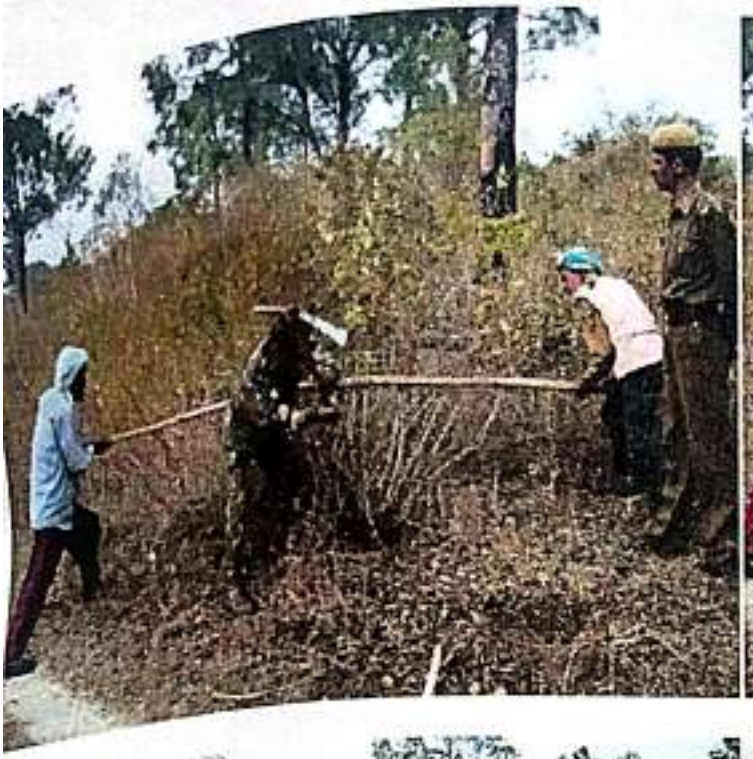


APPENDIX XXI

RECOMMENDATIONS OF KHOSLA COMMITTEE

Measures for prevention and control of fire:

1) Increased vigilance is necessary by appointment of an adequate number of fire watchers during the month of April, May and June as used to be practice earlier.
2) Clearing and maintenance of fire lines which has been virtually abandoned due to shortage of funds must be carried out regularly.
3) The practice of controlled burning to deal with the accumulation of combustible pine needles on the forest floor which has been abandoned as a result of shortage of funds has to be reintroduced.
4) Proper forest management and silvicultural practices particularly in pine forests which have been abandoned as a result of imposition of the ban on green fellings must be reintroduced to ensure proper health and protection of the forest. For this purpose, ban on felling of pine should immediately be revoked and the forests worked as per working plans.
5) Efforts for finding alternative uses of pine needles should be supported by the government so as to demonstrate their economic viability. This will help reduce the accumulation of combustible material in the forest floor.
6) The forest department staff should be provided with a complete communication network through wireless to enable a quick response in dealing with forest fire and also with the problems of illicit fellings
7) The communication network has to be supported with improved mobility to enable quick transport of men and materials from one area to another. For this at least one additional jeep may be provided at the divisional level to the D.F.O. in the hill areas.
8) Where villagers do not come to assist the forest department in extinguishing forest fires their timber rights should be curtailed if not forfeited.
9) The state government must ensure that adequate funds are provided to the forest department for the proper care, maintenance and protection of the forests. The steady reduction in such funds has seriously affected the activities of the forest departments. These fund should be provided through a centrally sponsored scheme for this purpose.

A long term strategy:-

1) Existing forest management policies have to change ti a more participative pattern of forest management in which village communities are more deeply involved.
2) The civil forests in Uttar Pradesh which today are no one's responsibility should be converted in to Panchayat forests as rapidly as possible and placed under the forest departments
3) The forest Panchayat rules should be amended to ensure that the village have more effective control over their forests and derive tangible benefits from them.
4) Mahila mandals should be actively promoted and supported by the forest department as an agency for the care and protection of the forests.
5) Integrated forestry development programme should be adopted as the principal pattern of land related development programme in the hills.
6) The genuine need of villagers for timber must be met. Additional quantities over and above their rights can be supplied to them as PD subject to a careful verification of the genuineness of their requirements. The additional timber required for the purpose can easily be met from a removal of the ban on green fellings in pine forests.
7) The forest department should be strengthened to enable it to discharge its traditional functions in the reserved forests more effectively, beat sizes should be reduced, vehicles and wireless sets provided and personal management improved.
8) Development responsibilities through adoption of integrated multi-disciplinary programmes covering forestry, animals husbandry, soil conservation, fodder development, drinking water and fuel saving should be assigned to the forest department.

APPENDIX XXII

TECHNIQUE OF RESIN EXTRACTION

The resin is being extracted by HPSFDC Ltd. by Rill Method. The technique is explained in detail as below.

RILL METHOD

In India, Rill method was introduced by FRI, in 1976. In H.P. Rill Method of resin tapping was introduced on an experimental scale in 1984, when 21,000 blazes were tapped under this method in Distt. Kangra and was gradually extended to other areas. Finally in 1991, H.P. State Forest Corporation switched over to Rill method of tapping in entire State. The specification in the Rill method is as under:-

1. Marking the size of blaze.
   a. Shaving of bark= 45x30 cm.
   b. Bark to be left in the shaved area= 2 mm.

2. Size of blaze.
   a. Length = 38cm.
   b. Width =20cm.
   c. Width of bark between rills= 5mm.

3. Size of Rill.
   a. Average width of rill= 6 to 7 mm
   b. Depth of Rill= 2 mm
   c. Number of rills in a season =32
   d. Distance between two channels= 7.5 cm.

4. Angle of Rill- Angle of Rill with the central groove- 40 degrees.
5.

TOOLS AND STRORE

The following set of tools is required for each labourer engaged for resin tapping.

Sr.No.	Name of tool.	No of tool	Life in year.
1	Bark Shaver	1	5
2	Blaze Frame	1	5
3	Marking Gauge	1	10
4	Central Groove Cutter	1	5
5	Pot Scrapper cum Groove cleaner.	1	5
6	Spray Bottle.	1	1
7	Freshening (Rill Making) knife	1	5

8	Hammer cum nail puller	1	5
9	Resin collection tins(Balti)	1	½ to 1
10	Sharpening stone (Pathri) large	1	1
11	Pathri small	1	1
12	Needle file	1	1
13	Pliers to pull out nail/lips.	1	5

In addition following store articles are required per section (1000 Blazes)

1	Pots (16cm deep, 12 cm external diameter at the top) for one section.	1000	1.5
2	Lip	1000	1
3	Tin	5.50 Qtl .of resin	1
4	Nail-wooden/iron a. 2 cm. b. 5 cm.	 1.25Kg. 1.00 Kg.	 1 1
5	Gunny Bags with plastic lining	Will depend on capacity.	1
6	Weighting scale	1/depot	5
7	Set of weights ½,1,2,5,10Kg	One set / depot	20
8	Stencil for tins	1	1
9	Acid: Nitric Acid(Sp. Gravity 1.42) Sulphuric acid(Sp. Gravity 1.840)	 3.50litres 2.50 litres	 1 1
10	Soldering Material: a. Solder b. Naushadar c. Tin lids d. Bark/Bark Chips for heating	 4.65Kg 0.58 kg 1000 40.00kg	 1 1 1 1
11	Blower	1 per depot	3
12	Solder Pin	1 per depot	3
13	Paint	3.00 litres	1
14	Measuring Cylinder 50&500ml.	1 each depot	3
15	Beaker – 500&1000 ml.	1 each depot	3
16	Funnel	1 each depot	3

CROP SETTING FOR FIRST TIME

The following steps are involved in setting up crop.

Step-1

Bark shaving : The loose and rough bark over a surface area of about 45cmx30cm above 15 cm from the ground is removed with the bark shaver leaving 2 mm thick live bark which all facilitate easy and smooth freshening of blaze. The surface should be very smooth and it looks reddish in colour.

Marking with blazes frame and Central groove marking: The blaze frame is vertically fixed on the bark shaved surface leaving 15 cm above the ground and the position of the blaze frame marked the marking gauge . Then the position of the central groove is also marked with the help of wooden board and marking gauge.

Groove cutting: A central groove 4 mm deep and 7-9mm wide is made with the help of central groove cutter by moving it down wards. If the groove is not perfect towards the ground then move the too up wards to make the groove uniform in depth. But in the subsequent years, the groove should be cut down wards

Fixing the lip and resin pot: The lip should be fixed properly with the help of two bullock-shoe nail so that it fits compactly against the tree to ensure proper flow of resin into the pot. A 5cm long wire nail preferably double headed nail should be nailed at a slight angle upward into the tree about 2cm below the midpoint of the lip for hanging the resin pot against the tree the resin pot should be hung with the nail.

The areas of the stem most favourable for resin production are those directly facing the sun. The channels must be kept vertically upward and where necessary a vertical line should be marked with scribe beforehand.

REPLACMENT OF BROKEN POTS.

In old work the posts are safer on the trees and collection is an unnecessary expense except where breakage is heavy or in localities of heavy snowfall. By leaving pots hanging on the trees much winter resin in collected which will other-wise be wasted and the surrounding will be kept less inflammable. Where pots are not collected along with the lips a lower rate for raising the lips and pots should be paid. In old works the pots are already on the trees and the labourers put them up after re-fixing the nails. The hanging of pots in old works forms part of the routine and is not separately paid for. In setting up crops it is a common practice to delay the replacement of broken pots to the beginning of the tapping season with the result that very often this is neglected for a long time and considerable wastage of resin takes place. This work must be done immediately after fixing the lips and labour should not be paid until this has been completed.

DURATION AND SEASON OF SETTING UP OF CROP:

The work of setting up of crop can be done in one month provided one labourer is employed per section. This work should be taken in hand on 15th February and completed by 15th March.

RATE OF WORK:

One person can pull out 400 lips a day. He can completed setting up in 60 channels per day including bark shaving ,marking of blaze frame, making central groove and fastening of the lips and hanging of pots.

TAPPING UNIT.

A tapping unit in rill method consists of 600-700 blazes/trees. Each labourer, therefore, freshens 100 blazes daily and collects resin from them so that he can go over the section once in 6 days thus refreshes each blazes 5 time a month. In order to accomplish this, a labourer subdivides a section in to 6 part by artificial or natural boundaries so that he can go over each sub section in a day The average number sections in a resin depot is 8 to 12 but a large number of sections can be attached to a depot if the configuration of the ground justifies easy control.

TAPPING SEASON

Ordinarily, tapping should be begin on 15th of March and should continue for 7 months ending on 15th of October in colder and 15th of November (8months) in warmer localities. There is a tendency both among the subordinate staff and labourers to start late and wind up the operations earlier. This must be strictly forbidden and the tapping season should not be reduced without the express sanction of the Divisional Manager.

MAKING OF RILLS/FRESENING:

For making rills, the tapper should stand on one side of the blaze and hold the rill making knife at the lowest point of the central groove. Then the knife should be pulled parallel to the blazes line till the outer margin of the blaze. But it should not go beyond the outer blaze line. The rill should have an angle of 40 degrees with the central groove .The same operation should be repeated on the other side of the central groove .For 2nd and subsequent pair of the rills which are made at weekly interval, the guide of the rill making knife should move touching the upper side of the previous rill. This will make equally spaced rills on the blazes. The average width of the bark left between consecutive rills is 5 mm and average width of the rill is 6 to 7 mm and average with of bark left between the rills is 5 mm. The depth of the rill is about 2 mm into the sapwood of the tree. In the whole season, the total number of rills will be 32 on either side of the central groove. The blaze attains a height of 38 cm in one tapping season.

PREPARATION AND APPLICATION OF STIMULANT.

The stimulant use is a 1:1 mixture of dilute Sulphuric acid (20% by volume) and dilute nitric acid (20% by volume). In earlier experiments dilute acids were mixed together in equal proportion by weight. Recent investigations have revealed that an increase in resin yield by 36% to 53% can be achieved if the dilute acids are mixed together in equal

proportion by volume. The present method is consistently superior to the method based on weight/weight in all the months under study as well as over all the other methods together(Chaudhari et.al. 1991). A typical procedure for the preparation of the acid mixture stimulant is given below:

Strengths of commercial Sulphuric and nitric acids are determined from the specific gravities(read by means of a hydrometer) using the acids tables(Hodegman 1936). Volume of each acids required for preparing one litre dilute acid of 20% concentration can be calculated using the formula-Strength of commercial acid x volume = 20x1000.

For a batch of commercial acids, the quantity required of preparing 1000 cc of 20% acid was calculated as 213 c.c for Sulphuric acid(94%) and 370 c.c for nitric acid(54%). Therefore,20 % Sulphuric acid was prepared by adding 213 c.c of commercial Sulphuric acid to 787 c.c of water and 20% nitric acid was prepared by adding 370 c.c. of commercial nitric to 630 c.c water. One litre each of dilute acids thus prepared were mixed thoroughly in 1:1 ratio forming 2 litres of 20% acid mixture to be used as stimulant.

Precautions:

a. Concentrated acids are added slowly to the water as water should never be added to the concentrated acid.
b. Solution should be prepared and stored in glass or plastic containers.

Distribution of Stimulant:

The stimulant should be prepared by Depot Watcher/in-charge depot and distributed to tappers. Not more than 105 ml. Stimulant be given to a tapper per day. Depot in – charge should, maintain a stimulant distribution register in the depot on the Proforma given in SECTION-VIII. Maintenance of Record.

The acid mixture does not help in the manufacture of Resin in any way but in keeping the resin ducts open which facilitates continuous flow of resin for a longer duration. Freshly blazed rills are treated with acid mixture by squeezing the plastic bottle sprayer keeping at an angle of 45 degree and 3 to 5 cm away from rill and moving its nozzle in a steady motion along the rill downward. Precaution should be taken to treat the rills properly and uniformly. This is possible only when the acid will be discharged from the bottle in the form of a mist. The pot should be removed at the time of spraying acid mixture. It should be hung on the nails after removing extra acid from the lips otherwise it will be corrode the pots and down grade the quality of resin.

RESIN COLLECTION AND CENTRAL GROOVE CLEANING:

The resin pots are removed from the trees and the resin is thoroughly removed from the pot with the help of scrapper and collected in the collection can or tin. At the same time, the central groove is also cleaned after the each collection with groove cleaner to facilitate smooth running of fresh resin in the resin pot. During the period of May to

August when the resin yield is maximum, the resin should be collected as early as possible to avoid over flow from the resin pot but the freshening should be done only at weekly interval and not before. The lot in charge will maintain the account of resin collection labourer wise in the daily collection register-Form R-I

RE SETING OF CROP:

During summer months sometimes Chir areas where tapping is in progress catch fire and blazes get burnt and resin extraction works get interrupted. In such case areas re- setting of crop becomes necessary. Due to fire damage, blazes stop yielding resin. To save the balance part of the blazes tapping in same blaze is stopped and a new blaze is made. The new blaze is tapped to a height so that total length tapped does not exceed 38 cm. Next year the old blaze is continued and thus no area goes wasted.

CLOSING OF TAPPING AND FINAL SCRAPPING OF RESIN AND CLEANING OF LIPS& POTS.

The tapping should be stopped after 31th October in colder areas and 15th November in warmer localities to give rest to the trees. Scrapping of resin from the rills, grooves pots and lips is done from 1st Nov. To 15th Nov. in colder areas and from 16th Nov. to 39 Nov. in warmer areas. The resin collected from this scrapping should be stored separately as it contains more Sakki.

CROP SETTING FOR SUBSEQUENT YEARS:

The preparation of setting the crop for the subsequent years should be started from the 15th of February. The bark shaving should be done above the top of the first year's blaze and the position of the blaze is marked just above the previous year's blaze and rest operations of the first year are repeated.

MAXIMUM HEIGHT TO WHICH A TREE SHOULD BE TAPPED.

The yield of a new channel is low for the first year and it continues to increase during the 2nd and 3rd years and gives a maximum out-put during the 4th year. It begins to fall in the 5th year by which time the height of the channel has reached to about 2.10m It is possible to tap up to this height without the use of a ladder, even when the channel is on the downhill side of a tree by piling a few stones to stand on.

SPACING BETWEEN THE CHANNELS.

In the 5th /6th year new channel is started leaving a space of 7.5cm. It is estimated that the tree will attain a diameter of 105-110 cm by the end of 20th year of tapping. Due to taper in the tree the diameter at the upper portion will be less than that at the basal area. So the inter channel space at the basal area should be kept slightly higher than 7.5 cm. So that this space is maintained to 7.5cm in the top most (last) blaze.

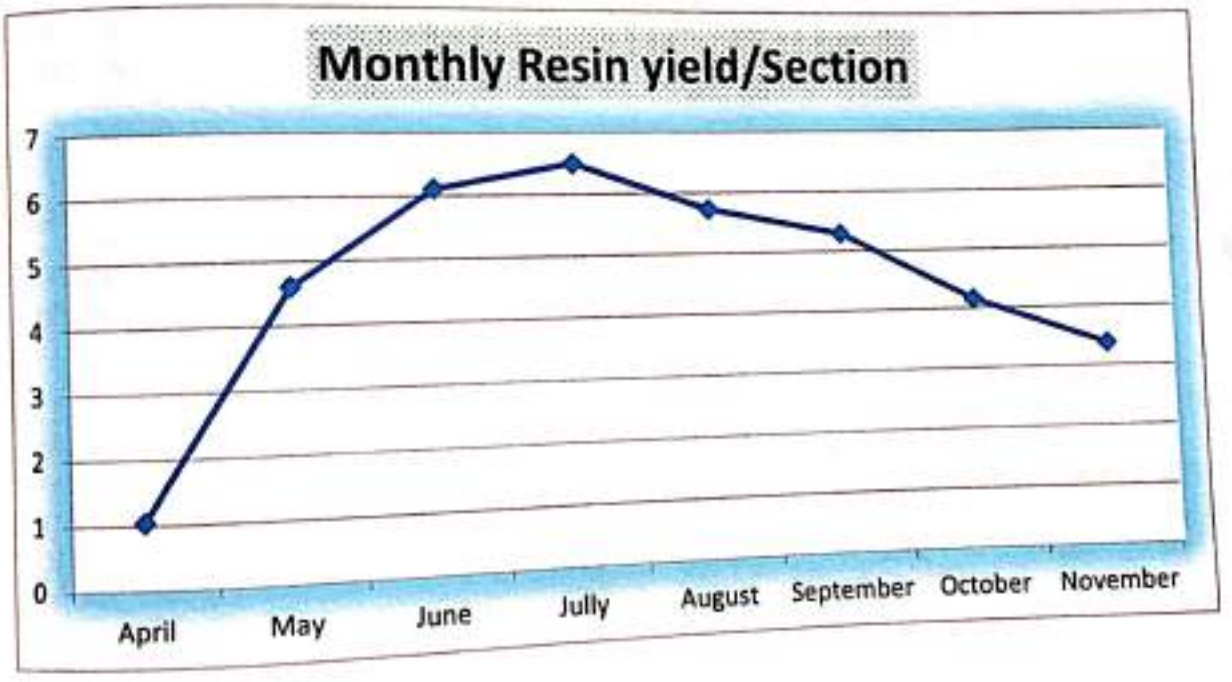
CONINUOUS TAPPING OF TREE:

The channels can be tapped for 5 years in height. During 5th year the height will be beyond the reach of tapper. Hence it is necessary to use a ladder. Research has shown that much higher yield can be obtained it tapping is done at a height of 2-4m.from the ground . During sixth year of tapping ,a new channel is started by making a blaze at the bottom of the tree in the same manner as in the Ist year, leaving a 7.5 cm wide space along the girth of the tree from the edge of Ist year blaze. The trees of 35cm diameter can be continuously tapped for 20 years and they can accommodate four channels of 20-cm.width.

YIELD:

The yield of resin various from forest to forest depending upon various factors detailed in section-I. Therefore, the yield per section should be fixed keeping in view the aforesaid factors, past yield, health/condition of tree etc. The tendency to fix higher & higher yield every year should be avoided as it leads to over tapping of a blaze.

Based upon the average yield for the year 2011-2012 for whole of Una District the graph showing monthly yields per section is given below:-



This data should serve as a guide for fixing fortnightly, monthly and annual yield of resin.

It has been seen that in summer season one tin resin is collected from 60-70 blazes. During rest of the year the number of blazes giving one tin of resin increases. Resin pots get filled up in a week containing 250-300 grams of resin.

In order to fix the fortnightly targets, the weekly collection of resin in all sections/sub section should be weighed in the presence of the lot in charge and based on this quantity and weather

conditions and also the quantity of resin obtained in previous year the yield for the subsequent fortnight should be fixed.

CONTINUOUS TAPPING FOR 20 YEARS.

After two year tapping, the blaze reaches a height at which is not possible to pull the freshening knife upwards. Therefore, third year's freshening is done by pushing the freshening knife upwards from the central groove towards the outer edge of the blaze mark.

In this way, the blaze can be extended up to four years. During fifth year's, the height will be beyond the reach of the tapper. Hence, it is necessary to use a ladder. Research has shown that much higher yield can be obtained if tapping is done at a height of 2.04m from the ground. If the practical difficulties of making blazes to a greater height could be overcome, the production of resin could be almost double.

During sixth year of tapping , a new blaze is made at the bottom of the tree in the same manner as in the first year, leaving 7.5 cm wide space along the girth of the, tree from the edge of the first.

Thus tapping on trees of 35cm diameter can be continued for 20 years, and they can accommodate four blazes of 20 cm width as show in the figure above.

RESTING PERIOD.

No resting period is necessary under light continuous tapping except where the chil trees have been tapped 70% or more of girth at breast height . Such trees can, however, be tapped in height where ever possible.

PERIOD OF HEALING

Very little is known about the rate of occlusion and further observations are absolutely necessary on this vital issue. Mr. Champion records the following in the united Provinces Forest Bulletin No. 51.

"The rate of occlusion of resin channels in *Pinus* depends primarily on the general vigour of the trees as indicated by its degree of maturity, the development of its crown and its height growth and secondarily on an adequate supply of water and good material reaching the edges of the wound , conditions being optimum on the north side of a tree on northern aspects at about 1500 m altitude at foot of the tree and in the case of a left handed twist tree on the left hand side.

Studies were undertaken at Forest Research institute, Dehra Dun to compare the healing rate of blazes tapped by cup and lip method and rill method. The studies revealed that the rate of healing of blazes made by rill method ranged from 19.2 to 51.3 sq. cum per year while in the cases of blazes made by cup and lip method, the rate of healing ranged from 4.8 to 12.2 sq.cm which is lower than the method (Chaudhari et al; 1988)

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भारत सरकार
पर्यावरण एवं वन मंत्रालय

GOVERNMENT OF INDIA

MINISTRY OF ENVIRONMENT & FOREST

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NORTHERN REGIONAL OFFICE
BAYS NO.24-25, SECTOR 31-A
DAKSHIN MARG, CHANDIGARH-160030

F.No.13-7(10)1997-ROC/5854

Dated:-19th July, 2012

To

The Principal Secretary (Forests)
Government of Himachal Pradesh,
Forest Department,
Talland, Shimla, Himachal Pradesh.

Sub: Approval of Working Plan for the forests of Una Forest Division (2012-2013 to 2026-2027) written by Shri R.S.Patial, IFS –reg.

Ref: Pr. Chief Conservator of Forests, Govt. of Himachal Pradesh letter No.837 dated 18/07/2012.

Sir,

The Working Plan for the forests of Una Forest Division (2012-2013 to 2026-2027) has been examined in accordance with the provisions of Forests (Conservator) Act, 1980 as amended till date, National Working Plan Code, guidelines issued by Government of India, Ministry of Environment and Forests, New Delhi from time to time, National Forest Policy 1988 as well as orders dated 12th December 1996 of Hon'ble Supreme Court of India in PIL WP (C) 202 of 1995 read with WP (C) 171 of 1996.

After careful consideration of the proposed Working Plan, approval of the Competent Authority is hereby conveyed under Section 2 of the Forest (Conservation)Act, 1980 subject to observance of the following conditions: -

1. The approval shall be effective from the date of issuance of this communication till 31.03.2027.
2. All the provisions of the Forest (Conservation) Act, 1980 and various Rules & guidelines issued under the Act shall be strictly enforced.
3. Yield obtained from dead, dry & salvaged timber will form part of prescribed yield and in case prescribed yield has been achieved from dead & dry volume, no further

felling will be carried out. Yield from dead, dry & salvaged timber must not exceed the prescribed yield in the Working Plan.

4. All the felling must commensurate with regeneration and no felling would be permitted unless funds for regeneration are available. In this regard, orders of Hon'ble Supreme Court of India will be strictly complied with.
5. Working Plan is technically approved. However, felling in forests will be undertaken only as per orders dated 12.12.1996 of Hon'ble Supreme Court of India in CWP No.202 of 1995 with CWP No.171/1996 and/or any other order of Hon'ble Supreme Court of India or any other Court as applicable.
6. Intensive protection measures against fire, biotic interference and encroachment in forests shall be taken up.
7. All the prescriptions prescribed in the Working Plan regarding plantation, protection and development of the forest area will be strictly followed and any change in the prescriptions will be treated as deviation for which prior approval of competent authority will be obtained.
8. Sufficient budgetary allocations be ensured for timely implementation of various prescriptions regarding protection, regeneration and development of the forests.
9. Midterm review of the Working Plan will be taken up in 2019-20.
10. The work on revision of Working Plan shall be taken up well in advance so that the revised plan is ready before expiry of the current Working Plan.

The Central Government reserves the right to review/modify or withdraw this approval at any point of time depending upon the management needs and any other guidelines of the Ministry of Environment and Forests, Government of India or Hon'ble Supreme Court of India.

Yours faithfully,

Sd/-
(S.K.Sehrawat)
I/c Addl.Principal Chief Conservator of Forests (Central)

Copy to:

1. The Addl.Director General of Forests (FC), Ministry of Environment & Forests, Paryavaran Bhawan, CGO Complex, New Delhi.
2. The Principal Chief Conservator of Forests, Govt.of Himachal Pradesh, Forest Department, Talland, Shimla, Himachal Pradesh.
3. The Addl.Pr. Chief Conservator of Forests, Working Plan & Settlement Mandi, Himachal Pradesh.
4. The Divisional Forest Officer-cum-Working Plan Officer, Forest Division and District Una, Himachal Pradesh.
5. Guard File.