HIMACHAL PRADESH FOREST DEPARTMENT

RECASTING OF CATCHMENT AREA TREATMENT PLAN FOR SATLUJ BASIN OF HIMACHAL PRADESH

KARCHAM WANGTOO PROJECT

NAIK ENVIRONMENT RESEARCH INSTITUTE LTD.
(NERIL)

KARCHAM WANGTOO PROJECT

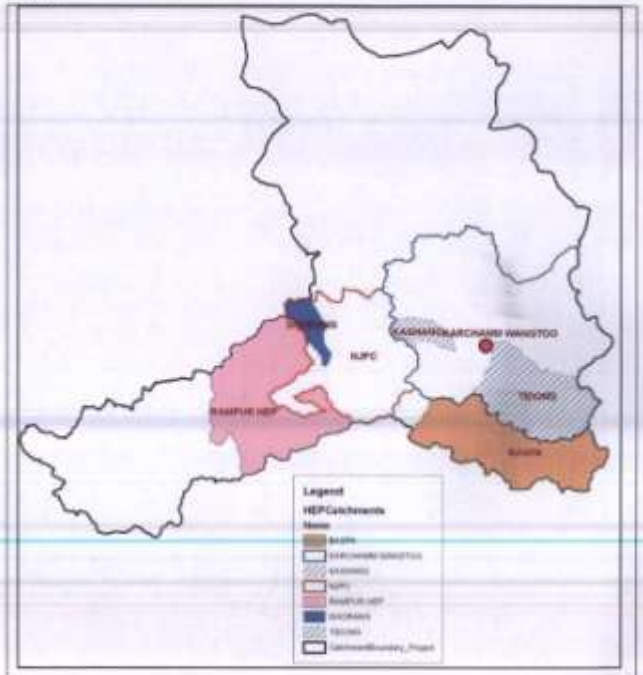
CHAPTER I

INTRODUCTION

CHAPTER 1: BACKGROUND FOR KARCHAM WANGTOO HYDRO ELECTRIC PROJECT

The Catchment Area Treatment (CAT) Plan of Karcham-Wangtoo Hydro Electric Project was prepared by Jay Prakash Industries through NEERI during the year 2001. The Plan was prepared for a period of 10 years starting from 2002-03 to 2012-13 with total financial outlay of Rs. 31.94 crore. The actual implementation of the CAT Plan was started in the year 2006-07. As per stipulation imposed by the GoI MoEF, the user agency deposited the funds on annual basis as per annual phasing prescribed in the approved CAT Plan. In the earlier years, the user agency had deposited some funds in the state treasury and after the constitution of the Ad-hoc CAMPA (Compensatory Afforestation Fund Management and Planning Authority), they started depositing the funds in the CAMPA. Later on, after the constitution of state CAMPA, the funds are now being released since 2009 onwards gradually to the state CAMPA, enabling the implementation of CAT Plans.

This time gap in the preparation of CAT Plan and their actual implementation has rendered the original CAT Plan document out dated and impractical to execute. Moreover, many changes have also taken place during the last few years because of the altered ground realities, review of technical / administrative decisions and new advances/ techniques in the field of soil and water conservation, which has necessitated the recasting of this CAT Plan.



Satluj Catchment boundary and HEP Boundary

About Comprehensive Catchment Area Treatment Plan:

NERIL was awarded the work of Preparation of Comprehensive Catchment Area Treatment (CCAT) Plan for the entire Satluj basin on 25th March, 2009 and actual work commenced on 1st April, 2009.

The Satluj Basin has a total catchment area of 20,000 sq. km. NERIL's study area stretches from Bilaspur district up to the Spiti valley, i.e. the Satluj basin above Kol Dam and its tributary-Spiti. The spatial unit of this study was Micro-watershed. The study area comprised of 179 micro-watersheds from Kol Dam to Wangtoo and 31 sub catchments from Wangtoo to Spiti which were not demarcated further into their micro-watershed. Hence, the sub catchments have been considered as a unit of study for such regions. NERIL team of field investigators have visited all the MWSs and SCs. (both inhabited and un-inhabited) to collect primary and secondary data w.r.t the demography, topography, plantation, status of current treatment measures, pressures on the MWS from various sources etc. Similarly, socio-economic data was collected through PRA's and RRA's by NERIL's team of field investigators and experts. GPS co-ordinates and photographs of all the locations visited were taken. Further, this CCAT Plan was completed and submitted to the H.P Forest Department in May, 2011.

On the basis of guidelines followed while preparing the CCAT Plan for Satluj basin, the H.P. Forest department has allotted the work of recasting of Annual Action Plans of the ongoing CAT Plans, including Karcham Wangtoo Hydro Electric Project to NERIL. The task of recasting is based on ground realities and incorporates the recent advances in silt management and consonance with the stipulations on the project of Catchment Area Treatment Plan. The main objective for recasting of Action Plan is prioritizing the most cost effective vegetative measures and Bio-engineering methodology rather than the conventional approach of using civil structures. In addition, target oriented plantation to encourage moisture retention, reduce soil erodibility and improve soil and water conservation measures is also proposed.

INTRODUCTION

The Catchment Area of Karcham Wangtoo Hydro Electric Project includes part of Kilba-Kalpa Ranges (above dam site at Karcham), Moorang Range, Pooh Range upto Khab (confluence of Satluj and Spiti) and Lippa-Asrang Wild Life Sanctuary falling under Sangla Range. The whole of the catchment area falls under the jurisdiction of Kinnaur forest division which also includes part of Sarahan Wildlife division. The division wise total CAT Plan outlay and achievements up to 31/3/2011 including approved APO for the year 2011-12 is given as under:

Sr. No	Name of division	CAT Plan outlay	Achieved up to 31/3/2011 including APO for 2011-12	Balance
1.	Kinnaur	309440111	144274822	165165289
2.	WL Sarahan	10000000	0	100000 00
	Total	**309440111**	**144274822**	175165289

The Balance amount of Karcham Wangtoo Hydro Electric Project CAT Plan has been recasted on the basis of sub catchment. The Karcham Wangtoo HEP CAT plan comprises of two Forest Divisions and spreads over fourteen sub catchments.

A. The division wise sub catchments are given as under:

a) In Kinnaur Division (14 Sub-catchment)

Sub Catchment No.5, 6, 11, 12(part), 13, 15, 16 (part), 17, 18, 20, 21, 22(part), 23 and 24

b) In WL Sarahan Division (1 Sub-catchment)

Part of Sub Catchment No. 16.

B. The following Forest Ranges are covered under Karcham Wangtoo HEP CAT-Plan:

a) **Kinnaur Division**

b) Kilba Range (part) [Karcham block], Kalpa Range (part) [Urni block (part), Kalpa block and Shongtong block], Moorang range and Pooh range.

c) WL Division Sarahan

Sangla Range (Asrang Beat)

C. Division wise Panchayats falling under Karcham Wangtoo HEP CAT plan are:

a) Kinnaur Forest Division

Brua, Shong and part of Chansu, Kalpa, Khawangi, Miroo, Yulla, Roghi, Kalpa, Pangi, Rarang, Asrang, Jangi, Lippa, Kanam, Labrang, Spillow, Pooh, Ropa, Sunam, Giabong, Namgia, Nesang, Moorang, Thangi, Kunucharang, Ribba, Risba, Purbani, Powari, Tangling, Barang and Mebar (33 Panchayats)

b) WL Division Sarahan:

Asrang (1 Panchayat)

SCOPE OF WORK AND METHODOLOGY

As per guideline issued from the H.P. Forest department, the scope of work and task involving the recasting of balance (unspent) amount of the Karcham Wangtoo Hydro Electric Project CAT Plan is as under:

1) Preparation of GIS baseline data available from the comprehensive CAT Plan of Satluj River basin after proper delineation of sub catchment falling in Karcham Wangtoo Hydro Electric Project CAT Plan.

2) To enhance the base layer data of comprehensive CAT Plan by creation of new layers like:

- Nurseries
- Forest roads
- Forest buildings, Rest houses
- Treatment already done/existing
- Future treatments proposed

All the above details will be sub catchment specific.

3) Field reconnaissance

a) NERIL has carried out systematic field reconnaissance of each sub catchment for existing works by recording their GPS coordinates along with photographs. Also suggested scope for further improvement through Bio-engineering techniques which has been prescribed on site specific recommendations under future management / treatment Plan accordingly.

b) Prescription of the new works after extensive field visits / survey of the Sub catchments. Further addition and deletion of the unexecuted works of the existing Karcham Wangtoo Hydro Electric Project CAT Plan.

c) After that, the works proposed have been prioritized and suitably spread spatially subcatchmentwise over the next 10 years.

d) More emphasis has been given to the cost effective Bio-engineering methodology and less to civil/stone structures.

e) Further no civil works has been proposed beyond 30°-35° slope.

4) Emphasis on Nursery management

Almost all the nurseries that fall in the Karcham Wangtoo Hydro Electric Project CAT Plan have been visited during intensive field survey and site specific prescriptions for their improvement have been prescribed. Further suitable species to be raised in the nurseries has also been prescribed for Afforestation, including suitable bio engineering species for the areas falling in each micro watershed in each nursery. Improvement of infrastructure in each nursery like Water storage, Vermi compost etc. wherever required has also been suggested under future planning.

METHODOLOGY ADOPTED FOR RE-CASTING

To achieve the scope of work assigned to the consultant, following methodology has been adopted for recasting the Karcham Wangtoo Hydro Electric Project CAT Plan.

- Sub Catchment wise planning which is further described under three heads:
  - Introduction of sub catchment.
  - Past management.
  - Future management/planning.
- Reconnaissance/ Intensive Field Survey of each sub-catchment along with concerned implementing field staffs of the H.P. Forest Department.
- Panoramic view of the subcatchment.
- Identification of boundaries of the sub catchment.
- Location in the Toposheet (MAP).
- Works executed under concerned CAT Plan with GPS coordinates along with photographs of the works.
- Works to be executed under different components along with GPS coordinates and photographs.

A brief account of each subcatchment described under three heads is given as under:

a) Introduction of subcatchment:

The introductory part of the subcatchment contains the administrative/demo graphic, land use pattern, biodiversity and Socio-economic details along with GPS co-ordinates and panoramic view of the subcatchment.

b) Past management

The past management has been described under main components like soil conservation measures, Afforestation, Infrastructure development etc. of the old CAT Plan along with GPS coordinates, photographs and overlay on GIS baseline data.

c) Future management

The future management has been described under these nine main components as per guidelines issued by the Government of Himachal Pradesh as per **Annexure A**

Sr. No	Item	Percentages
1.	Afforestation, Maintenance, Pastures & Nurseries*	20
2.	Soil and water conservation measures*	25
3.	PES including study and its implementation	10
4.	Research, Capacity build-up, publicity	5
5.	Institutional charges/Departmental charges	7
6.	Monitoring & Evaluation	3
7.	Wildlife related interventions	5
8.	Infrastructural build-up	15
9.	Contingencies	10
	Total	**100**

**In CAT plans involving Protected Areas, these funds (Sr .no. 1 & 2) be re-allocated for Wild life activities, keeping in view specific requirements of the area.*

This recasting plan aims at achieving the scope of work based on ground realities and detail site specific prescription along with their GPS co-ordinates and photographs. In addition, division wise financial forecasting is done subcatchment wise.

The technical description about the CAT Plan main components is as follows:

1. AFFORESTATION MEASURES:

The Afforestation measures have been categorized in these 4 sub-components:

a) Normal Afforestation:

Under this component three strand barbed wire fencing with creosoted wooden fence posts and two layers of live-hedge plants to reinforce fencing has been prescribed with planting of 1100 plants per Ha out of which at least 20% would be trees of medicinal value and 10% of wild fruits species to maintain diversity.

b) Enrichment planting:

Under this component the area falling in degraded forest and improvement of the forest stocking has been proposed which aims at planting 800 tall plants per notional Ha.

c) *Energy plantation:*

The areas falling around habitations in small patches are proposed to be taken under this component. Five strand barbed wire fencing- 3 strand and 2 cross wire; with creosoted wooden fence posts and two layers of live hedge to reinforce fencing have been prescribed with planting of 5000 tall plants of fuel and fodder value per ha (spacing 2m x 1m).

d) *Measures to handle Invasive species:*

Under this component, the area infested with invasive weeds like lantana is proposed to be undertaken. The invasive weeds are to be eradicated and planted with 800 No of plants per Ha. (i.e. 300 Nos. tall plants and 500 Nos. bamboo) including sowing of native grass seeds. Extensive use of local grass to be broadcast over the area being treated is recommended. A one and half to two meter wide strip of lantana is to be retained along the periphery of the area being treated to obviate the need to do any fencing. Gaps, if any, in this protective strip be filled with stacks of cut lantana / live hedges. Involvement of User Groups for maintenance of such areas should be encouraged.

NOTE: In view of the recommendations/ suggestions to improve the execution of CAMPA works given wide APCCF (CAT and ES) H.P. no. - FT CAMPA/2010/CAT Plan/General Dated: 2/8/2011 (Refer Annexure B) & further as per office letter from chair person, executive committee HP state CAMPA-Cum-PCCF HP dated 21/01/2012 (Refer Annexure C).

1. Five years maintenance as per old practice prevalent in the forest department has been prescribed under Afforestation scheme.
2. The cost norms for each component of Afforestation measures listed above has been prepared on the basis of prevalent schedule of works and labour rates for Rampur circle. Refer **Annexure D.**
3. Provision for fencing under enrichment component has also been made on the lines of departmental schemes for enrichment component being implemented by the forest department.
4. The norms/ Schedule of Rates approved by the Competent Authority has been applied in the Recast CAT Plan.

5. Future escalation in the wages and unforeseen eventualities will be met with from the Contingencies component.

6. The proposed activities in the CAT Plan can be changed with prior approval of the Competent Authority as and when required.

7.

NOTE: The catchment area Karcham Wangtoo Hydro Electric Project falls under dry & arid condition. Therefore there is less scope for Afforestation activities. More over the soil is mostly Sandy, Calcareous & the area is refractory which is not fit for Afforestation. As such the percentage kept for Afforestation activites has been decreased from 20% to 15%. Only areas under Enrichment scheme has been proposed & only in Pooh Subdivision the areas where irrigation facilities are available has been proposed under enrichment

2. SOIL AND WATER CONSERVATION MEASURES:

The soil and moisture conservation measures works has been prescribed and described under the following categories:

a) Moisture retentively operations: staggered contour trenching (priority activity), bio-engineering species planting.

b) Contoured live hedges.

c) Vegetative structures- fascines, brush-wood check dams, bamboo crib etc. wherever applicable.

d) Civil structures- masonry crate wire check dams, masonry dams, (primarily dry stone), check/protection walls.

e) Drainage line treatment and landslide control, with site specific estimates, using interventions mentioned in a-d above.

The cost norms of soil and water conservation endeavors have also been prepared on the basis of prevalent schedule of work and labour rates for Rampur circle, **Annexure-D.**

3. PAYMENTS FOR ENVIRONMENTAL SERVICES:

a) Soil conservation works in private land

The site specific financial outlay for the private areas for treatment has been prescribed. The amount kept for treatment will be released to the individual after completion/ treatment carried out by the owners of the land.

b) The provision kept for JFMC'S for assisting the forest staff in each subcatchment under Forest protection measures will be released only after the entire satisfaction of forest staff, in case the JFMCs actively associate and prevent the forest offence successfully.

c) With regard to distribution of GI pipe for hoisting the flags per the list provided by the Panchayat. It will be done through concerned Panchayat in the presence of forest staff by keeping proper record. In case improper utilization of the materials, the concerned Panchayat will be responsible. It will be one time provision.

d) The agriculture, horticulture and animal rearing are the main occupations of the people in the project area. The slope of the land holding is mostly steep to very steep which leads to severe soil erosion due to wrong cropping pattern. The productivity of such land is mostly poor and traditional. It is thus imperative that appropriate technological interventions are made in the agriculture, horticulture and animal rearing. As such there is need of using and improving the indigenous method of agriculture, use of toxic chemical like pesticide, weedicide must be restricted or not used at all. This will help in maintaining the quality of biodiversity, water, soil and atmosphere as a whole. Similarly the people in the Sub catchment are rearing sheep, goat & other domestic cattle & are having extensive rights for grazing in the forest which also requires immunization in order to prevent the contagious diseases to & from wild life living in the Sub catchment. In addition to this other animal improvement interventions are also required so that the environment is not affected. The mitigative works should be carried out with consent of public through line departments.

7. WILDLIFE MEASURES:-

In view of the decision taken in the meeting held on 29.02.2012 at Rampur under the Chairmanship of Nodal Officer State Campa-cum-Conservator of Forests, CAT Plans, it has been decided that recasting pertaining to WL portion will also be done by NERIL. Therefore, the Recasting work for the same has been done and compiled in the Recast CAT Plan of KARCHAM WANGTOO HEP.

The recast output of Annual Action Plan of Karcham Wangtoo Hydro Electric Project CAT Plan has been thoroughly discussed with the concerned Officers and field staff of Kinnaur Forest Division on 14th October, 2011 at Recong Peo and with wildlife division Sarahan on 09/04/2012

8. INFRASTRUCTURE BUILD UP AND FOREST PROTECTION:-

The provision for infrastructure build up has been made on site specific basis after taking their GPS co-ordinates along with their photographs. With regards to distribution of non conventional energy and fuel saving devices in catchment area on cost sharing basis, 50% provision has been made for the identified families, the list of which has been made available by the concerned forest staff.

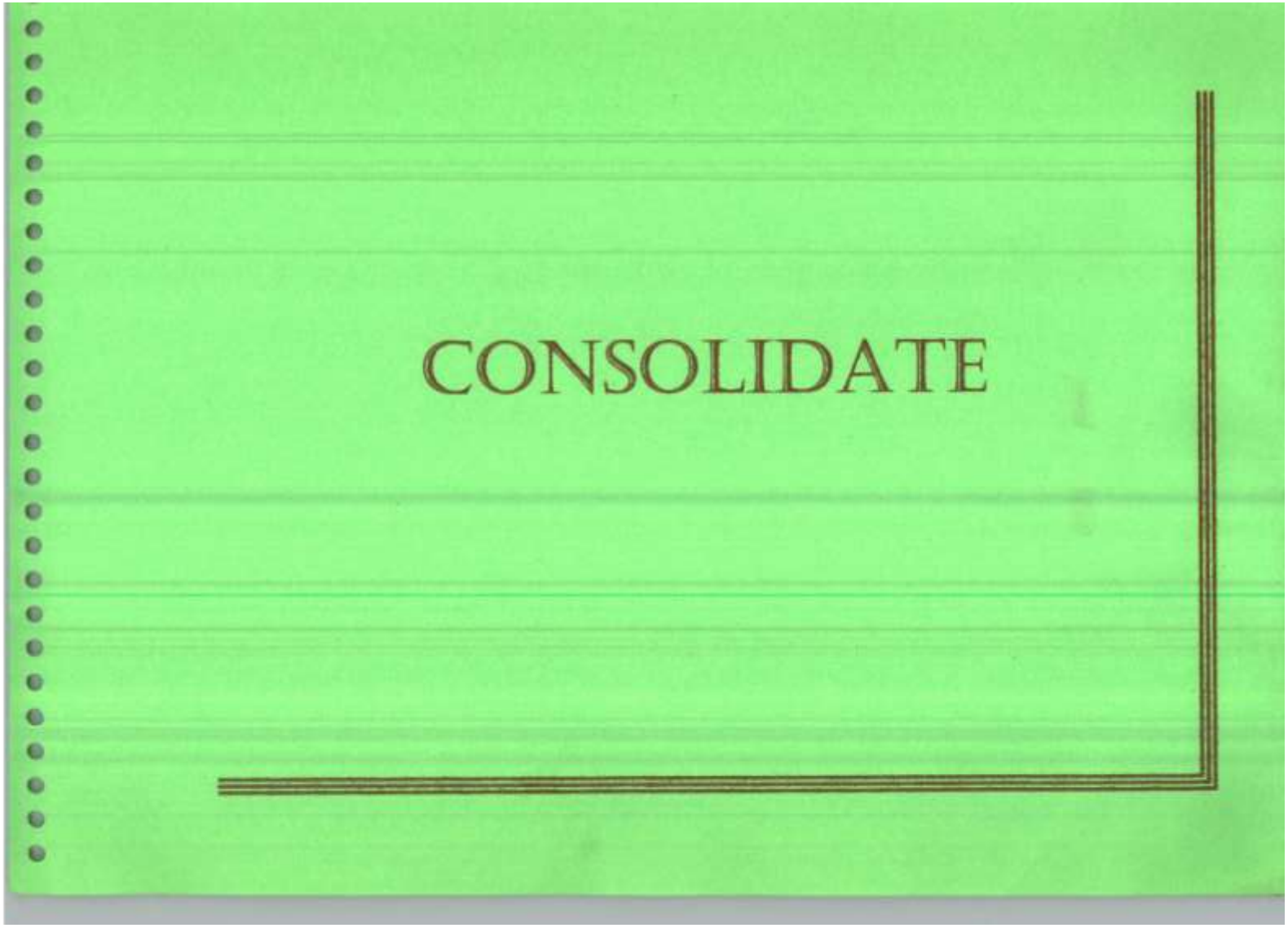
The provision for distribution of LPG and Pressure cooker will be one time only and the mechanism for their distribution will be through concerned Panchayat in presence of forest staff by keeping proper record.

9. MICROPLANNING

There is drastic change in the micro climate of the area with an increase in Horticulture activites. Consequently there are frequent Flash floods in the area. Therefore a 5% Provision for Micro Planning has been kept w.e.f second year onwards.

CHAPTER II

OVER VIEW


CONSOLIDATE

CONSOLIDATE KARCHAM WANGTOO HEP

Sr. No	Name of division	CAT Plan outlay	Achieved up to 31/3/2011 including APO for 2011-12	Balance
1.	Kinnaur	309440111	144274822	165165289
2.	WL Sarahan	10000000	0	10000000
	Total	**319440111**	**144274822**	175165289

SUMMARY

Annual phasing summary of KARCHAM WANGTOO CAT Plan Kinnaur Division (All amount in Lacks)

Name of Component	Balance Amount to be recasted	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total	Balance
Afforestation Measures	247.75	0.00	66.70	40.22	22.15	13.90	7.65	6.33	3.62	0.95	0.21	161.74	86.00
Soil & Water Conservation Endeavors	412.91	0.00	152.95	217.50	58.00	8.50	0.00	0.00	0.00	0.00	0.00	436.95	-24.04
Payment for Environmental Services	165.17	0.00	0.00	4.50	1.50	15.90	32.90	32.44	31.68	30.63	15.62	165.17	0.00
Research, Training & Capacity build up, Publicity & Awareness, Documentation	82.58	0.00	0.00	0.00	16.00	16.00	15.00	15.00	10.50	10.08	0.00	82.58	0.00
Infrastructure built up & Forest Protection	247.75	0.00	4.90	139.99	21.37	9.97	7.94	7.65	7.50	2.80	2.80	204.92	42.83
Wild Life Measures*	82.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	82.58
Monitoring & Evaluation	49.55	0.00	0.00	7.00	9.00	10.00	7.00	6.55	6.00	4.00	0.00	49.55	0.00
Institutional / Departmental Charges	115.62	0.00	12.50	19.75	25.00	20.00	18.50	7.50	6.50	5.87	0.00	115.62	0.00
Micro Planning	82.58	0.00	12.00	12.50	12.00	11.75	11.50	11.25	6.00	5.58	0.00	82.58	0.00
Contingencies	165.17	0.00	28.50	47.17	19.50	13.50	13.00	11.50	10.00	9.00	13.00	165.17	0.00
Total	1651.65	0.00	277.55	488.63	184.52	119.52	113.49	98.22	81.80	68.91	31.63	1464.28	187.37

* Amount Kept under Component Wild Life Measures has been transferred to WL Division

YEAR WISE ABSTRACT

Abstract action plan of Karcham Wangtoo HEP for Second year (2012-13)

Name Of Component		Name Of Division	Physical Targets (Ha/Nos)							Total Financial (In Lacks)
				Maintenance						
			New	I Year	II Year	III Year	IV Year	V Year	Total	
Afforestation Measures	(a) Normal Afforestation (In Ha)	Kinnaur	0	0	59	66	106	5	236	8.11
	(b) Enrichment (In Ha)		72	0	0	0	0	0	72	26.10
	(1A)Nurseries (locations in Nos)								14	32.50
Soil & Water Conservation Endeavors	(a) Moisture Retentively Operations (locations in Nos)	Kinnaur							0	0.00
	(b) Live Hedge Fencing (locations in Nos)								0	0.00
	(c) Vegetative structures (locations in Nos)								2	1.20
	(d) Civil Structures (locations in Nos)								38	112.75
	(e) Drainage line treatment & Land slide control (locations in Nos)								8	35.50
	(f) Stream Bank stabilizations (locations in Nos)								1	3.50
Payment for Environmental Services		Kinnaur								0.00
Research, Training & Capacity build up, Publicity & Awareness, Documentation		Kinnaur								0.00
Infrastructure built up & Forest Protection	(a) Building for stay of staff, FRH/I Hut (locations in Nos)	Kinnaur							2	4.50
	(b) Forest Roads/ I Paths (locations in Nos)								0	0.00
	(c) Augmentation of Water Supply. (locations in Nos)								0	0.00
	(d) Vehicle & Operational Support to HPFD									0.40
	(e) Office Equipment (computers,Laptops ,GPS, LCD Projector etc.)									0.00
	(f) SR Monitoring & Purchase of Metoorological Equipment									0.00
	(g) Construction & Repair of Boundary Pillars.									0.00
	(h) Fire Protection Measures									0.00
	(i) Distribution of Non-conventional energy & Fuel Saving devices									0.00
Wild Life Measures		Kinnaur								0.00
Monitoring & Evaluation		Kinnaur								0.00
Institutional / Departmental Charges		Kinnaur								12.50
Micro Planning		Kinnaur								12.00
Contingencies		Kinnaur								28.50
Grand Total										277.55

Abstract action plan of Karcham Wangtoo HEP for Third year (2013-14)

Name Of Component		Name Of Division	Physical Targets (Ha/Nos)							Total Financial (in Lacks)
				Maintenance						
			New	I Year	II Year	III Year	IV Year	V Year	Total	
Afforestation Measures	(a) Normal Afforestation (in Ha)	Kinnaur	0	0	0	59	61	106	226	6.70
	(b) Enrichment (in Ha)		77	72	0	0	0	0	149	33.52
	(1A)Nurseries (locations in Nos)								0	0.00
Soil & Water Conservation Endeavors	(a) Moisture Retentively Operations (locations in Nos)	Kinnaur								
	(b) Live Hedge Fencing (locations in Nos)								0	0.00
	(c) Vegetative structures (locations in Nos)								0	0.00
	(d) Civil Structures (locations in Nos)								1	1.50
	(e) Drainage line treatment & Land slide control, (locations in Nos)								57	167.00
	(f) Stream Bank stabilizations (locations in Nos)								10	47.50
									1	1.50
Payment for Environmental Services		Kinnaur								4.50
Research, Training & Capacity build up, Publicity & Awareness, Documentation		Kinnaur								0.00
Infrastructure built up & Forest Protection	(a) Building for stay of staff, FRH/I Hut. (locations in Nos)	Kinnaur							48	97.49
	(b) Forest Roads/ I Paths (locations in Nos)								7	19.00
	(c) Augmentation of Water Supply. (locations in Nos)								5	13.00
	(d) Vehicle & Operational Support to HPFD									3.50
	(e) Office Equipment (computers,Laptops GPS, LCD Projector etc.)									2.50
	(f) Silt Monitoring & Purchase of Meteorological Equipment									0.00
	(g) Construction & Repair of Boundary Pillars.									0.00
	(h) Fire Protection Measures									4.50
	(i) Distribution of Non-conventional energy & Fuel Saving devices									0.00
Wild Life Measures		Kinnaur								0.00
Monitoring & Evaluation		Kinnaur								7.00
Institutional / Departmental Charges		Kinnaur								19.75
Micro Planning		Kinnaur								12.50
Contingencies		Kinnaur								47.17
Grand Total										488.63

Abstract action plan of Karcham Wangtoo HEP for Fourth year (2014-15)

Name Of Component		Name Of Division	Physical Targets (Ha/Nos)							Total Financial (In Lacks)
			New	Maintenance						
				I Year	II Year	III Year	IV Year	V Year	Total	
Afforestation Measures	(a) Normal Afforestation (In Ha)	Kinnaur	0	0	0	0	49	61	110	3.45
	(b) Enrichment (In Ha)		26	77	72	0	0	0	175	18.70
	(1A)Nurseries (locations in Nos)								0	0.00
Soil & Water Conservation Endeavors	(a) Moisture Retentively Operations (locations in Nos)	Kinnaur							0	0.00
	(b) Live Hedge Fencing (locations in Nos)								0	0.00
	(c) Vegetative structures (locations in Nos)								0	0.00
	(d) Civil Structures (locations in Nos)								17	32.50
	(e) Drainage line treatment & Land slide control. (locations in Nos)								6	25.50
	(f) Stream Bank stabilizations (locations in Nos)								0	0.00
Payment for Environmental Services		Kinnaur								1.50
Research, Training & Capacity build up, Publicity & Awareness, Documentation		Kinnaur								16.00
Infrastructure built up & Forest Protection	(a) Building for stay of staff, FRH/I Hut. (locations in Nos)	Kinnaur							4	9.00
	(b) Forest Roads/ I Paths (locations in Nos)								0	0.00
	(c) Augmentation of Water Supply. (locations in Nos)								0	0.00
	(d) Vehicle & Operational Support to HPFD									1.50
	(e) Office Equipment (computers,Laptops ,GPS, LCD Projector etc.)									3.00
	(f) Silt Monitoring & Purchase of Meteorological Equipment									0.00
	(g) Construction & Repair of Boundary Pillars.									1.17
	(h) Fire Protection Measures									4.50
	(i) Distribution of Non-conventional energy & Fuel Saving devices									0.20
Wild Life Measures		Kinnaur								0.00
Monitoring & Evaluation		Kinnaur								9.00
Institutional / Departmental Charges		Kinnaur								25.00
Micro Planning		Kinnaur								12.00
Contingencies		Kinnaur								19.50
Grand Total										184.52

Abstract action plan of Karcham Wangtoo HEP for Fifth year (2015-16)

			Physical Targets (Ha/Nos)							Total Financial (In Lacks)
				Maintanance						
Name Of Component		Name Of Division	New	I Year	II Year	III Year	IV Year	V Year	Total	
Afforestation Measures	(a) Normal Afforestation (In Ha)	Kinnaur	0	0	0	0	0	49	49	1.56
	(b) Enrichment (In Ha)		10	26	77	72	0	0	185	12.34
	(1A)Nurseries (locations In Nos)								0	0.00
Soil & Water Conservation Endeavors	(a) Moisture Retentively Operations (locations In Nos)	Kinnaur							0	0.00
	(b) Live Hedge Fencing (locations In Nos)								0	0.00
	(c) Vegetative structures (locations In Nos)								0	0.00
	(d) Civil Structures (locations In Nos)								1	2.50
	(e) Drainage line treatment & Land slide control. (locations In Nos)								2	6.00
	(f) Stream Bank stabilizations (locations In Nos)								0	0.00
Payment for Environmental Services		Kinnaur								15.90
Research, Training & Capacity build up, Publicity & Awareness, Documentation		Kinnaur								16.00
Infrastructure built up & Forest Protection	(a) Building for stay of staff, FRH/I Hut. (locations In Nos)	Kinnaur							0	0.00
	(b) Forest Roads/ I Paths (locations In Nos)								0	0.00
	(c) Augmentation of Water Supply. (locations In Nos)								0	0.00
	(d) Vehicle & Operational Support to HPFD									3.25
	(e) Office Equipment (computers,Laptops ,GPS, LCD Projector etc.)									1.25
	(f) Silt Monitoring & Purchase of Meteorological Equipment									0.00
	(g) Construction & Repair of Boundary Pillars.									0.77
	(h) Fire Protection Measures									4.50
	(i) Distribution of Non-conventional energy & Fuel Saving devices									0.20
Wild Life Measures		Kinnaur								0.00
Monitoring & Evaluation		Kinnaur								10.00
Institutional / Departmental Charges		Kinnaur								20.00
Micro Planning		Kinnaur								11.75
Contingencies		Kinnaur								13.50
Grand Total										**119.52**

Abstract action plan of Karcham Wangtoo HEP for Sixth year (2016-17)

			Physical Targets (Ha/Nos)							Total Financial (In Lacks)
				Maintenance						
Name Of Component		Name Of Division	New	I Year	II Year	III Year	IV Year	V Year	Total	
Afforestation Measures	(a) Normal Afforestation (in Ha)	Kinnaur	0	0	0	0	0	0	0	0.00
	(b) Enrichement (in Ha)		0	10	26	77	72	0	185	7.65
	(1A)Nurseries (locations in Nos)								0	0.00
Soil & Water Conservation Endeavors	(a) Moisture Retentively Operations (locations in Nos)	Kinnaur							0	0.00
	(b) Live Hedge Fencing (locations in Nos)								0	0.00
	(c) Vegetative structures (locations in Nos)								0	0.00
	(d) Civil Structures (locations in Nos)								0	0.00
	(e) Drainage line treatment & Land slide control. (locations in Nos)								0	0.00
	(f) Stream Bank stabilizations (locations in Nos)								0	0.00
Payment for Environmental Services		Kinnaur								32.90
Research, Training & Capacity build up, Publicity & Awareness, Documentation		Kinnaur								15.00
Infrastructure built up & Forest Protection	(a) Building for stay of staff, FRH/I Hut. (locations in Nos)	Kinnaur							0	0.00
	(b) Forest Roads/ / Paths (locations in Nos)								0	0.00
	(c) Augmentation of Water Supply. (locations in Nos)								0	0.00
	(d) Vehicle & Operational Support to HPFD									3.25
	(e) Office Equipment (computers,Laptops ,GPS, LCD Projector etc.)									0.00
	(f) SIR Monitoring & Purchase of Meteorological Equipment									0.00
	(g) Construction & Repair of Boundary Pillars.									0.00
	(h) Fire Protection Measures									4.50
	(i) Distribution of Non-conventional energy & Fuel Saving devices									0.10
Wild Life Measures		Kinnaur								6.00
Monitoring & Evaluation		Kinnaur								7.00
Institutional / Departmental Charges		Kinnaur								18.50
Micro Planning		Kinnaur								11.50
Contingencies		Kinnaur								13.00
Grand Total										**113.49**

Abstract action plan of Karcham Wangtoo HEP for Seventh year (2017-18)

Name Of Component		Name Of Division	Physical Targets (Ha/Nos)							Total Financial (in Lacks)
			New	Maintenance I Year	II Year	III Year	IV Year	V Year	Total	
Afforestation Measures	(a) Normal Afforestation (in Ha)	Kinnaur	0	0	0	0	0	0	0	0.00
	(b) Enrichment (in Ha)		0	0	10	26	77	72	185	6.33
	(1A)Nurseries (locations in Nos)								0	0.00
Soil & Water Conservation Endeavors	(a) Moisture Retentively Operations (locations in Nos)	Kinnaur							0	0.00
	(b) Live Hedge Fencing (locations in Nos)								0	0.00
	(c) Vegetative structures (locations in Nos)								0	0.00
	(d) Civil Structures (locations in Nos)								0	0.00
	(e) Drainage line treatment & Land slide control. (locations in Nos)								0	0.00
	(f) Stream Bank stabilizations (locations in Nos)								0	0.00
Payment for Environmental Services		Kinnaur							0	0.00
Research, Training & Capacity build up, Publicity & Awareness, Documentation		Kinnaur								32.44
Infrastructure built up & Forest Protection	(a) Building for stay of staff, HH/I Hut (locations in Nos)	Kinnaur								15.00
	(b) Forest Roads/ : Paths (locations in Nos)								0	0.00
	(c) Augmentation of Water Supply. (locations in Nos)								0	0.00
	(d) Vehicle & Operational Support to HPFD								0	0.00
	(e) Office Equipment (computers,Laptops ,GPS, LCD Projector etc.)									3.00
	(f) Silt Monitoring & Purchase of Meteorological Equipment									0.00
	(g) Construction & Repair of Boundary Pillars.									0.00
	(h) Fire Protection Measures									0.00
	(i) Distribution of Non-conventional energy & Fuel Saving devices									4.50
Wild Life Measures		Kinnaur								0.25
Monitoring & Evaluation		Kinnaur								0.00
Institutional / Departmental Charges		Kinnaur								6.55
Micro Planning		Kinnaur								7.50
Contingencies		Kinnaur								11.25
Grand Total										11.50
										98.22

Abstract action plan of Karcham Wangtoo HEP for Eighth year (2018-19)

Name Of Component		Name Of Division	Physical Targets (Ha/Nos)							Total Financial (In Lacks)
				Maintenance						
			New	I Year	II Year	III Year	IV Year	V Year	Total	
Afforestation Measures	(a) Normal Afforestation (In Ha)	Kinnaur	0	0	0	0	0	0	0	0.00
	(b) Enrichment (In Ha)		0	0	0	10	26	77	113	3.62
	(1A)Nurseries (locations In Nos)								0	0.00
Soil & Water Conservation Endeavors	(a) Moisture Retentively Operations (locations In Nos)	Kinnaur							0	0.00
	(b) Live Hedge Fencing (locations In Nos)								0	0.00
	(c) Vegetative structures (locations In Nos)								0	0.00
	(d) Civil Structures (locations In Nos)								0	0.00
	(e) Drainage line treatment & Land slide control. (locations In Nos)								0	0.00
	(f) Stream Bank stabilizations (locations In Nos)								0	0.00
Payment for Environmental Services		Kinnaur								31.68
Research, Training & Capacity build up, Publicity & Awareness, Documentation		Kinnaur								10.50
Infrastructure built up & Forest Protection	(a) Building for stay of staff, FRH/I Hut. (locations In Nos)	Kinnaur							0	0.00
	(b) Forest Roads/ i Paths (locations In Nos)								0	0.00
	(c) Augmentation of Water Supply (locations In Nos)								0	0.00
	(d) Vehicle & Operational Support to HPFD									3.00
	(e) Office Equipment (computers,Laptops ,GPS, LCD Projector etc.)									0.00
	(f) Silt Monitoring & Purchase of Meteorological Equipment									0.00
	(g) Construction & Repair of Boundary Pillars.									0.00
	(h) Fire Protection Measures									4.50
	(i) Distribution of Non-conventional energy & Fuel Saving devices									0.00
Wild Life Measures		Kinnaur								0.00
Monitoring & Evaluation		Kinnaur								6.00
Institutional / Departmental Charges		Kinnaur								6.50
Micro Planning		Kinnaur								6.00
Contingencies		Kinnaur								10.00
Grand Total										**81.80**

Abstract action plan of Karcham Wangtoo HEP for Ninth year (2019-20)

Name Of Component		Name Of Division	Physical Targets (Ha/Nos)							Total Financial (In Lacks)
			New	Maintenance I Year	II Year	III Year	IV Year	V Year	Total	
Afforestation Measures	(a) Normal Afforestation (In Ha)	Kinnaur	0	0	0	0	0	0	0	0.00
	(b) Enrichment (In Ha)		0	0	0	0	10	26	36	0.05
	(1A)Nurseries (locations in Nos)								0	0.00
Soil & Water Conservation Endeavors	(a) Moisture Retentivaly Operations (locations in Nos)	Kinnaur							0	0.00
	(b) Live Hedge Fencing (locations in Nos)								0	0.00
	(c) Vegetative structures (locations in Nos)								0	0.00
	(d) Civil Structures (locations in Nos)								0	0.00
	(e) Drainage line treatment & Land slide control. (locations in Nos)								0	0.00
	(f) Stream Bank stabilizations (locations in Nos)								0	0.00
Payment for Environmental Services		Kinnaur								30.63
Research, Training & Capacity build up, Publicity & Awareness, Documentation		Kinnaur								10.00
Infrastructure built up & Forest Protection	(a) Building for stay of staff, Fifth/I Hut (locations in Nos)	Kinnaur							0	0.00
	(b) Forest Roads/ / Paths (locations in Nos)								0	0.00
	(c) Augmentation of Water Supply. (locations in Nos)								0	0.00
	(d) Vehicle & Operational Support to HPFD									2.80
	(e) Office Equipment (computers,Laptops ,GPS, LCD Projector etc.)									0.00
	(f) Silt Monitoring & Purchase of Metteorological Equipment									0.00
	(g) Construction & Repair of Boundary Pillars.									0.00
	(h) Fire Protection Measures									0.00
	(i) Distribution of Non-conventional energy & Fuel Saving devices									0.00
Wild Life Measures		Kinnaur								0.00
Monitoring & Evaluation		Kinnaur								4.00
Institutional / Departmental Charges		Kinnaur								1.87
Micro Planning		Kinnaur								5.58
Contingencies		Kinnaur								9.00
Grand Total										68.91

Abstract action plan of Karcham Wangtoo HEP for Tenth year (2020-21)

			Physical Targets (Ha/Nos)							Total Financial (In Lacks)
				Maintenance						
Name Of Component		Name Of Division	New	I Year	II Year	III Year	IV Year	V Year	Total	
Afforestation Measures	(a) Normal Afforestation (in Ha)	Kinnaur	0	0	0	0	0	0	0	0.00
	(b) Enrichment (in Ha)		0	0	0	0	0	10	10	0.21
	(c)A)Nurseries (locations in Nos)								0	0.00
Soil & Water Conservation Endeavors	(a) Moisture Retentively Operations (locations in Nos)	Kinnaur							0	0.00
	(b) Live Hedge Fencing (locations in Nos)								0	0.00
	(c) Vegetative structures (locations in Nos)								0	0.00
	(d) Civil Structures (locations in Nos)								0	0.00
	(e) Drainage line treatment & Land slide control. (locations in Nos)								0	0.00
	(f) Stream Bank stabilizations (locations in Nos)								0	0.00
Payment for Environmental Services		Kinnaur								15.62
Research, Training & Capacity build up, Publicity & Awareness, Documentation		Kinnaur								0.00
Infrastructure built up & Forest Protection	(a) Building for stay of staff, FRH/T Hut. (locations in Nos)	Kinnaur							0	0.00
	(b) Forest Roads/ / Paths (locations in Nos)								0	0.00
	(c) Augmentation of Water Supply. (locations in Nos)								0	0.00
	(d) Vehicle & Operational Support to HPFD									2.80
	(e) Office Equipment (computers,Laptops ,GPS, LCD Projector etc.)									0.00
	(f) Silt Monitoring & Purchase of Metrorological Equipment									0.00
	(g) Construction & Repair of Boundary Pillars.									0.00
	(h) Fire Protection Measures									0.00
	(i) Distribution of Non-conventional energy & Fuel Saving devices									0.00
Wild Life Measures		Kinnaur								0.00
Monitoring & Evaluation		Kinnaur								0.00
Institutional / Departmental Charges		Kinnaur								0.00
Micro Planning		Kinnaur								0.00
Contingencies		Kinnaur								15.00
Grand Total										31.63

CHAPTER III

ANNUAL PHASING DETAILS

APO for KARCHAM WANGTOO HEP(Kinnaur Division) (All amount in Lacks)

Afforestation Measures

Name of Sub Component	Name of Area	Name of Range	Name of Beat	Micro water shed	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total
(a) Normal Afforestation	C 141 (5 Ha. 2010-11)	Kilba	Sapani	Sc-05		0.16	0.09	0.04	0.04						0.33
(a) Normal Afforestation	C 141 (5 Ha. 2009-10)	Kilba	Sapani	Sc-05		0.09	0.04	0.04							0.17
(a) Normal Afforestation	C 242 part III (5 Ha. 2008-09)	Kalpa	Recong Peo	Sc-11		0.04	0.04								0.09
(a) Normal Afforestation	C 243 (5 Ha. 2008-09)	Kalpa	Recong Peo	Sc-11		0.04	0.04								0.09
(a) Normal Afforestation	UF Goli (5 Ha. 2009-10)	Kalpa	Kalpa	Sc-11		0.09									0.09
(a) Normal Afforestation	C 244 (5Ha 2010-11)	Kalpa	Roghi	Sc-12		0.16	0.09	0.04	0.04						0.33
(a) Normal Afforestation	C 246 (5 Ha. 2008-09)	Kalpa	Roghi	Sc-12		0.04	0.04								0.08
(a) Normal Afforestation	C 237 (5 Ha 2008-09)	Kalpa	Pangi	Sc-13		0.04	0.04								0.09
(a) Normal Afforestation	C 237 (5Ha 2010-11)	Kalpa	Pangi	Sc-13		0.16	0.09	0.04	0.04						0.33
(a) Normal Afforestation	C 231 (3 Ha 2010-11)	Moorang	Rarang	Sc-15		0.18	0.15	0.13	0.13						0.59
(a) Normal Afforestation	C 231 (3 Ha. 2008-09)	Moorang	Rarang	Sc-15		0.13	0.13								0.25
(a) Normal Afforestation	C 225 (3 Ha. 2010-11)	Moorang	Jangi	Sc-16		0.18	0.15	0.13	0.13						0.59

(a) Normal Afforestation	C 224 (5 Ha. 2009-10)	Moorang	Jangi	Sc-16		0.26	0.21	0.21							0.68
(a) Normal Afforestation	C 219 a (3 Ha. 2009-10)	Moorang	Lippa	Sc-16		0.15	0.13	0.13							0.41
(a) Normal Afforestation	C 219 a (5 Ha. 2008-09)	Moorang	Lippa	Sc-16		0.21	0.21								0.42
(a) Normal Afforestation	Thoring Ashong (5 Ha. 2008-09)	Moorang	Lippa	Sc-16		0.21	0.21								0.42
(a) Normal Afforestation	Lippa (5 Ha. 2010-11)	Moorang	Lippa	Sc-16		0.30	0.26								0.56
(a) Normal Afforestation	UF Surpoo-II (5 Ha. 2008-09)	Pooh	Kanam	Sc-17		0.21	0.21								0.42
(a) Normal Afforestation	UF Chhara-Chhatang (5 Ha. 2008-09)	Pooh	Kanam	Sc-17		0.21	0.21								0.42
(a) Normal Afforestation	C 205 Ropa (5 Ha. 2009-10)	Pooh	Giabung	Sc-18		0.26	0.21	0.21							0.68
(a) Normal Afforestation	UF Tam-C 205 (5 Ha. 2008-09)	Pooh	Giabung	Sc-18		0.21	0.21								0.42
(a) Normal Afforestation	UF Ropa (5 Ha. 2008-09)	Pooh	Giabung	Sc-18		0.21	0.21								0.42
(a) Normal Afforestation	Yangti Dogri (5 Ha. 2010-11)	Pooh	Namgia	Sc-20		0.30	0.26	0.21	0.21						0.98
(a) Normal Afforestation	Habsang (5 Ha. 2010-11)	Pooh	Namgia	Sc-20		0.30	0.26	0.21	0.21						0.98
(a) Normal Afforestation	Tashigang (5 Ha. 2010-11)	Pooh	Namgia	Sc-20		0.30	0.26	0.21	0.21						0.98
(a) Normal Afforestation	DPF Dubling II (5 Ha. 2009-10)	Pooh	Dubling	Sc-20		0.26	0.21	0.21							0.68

(a) Normal Afforestation	DPF Dubling (5 Ha. 2008-09)	Pooh	Dubling	Sc-20		0.21	0.21									0.42
(a) Normal Afforestation	DPF Dubling (5 Ha. 2007-08)	Pooh	Dubling	Sc-20		0.21	0.00									0.21
(a) Normal Afforestation	UF Nesang 5Ha. (2009-10)	Moorang	Mooran g	Sc-21		0.26	0.21	0.21								0.68
(a) Normal Afforestation	UF Lalnen (5 Ha. 2010-11)	Moorang	Mooran g	Sc-22		0.30	0.26	0.21	0.21							0.98
(a) Normal Afforestation	Shilling (3 Ha. 2009-10)	Moorang	Mooran g	Sc-22		0.15	0.13	0.13								0.41
(a) Normal Afforestation	UF Thangi (10 Ha. 2008-09)	Moorang	Mooran g	Sc-22		0.42	0.42									0.84
(a) Normal Afforestation	Pyakutang III (3Ha. 2010-11)	Moorang	Ribba	Sc-23		0.18	0.15	0.13	0.13							0.59
(a) Normal Afforestation	Pyangee (5Ha. 2010-11)	Moorang	Ribba	Sc-23		0.30	0.26	0.21	0.21							0.98
(a) Normal Afforestation	C 191 (3 Ha. 2009-10)	Moorang	Ribba	Sc-23		0.15	0.13	0.13								0.41
(a) Normal Afforestation	UF Haido (2 Ha. 2009-10)	Moorang	Rispa	Sc-23		0.10	0.08	0.08								0.27
(a) Normal Afforestation	Rispa Gorbang nala (2 Ha. 2009-10)	Moorang	Rispa	Sc-23		0.10	0.08	0.08								0.27
(a) Normal Afforestation	C 186 (5 Ha. 2009-10)	Moorang	Ribba	Sc-23		0.26	0.21	0.21								0.68
(a) Normal Afforestation	C 187 b (3 Ha. 2009-10)	Moorang	Ribba	Sc-23		0.15	0.13	0.13								0.41
(a) Normal Afforestation	C 167 (10Ha. 2008-09)	Kilba	Ralli	Sc-24		0.09	0.09									0.17

(a) Normal Afforestation	UF Landhar (5Ha. 2008-09)	Kalpa	Tangling	Sc-24		0.04	0.04								0.09
(a) Normal Afforestation	C 172 Barang(5 Ha. 2009-10)	Kalpa	Barang	Sc-24		0.09	0.04	0.04							0.17
(a) Normal Afforestation	C 179 (5 Ha. 2009-10)	Kalpa	Tangling	Sc-24		0.09	0.04	0.04							0.17
(a) Normal Afforestation	C 181 (5 Ha. 2009-10)	Kalpa	purbani	Sc-24		0.09	0.04	0.04							0.17
(a) Normal Afforestation	C 167 (10 Ha. 2008-09)	Kilba	Ralli	Sc-24		0.09	0.09								0.17
(a) Normal Afforestation	C 172 a (5 Ha. 2008-09)	Kalpa	Barang	Sc-24		0.04	0.04								0.09
(a) Normal Afforestation	C 174 (4 Ha. 2008-09)	Kalpa	Barang	Sc-24		0.03	0.03								0.07
(a) Normal Afforestation	C 181 a (4 Ha. 2008-09)	Kalpa	purbani	Sc-24		0.03	0.03								0.07
(a) Normal Afforestation	Membar kanda (5 Ha. 2010-11)	Kilba	Ralli	Sc-24		0.04	0.04								0.09
(b) Enrichment	C 151 (b) I (5 Ha. New)	Kilba	Brua	Sc-06		1.51	0.30	0.20	0.15	0.10	0.10				2.34
(b) Enrichment	C 151 (b) II (5 Ha. New)	Kilba	Brua	Sc-06			1.51	0.30	0.20	0.15	0.10	0.10			2.34
	C-243 (1a)														
(b) Enrichment	Chini (5 Ha.New)	Kalpa	Kalpa	Sc-11		1.68	0.34	0.23	0.17	0.11	0.11				2.65
(b) Enrichment	C-241 Duni (4 Ha.New)	Kalpa	Kalpa	Sc-11			1.34	0.27	0.18	0.14	0.09	0.09			2.12
(b) Enrichment	C-239 Telengi I (5 Ha.New)	Kalpa	Kalpa	Sc-11		1.68	0.34	0.23	0.17	0.11	0.11				2.65
(b) Enrichment	C-239 Telengi II (5 Ha.New)	Kalpa	Kalpa	Sc-11			1.68	0.34	0.23	0.17	0.11	0.11			2.65

(b) Enrichment	C-240 (b) Telangi (5 Ha.New)	Kalpa	Pangi	Sc-11		1.68	0.34	0.23	0.17	0.11	0.11				**2.65**
(b) Enrichment	C-242 I (6 Ha.New)	Kalpa	Recong Peo	Sc-11		2.02	0.41	0.27	0.21	0.14	0.14				**3.18**
(b) Enrichment	C-242 II (6 Ha.New)	Kalpa	Recong Peo	Sc-11			2.02	0.41	0.27	0.21	0.14	0.14			**3.18**
(b) Enrichment	C-247 Kastiarang (6 Ha.New)	Kalpa	Roghi	Sc-12			2.02	0.41	0.27	0.21	0.14	0.14			**3.18**
(b) Enrichment	C-237 Boktu I (3 Ha.New)	Kalpa	Pangi	Sc-13			1.01	0.20	0.14	0.10	0.07	0.07			**1.59**
(b) Enrichment	C-237 Boktu II (3 Ha.New)	Kalpa	Pangi	Sc-13		1.01	0.20	0.14	0.10	0.07	0.07				**1.59**
(b) Enrichment	C 225 I (2 Ha.New)	Moorang	Jangi	Sc-16		0.80	0.17	0.13	0.11	0.09	0.09				**1.39**
(b) Enrichment	C 225 II (5 Ha.New)	Moorang	Jangi	Sc-16			1.97	0.43	0.32	0.27	0.22	0.22			**3.43**
(b) Enrichment	C 225 III (3 Ha.New)	Moorang	Jangi	Sc-16				1.17	0.25	0.19	0.16	0.13	0.13		**2.04**
(b) Enrichment	NC-01 Dubling (3 Ha.New)	Pooh	Dubling	Sc-20		1.24	0.27	0.20	0.17	0.14	0.14				**2.15**
(b) Enrichment	UF Lanan I (4 Ha.New)	Moorang	Mooran g	Sc-22		1.61	0.35	0.26	0.22	0.18	0.18				**2.79**
(b) Enrichment	UF Lanan II (4 Ha.New)	Moorang	Mooran g	Sc-22			1.61	0.35	0.26	0.22	0.18	0.18			**2.79**
(b) Enrichment	UF Thowaring I (5 Ha.New)	Moorang	Mooran g	Sc-22		2.01	0.43	0.33	0.27	0.22	0.22				**3.49**
(b) Enrichment	UF Thowaring II (5 Ha.New)	Moorang	Mooran g	Sc-22			2.01	0.43	0.33	0.27	0.22	0.22			**3.49**
(b) Enrichment	C 191 I (5 Ha.New)	Moorang	Rispa	Sc-23		2.01	0.43	0.33	0.27	0.22	0.22				**3.49**
(b) Enrichment	C 191 II (5 Ha.New)	Moorang	Rispa	Sc-23			2.01	0.43	0.33	0.27	0.22	0.22			**3.49**

(b) Enrichment	C 192 I (3 Ha.New)	Moorang	Rispa	Sc-23		1.20	0.26	0.20	0.16	0.13	0.13				**2.09**
(b) Enrichment	C 192 II (3 Ha.New)	Moorang	Rispa	Sc-23			1.20	0.26	0.20	0.16	0.13	0.13			**2.09**
(b) Enrichment	C 188 a I (4 Ha.New)	Moorang	Ribba	Sc-23		1.61	0.35	0.26	0.22	0.18	0.18				**2.79**
(b) Enrichment	C 188 a II (4 Ha.New)	Moorang	Ribba	Sc-23			1.61	0.35	0.26	0.22	0.18	0.18			**2.79**
(b) Enrichment	C 188 b I (3 Ha.New)	Moorang	Ribba	Sc-23		1.20	0.26	0.20	0.16	0.13	0.13				**2.09**
(b) Enrichment	C 188 b II (3 Ha.New)	Moorang	Ribba	Sc-23			1.20	0.26	0.20	0.16	0.13	0.13			**2.09**
(b) Enrichment	C 189 a I (4 Ha.New)	Moorang	Ribba	Sc-23		1.61	0.35	0.26	0.22	0.18	0.18				**2.79**
(b) Enrichment	C 189 a II (4 Ha.New)	Moorang	Ribba	Sc-23			1.61	0.35	0.26	0.22	0.18	0.18			**2.79**
(b) Enrichment	C 179 Tangling Powari I(5 Ha. New)	kalpa	Tangling	Sc-24			2.01	0.43	0.33	0.27	0.22	0.22			**3.49**
(b) Enrichment	C 179 Tangling Powari II (3 Ha. New)	kalpa	Tangling	Sc-24				1.01	0.20	0.14	0.10	0.07	0.07		**1.59**
(b) Enrichment	C 179 Tangling Powari III (3 Ha. New)	kalpa	Tangling	Sc-24			1.01	0.20	0.14	0.10	0.07	0.07			**1.59**
(b) Enrichment	C 180 Landhar (5 Ha. New)	kalpa	Tangling	Sc-24				2.01	0.43	0.33	0.27	0.22	0.22		**3.49**
(b) Enrichment	C 171 b Barang (5 Ha. New)	kalpa	Barang	Sc-24		1.51	0.30	0.20	0.15	0.10	0.10				**2.34**
(b) Enrichment	C 171 a Anodan (5 Ha. New)	kalpa	Barang	Sc-24					1.68	0.34	0.23	0.17	0.11	0.11	**2.65**

(b) Enrichment	C 173 Barang (3 Ha. New)	kalpa	Barang	Sc-24				0.90	0.18	0.12	0.09	0.06	0.06		**1.41**
(b) Enrichment	C 172 b Anodan (2 Ha. New)	kalpa	Barang	Sc-24			0.60	0.12	0.08	0.06	0.04	0.04			**0.94**
(b) Enrichment	C 174 b Barang (2 Ha. New)	kalpa	purbani	Sc-24				0.67	0.14	0.09	0.07	0.05	0.05		**1.06**
(b) Enrichment	C 183 b (5 Ha. New)	kalpa	purbani	Sc-24					1.51	0.30	0.20	0.15	0.10	0.10	**2.34**
(b) Enrichment	C 182 Purbani (5 Ha. New)	kalpa	purbani	Sc-24				1.68	0.34	0.23	0.17	0.11	0.11		**2.65**
(b) Enrichment	C 181 a Purbani (5 Ha. New)	kalpa	purbani	Sc-24			1.68	0.34	0.23	0.17	0.11	0.11			**2.65**
(b) Enrichment	C 184 (5 Ha. New)	kalpa	purbani	Sc-24				1.51	0.30	0.20	0.15	0.10	0.10		**2.34**
(b) Enrichment	UF Shongtong (5 Ha. New)	kalpa	Barang	Sc-24		1.74	0.35	0.23	0.17	0.11	0.11				**2.71**
(c) Energy Plantation	Na	Na	Na	Na											**0.00**
(d) Measure to handle invasive species.	Na	Na	Na	Na											**0.00**
(1A)Nurseries	Maintenance of kalpa (0.65 Ha) Ht 2784	Kalpa	Kalpa	Sc-11		4.00									**4.00**
(1A)Nurseries	Recong PEO 0.25 hc (Ht 2386)	Kalpa	Recong Peo	Sc-11		2.50									**2.50**
(1A)Nurseries	Pangi 0.55 Ha (Ht 2547m)	Kalpa	Pangi	Sc-13		2.00									**2.00**
(1A)Nurseries	Akpa 0.50Hc (Ht 2335m)	Moorang	Rarang	Sc-15		1.50									**1.50**

(1A)Nurseries	Jangi 0.25Hc (Ht 2691m)	Moorang	Jangi	Sc-16		1.00										1.00
(1A)Nurseries	Lippa 1 Hc (Ht 2600 m)	Moorang	Jangi	Sc-16		3.00										3.00
(1A)Nurseries	Kanam/Surpo o 0.5 Hc (Ht 2853m)	Pooh	Kanam	Sc-17		1.50										1.50
(1A)Nurseries	Dubling (1 Ha Ht 2994m)	Pooh	Dubling	Sc-20		2.00										2.00
(1A)Nurseries	Moorang (0.65 Ha)	Moorang	Mooran g	Sc-22		1.50										1.50
(1A)Nurseries	Ribba/Skibba (0.25 Ha. Ht 2320m)	Moorang	Ribba	Sc-23		2.50										2.50
(1A)Nurseries	Skibba (0.5 Ha. Ht 2227m)	Moorang	Ribba	Sc-23		0.00										0.00
(1A)Nurseries	Shongtong (0.25 Ha, Ht 1928m)	kalpa	Barang	Sc-24		5.00										5.00
(1A)Nurseries	Ralli (0.50 Ha , Ht 1849m)	Kilba	Ralli	Sc-24		3.00										3.00
(1A)Nurseries	Purbani (0.20 Ha , Ht 2567m)	kalpa	purbani	Sc-24		3.00										3.00
(1B)Pasture Reclamation.	Na	Na	Na	Na												0.00

Soil & Water Conservation Endeavors

Name of Sub Component	Name of Area	Name of Range	Name of Beat	Micro water shed	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total
(a) Moisture Retentively Operations	Na	Na	Na	Na											0.00
(b) Live Hedge Fencing	Na	Na	Na	Na											0.00
(c) Vegetative structures	Trimurti Slip	Pooh	Namgia	Sc-20		0.2									0.20
(c) Vegetative structures	Markarang nala	Moorang	Rispa	Sc-23			1.5								1.50
(c) Vegetative structures	Ralli nala	Kilba	Ralli	Sc-24		1									1.00
(d) Civil Structures	Kandralus Slip	Kilba	Sapni	Sc-05		3									3.00
(d) Civil Structures	UF Chunang Slip-I	Kilba	Brua	Sc-05	0.00										0.00
(d) Civil Structures	UF Chunang Slip-II	Kilba	Brua	Sc-05	0.00										0.00
(d) Civil Structures	Badan & Molodan slip	Kilba	Brua	Sc-05		4	1.5								5.50
(d) Civil Structures	Kache nala slip	Kilba	Brua	Sc-05		6	2.5								8.50
(d) Civil Structures	Khula nala/slip	Kalpa	Kalpa	Sc-11		2.5									2.50
(d) Civil Structures	C 239 Slip/nala_I	Kalpa	Kalpa	Sc-11			2.5								2.50
(d) Civil Structures	C 239 Slip/nala_III	Kalpa	Kalpa	Sc-11			2								2.00
(d) Civil Structures	Pancha Slide	Kalpa	Kalpa	Sc-11		4	2.5								6.50
(d) Civil Structures	Boktu Slip	Kalpa	Pangi	Sc-11		3	1.5								4.50
(d) Civil Structures	Sharbo Slip	Kalpa	Recong Peo	Sc-11		1.5									1.50

(d) Civil Structures	Talangi nala	Kalpa	Recong Peo	Sc-11			4								4.00
(d) Civil Structures	Gori slip	Kalpa	Recong Peo	Sc-11		3									3.00
(d) Civil Structures	Kalpa Dakho slip/nala	Kalpa	Recong Peo	Sc-11		2.5									2.50
(d) Civil Structures	Raildenden nala	Kalpa	Roghi	Sc-12		3	1.5								4.50
(d) Civil Structures	Kholangden Nala	Kalpa	Roghi	Sc-12			3	1							4.00
(d) Civil Structures	Khosharang Nala	Kalpa	Roghi	Sc-12		2	1.5								3.50
(d) Civil Structures	DPF C 244 Slip	Kalpa	Kalpa	Sc-12			1								1.00
(d) Civil Structures	C 243 Slip (Kalpa beat)	Kalpa	Kalpa	Sc-12		1.5	3								4.50
(d) Civil Structures	Kare nala	Kalpa	Roghi	Sc-12		3	5								8.00
(d) Civil Structures	Ragura nala (Brano nala)	Kalpa	Pangi	Sc-13			3	1.5							4.50
(d) Civil Structures	Godang Slip	Moorang	Rarang	Sc-15			2								2.00
(d) Civil Structures	Godang Nala	Moorang	Rarang	Sc-15		3	1								4.00
(d) Civil Structures	Krichang Nala	Moorang	Rarang	Sc-15			3	2							5.00
(d) Civil Structures	Buroo Slip	Moorang	Rarang	Sc-15		2	5								7.00
(d) Civil Structures	Sharangti Nala (Akpa Ht 2602)	Moorang	Rarang	Sc-15		2	1								3.00
(d) Civil Structures	Chhorka Nala (Ht 2262)	Moorang	Rarang	Sc-15		2.75									2.75
(d) Civil Structures	Hondening nala	Moorang	Jangi	Sc-16			3	1.5							4.50
(d) Civil Structures	Langfaring Slip/Nala	Moorang	Jangi	Sc-16		2	1								3.00
(d) Civil Structures	Gandumshurku Slip	Moorang	Lippa	Sc-16				2.5							2.50

(d) Civil Structures	Tepanashong Slip	Moorang	Lippa	Sc-16		3	2								5.00
(d) Civil Structures	kaling slip	Moorang	Lippa	Sc-16		3	1.5								4.50
(d) Civil Structures	Jojrang Slip	Moorang	Lippa	Sc-16		3	1.5								4.50
(d) Civil Structures	khalungpa Slip	Moorang	Lippa	Sc-16			5	2							7.00
(d) Civil Structures	Spillow Slip/nala	Pooh	Kanam	Sc-17		3.5	1								4.50
(d) Civil Structures	Rinang nala	Pooh	Kanam	Sc-17		2	5	1							8.00
(d) Civil Structures	Yullidhar nala	Pooh	Giabong	Sc-18			3								3.00
(d) Civil Structures	Ropa Nala	Pooh	Giabong	Sc-18		2	0.5								2.50
(d) Civil Structures	Gialbapangchelungpha nala (Askhroo nala)	Pooh	Giabong	Sc-18		3	1								4.00
(d) Civil Structures	Telenque nala	Pooh	Sunam	Sc-18		3	2	1							6.00
(d) Civil Structures	Limpadardar Yolam nala	Pooh	Sunam	Sc-18		4	6	4							14.00
(d) Civil Structures	Chukku nala	Pooh	Giabong	Sc-18			3.5								3.50
(d) Civil Structures	Omperia nala I	Pooh	Giabong	Sc-18			3								3.00
(d) Civil Structures	Omperia nala II	Pooh	Giabong	Sc-18			2								2.00
(d) Civil Structures	Sursey nala I	Pooh	Giabong	Sc-18			4								4.00
(d) Civil Structures	Sursey nala II	Pooh	Giabong	Sc-18			3								3.00
(d) Civil Structures	Changnakh Nala/slip	Pooh	Giabong	Sc-18		3	5.5	1.5							10.00
(d) Civil Structures	Namgia Nala	Pooh	Namgia	Sc-20		4	2								6.00
(d) Civil Structures	Tashigang Slip	Pooh	Namgia	Sc-20		3	4	1							8.00
(d) Civil Structures	Habsang nala	Pooh	Namgia	Sc-20			3.5	1.5							5.00
(d) Civil Structures	Namgia Nala II	Pooh	Namgia	Sc-20			3.5								3.50
(d) Civil Structures	Dakthal Slip/Slide	Pooh	Dubling	Sc-20			2.5								2.50
(d) Civil Structures	Dubling Nala/slip II	Pooh	Dubling	Sc-20		3	2								5.00

(d) Civil Structures	Soyangati nala	Moorang	Moorang	Sc-21		3	4								7.00
(d) Civil Structures	Tharche Nala/slip	Moorang	Moorang	Sc-21			4								4.00
(d) Civil Structures	Namchang Slip	Moorang	Moorang	Sc-21			4.5								4.50
(d) Civil Structures	Tongtong nala	Moorang	Moorang	Sc-21			2.5								2.50
(d) Civil Structures	Nokulkua nala	Moorang	Moorang	Sc-22	0.00										0.00
(d) Civil Structures	Raldang Nala	Moorang	Ribba	Sc-23		4.5	5	2.5							12.00
(d) Civil Structures	Holdo (Chirrang) Khad	Moorang	Rispa	Sc-23	0.00										0.00
(d) Civil Structures	Gramong Nala	Moorang	Rispa	Sc-23		2	4								6.00
(d) Civil Structures	Rakshash Nala	Moorang	Rispa	Sc-23			3	1.5							4.50
(d) Civil Structures	Poonalang nala	Kalpa	Purbani	Sc-24		5	6.5	6	2.5						20.00
(d) Civil Structures	Purbani Slip (Rawa C 184)	Kalpa	Purbani	Sc-24		2.5									2.50
(d) Civil Structures	Landhar nala (Kurang nala)	Kalpa	Tangling	Sc-24		2									2.00
(d) Civil Structures	Landhar nala II	Kalpa	Tangling	Sc-24			3	1							4.00
(d) Civil Structures	Tallampi nala I	Kalpa	Tangling	Sc-24			3.5								3.50
(d) Civil Structures	Tallampi nala II	Kalpa	Tangling	Sc-24			5								5.00
(d) Civil Structures	Thittarodhan slip	Kalpa	Tangling	Sc-24	0.00										0.00
(d) Civil Structures	Tichro slip	Kalpa	Tangling	Sc-24		3.5	1.5								5.00
(d) Civil Structures	Sharmi nala/slip	Kalpa	Barang	Sc-24			3	1							4.00
(d) Civil Structures	Shayang khad	Kalpa	Barang	Sc-24	0.00										0.00
(e) Drainage line treatment & Land slide control.	Brua khad	Kilba	Brua	Sc-05		3	1.5								4.50
(e) Drainage line treatment & Land slide control.	Shong Nala	Kilba	Chansu & Brua	Sc-06		4	6.5	4.5							15.00

(e) Drainage line treatment & Land slide control.	Peger Khad/Nala	Moorang	Lippa	Sc-16		5	6.5	7	3.5						22.00
(e) Drainage line treatment & Land slide control.	Kanam nala	Pooh	Kanam	Sc-17		4	6.5	2							12.50
(e) Drainage line treatment & Land slide control.	Shiva Nala	Pooh	Giabong	Sc-18	0.00										0.00
(e) Drainage line treatment & Land slide control.	Moorang Nala	Moorang	Moorang	Sc-22		5	6.5	5	2.5						19.00
(e) Drainage line treatment & Land slide control.	Tangling nala	Kalpa	Tangling	Sc-24		4	3								7.00
(e) Drainage line treatment & Land slide control.	Lanka garang nala	Kilba	Ralli	Sc-24		5	6.5	3.5							15.00
(e) Drainage line treatment & Land slide control.	Membar nala	Kilba	Ralli	Sc-24		5.5	6.5	3.5							15.50
(e) Drainage line treatment & Land slide control.	Barang nala	Kalpa	Barang	Sc-24			4								4.00
(f) Stream Bank stabilizations	Holdo River bank stabilization	Moorang	Rispa	Sc-23		3.5	1.5								5.00

Payment for Environmental Services

Name of Area	Name of Range	Name of Beat	Micro water shed	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total
Sc			Sc-05					2.75	2.75	2.60	2.60	2.27		12.97
Sc			Sc-06						2.00	2.00	1.90	1.90	1.88	9.68
Sc			Sc-11					3.80	3.80	3.75	3.75	3.67		18.77
Sc			Sc-12					0.90	0.90	0.89	0.85	0.85		4.39
Sc			Sc-13					2.60	2.60	2.50	2.50	2.30		12.50
Sc			Sc-15					2.25	2.25	2.20	2.20	1.94		10.84
Sc			Sc-16						2.60	2.60	2.59	2.50	2.50	12.79
Kanam nala	Pooh	Kanam	Sc-17			2.50								2.50
Sc			Sc-17						2.50	2.50	2.35	2.35	2.09	11.79
Limpadardar Yolam nala	Pooh	Sunam	Sc-18			1.00								1.00
Sc			Sc-18						2.50	2.50	2.35	2.35	2.24	11.94
Sc			Sc-20						1.75	1.75	1.69	1.60	1.60	8.39
Tongtong nala	Moorang	Moorang	Sc-21			1.00								1.00
Sc			Sc-21						1.50	1.50	1.45	1.45	1.45	7.35
Moorang Nala	Moorang	Moorang	Sc-22				1.50							1.50
Sc			Sc-22						1.65	1.65	1.60	1.60	1.56	8.06
Sc			Sc-23						2.50	2.50	2.35	2.35	2.30	12.00
Sc			Sc-24					3.60	3.60	3.50	3.50	3.50		17.70

Research, Training & Capacity build up, Publicity

1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total
			16	16	15	15	10.5	10.08		82.58

Infrastructure built up & Forest Protection

Name of Sub Component	Name of Area	Name of Range	Name of Beat	Micro water shed	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total
(a) Building for stay of staff, FRH/I Hut.	Maintance of FG Hut Shong at Brua	Kilba	Shong	Sc-05			1								1.00
(a) Building for stay of staff, FRH/I Hut.	Maintance of FG Hut Sapni (Ht 2674m)	Kilba	Sapni	Sc-05			2.5								2.50
(a) Building for stay of staff, FRH/I Hut.	Maintenances of BO Quarter Kalpa.	Kalpa	Kalpa	Sc-11			1.75								1.75
(a) Building for stay of staff, FRH/I Hut.	Construction of Range rest room at kalpa	Kalpa	Kalpa	Sc-11			5.5	3							8.50
(a) Building for stay of staff, FRH/I Hut.	Maintenances of FG hut Kalpa.	Kalpa	Kalpa	Sc-11			1								1.00
(a) Building for stay of staff, FRH/I Hut.	Maintenances of Type one quarter Kalpa.	Kalpa	Kalpa	Sc-11			2								2.00
(a) Building for stay of staff, FRH/I Hut.	Maintenances of Type two quarter Kalpa.	Kalpa	Kalpa	Sc-11			2								2.00
(a) Building for stay of staff, FRH/I Hut.	Fencing of residential colony of staffs	Kalpa	Kalpa	Sc-11			2								2.00
(a) Building for stay of staff, FRH/I Hut.	Maintenances/special repair. of Range residence Kalpa.	Kalpa	Kalpa	Sc-11		3	2.5								5.50
(a) Building for stay of staff, FRH/I Hut.	Maintenance Range office Kalpa.	Kalpa	Kalpa	Sc-11			2								2.00
(a) Building for stay of staff, FRH/I Hut.	Construction of Biodiversity centre at Recong PEO	Kalpa	Recong Peo	Sc-11			1.8								1.80

(a) Building for stay of staff, FRH/I Hut.	Construction of Range Rest room above store/canteen Recong Peo	Kalpa	Recong Peo	Sc-11	0.00											**0.00**
(a) Building for stay of staff, FRH/I Hut.	Maintenances of toilets in Division office	Kalpa	Recong Peo	Sc-11			0.35									**0.35**
(a) Building for stay of staff, FRH/I Hut.	Fencing & fixing of Solar light in Divisional forest complex including officers residents	Kalpa	Recong Peo	Sc-11			5.5	3.5								**9.00**
(a) Building for stay of staff, FRH/I Hut.	Compound of DFO recidents	Kalpa	Recong Peo	Sc-11			1.5									**1.50**
(a) Building for stay of staff, FRH/I Hut.	Maintainance of FG hut Pangi	Kalpa	Pangi	Sc-13			1.5									**1.50**
(a) Building for stay of staff, FRH/I Hut.	Maintainance of Beat guard store at Pangi	Kalpa	Pangi	Sc-13			0.75									**0.75**
(a) Building for stay of staff, FRH/I Hut.	Costruction of FG hut Akpa.	Mooran g	Rarang	Sc-15			0.85									**0.85**
(a) Building for stay of staff, FRH/I Hut.	Maintenance range office/ residents Akpa.	Mooran g	Rarang	Sc-15			1.5									**1.50**
(a) Building for stay of staff, FRH/I Hut.	Maintenance I/ Hut Akpa.	Mooran g	Rarang	Sc-15			3.5									**3.50**
(a) Building for stay of staff, FRH/I Hut.	Maintenance Chowkidar quarter Akpa.	Mooran g	Rarang	Sc-15			1									**1.00**
(a) Building for stay of staff, FRH/I Hut.	Costruction of FG hut Jangi.	Mooran g	Jangi	Sc-16			1.34									**1.34**
(a) Building for stay of staff, FRH/I Hut.	Maintenance BO quarter Jangi	Mooran g	Jangi	Sc-16			1.5									**1.50**
(a) Building for stay of staff, FRH/I Hut.	Special repair of FG hut Lippa	Mooran g	Jangi	Sc-16			3	1.5								**4.50**

(a) Building for stay of staff, FRH/I Hut.	Maintenance BO quarter Kanam at Spillow (Ht 2329)	Pooh	kanam	Sc-17			2.5								**2.50**
(a) Building for stay of staff, FRH/I Hut.	Maintenance FG hut Kanam	Pooh	kanam	Sc-17			3								**3.00**
(a) Building for stay of staff, FRH/I Hut.	Maintenance of Type II quarter (BO residence)	Pooh	Pooh	Sc-18			1								**1.00**
(a) Building for stay of staff, FRH/I Hut.	Maintenance of Type II quarter (Range assisttant residence)	Pooh	Pooh	Sc-18			1.5								**1.50**
(a) Building for stay of staff, FRH/I Hut.	Maintenance of Type III quarter no 2	Pooh	Pooh	Sc-18			1.5								**1.50**
(a) Building for stay of staff, FRH/I Hut.	Maintenance of Type II quarter no 5	Pooh	Pooh	Sc-18			0.1								**0.10**
(a) Building for stay of staff, FRH/I Hut.	Maintenance of FRH Pooh	Pooh	Pooh	Sc-18			0.5								**0.50**
(a) Building for stay of staff, FRH/I Hut.	Maintenance of Chowkidar quarter Pooh	Pooh	Pooh	Sc-18			1								**1.00**
(a) Building for stay of staff, FRH/I Hut.	Maintenance of FG hut Giabong (Ht 2899m)	Pooh	Giabong	Sc-18			2								**2.00**
(a) Building for stay of staff, FRH/I Hut.	Maintenance of I hut Giabong	Pooh	Giabong	Sc-18			4	1							**5.00**
(a) Building for stay of staff, FRH/I Hut.	Construction of FG hut Sunam	Pooh	Sunam	Sc-18			1.5								**1.50**
(a) Building for stay of staff, FRH/I Hut.	Construction of Range office / Residence Malling at Nako.	Maling	Maling	Sc-19			9								**9.00**
(a) Building for stay of staff, FRH/I Hut.	Maintenance Malli hut Dubling	Pooh	Dubling	Sc-20			2								**2.00**

(a) Building for stay of staff, FRH/I Hut.	Construction of FG hut Dubling	Pooh	Dubling	Sc-20			1								1.00
(a) Building for stay of staff, FRH/I Hut.	Maintenance FG hut Rispa	Mooran g	Rispa	Sc-23			1.5								1.50
(a) Building for stay of staff, FRH/I Hut.	Maintenance of BO quarter Ribba	Mooran g	Ribba	Sc-23			1.5								1.50
(a) Building for stay of staff, FRH/I Hut.	Maintenance FG hut Ribba	Mooran g	Ribba	Sc-23			1.25								1.25
(a) Building for stay of staff, FRH/I Hut.	Maintenance of Chowkidar quarter Shongtong	Kalpa	Barang	Sc-24			2								2.00
(a) Building for stay of staff, FRH/I Hut.	Maintenance of BO quarter Shongtong	Kalpa	Barang	Sc-24			3.5								3.50
(a) Building for stay of staff, FRH/I Hut.	Maintenance of FG hut including store	Kalpa	Barang	Sc-24			1								1.00
(a) Building for stay of staff, FRH/I Hut.	Maintenance of FRH Shongtong	Kalpa	Barang	Sc-24			4								4.00
(a) Building for stay of staff, FRH/I Hut.	Maintenance of FG hut Ralli	Kilba	Ralli	Sc-24			1.5								1.50
(a) Building for stay of staff, FRH/I Hut.	Maintenance of FG hut Purbani	Kalpa	Purbani	Sc-24			1.5								1.50
(a) Building for stay of staff, FRH/I Hut.	Maintenance of Chowkidar quarter Purbani	Kalpa	Purbani	Sc-24			2								2.00
(a) Building for stay of staff, FRH/I Hut.	Maintenance of FRH Purbani	Kalpa	Purbani	Sc-24		1.5									1.50
(a) Building for stay of staff, FRH/I Hut.	Maintenance of FG hut Tangling	Kalpa	Tangling	Sc-24			0.80								0.80
(b) Forest Roads/ I Paths	Maintenances of Approach road to range office	Kalpa	Kalpa	Sc-11			5								5.00

(b) Forest Roads/ I Paths	Maintenance of Approch path to Range office from FRH Pooh	Pooh	Pooh	Sc-18			1								1.00
(b) Forest Roads/ I Paths	Maintenance of Path from Siasoo khad to Sunam (6 Km)	Pooh	Sunam	Sc-18			2								2.00
(b) Forest Roads/ I Paths	Maintenance of B Path from Holdo to Tirung khad (5 Km)	Mooran g	Rispa	Sc-23			1.5								1.50
(b) Forest Roads/ I Paths	Maintenance/Construct ion of Approach road to forest colony Skibba	Mooran g	Ribba	Sc-23			3								3.00
(b) Forest Roads/ I Paths	Maintenance of Approach road to FRH Shongtong	Kalpa	Barang	Sc-24			2.5								2.50
(b) Forest Roads/ I Paths	Construction of Approach road to FRH Purbani & Maintenance of path to FG hut.	Kalpa	Purbani	Sc-24			4								4.00
(c) Augmentation of Water Supply.	Maintance of FG Hut Shong at Brua	Kilba	Shong	Sc-05			0.5								0.50
(c) Augmentation of Water Supply.	Forest Colony Kalpa	Kalpa	Kalpa	Sc-11			1								1.00
(c) Augmentation of Water Supply.	Divisional complex Recong Peo			Sc-11			10								10.00
(c) Augmentation of Water Supply.	Maintenance of FG hut Giabong (Ht 2899m)	Pooh	Giabong	Sc-18			1								1.00
(c) Augmentation of Water Supply.	Maintenance of Chowkidar quarter Shongtong	Kalpa	Barang	Sc-24			0.5								0.50

(d) Vehicle & Operational Support to HPFD	Na	Na	Na	Na		0.4	3.5	3.5	3.25	3.25	3	3	2.8	2.8	**25.50**
(e) Office Equipment (computers,Laptops ,GPS, LCD Projector etc.)	(computer & printer=3,Laptop=1 ,GPS=25, LCD Projector=1, Digital Camara=25, Internet Dongal etc.)	Na	Na	Na			2.5	3	1.25						**6.75**
(f) Silt Monitoring & Purchase of Meteorological Equipment	Na	Na	Na	Na											**0.00**
(g) Construction & Repair of Boundary Pillars.	C141, C 142, C 143, C 144, C 145, C 146, C 147, C 148, C 149 & C 150			Sc-05				0.33							**0.33**
(g) Construction & Repair of Boundary Pillars.	C151 a & C 151 b			Sc-06				0.03							**0.03**
(g) Construction & Repair of Boundary Pillars.	C240, C 239, C 241, C 242			Sc-11				0.3							**0.30**
(g) Construction & Repair of Boundary Pillars.	C244, C 245 a, C 245 b, C 246, C 247, NC 25			Sc-12					0.12						**0.12**
(g) Construction & Repair of Boundary Pillars.	C235, C 236, C 237, C 238			Sc-13				0.1							**0.10**
(g) Construction & Repair of Boundary Pillars.	C188 a, C 189 a & C 190			Sc-16				0.18							**0.18**
(g) Construction & Repair of Boundary	C193			Sc-22					0.65						**0.65**

(g) Construction & Repair of Boundary Pillars.	C187, C 188 b, C 189 b, C 191 & C 192			Sc-23				0.12							**0.12**
(g) Construction & Repair of Boundary Pillars.	C166, C 167, C 168, C 169 a, C 169 b			Sc-24				0.11							**0.11**
(h) Fire Protection Measures	Fire Protection Measures (Hiring of 3 Vehicle (One per Range)during fire season)	Na	Na	Na			4.5	4.5	4.5	4.5	4.5	4.5			**27.00**
(i) Distribution of Non-conventional energy & Fuel Saving devices	Shong	Kilba	Shong	Sc-06				0.2	0.2	0.19	0.15				**0.74**

Wild Life Measures

1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total
									0.00	0.00

Monitoring & Evaluation

1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total
		7	9	10	7	6.55	6	4		49.55

Institutional Departmental Charges

Name of Sub Component	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total
a i) Establishment Cost (Refund of Salary of CAT Plan Division to Govt.)		5.00	10.00	15.00	10.00	10.00					50.00
a ii) Establishment Cost (contractual Emoluments)		3.00	4.00	3.50	5.00	4.50	4.00	3.50	3.00		30.50
b) Office Expenses		3.00	3.00	3.00	2.50	2.50	2.00	2.00	1.87		19.87
c) Motor Vehicle & POL		1.50	2.50	3.00	2.00	1.50	1.50	1.00	1.00		14.00
d)Amenities to Staff and Labour			0.25	0.50	0.50						1.25

Contingencies

1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total
0.00	28.50	47.17	19.50	13.50	13.00	11.50	10.00	9.00	13.00	165.17

*** The amount kept at the disposal of DFO CAT Plan and expended accordingly.**
****Unforeseen eventualities in future or to be spent under Comprehensive CAT Plan for Sutluj Basin Falling in Kinnaur Forest Division.**
***** Out of Rs 3 Lacks, Rs 1.50 Lacks is meant for DFO kinnaur under this component for the second year i.e. 2012-13.**

CHAPTER IV

DETAILED DATA OF MICRO WATERSHEDS

SUB CATCHMENT

05

MANAGEMENT PLAN OF – Sc05 Sub Catchment (UNDER KARCHAM WANGTOO HEP)

INTRODUCTION

LOCATION (BOUNDARIES)					GENERAL DESCRIPTION OF MWS				
AREA OF MWS	LATITUDE	LONGITUDE	ALTITUDE	SLOPE	SOIL	FOREST			PANCHAYAT
						RANGE	BLOCK	BEAT	
9000 ha.	31°23 to 31°30'	78°06' to 78°11'	1905 to 5141	35° to 85°	Loam, Sandy Loam/ Clay Loam	Kilba	Karcham	Sapni & part of Shong	Brua

LAND USE						DEMOGRAPHY		
RF	DPF	UPF	PRIVATE LAND (Agri+Horti)	WASTE LAND	TOTAL	HOUSE HOLD	HUMAN POPULATION	LIVE STOCK POPULATION
(in HA)	(in HA)	(in HA)	(in HA)	(in HA)	(in HA)	(in Nos.)	(in Nos.)	(in Nos.)
	331.05	1054	413	227	2025.05	639	3198	10901

FLORA

TREES	FIR, KAIL, DEODAR, WALNUT, KUNISH, CHILGOZA, POPLUS, SPRUCE, AESCULUS, CORYLUS, QUERCUS ILEX, BIRD CHERRY ETC.
HERBS & SHRUBS	ROSA ,RUBUS, COTONEASTER, DESDOMODIUM, VIOLA, POLYGONUM, FRAGERIA, THALICTRUM, PLECTRANTHUS, SALVIA, INDIGO FERA, BERBARIS, DAPHNE, LONICERA, VIBURNUM, NEPETA, AARONS ROD, AINSLIAEA, VALERIANA, SPIRAEA, ARTIMESIA, LONICERA, DEUTIZIA, BALSOM ETC.
GRASSES	ARUNDO-DONAX, AGROPHRON LONGEARISTATUM, AGROSTIS ALBA ETC.
MEDICINAL HERBS	RATANJOT, GUCHHI, KALA ZIRA, DIASCORIA ETC.

FAUNA

ANIMALS	BLACK BEAR, LEOPARD & OTHERS SMALL MAMMALS
BIRDS/PHEASANTS	CHAKUR & OTHER BIRDS ETC.

Karcham Wangtoo HEP (Kinnaur Division)

Sub-Catchment 05

Naik Environment Research Institute Ltd

FUTURE PLANNING

1 Afforestation Measures

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Normal Afforestation	C 141 (5 Ha. 2010-11)	31 29'34", 78 09'06"	The area has been closed under rehabilitation of degraded forest during 2010-11. The area is fenced with barbed wire fencing. The area is situated above Kanai village & consists of Deodar/ Kail forest. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kilba.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 2nd year)	5	3120	0.156
					Ha.(maint. 3rd year)		1740	0.087
					Ha.(maint. 4th year)		870	0.0435
					Ha.(maint. 5th year)		870	0.0435
	C 141 (5 Ha. 2009-10)	31 29'35", 78 09'14"	The area has been closed under rehabilitation of degraded forest during 2009-10. The area is fenced with barbed wire fencing. Slope is moderate to steep. The area is situated adjoining to Kanai village. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kilba.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 3rd year)	5	1740	0.087
					Ha.(maint. 4th year)		870	0.0435
					Ha.(maint. 5th year)		870	0.0435
(b) Enrichment								
(c) Energy Plantation								
(d) Measure to handle invasive species.								
Nurseries								
Pasture Reclamation.								
Total Afforestation and Nurseries								**0.50**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
2 Soil & Water Conservation Endeavors								
(a) Moisture Retentively Operations								
(b) Live Hedge Fencing								
(c) Vegetative structures								
(d) Civil Structures	Kandralus Slip	31 28'53", 78 10'49"	The Slip is situated on the left bank of Baspa river & left side of Baturi khad. It originates from old Mule Path from Karcham to Brua. The slope is steep & about 15x3m length requires treatment.	(i) Pollarding of Kunish. (ii) Construction of check wall/P/wall in crate downside. (iii) Construction of vegetative Pallisade/HBL in staggard. (iv) Planting of Desmodium, Spiraea, Kunish Etc.	Ha.	1.2	84400	3.00
					Cum	122	1633	
	UF Chunang Slip-I	31 28'24", 78 10'53"	The Slip is situated on the left bank of Baspa river & above Brua road. The slope is moderate to steep. The slip is about 15x20m & requires treatment.	(i) Construction of vegetative Pallisade/HBL in staggered. (ii) Construction of check wall/P/wall in crate. (iii) Planting of Desmodium, Spiraea, Kunish & Sprinkling of Bioseeds like Robinia, Ailanthus, Brey, Plectranthus & Spiraea.	Ha.	2.35	84400	0.00
					Cum	245	1633	
	UF Chunang Slip-II	31 28'26", 78 10'46"	The Slip is situated above UF Chunang Slip-I & below Brua road & on the left bank of Baspa river . The slip is due to Scouring action of Baspa river down below. The slope is moderate to steep. The slip is wide & requires treatment.	(i) The slip is to be treated by constructing check wall/P/wall in crate. (ii) Construction of Toe Wall at the bottom & on the left side of Baspa River. (iii) Planting of Desmodium, Spiraea, Kunish & Sprinkling of Bioseeds like Robinia, Ailanthus, Brey, Plectranthus & Spiraea.	Ha.	1.75	84400	
					Cum	214	1633	0.00

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(d) Civil Structures	Badan & Molodan slip	31 28'01", 78 10'40"	Both the slips are located on the left bank of Brua khad & just below C 149 DPF of Deodar & Ilex forest. The part of the slip near Brua khad on the left bank is being treated under Baspa HEP cat plan (Spillover works) during this year by constructing check walls. The left bank of Brua khad is unstable & requires treatment whereas right bank is stable & requires no treatment.	(I) Construction of vegetative Pallisade/HBL in staggered. (ii) Construction of P/wall in crate. (iii) Planting of Willow, Poplar & Kunish. (iv) Sprinkling of Bioseeds like Desmodium, Spiraea, Kunish, Robinia, Allanthus, Bray, Plectranthus & Cannabis.	Ha.	2.35	84400	5.50
					Cum	214	1633	
	Kache nala slip	31 27'15", 78 10'02"	The slip is situated on the left bank of Brua khad. The slip is steep & is located near DPF C 149. It is causing damage to private as well as Govt property down below. There is no water except during rainy season. About 1300m x 500m requires treatment. The GPS coordinates has been given by the RO Kilba.	(I) Construction of diversion drain about 0.5Km. (ii)Construction of vegetative Pallisade/HBL in staggered. (iii) Construction of check wall/ P/wall in crate. (iv) Planting of Desmodium, Spiraea, Willow, Poplar & Kunish. (v) Sprinkling of Bioseeds like Desmodium, Spiraea, Kunish, Robinia, Allanthus, Bray, Plectranthus & Cannabis.	Ha.	3.5	84400	8.50
					Cum	337	1633	
					Rmt	500	338	
(e) Drainage line treatment & Land slide control.	Brua khad	31 28'23", 78 10'59"	The khad originates from top of kanchi Dogri & is steep to very steep/ Precipitous above & moderate to gentle down below. It is a perennial khad. Most of the banks of the khad are sliding at different locations & requires treatments. One part on the left bank of the khad near to Brua bridge is being treated under Baspa HEP Cat plan.	(I) Construction of vegetative Pallisade/HBL in staggered. (ii) Construction of check wall/ P/wall in crate. (iii) Planting of Desmodium, Spiraea, Willow, Poplar & Kunish. (iv) Sprinkling of Bioseeds like Desmodium, Spiraea, Kunish, Robinia, Allanthus, Bray, Plectranthus & Cannabis.	Ha.	1.75	84400	4.50
					Cum	184	1633	
(f) Stream Bank stabilizations								
Total Soil & Water Conservation Endeavors								**21.50**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
3 Payment for Environmental Services								
			i) It is proposed that the JFMC's of the Subcatchment will be involved in all type of forest protection activities in the areas. ii) The villagers located in the sub Catchment are mostly agriculturalist / horticulturalist and Buddhist and fell 1 no of Deo pole annually for hoisting flags in their houses. The people will be given / provided one GI pipe each to 639 nos. people situated in the sub Catchment, so that people don't fell the poles from the forest from this purpose. iii) The villagers located in the Sub Catchments are mostly agriculturalist / horticulturalist and are mostly dependant upon it. The slope of the land holding is mostly steep to very steep which leads to severe soil erosion due to wrong cropping pattern. Similarly the people in the Sub catchment are rearing sheep, goat & other domestic cattle's & are having extensive rights for grazing in the forest which also requires immunition in order to prevent the contagions disease to & from wild life living in & around the Subcatchment. In addition to this other animal improvement interventions are also required so that the environment is no affected.	i) Lump sum provision has been kept for this purpose which will be given to the JFMC's, which actively involve themselves in forest protection in the micro water shed. ii) The people located in the sub Catchment shall be provided 1 no of GI pipe for the purpose. iii) Lump sum provision has been kept for Agricultural / Horticultural & Animal Husbandry support in the Sub Catchment.	**No.**	**JFMC's and 1 No of GI pipe**	**Lumpsum**	**12.97**
Total Payment for Environmental Services								**12.97**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
5 Infrastructure built up & Forest Protection								
(a) Building for stay of staff, FRH/I Hut.	Maintance of FG Hut Shong at Brua	31 28'02", 78 10'59"	It is newly constructed hut during 1999-2000 & is situated on the right bank of Brua khad & just above Brua like road. It requires minor repair/ maintenance.	(i) Painting & whitewashing. (ii) Repair/ maintenance side drain & Plinth protection. (iii) Development of compound.	No	1	Lumpsum	1.00
	Maintance of FG Hut Sapni (Ht 2674m)	31 29'15", 78 10'07"	The hut is situated above Sapni village & below DPF C 144 & adjoining to C 143 a beautiful Deodar forest. It is a newly constructed FG Hut during 1998-99 requires minor repair/ maintenance.	(i) Painting & Distempering. (ii) Repair/ maintenance side drain. (iii) Development of compound. (iv) Flooring in the rooms. (v) Maintenance of sanitary fitting & reconstruction of septic tank. (vi) repair of electricity. (vii) Painting in CGI Roofing.	No	1	Lumpsum	2.50
(b) Forest Roads/ I Paths								
(c) Augmentation of Water Supply.	Maintance of FG Hut Shong at Brua	31 28'02", 78 10'59"	It is newly constructed hut during 1999-2000 & is situated on the right bank of Brua khad & just above Brua like road. It requires minor repair/ maintenance.	(i) Internal fitting of water supply. (ii) Augmentation of water supply from near by natural spring through GI Pipe about 150m.	No	1	Lumpsum	0.50
(d) Vehicle & Operational Support to HPFD								
(e) Office Equipment								

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(f) Silt Monitoring & Purchase of Meteorological Equipment								
(g) Construction & Repair of Boundary Pillars.	C141, C 142, C 143, C 144, C 145, C 146, C 147, C 148, C 149 & C 150		The boundary pillers in C141=14 Nos. (14 large), C142 =19nos.(19 large) , C143 =28nos.(28 large), C144=20 Nos. (14 large and 6 no. small), C145=25 Nos. (25 large), C146=20 Nos. (20 large), C147=28 Nos. (8 large and 20 no. small), C148=9 Nos. (9 large), C149=19 Nos. (19 large), C150=9 Nos. (9 large and 17 no. small) require maintenance and updation.	Maintenance of 191 boundary pillers in C 141 to C 150.	No.	191	Lumpsum	0.33
(h) Fire Protection Measures								
(i) Distribution of Non-conventional energy & Fuel Saving devices								
Total Infrastructure built up								**4.33**
Grand Total								**39.31**

Soil & Water Conservation Endeavors

Kandralus Slip

UF Chunang Slip-I

UF Chunang Slip-II

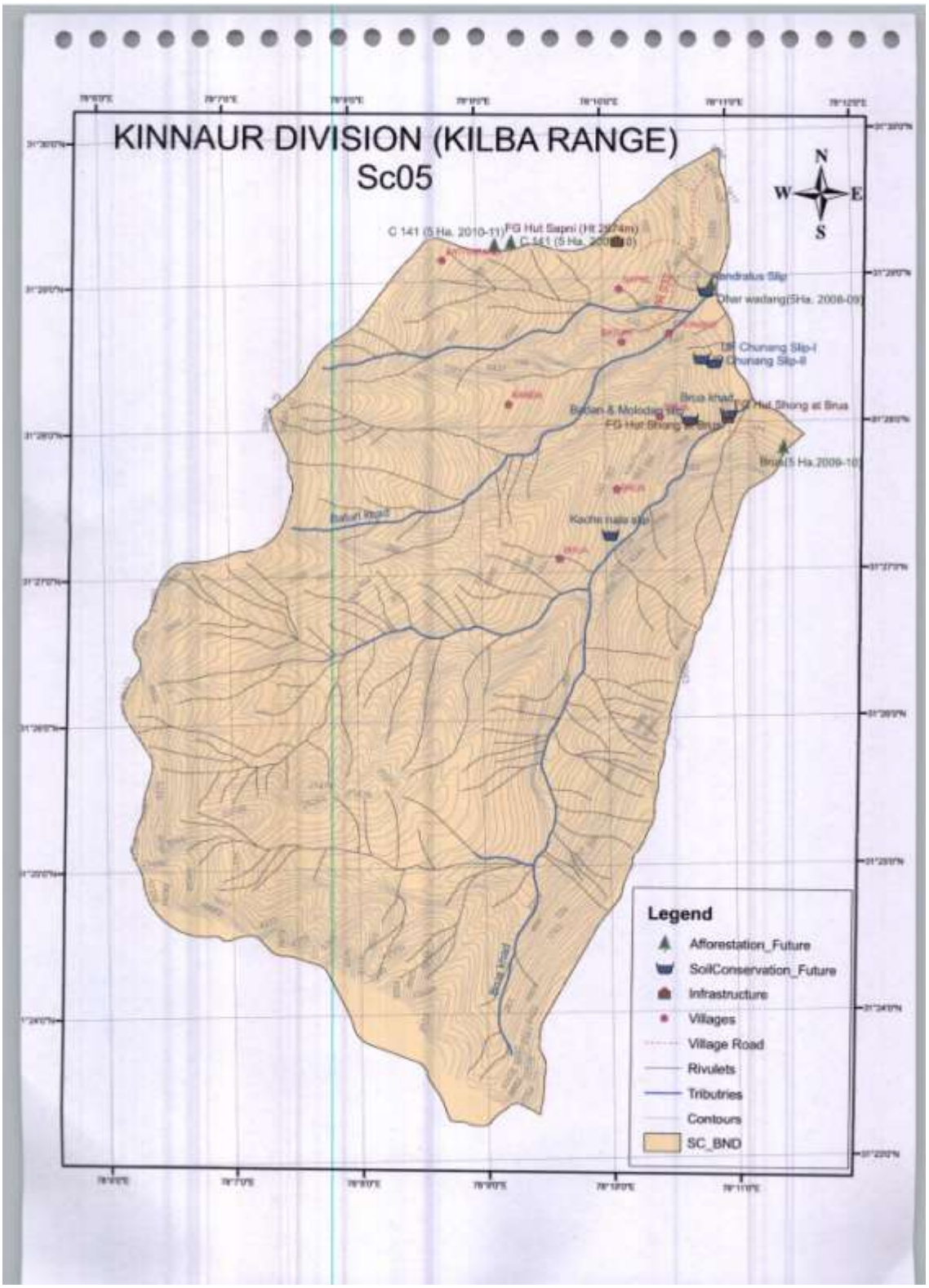
Badan & Molodan slip

Brua khad

Naik Environment Research Institute Ltd

Infrastructure built up & Forest Protection

FG Hut Sapni


KINNAUR DIVISION (KILBA RANGE)
Sc05
N
W
E
S
C 141 (5 Ha. 2010-11)
FG Hut Sapni (Ht 2974m)
Chunang Slip-II
Kachhi nala slip
Legend
Afforestation_Future
SoilConservation_Future
Infrastructure
Villages
Village Road
Rivulets
Tributries
Contours
SC_BND

SUB CATCHMENT

06

MANAGEMENT PLAN OF – Sc06 Sub Catchment (UNDER KARCHAM WANGTOO HEP)

INTRODUCTION

LOCATION (BOUNDARIES)						GENERAL DESCRIPTION OF MWS			
AREA OF MWS	LATITUDE	LONGITUDE	ALTITUDE	SLOPE	SOIL	FOREST			PANCHAYAT
						RANGE	BLOCK	BEAT	
3000 ha.	31'23' to 31'28'	78'09' to 78'14'	1910 to 5094	40' to 85'	Loam	kilba	Karcham & Sangla	Shong & part of chaosu	Shong & part of chansu

LAND USE						DEMOGRAPHY		
RF	*DPF*	*UPF*	*PRIVATE LAND (Agri+Horti)*	*WASTE LAND*	*TOTAL*	*HOUSE HOLD*	*HUMAN POPULATION*	*LIVE STOCK POPULATION*
(in HA)	*(in HA)*	*(in HA)*	*(in HA)*	*(in HA)*	*(in HA)*	*(in Nos.)*	*(in Nos.)*	*(in Nos.)*
	449.2	Na	87	683	1219.2	168	840	14581

FLORA

TREES	FIR, KAIL, DEODAR, ACER, BETULA, BIRD CHERRY, AESCULUS, SPRUCE, WALNUT, KUNISH, CHILGOZA, POPLUS ETC.
HERBS & SHRUBS	ROSA ,RUBUS, COTONEASTER, DESDOMODIUM, VIOLA, POLYGONUM, FRAGERIA, THALICTRUM, PLECTRANTHUS, SALVIA, INDIGO FERA, BERBARIS, DAPHNE, LONICERA, NEPETA, GIRARDIANA HETEROPHYLLA, VIBURNUM, SPIRAEA, LONICERA, DEUTIZIA, BALSOM ETC.
GRASSES	ARUNDO-DONAX, AGROPHRON LONGEARISTATUM, AGROSTIS ALBA ETC.
MEDICINAL HERBS	RATANJOT, GUCHHI, KALA ZIRA, DIASCORIA ETC.

FAUNA

ANIMALS	BLACK BEAR, LEOPARD & OTHERS SMALL MAMMALS
BIRDS/PHEASANTS	CHAKUR & OTHER BIRDS ETC.

Karcham Wangtoo HEP (Kinnaur Division)

Sub-Catchment 06

PAST HISTORY OF MANAGEMENT

Soil & Moisture conservation

Name of Area	GPS Coordinates	Observation	Remarks
Shong Nala	31 26'26", 78 15'25"	The nala originates from Sisti (Burang Ghatti top) & the length is about 4 to 5 Km. It is a perennial khad & the slope is steep above & gentle to moderate below. The nala meets with Baspa river below Shong road. The nala has been treated during 2008-09 by constructing P wall in crate 59 Nos. on left bank by incharge Shong beat & on right bank by incharge Chansu beat. most of the structures has been damaged. The nala is causing damage on both the banks. The nala requires treatment after repair alignments on both the banks.	Treatment required is given under future management.

Road Side Erosion Control

Name of Area	GPS Coordinates	Observation	Remarks

Afforestation

Name of Area	GPS Coordinates	Observation	Remarks

Rural Infrastructure Development

Name of Area	GPS Coordinates	Observation	Remarks

Forest Infrastructure Development

Name of Area	GPS Coordinates	Observation	Remarks

BOUNDARY PILLARS

Name of Area	GPS Coordinates	Observation	Remarks

FUTURE PLANNING

1 Afforestation Measures

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Normal Afforestation								
(b) Enrichment	C 151 (h) (10 Ha. New)	31.26'04", 78 11'42"	The proposed area is situated adjoining to Shorg village. It is open to very open Forest of pure Deodar An area of about 10 Ha (5 ha + 5 ha each) is proposed to be taken under enrichment component so as to restock the area. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kilba.	1)B-wire fencing 2) Planting of Deodar from Kilba nursery.	Ha.	10	46890	4.689
(c) Energy Plantation								
(d) Measure to handle invasive species.								
Nurseries								
Pasture Reclamation.								
Total Afforestation and Nurseries								**4.69**

2 Soil & Water Conservation Endeavors

(a) Moisture Retentively Operations								
(b) Live Hedge Fencing								

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(c) Vegetative structures								
(d) Civil Structures								
(e) Drainage line treatment & Land slide control.	Shong Nala	31 26'26", 78 15'25"	The nala originates from Sisti (Burang Ghatti top) & the length is about 4 to 5 Km. It is a perennial khad & the slope is steep above & gentle to moderate below. The nala meets with Baspa river below Shong road. The nala has been treated during 2008-09 by constructing P wall in crate 59 Nos. on left bank by incharge Shong beat & on right bank by incharge Chansu beat. most of the structures has been damaged. The nala is causing damage on both the banks. The nala requires treatment after proper alignments on both the banks.	(i) Construction of P/walls in crate on strategic locations after proper alignment on both the banks. (ii) planting of biospecies like Spiraea, Desmodium, Plectranthus, Firal, Ash, Lonicera on both the banks. (iii) Broadcasting of Bioseeds like Spiraea, Desmodium, Plectranthus, Firal, Ash, Lonicera, Kunish on the slips on both sides of the khad. (iv) Pollarding of Willow, Kunish & Poplus.	Ha. Cum	4.75 674	84400 1833	15.00
(f) Stream Bank stabilizations								
Total Soil & Water Conservation Endeavors								**15.00**

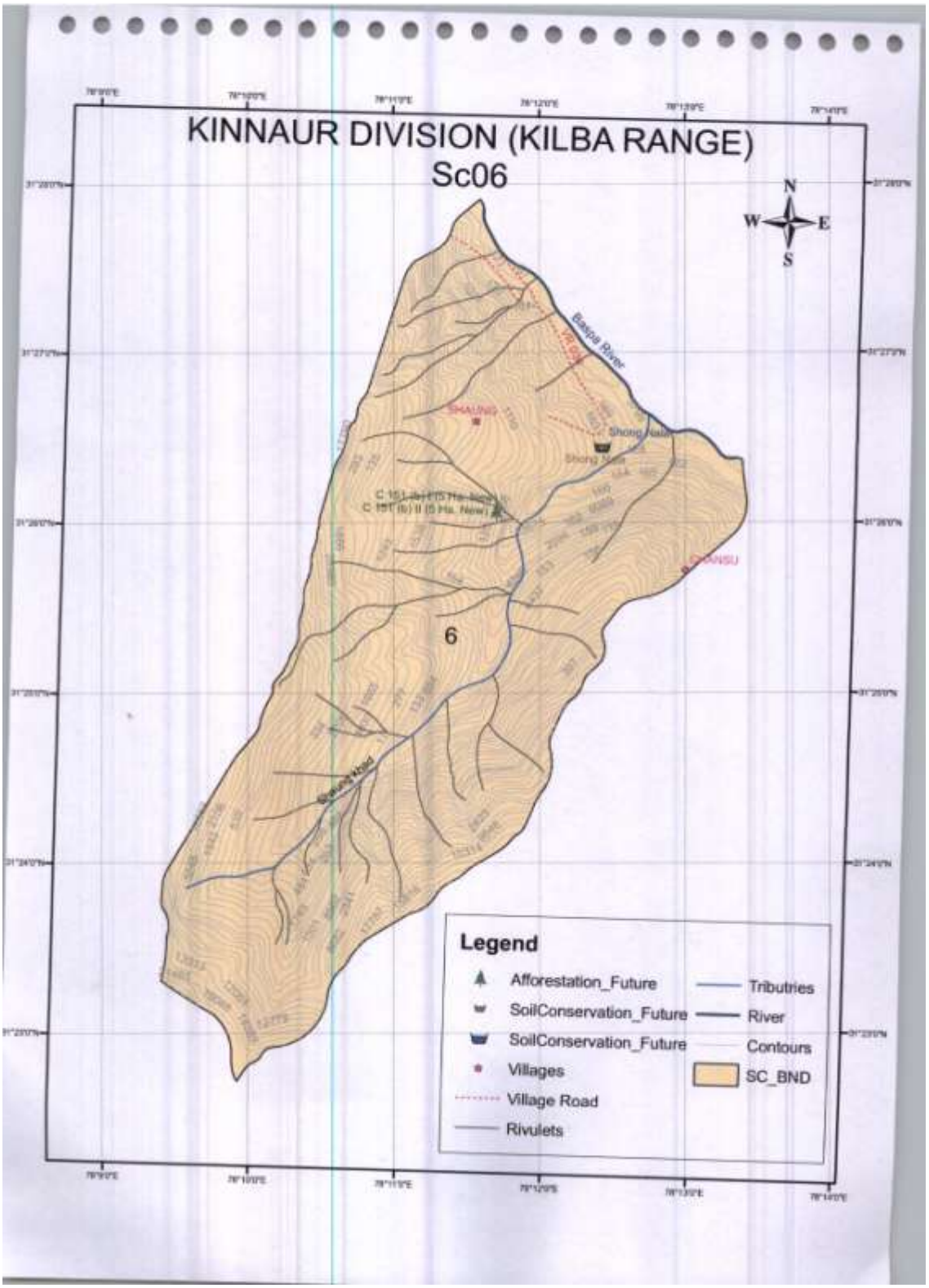
Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
3 Payment for Environmental Services								
			i) It is proposed that the JFMC's of the Subcatchment will be involved in all type of forest protection activities in the areas. ii) The villagers located in the sub Catchment are mostly agriculturalist / horticulturalist and Buddhist and fell 1 no of Deo pole annually for hoisting flags in their houses. The people will be given / provided one GI pipe each to 168 nos. people situated in the sub Catchment, so that people don't fell the poles from the forest from this purpose.iii) The villagers located in the Sub Catchments are mostly agriculturalist / horticulturalist and are mostly dependant upon it. The slope of the land holding is mostly steep to very steep which leads to severe soil erosion due to wrong cropping pattern. Similarly the people in the Sub catchment are rearing sheep, goat & other domestic cattle's & are having extensive rights for grazing in the forest which also requires immunition in order to prevent the contagines disease to & from wild life living in & around the Subcatchment. In addition to this other animal improvement interventions are also required so that the environment is no affected.	i) Lump sum provision has been kept for this purpose which will be given to the JFMC's, which actively involve themselves in forest protection in the micro water shed. ii) The people located in the sub Catchment shall be provided 1 no of GI pipe for the purpose. iii) Lump sum provision has been kept for Agricultural / Horticultural & Animal Husbandry support in the Sub Catchment.	**No.**	**JFMC's and 1 No of GI pipe**	**Lumpsum**	9.676
Total Payment for Environmental Services								**9.68**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
5 Infrastructure built up & Forest Protection								
(a) Building for stay of staff, FRH/I Hut.								
(b) Forest Roads/ I Paths								
(c) Augmentation of Water Supply.								
(d) Vehicle & Operational Support to HPFO								
(e) Office Equipment								
(f) Silt Monitoring & Purchase of Meteorological Equipment								
(g) Construction & Repair of Boundary Pillars.	C151 a & C 151 b0		The boundary pillers in C151 a & b=19Nos. (19 large) require maintenance and updation.	Maintenance of 19 boundary pillers in C 151 a & b.	No.	19		0.03
(h) Fire Protection Measures								
(i) Distribution of Non-conventional energy & Fuel Saving devices	Villagers of Koti, Labana, Julli, Dharla, Molgi, Sadana	---	The villagers are located in the Farflung area and 74 nos of households are dependent on forest for their fuel and are not having LPG.	It is proposed to distribute 74 nos. of LPG and on cost sharing.	No.	74	1000	0.74
Total Infraetructure built up								**0.77**
Grand Total								**30.14**

Soil & Water Conservation Endeavors

Shong Nala

Naik Environment Research Institute Ltd


KINNAUR DIVISION (KILBA RANGE)
Sc06
N
W
E
S
Baspa River
SHALING
Shong Nala
CHANSU
6
Legend
Afforestation_Future
SoilConservation_Future
SoilConservation_Future
Villages
Village Road
Rivulets
Tributries
River
Contours
SC_BND

SUB CATCHMENT

11

MANAGEMENT PLAN OF – Sc11 Sub Catchment (UNDER KARCHAM WANGTOO HEP)

INTRODUCTION

LOCATION (BOUNDARIES)					GENERAL DESCRIPTION OF MWS				
AREA OF MWS	LATITUDE	LONGITUDE	ALTITUDE	SLOPE	SOIL	FOREST			PANCHAYAT
						RANGE	BLOCK	BEAT	
2300 ha.	31°32, to 31°35'	78°11' to 78°17'	1900 to 5090	40° to 85°	SandyLoam	Kalpa	Kalpa	Kalpa & Recong Peo	Kalpa & Khawangi

LAND USE						DEMOGRAPHY		
RF	*DPF*	*UPF*	*PRIVATE LAND (Agri+Horti)*	*WASTE LAND*	*TOTAL*	*HOUSE HOLD*	*HUMAN POPULATION*	*LIVE STOCK POPULATION*
(in HA)	*(in HA)*	*(in HA)*	*(in HA)*	*(in HA)*	*(in HA)*	*(in Nos.)*	*(in Nos.)*	*(in Nos.)*
	425.12		312	385	1122.12	1395	6533	3104

FLORA

TREES	KAIL, DEODAR, SPRUCE, WALNUT, KUNISH, CHILGOZA, POPLUS ETC.
HERBS & SHRUBS	ROSA ,RUBUS, COTONEASTER, DESDOMODIUM, VIOLA, POLYGONUM, FRAGERIA, THALICTRUM, PLECTRANTHUS, SALVIA, INDIGO FERA, BERBARIS, DAPHNE, LONICERA, JUNIPERUS COMMUNIS, SPIRAEA, ARTIMESIA, NEPETA, LONICERA, DEUTIZIA ETC.
GRASSES	ARUNDO-DONAX, AGROPHRON LONGEARISTATUM, AGROSTIS ALBA ETC.
MEDICINAL HERBS	RATANJOT, GUCHHI, KALA ZIRA, DIASCORIA ETC.

FAUNA

ANIMALS	BLACK BEAR, LEOPARD, BHARAL, & OTHERS SMALL MAMMALS
BIRDS/PHEASANTS	CHAKUR & OTHER BIRDS ETC.

Karcham Wangtoo HEP (Kinnaur Division)

Sub-Catchment 11

PAST HISTORY OF MANAGEMENT

Soil & Moisture conservation

Name of Area	GPS Coordinates	Observation	Remarks
Khula nala/slip	31 34'18", 78 16'02"	The nala is situated in C 239 DPF. The nala originates from the top of C 239 & the length is about 1.5 - 2 Km. The slope is moderate to steep. It is a dry nala & has been treated during past but the record was not produced. A small Rill erosion has started due to over flow/ damage of Boktu kuhl running above the nala/slip. few structures has also been damaged. The nala requires treatment.	Treatment required in the nala is given under future Planning.
C 239 Slip/nala_I	31 34'08", 78 15'52"	It is situated on both side of Pangi-Kalpa link road. The nala originates from the top of C 239 DPF. The slope is moderate to steep. It is a dry nala/slip & has been treated during past but the record was not produced. The slip has been treated below the road. There is a small slip on the right side of the main nala below road which is sliding & requires treatment.	Treatment required in the nala is given under future Planning.
C 239 Slip/nala_II	31 34'03", 78 15'53"	It is situated towards Tallangi village & below Pangi-Kalpa link road. The nala originates from below Tallangi Kuhal. The slope is moderate to steep. It is a dry nala/slip & has been treated during past but the record was not produced. The slip has been treated below the road. Shrubs like Indigofera, Desmodium ets are coming naturally. No further treatment is required.	No further treatment is required.
C 239 Slip/nala_III	31 33'59", 78 15'52"	It is situated below Pangi-Kalpa link road & near to Tallangi village. The nala originates from & below Tallangi Kuhal which runs above the nala/ slip. The slope is moderate to steep. It is a dry nala/slip The slip has also been treated by IPH since the area was sinking. The IPH has constructed crate wire structures down to Kuhul in GI pipe. Below that the forest department has been treated the nala/slip during 2010-11 by constructing check walls 34 nos in crate & 34 nos in dry. The nala/slip still requires treatment.	Treatment required in the nala is given under future Planning.
Gardani Slip	31 33'54", 78 16'26"	The slip is situated between old HT road & NH 22. The slope is steep to very steep & is very fragile. The slip has been treated during 2008-09 past but the record was not produced. There is no scope of further treatment.	No further treatment is required.
Sharbo Slip	31 32'22", 78 16'28"	The slip is situated below Powari-Recong Peo road & above Sharbo farm. The slope is moderate to steep. The slip has been treated during 2010-11 by constructing check walls 20nos in crate & 06nos in dry. The slip still requires treatment. The GPS coordinates has been given by RO Kalpa.	Treatment required in the nala is given under future Planning.
Gori slip	31 33'46", 78 16'10"	The slip originates from below Talangi village. The slope is moderate to steep. The length is about 1.5-2 Km & runs to old Recong Peo-Pooh road. The slip has been treated during 2009-10 by constructing check walls 24nos in crate & 6nos in dry. The slip still requires treatment. The GPS coordinates has been given by RO Kalpa.	Treatment required in the nala is given under future Planning.

		Road Side Erosion Control	
Name of Area	GPS Coordinates	Observation	Remarks
		Afforestation	
Name of Area	GPS Coordinates	Observation	Remarks
		Rural Infrastructure Development	
Name of Area	GPS Coordinates	Observation	Remarks
		Forest Infrastructure Development	
Name of Area	GPS Coordinates	Observation	Remarks
		BOUNDARY PILLARS	
Name of Area	GPS Coordinates	Observation	Remarks

FUTURE PLANNING

1 Afforestation Measures

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacks.)
(a) Normal Afforestation	C 242 part III (5 Ha. 2008-09)	31 33'20", 78 15'24"	The area has been closed under rehabilitation of degraded forest during 2008-09. The area is fenced with barbed wire fencing. Slope is moderate to steep. The area is situated below Chini village. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	5	870	0.0435
					Ha.(maint. 5th year)		870	0.0435
	C 243 (5 Ha. 2008-09)	31 33'57", 78 15'35"	The area has been closed under rehabilitation of degraded forest during 2008-09. The area is fenced with barbed wire fencing. Slope is moderate to steep. The area is situated beyond Yuwaring. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	5	870	0.0435
					Ha.(maint. 5th year)		870	0.0435
	UF Goli (5 Ha. 2009-10)	31 37'03", 78 16'06"	The area has been closed under NTFP Component during 2009-10. The area is fenced with barbed wire fencing. The area is situated above Kalpa. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 3rd year)	5	1740	0.087
(b) Enrichment	C-243 (1a) Chini (5 Ha.New)	31 32'42", 78 15'23"	The proposed area is situated above Roghi road & PWD RH. It is open to very open forest of Deodar & Neoza. The area about 5 Ha. is proposed to be taken under enrichment component so as to restock the area. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Kalpa Nursery	Ha.	2.5	59025	1.475625
						2.5	46890	1.17225
	C-241 Dvni (4 Ha.New)	31 32'53", 78 15'11"	The proposed area is situated above Roghi road. It is open to very open forest of Deodar & Neoza. The area about 4 Ha. is proposed to be taken under enrichment component so as to restock the area. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Kalpa Nursery	Ha.	2	59025	1.1805
						2	46890	0.9378

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacks.)
(b) Enrichment	C-239 Telengi (10Ha.New)	31 33'26", 78 15'31"	The proposed area is situated above & below Kashmir. It is open to very open forest of Deodar & Neoza. The area about 10(5+5) Ha. is proposed to be taken under enrichment component so as to restock the area. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Kalpa Nursery	Ha.	5	59025	2.95125
						5	46890	2.3445
	C-240 (b) Telangi (5 Ha.New)	31 33'52", 78 15'36"	The proposed area is situated above Boktu farm. It is open to very open forest of Deodar & Neoza. The area about 5 Ha. is proposed to be taken under enrichment component so as to restock the area. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Pangi Nursery	Ha.	2.5	59025	1.475625
						2.5	46890	1.17225
	C-242 (12 Ha.New)	31 33'20", 78 15'24"	The proposed area is situated near Divisional Forest Complex Recong Peo. It is open to very open forest of Deodar & Neoza. The area about 12 (6+6) Ha. is proposed to be taken under enrichment component so as to restock the area. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Recong Peo Nursery	Ha.	6	59025	3.5415
						6	46890	2.8134
(c) Energy Plantation								
(d) Measure to handle invasive species.								

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacks.)
Nurseries	Maintenance of kalpa (0.65 Ha) Ht 2784	31 32'19", 78 15'13"	The nursery is located just below circuit house at kalpa & near to forest colony. The aspect is Eastern. Irrigation is through Alkathene pipe from permanent water supply to colony which is not sufficient & then stored in the storage tank. Two nos of Vermicompost pits are available and put to use. The nursery contains following stocks. Chilgoza = 10140nos, Chulli = 5860nos, Deodar = 22255nos, Chulli in P bags = 9840nos, Behmi = 1440nos, Wild Rose = 6270nos, Robinia = 38260nos, Willow = 1860nos, Khanor = 1990nos, Spiraea = 340nos.	(i) Extension & improvement of nursery. (ii) Repair of Storage tank. (iii) Independent water supply from Goli spring which is about 3 Km & is situated at the top of C 241. (iv) raising of Biospecies like Lonicera, Desmoium, Spiraea, Chaku etc. (v) Repair of fencing around nursery. (vi) Maintenance of Inspection path.	No	1	Lumpsum	4.00
	Recong PEO 0.25 hc (Ht 2386)	31 31'39", 78 15'30"	The nursery is located in C 242 & near to forest complex. The aspect is Eastern. Irrigation is through Alkathene pipe from kalpa colony which is not sufficient & then stored in the storage tank. Four nos of Vermicompost pits are available and out of which two nos has been put to use. The nursery contains following stocks. Chilgoza = 10650nos, Chulli = 1100nos, Deodar = 5190nos, Wild Rose = 8510nos, Robinia = 16900nos, Poplar = 1330nos, Draik = 1950nos, Behmi = 5230nos.	(i) Extension & improvement of nursery. (ii) Raising of Biospecies like Lonicera, Deamoium, Spiraea, Daphne etc. (iii) Repair of fencing around nursery.	No	1	Lumpsum	2.50
Pasture Reclamation.								
Total Afforestation and Nurseries								25.83
2 Soil & Water Conservation Endeavors								
(a) Moisture Retentively Operations								
(b) Live Hedge Fencing								
(c) Vegetative structures								

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacks.)
(d) Civil Structures	Khula nala/slip	31 34'18", 78 16'02"	The nala is situated in C 239 DPF. The nala originates from the top of C 239 & the length is about 1.5 - 2 Km. The slope is moderate to steep. It is a dry nala & has been treated during past but the record was not produced. A small Rill erosion has started due to over flow/ damage of Boktu kuhl running above the nala/slip. few structures has also been damaged. The nala requires treatment.	(i) Repair of damaged structures. (ii) Construction of check dam & check wall in crate. (iii) Planting & sprinkling of BioSpecies like Lonicera, spiraea, Daphne, Artimesia, Plectranthus etc.	Ha.	1.2	84400	2.50
					Cum	92	1633	
	C 239 Slip/nala_I	31 34'08", 78 15'52"	It is situated on both side of Pangi-Kalpa link road. The nala originates from the top of C 239 DPF. The slope is moderate to steep. It is a dry nala/slip & has been treated during past but the record was not produced. The slip has been treated below the road. There is a small slip on the right side of the main nala below road which is sliding & requires treatment.	(i) vegetative structures like Pallisade/HBL in staggered. (ii) Construction of P/ wall in crate. (iii) Planting & sprinkling of BioSpecies like Lonicera, spiraea, Daphne, Artimesia, Plectranthus etc.	Ha.	1.2	84400	2.50
					Cum	92	1633	
	C 239 Slip/nala_III	31 33'59", 78 15'52"	It is situated below Pangi-Kalpa link road & near to Tallangi village. The nala originates from & below Tallangi Kuhal which runs above the nala/ slip. The slope is moderate to steep. It is a dry nala/slip The slip has also been treated by IPH since the area was sinking. The IPH has constructed crate wire structures down to Kuhul in GI pipe. Below that the forest department has been treated the nala/slip during 2010-11 by constructing check walls34nos in crate & 34nos in dry. The nala/slip still requires treatment.	(i) Construction of P/ wall in crate down below. (ii) Planting & sprinkling of BioSpecies like Robinia, Indigofera, Lonicera, spiraea, Daphne, Artimesia, Plectranthus etc.	Ha.	0.9	84400	2.00
					Cum	76	1633	

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacks.)
(d) Civil Structures	Pancha Slide	31 33'58", 78 15'52"	The slide is located in C 239 forest & is below to Recong PEO - kalpa road & above Tallangi. The area is sliding/ sinking. Water supply line in pipe is also running in the area & it appears that it is due to ill planning of IPH Department which has resulted this situation. About one Ha area requires treatment.	(i) Dragging of material be stopped. (ii) The water line constructed earlier & now abandoned be filled up/leveled so as to avoid seepage of water. (iii) Construction of P/ wall in crate down below. (iv) Construction of crate wire check wall in staggered . (v)Planting & sprinkling of BioSpecies like Indigofera, Lonicera, spiraea, Daphne, Artimesia, Plectranthus etc.	Ha.	2.35	84400	6.50
					Cum	276	1633	
	Boktu Slip	31 35'17", 78 16'36"	It is situated on the right side of Pangi nala & about 300m above Pangi Bridge over Pangi nala on NH 22. The slope is moderate to steep & very steep. No work is required at the top. However about 1 Ha of area requires treatment.	(i) Construction of P/check wall in crate down below on the right side of pangi khad. (ii) Planting & sprinkling of BioSpecies like Firal, Ailanthus, Lonicera, spiraea, Daphne, Artimesia, Plectranthus etc. (iii) Planting of Kunish, Poplar & Willow.	Ha.	1.75	84400	4.50
					Cum	184	1633	
	Sharbo Slip	31 32'22", 78 16'28"	The slip is situated below Powari-Recong Peo road & above Sharbo farm. The slope is moderate to steep. The slip has been treated during 2010-11 by constructing check walls 20nos in crate & 06nos in dry. The slip still requires treatment. The GPS coordinates has been given by RO Kalpa.	(i) Stoppage of Sewerage water & other waste water of Recong Peo. (ii) Construction of check wall in crate. (iii) Planting & sprinkling of BioSpecies like Firal, Ailanthus, Lonicera, spiraea, Robinia, Artimesia, Plectranthus etc.	Ha.	0.6	84400	1.50
					Cum	81	1633	

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacks.)
(d) Civil Structures	Talangi nala	31 33'43", 78 16'26"	The nala originates from the Pangi - Kalpa road & the length is about 2.5-3 Km. The nala goes up to NH 22 Powari GREF. The slope is moderate to steep. It is a seasonal nala & requires treatment. The GPS coordinates has been given by RO Kalpa.	(i) Construction of check dams/wall in crate. (ii) Planting & sprinkling of BioSpecies like Firal, Ailanthus, Lonicera, spiraea, Robinia, Artimesia, Plectranthus, Kunish, Willow etc.	Ha.	1.75	84400	4.00
					Cum	153	1633	
	Garo slip	31 33'46", 78 16'10"	The slip originates from below Talangi village. The slope is moderate to steep. The length is about 1.5-2 km & runs unto old Recong Poo-Pooh road. The slip has been treated during 2009-10 by constructing check walls 24nos in crate & 6nos in dry. The slip still requires treatment. The GPS coordinates has been given by RO Kalpa.	(i) Construction of check wall in crate. (ii) Planting & sprinkling of BioSpecies like Firal, Ailanthus, Lonicera, spiraea, Robinia, Artimesia, Plectranthus, Kunish, Willow Poplar etc.	Ha.	1.2	84400	3.00
					Cum	122	1633	
	Kalpa Dakho slip/nala	31 31'09", 78 16'19"	The slip/nala originates from Shilli road & the length is about 2Km. The slope is moderate to steep. The nala / slip meets with river Satluj near to old Shongtong bridge. It is a perannial nala & requires treatment. The GPS coordinates has been given by RO Kalpa.	(i) Construction of check dams/wall in crate. (ii) Sprinkling of BioSpecies like Firal, Ailanthus, Lonicera, spiraea, Robinia, Artimesia, Plectranthus, Kunish, Willow Poplar etc. (iii) lanting of Willo, Poplar, Kunish, Lonicera, spiraea etc.	Ha.	1.2	84400	2.50
					Cum	92	1633	
(e) Drainage line treatment & Land slide control.								
(f) Stream Bank stabilizations								
Total Soil & Water Conservation Endeavors								29.00

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacks.)
3 Payment for Environmental Services								
			i) It is proposed that the JFMC's of the Subcatchment will be involved in all type of forest protection activities in the areas. ii) The villagers located in the sub Catchment are mostly agriculturalist / horticulturalist and Buddhist and fell 1 no of Deo pole annually for hoisting flags in their houses. The people will be given / provided one GI pipe each to 1395 nos. people situated in the sub Catchment, so that people don't fell the poles from the forest from this purpose. iii) The villagers located in the Sub Catchments are mostly agriculturalist / horticulturalist and are mostly dependant upon it. The slope of the land holding is mostly steep to very steep which leads to severe soil erosion due to wrong cropping pattern. Similarly the people in the Sub catchment are rearing sheep, goat & other domestic cattle's & are having extensive rights for grazing in the forest which also requires immunition in order to prevent the contagions disease to & from wild life living in & around the Subcatchment. In addition to this other animal improvement interventions are also required so that the environment is no affected.	i) Lump sum provision has been kept for this purpose which will be given to the JFMC's, which actively involve themselves in forest protection in the micro water shed. ii) The people located in the sub Catchment shall be provided 1 no of GI pipe for the purpose. iii) Lump sum provision has been kept for Agricultural / Horticultural & Animal Husbandry support in the Sub Catchment.	No.	JFMC's and 1 No of GI pipe	Lumpsum	18.765
Total Payment for Environmental Services								18.77
5 Infrastructure built up & Forest Protection								
(a) Building for stay of staff, FRH/I Hut.	Maintenances of BO Quarter Kalpa.	31 32'17", 78 15'14"	It is situated near to Range office kalpa & on the right side of kalpa nursery. The residence requires maintenance.	(i) cement flooring in one room & in gallery. (ii) Cement plastering. (iii) Maintenances & fixing of tiles in bathroom & kitchen. (iv) Construction/Maintenances of side drain & Plinth protection. (v) Development of compound.	No	1	Lumpsum	1.75

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (In lacks.)
(a) Building for stay of staff, FRH/I Hut.	Construction of Range rest room at kalpa	31 32'17", 78 15'14"	An old Peon / Chowkidhar Quarter is situated near to Range office & below BO Quarter kalpa. It is in a dilaidated condition & is almost condomned. There is scarcity for staying of field staffs while visiting to Range office kalpa. It is, therefore, necessary to construct range rest room in place of old Peon / Chowkidhar Quarter after observing codal formalities. The old serviceable material be retrieved & used.	(i) Construction of range rest room at kalpa.	No	1	Lumpsum	8.50
	Maintenances of FG hut Kalpa.	31 32'18", 78 15'14"	The hut is located below kalpa nursery & requires maintenance.	(i) Replacement of rotten wooden flooring & flooring in cement concrete. (ii) Construction/Maintenances of side drain & Plinth protection. (iii) Maintenances of bathroom & kitchen.	No	1	Lumpsum	1.00
	Maintenances of Type one quarter Kalpa.	31 32'18", 78 15'15"	The quarter is located near to FG hut kalpa. The quarter is in dilaidated condition & requires maintenance. At present a special duty forest guard is residing in this quarter.	(i) Flooring in cement concrete. (ii) Construction/Maintenances of side drain & Plinth protection. (iii) Maintenances & fixing of tiles in bathroom & kitchen. (iv) painting & distempering. (v) Replacement of rotten CGI sheets & painting of CGI roofing.	No	1	Lumpsum	2.00

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacks.)
(A) Building for stay of staff, FRH/I Hut.	Maintenances of Type two quarter Kalpa.	31 32'18", 78 15'15"	The quarter is located near to PG hut & nursery kalpa. The quarter is in Duplex & requires maintenance.	(i) Cement plastering. (ii) Construction/Maintenances of side drain & Plinth protection. (iii) Maintenances & fixing of tiles in bathroom & kitchen. (iv) painting & distempering. (v) Maintenances of sanitary.	No	1	Lumpsum	2.00
	Fencing of residential colony of staffs	31 32'18", 78 15'15"	The staff colony is surrounded by road & foot path. It is therefore necessary to fence the forest colony by fixing B wire with Angle iron.	(i) Fencing of forest colony with B wire fixed with Angle iron about 400 Rmt.	No	1	Lumpsum	2.00
	Maintenances/special repair. of Range residence Kalpa.	31 32'16", 78 15'13"	It is situated above Kalpa link road & requires special repair.	(i) Replacement of mud plastering with Cement plastering. (ii) Replacement of old wooden flooring & re fixing. (iii) Replacement/refixing of cement sheets. (iv) Construction/Maintenances of side drain & Plinth protection. (v) Maintenances & fixing of tiles in bathroom & kitchen. (vi) painting & distempering. (vii) Maintenances of sanitary. (viii) Maintenances of old kitchen & store. (ix) Replacement of wooden rotten jaffray with iron. (x) Development of compound & painting of CGI roofing.	No	1	Lumpsum	5.50
	Maintenance Range office Kalpa.	31 32'16", 78 15'13"	It is situated above Kalpa link road & requires maintenance.	(i) Cement plastering. (ii) Replacement of old wooden flooring & re fixing. (iii) Construction/Maintenances of side drain & Plinth protection. (iv) painting & distempering. (v) Maintenances of store. (vi) Painting of CGI roofing.	No	1	Lumpsum	2.00

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacks.)
(a) Building for stay of staff, FRH/I Hut.	Construction of Biodiversity centre at Recong PEO	31 31'50", 78 15'58"	The Biodiversity centre with an estimate of Rs 1533500 only is being constructed under Baspa II HEP cat plan at Recong peo & is situated just below the Dfo residence. Up to 2010-11 Rs 10 Lakh has been spent & Rs 5 lakh are being utilized during this financial year. Rs 80000 more is required for its completion & Rs 1 lakh is required for setting up infrastructure in the centre.	For the completion of Biodiversity centre at Recong PEO & for setting up of infrastructure in the centre.	No	1	Lumpsum	1.80
	Construction of Range Rest room above store/canteen Recong Peo	31 31'42", 78 15'55"	The store/canteen building has been constructed near to divisional office Recong Peo under kashang HEP cat plan during 2010-11. A Range Rest room is required to be constructed over the store/canteen for holding meetings etc.	A Range Rest room is required to be constructed over the store/canteen for tahe stay of field staff on tour to division office.	No	1	Lumpsum	0.00
	Maintenances of toilets in Division office	313142, 781555	The toilet of ACF Kinnaur & toilets of staffs are required to be maintained by fixing tiles etc. The GPS Coordinates has been given by RO kalpa.	Maintenance of the toilet of ACF Kinnaur & toilets of staffs including fixing of tiles etc.	No	1	Lumpsum	0.35
	Fencing & fixing of Solar light in Divisional forest complex including officers residents	313142, 781555	Fencing & fixing of Solar light in Divisional forest complex including officers residents which is surrounded by road & foot path. It is therefore necessary to fence the forest colony & to provide solar electrification in the Forest Complex. The fencing basement about 480Rmt is required to be constructed out of which 30Rmt has already been constructed.	(i) Fixing of welded Mesh with angle iron 160nos fence post about 450Rmt. (ii) Provision of Solar electrification in the Forest Complex.	No	1	Lumpsum	9.00
	Compound of DFO residents & Repair of glass house	31 31'42", 78 15'55"	The Compound of DFO resident requires completion. About 100Sqm of left over area requires cement flooring. In addition to this the glass house also requires refixing of glass pans.	(i) cement flooring in left over compound about 100Sqm. (ii)RE Fixing of glass pans.	No	1	Lumpsum	1.50
(b) Forest Roads/ I Paths	Maintenances of Approach road to range office	31 32'15", 78 15'13"	The condition of old Jeepabe approach road to range office complex from main road is not good & requires reconstruction/ maintains.	(i) Reconstruction/ maintains of about 300 -350m old Jeepabe approach road to range office complex from main road.	Km	350mt	Lumpsum	5.00

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lecks.)
(c) Augmentation of Water Supply.	Forest Colony Kalpa	31 32'16", 78 15'01"	A water storage tank is located at permanent Spring water source along Recong PEO - Rogi road. The water is carried/taken through pipe from the storage tank to Range forest colony kalpa. The storage tank requires maintenance.	(i) Fixing of CGI roofing over the storage tank. (ii) Maintenance of water supply line about 0.5 Km up to Range forest colony kalpa.	No	1	Lumpsum	1.00
	Divisional complex Recong Peo		There is scarcity of water in the forest colony situated at Recong Peo & requires augmentation of water supply from permanent source at Goli which is about 3 Km.	(i) Laying of GI pipe from Goli including external fitting & Refillingetc.				10.00
(d) Vehicle & Operational Support to HPFD								
(e) Office Equipment								
(f) SIR Monitoring & Purchase of Meteorological Equipment								
(g) Construction & Repair of Boundary Pillars.	C240, C 239, C 241, C 242		The boundary pillers in C 239=55 Nos. (18 large and 37 no. small), C 240=9 Nos. (5 large and 4 no. small), C 241=33 Nos. (18 large and 15 no. small), C 242=78Nos. (23 large and 55 no. small) require maintenance and updation.	Maintenance of 175 boundary pillers in C240, C 239, C 241, C 242.	No.	175	Lumpsum	0.3
(h) Fire Protection Measures								
(i) Distribution of Non-conventional energy & Fuel Saving devices								
				Total Infrastructure built up				53.70
				Grand Total				127.29

Nurseries

Maintenance of kalpa

Recong PEO

Soil & Water Conservation Endeavors

Khula nala/slip

C 239 Slip/nala_I

C 239 Slip/nala_III

Kalpa Dakho slip/nala

Pancha Slide

Sharbo Slip

Talangi nala

Infrastructure built up & Forest Protection

BO Quarter & Rest Room at Kalpa

FG hut Kalpa

Type one & Two quarter Kalpa.

Fencing of residential colony of staffs

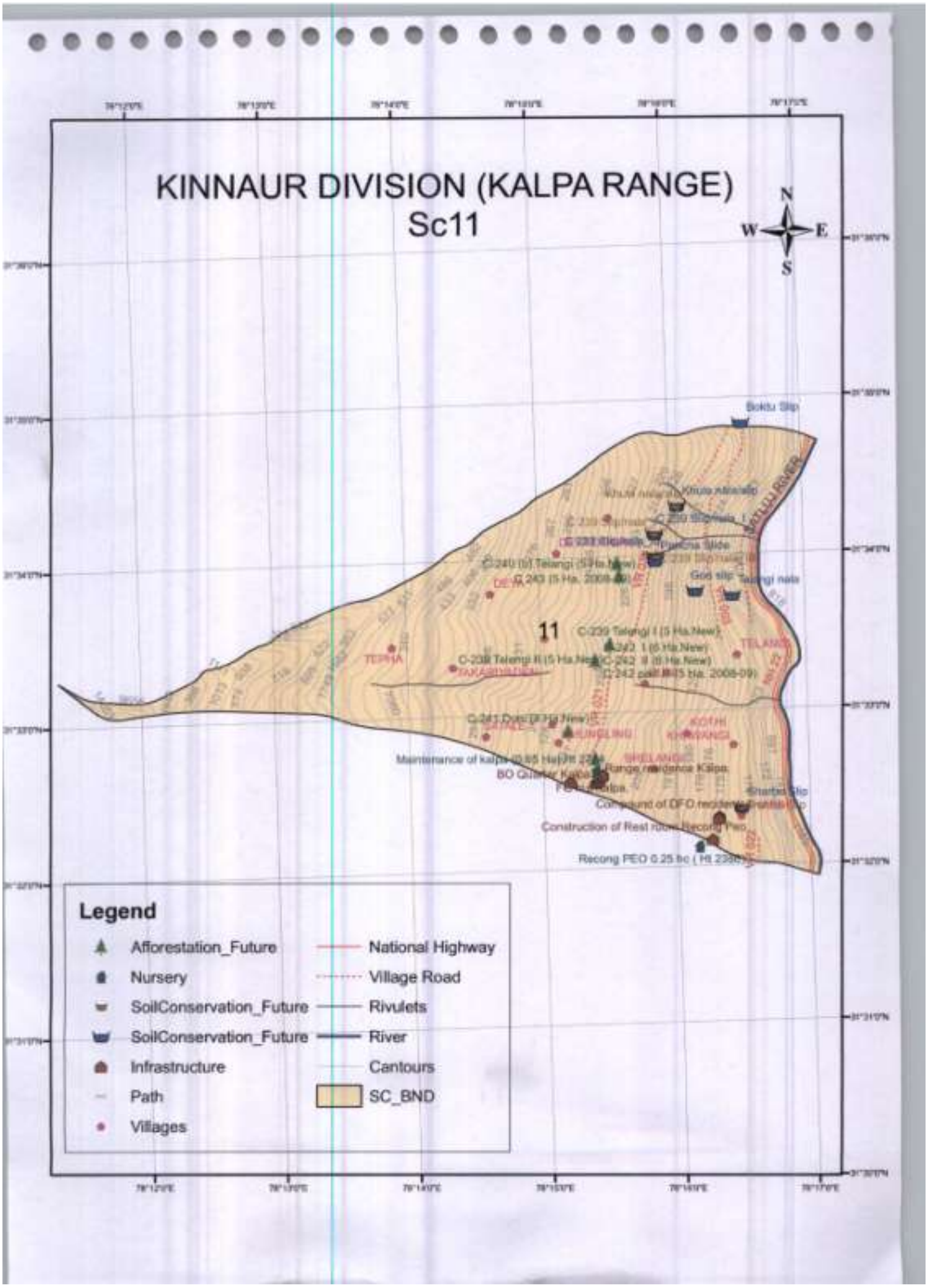
Repair of Range residence Kalpa

Office Kalpa

Biodiversity centre at Recong PEO

Rest room above store/canteen, Toilets in DF, Fencing & fixing of Solar light in DF complex at Recong Peo

Road to range office


KINNAUR DIVISION (KALPA RANGE)
Sc11
N
W
E
S
11
Boktu Slip
TEPHA
Legend
Afforestation_Future
Nursery
SoilConservation_Future
SoilConservation_Future
Infrastructure
Path
Villages
National Highway
Village Road
Rivulets
River
Cantours
SC_BND

SUB CATCHMENT

12

MANAGEMENT PLAN OF – Sc12 Sub Catchment (UNDER KARCHAM WANGTOO HEP)

INTRODUCTION

LOCATION (BOUNDARIES)					GENERAL DESCRIPTION OF MWS				
AREA OF MWS	LATITUDE	LONGITUDE	ALTITUDE	SLOPE	SOIL	FOREST			PANCHAYAT
						RANGE	BLOCK	BEAT	
2600 ha.	31°29' to 31°34'	78°09' to 78°17'	1833 to 5090	40° to 90°	Sandyloam	Kalpa	Urni, part o Kalpa	Runang, part of Roghi & Kalpa	Miroo, Yula, part of Roghi & kalpa.

LAND USE						DEMOGRAPHY		
RF	*DPF*	*UPF*	*PRIVATE LAND (Agri+Horti)*	*WASTE LAND*	*TOTAL*	*HOUSE HOLD*	*HUMAN POPULATION*	*LIVE STOCK POPULATION*
(in HA)	*(in HA)*	*(in HA)*	*(in HA)*	*(in HA)*	*(in HA)*	*(in Nos.)*	*(in Nos.)*	*(in Nos.)*
	384.5	652	284	548	1868.5	147	685	790

FLORA

TREES	KAIL, AESCULUS, ALNUS, ILEX , FRAXINUS ZANTHOXYLOIDES, DEODAR, NEOZA, FIR SPRUCE.
HERBS & SHRUBS	BERBARIS, LONICERA, DEUTIZIA, DESMODIUM, INDIGOFERA, PLECTRANTHUS, SALVIA, THALICTRUM, VIOLA, DEBREGESSIA, RUBUS, RUMAX, STROBILANTHES , FRAGERIA , VIBURNUM, SPIRAEA , PRINSCIPIA , ARTIMESIA, THYMUS, DAPHNE, ROSA, ETC.
GRASSES	ARUNDO-DONAX AND LOCAL GRASSES
MEDICINAL HERBS	BANAFSHA, DIASCORIA, CHORA, DHOOP, KARU, GUCHHI, MOHARA, PATISH, SALAMPANJA , ETC.

FAUNA

ANIMALS	BLACK BEAR, LEOPARD, MONKEYS & OTHERS SMALL MAMMALS
BIRDS/PHEASANTS	KALIJ, MONAL , TRAGOPAN, CHAKOR & OTHER BIRDS

Karcham Wangtoo HEP (Kinnaur Division)

Sub-Catchment 12

PAST HISTORY OF MANAGEMENT

Soil & Moisture conservation

Name of Area	GPS Coordinates	Observation	Remarks
Raildenden nala	31 30'43", 78 13'17"	The nala originates from Shipancha kanda. It has two tributaries above old HT road & meets below old HT road to form one Raildenden nala (Shao nala). It is a perennial & glacier prone nala. Both the branches/tributaries has been treated during 2009-10 by constructing check walls 33 nos. (18 nos in crate & 15 nos dry), & during 2010-11 check walls nos in crate has also been constructed. The nala is surrounded by scarted Deodar pole crop. About 1.5 km length of the nala requires treatment.	Treatment required in the nala is given under future Planning.
Kholangden Nala	31 31'10", 78 12'54"	It is situated on the left side of PWD rest house & is perennial. The nala originates from Kotangcha Partum top. The slope is moderate to steep. The nala has been treated above old HT road during 2010-11 by constructing check dams 13 nos. (10 nos in crate & 03 nos dry). The balance part of the nala requires treatment.	Treatment required in the nala is given under future Planning.
Khosharang Nala	31 31'18", 78 14'33"	The nala originates from Khosharang top & he length is about 3 to 4 Km. It is moderate to steep. It is a seasonal & glacier prone nala. The nala has been treated wef 2008-09-2010-11. During 2010-11 check walls 21 nos. (13 nos in crate & 8 nos dry) has been constructed. The silt has been deposited behind the structures. Some structures has damaged which also requires treatment along with the remaining part of the nala.	Treatment required in the nala is given under future Planning.

Road Side Erosion Control

Name of Area	GPS Coordinates	Observation	Remarks

Afforestation

Name of Area	GPS Coordinates	Observation	Remarks

Rural Infrastructure Development

Name of Area	GPS Coordinates	Observation	Remarks

Forest Infrastructure Development

Name of Area	GPS Coordinates	Observation	Remarks

BOUNDARY PILLARS

Name of Area	GPS Coordinates	Observation	Remarks
C 246	31 30'34", 78 13'19"	Boundary pillar no 54 was located in C 246 which was in bad condition. The staff was directed to locate all the boundary pillars of all the forests in the catchment area & maintained/repaired accordingly.	The boundary pillars of all the forests in the catchment area requires rechecking & up keeping.

FUTURE PLANNING

1 Afforestation Measures

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Normal Afforestation	C 244 (5Ha 2010-11)	31 33'24", 78 21'21"	The area has been closed under Afforestation component during 2010-11. The area is fenced with Barbed Wire fencing. Slope is moderate to steep. The area is situated right side of Khosharang nala. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 2nd year)	5	3120	0.156
					Ha.(maint. 3rd year)		1740	0.087
					Ha.(maint. 4th year)		870	0.0435
					Ha.(maint. 5th year)		870	0.0435
	C 246 (5 Ha. 2008-09)	31 31'10", 78 13'36"	The area has been closed under rehabilitation of degraded forest during 2008-09. The area is fenced with barbed wire fencing. Slope is moderate to steep. The area is situated above old HT road & beyond Rogi. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	5	870	0.0435
					Ha.(maint. 5th year)		870	0.0435
(b) Enrichment	C-247 Kastiarang (6 Ha.New)	31 31'25", 78 21'21"	The proposed area is situated above Roghi road & PWD RH Roghi. It is open to very open forest of Deodar, Kail & Neoza. The area about 6 Ha. is proposed to be taken under enrichment component so as to restock the area. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Kalpa Nursery	Ha.	3	59025	1.77075
						3	46890	1.4067
(c) Energy Plantation								
(d) Measure to handle invasive species.								
Nurseries								
Pasture Reclamation.								
Total Afforestation and Nurseries								**3.59**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
2 Soil & Water Conservation Endeavors								
(a) Moisture Retentively Operations								
(b) Live Hedge Fencing								
(c) Vegetative structures								
(d) Civil Structures	Raildenden nala	31 30'43", 78 13'17"	The nala originates from Shilpanche kanda. It has two tributaries above old HT road & meets below old HT road to form one Raildenden nala (Shes nala). It is a perennial & glacier prone nala. Both the branches/tributaries has been treated during 2009-10 by constructing check walls 33 nos. (18 nos in crate & 15 nos dry), & during 2010-11 check walls nos in crate has also been constructed. The nala is surrounded by scarted Deodar pole crop. About 1.5 km length of the nala requires treatment.	(i) Staggered Bench Terracing. (ii) Construction of check dam & check wall in crate. (iii) Planting of BioSpecies like Indigofera, Lonicera, spiraea, Plectranthus, Kunish, Popular, Salix etc.	Ha.	1.75	84400	4.50
					Cum	184	1633	
	Kholangden Nala	31 31'10", 78 12'54"	It is situated on the left side of PWD rest house surrounded by beautiful Deodar forest & is perennial. The nala originates from Kotangcha Partum top. The slope is moderate to steep. The nala has been treated above old HT road during 2010-11 by constructing check dams 13 nos. (10 nos in crate & 03 nos dry). The balance part of the nala requires treatment.	(i) Staggered Bench Terracing. (ii) Construction of check dam & check wall in crate. (iii) Planting of BioSpecies like Kunish, Popular, Salix, Indigofera, Lonicera, spiraea, Plectranthus, etc.	Ha.	1.2	84400	4.00
					Cum	184	1633	

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(d) Civil Structures	Khosharang Nala	31 31'18", 78 14'33"	The nala originates from Khosharang top & he length is about 3 to 4 Km. It is moderate to steep. It is a seasonal & glacier prone nala. The nala has been treated wef 2008-09-2010-11. During 2010-11 check walls 21 nos. (13 nos in crate & 8 nos dry) has been constructed. The silt has been deposited behind the structures. Some structures has damaged which also requires treatment along with the remaining part of the nala.	(i) Repair of damaged structures. (ii) Staggered Bench Terracing. (iii) Construction of check dam & check wall in crate. (iv) Planting of BioSpecies like Indigofera, Lonicera, spiraea, Plectranthus, Phyllanthus Fraternus etc.	Ha.	1.2	84400	3.50
					Cum	153	1633	
	DPF C 244 Slip	31 31'18", 78 14'33"	It is a small slide/Rill erosion situated in C 244 Deodar forest. It is situated on the right side of Khosharang nala. The slope is moderate to steep & the length requiring treatment is about 15-20m.	(i) Gully Plugging at the top construction of brush wood check dam. (ii) Bench Terracing. (iii) Construction of check wall in crate. (iv) Planting of BioSpecies like Indigofera, Lonicera, spiraea, Plectranthus, Phyllanthus Fraternus etc.	Ha.	0.6	84400	1.00
					Cum	31	1633	
	C 243 Slip (Kalpa beat)	31 31'18", 78 14'33"	It is situated on the left side Khosharang nala & is located in C 243 which is a Kail & Deodar forest. The slope is moderate. About 200m x 5m requires treatment. The GPS coordinates has been given by RO kalpa.	(i) Construction of Staggered check walls in crate. (ii) Sprinkling of Bioseeds like Kail, Ailanthus, Robinia & Indigofera etc. (iii) Planting of BioSpecies like Indigofera, Lonicera, spiraea, Plectranthus etc.	Ha.	1.75	84400	4.50
					Cum	184	1633	
	Kare nala		It is situated in C 247 DPF of Deodar & Kail . The nala originates from the top of C 247 ridge & the length is about 3.5 Km. It is a perennial nala & the slope is moderate to steep. The nala meets with River Satluj near to Karcham Wangtoo HEP dam & requires treatment. The GPS coordinates has been given by RO kalpa.	(i) Construction of check walls/dams in crate. (ii) Sprinkling of Bioseeds like Kail, Ailanthus, Robinia & Indigofera etc. (iii) Planting of BioSpecies like Poplus, Kunish, Willow, Indigofera, Lonicera, spiraea, Plectranthus etc.(iv) Pollarding of Willow & Poplar.	Ha.	2.35	84400	8.00
					Cum	367	1633	

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(e) Drainage line treatment & Land slide control.								
(f) Stream Bank stabilizations								
Total Soil & Water Conservation Endeavors								**35.50**
3 Payment for Environmental Services								
			i) It is proposed that the JFMC's of the Subcatchment will be involved in all type of forest protection activities in the areas. ii) The villagers located in the sub Catchment are mostly agriculturalist / horticulturalist and Buddhist and fell 1 no of Deo pole annually for hoisting flags in their houses. The people will be given / provided one GI pipe each to 98 nos. people situated in the sub Catchment, so that people don't fell the poles from the forest from this purpose. iii) The villagers located in the Sub Catchments are mostly agriculturalist / horticulturalist and are mostly dependant upon it. The slope of the land holding is mostly steep to very steep which leads to severe soil erosion due to wrong cropping pattern. Similarly the people in the Sub catchment are rearing sheep, goat & other domestic cattle's & are having extensive rights for grazing in the forest which also requires immunition in order to prevent the contagions disease to & from wild life living in & around the Subcatchment. In addition to this other animal improvement interventions are also required so that the environment is no affected.	i) Lump sum provision has been kept for this purpose which will be given to the JFMC's, which actively involve themselves in forest protection in the micro water shed. ii) The people located in the sub Catchment shall be provided 1 no of GI pipe for the purpose. iii) Lump sum provision has been kept for Agricultural / Horticultural & Animal Husbandry support in the Sub Catchment.	**No.**	**JFMC's and 1 No of GI pipe**	**Lumpsum**	4.386
Total Payment for Environmental Services								**4.39**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
5 Infrastructure built up & Forest Protection								
(a) Building for stay of staff, FRH/I Hut.								
(b) Forest Roads/ I Paths								
(c) Augmentation of Water Supply.								
(d) Vehicle & Operational Support to HPFD								
(e) Office Equipment								
(f) Silt Monitoring & Purchase of Meteorological Equipment								
(g) Construction & Repair of Boundary Pillars.	C244, C 245 a, C 245 b, C 246, C 247, NC 25		The boundary pillers in C 244=9 Nos. (5 large and 4 no. small), C 245 a=10 Nos. (8 large and 02 no. small), C 245 b=7 Nos. (3 large and 4 no. small), C 246=4Nos. (4 large and 3 no. small), C 247=1Nos. (1 large), NC 246=39Nos. (39 large) require maintenance and updation.	Maintenance of 73 boundary pillers in C244, C 245 a, C 245 b, C 246, C 247, NC 25.	No.	73	Lumpsum	0.12
(h) Fire Protection Measures								
(i) Distribution of Non-conventional energy & Fuel Saving devices								
Total Infrastructure built up								**0.13**
Grand Total								**33.60**

Soil & Water Conservation Endeavors

Raildenden nala

Kholangden Nala

Khosharang Nala

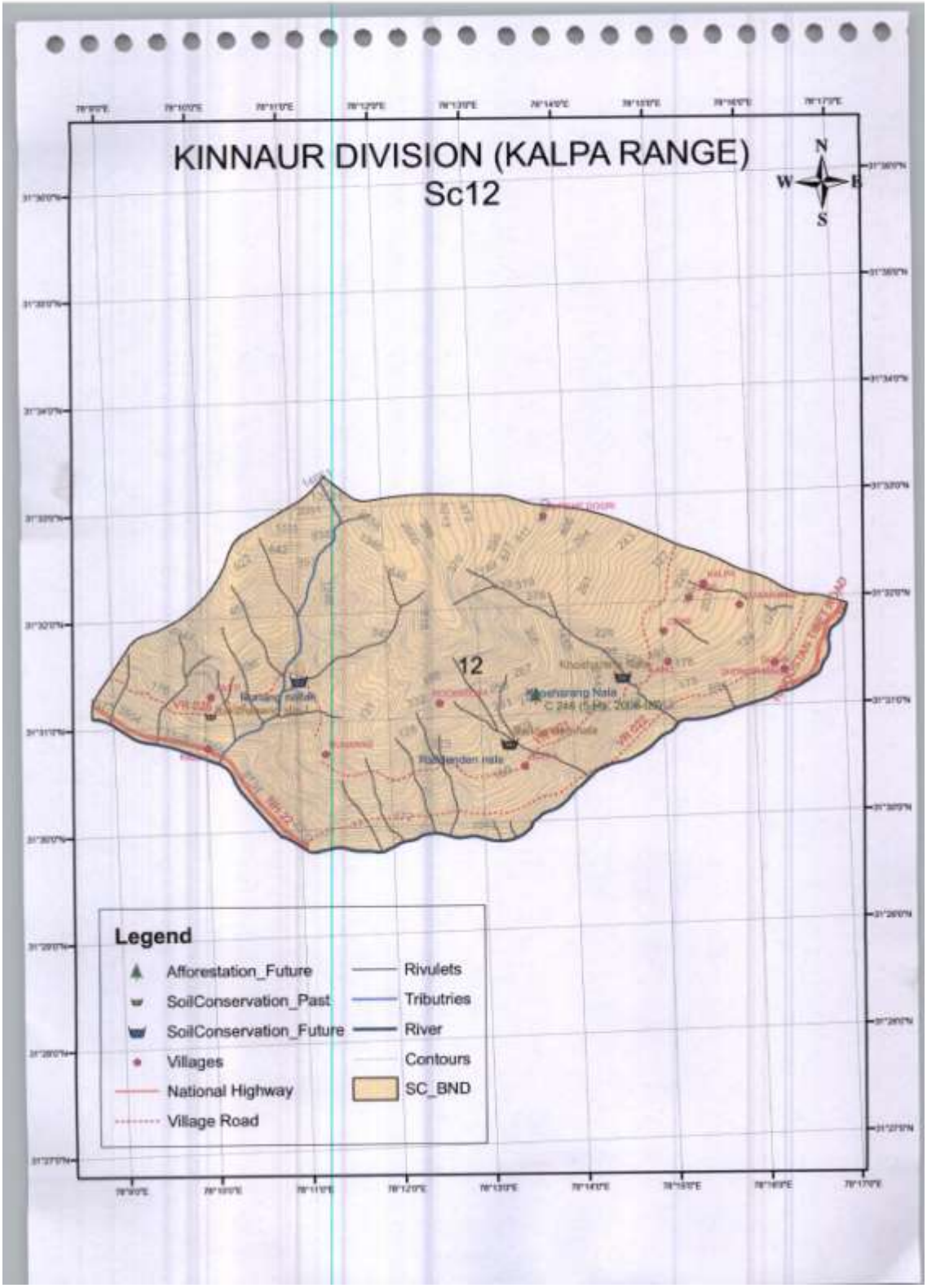
DPF C 244 Slip

C 243 Slip (Kalpa beat)

Infrastructure built up & Forest Protection

C244, C 245 a, C 245 b, C 246, C 247, NC 25

Naik Environment Research Institute Ltd


KINNAUR DIVISION (KALPA RANGE)
Sc12
N
W
E
S
12
Legend
Afforestation_Future
SoilConservation_Past
SoilConservation_Future
Villages
National Highway
Village Road
Rivulets
Tributries
River
Contours
SC_BND

SUB CATCHMENT

13

MANAGEMENT PLAN OF – Sc13 Sub Catchment (UNDER KARCHAM WANGTOO HEP)

INTRODUCTION

LOCATION (BOUNDARIES)					GENERAL DESCRIPTION OF MWS				
						FOREST			
AREA OF MWS	LATITUDE	LONGITUDE	ALTITUDE	SLOPE	SOIL	RANGE	BLOCK	BEAT	PANCHAYAT
6200 ha.	31°32' to 31°38'	78°11' to 78°19'	1960 to 5237	40° to 85°	Sandy Loam	Kalpa	Kalpa	Pangi	Pangi

LAND USE						DEMOGRAPHY		
RF	DPF	UPF	PRIVATE LAND (Agri+Horti)	WASTE LAND	TOTAL	HOUSE HOLD	HUMAN POPULATION	LIVE STOCK POPULATION
(in HA)	(in HA)	(in HA)	(in HA)	(in HA)	(in HA)	(in Nos.)	(in Nos.)	(in Nos.)
	723.73		86	1382	2191.73	572	2069	3562

FLORA

TREES	FIR, KAIL, DEODAR, WALNUT, KUNISH, CHILGOZA, POPLUS ETC.
HERBS & SHRUBS	ROSA ,RUBUS, COTONEASTER, DESDOMODIUM, VIOLA, POLYGONUM, FRAGERIA, THALICTRUM, PLECTRANTHUS, SALVIA, INDIGO FERA, BERBARIS, DAPHNE, LONICERA, SPIRAEA, ARTIMESIA, LONICERA, DEUTIZIA, NEPETA ETC.
GRASSES	ARUNDO-DONAX, AGROPHRON LONGEARISTATUM, AGROSTIS ALBA ETC.
MEDICINAL HERBS	RATANJOT, GUCHHI, KALA ZIRA, DIASCORIA ETC.

FAUNA

ANIMALS	BLACK BEAR, LEOPARD, BHARAL, & OTHERS SMALL MAMMALS
BIRDS/PHEASANTS	CHAKUR & OTHER BIRDS ETC.

Karcham Wangtoo HEP (Kinnaur Division)

Sub-Catchment 13

PAST HISTORY OF MANAGEMENT

Soil & Moisture conservation

Name of Area	GPS Coordinates	Observation	Remarks
Ragura nala (Brano nala)	31 36'08", 78 17'09"	The nala originates from Pin top. It is a seasonal nala & the slope is steep to precipitous above. The nala has been treated during 2009-10 by constructing check wall (19nos in dry & 18no in crate) above project road. The balance part of the nala requires treatment.	Treatment required in the nala is given under future Planning.

Road Side Erosion Control

Name of Area	GPS Coordinates	Observation	Remarks

Afforestation

Name of Area	GPS Coordinates	Observation	Remarks
C 237 (5 Ha 2008-09)	313525, 781543	The plantation area is situated on the right side of Tigul khad. The area consists of young to middle aged Deodar & Chilgoza trees. The area has been closed during 2008-09 under forestation scheme 7 planted with folloing plants: Poplar=50 nos, Ailanthus=200 nos, Willow = 200nos, Robinia=100 nos, Deodar=2950 nos, Neeza=2000nos. Total = 5500nos. The Chilgoza olants are doing well. The stone wall fencing needs repair/maintenance.	The area be maintained & well protected as per availability of funds given under future planning.

Rural Infrastructure Development

Name of Area	GPS Coordinates	Observation	Remarks

Forest Infrastructure Development

Name of Area	GPS Coordinates	Observation	Remarks

BOUNDARY PILLARS

Name of Area	GPS Coordinates	Observation	Remarks

FUTURE PLANNING

1 Afforestation Measures

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Normal Afforestation	C 237 (5 Ha 2008-09)	31 35'25", 78 15'43"	The plantation area is situated on the right side of Tiqual khad. The area consists of young to middle aged Deodar & Chilgoza trees. The area has been closed during 2008-09 under forestation scheme 7 planted with following plants: Poplar=50 nos, Ailanthus=200 nos, Willow = 200nos, Robinia=100 nos, Deodar=2950 nos, Neoza=2000nos. Total = 5500nos. The Chilgoza plants are doing well. The stone wall fencing needs repair/maintenance.	Fence require repair and the area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	5	870	0.0435
					Ha.(maint.		870	0.0435
	C 237 (3Ha 2010-11)	31'29'35", 78'09'14"	The area has been closed under Afforestation component during 2010-11. The area is fenced with Barbed Wire fencing. Slope is moderate to steep. The area is situated near to FG hut Pangi. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 2nd year)	5	3120	0.156
					Ha.(maint. 3nd year)		1740	0.087
					Ha.(maint. 4th year)		870	0.0435
					Ha.(maint. 5th year)		870	0.0435
(b) Enrichment	C-237 Boktu (6 Ha.New)	31 33'51", 78 15'42"	The proposed area is situated above FG hut Pangi. It is open to very open forest of Deodar & Neoza. The area about 6 Ha(3Ha + 3Ha). is proposed to be taken under enrichment component so as to restock the area. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Pangi Nursery	Ha.	3	59025	1.77075
						3	46890	1.4067
(c) Energy Plantation								
(d) Measure to handle invasive species.								

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
Nurseries	Pangi 0.55 Ha (Ht 2547m)	31 35'25", 78 15'58"	The nursery is located just below Pangi link road & near to FG hut Pangi. The aspect is Southern. Irrigation is through Alkathene pipe from near by penmen source of Tiqual nala & then stored in the storage tank of 500Lts. Four nos of Vermicompost pits are available has been put to use. The nursery contains following stocks. Chilgoza = 12160nos, Chulli = 3440nos, Deodar = 6380nos, Behmi = 3960nos , Wild Rose = 1050nos, Roblinia = 3980nos, Willow = 1940nos, Seabuckthorn = 920nos, Kushtl = 520nos, Mulberry = 550nos, Drake = 3530nos, Shrubs = 2673nos.	(i) No scope of extension except improvement of nursery. (ii) Raising of Biospecies like Lonicera, Indigofera, Desmodium, Spiraea, Daphne etc. (iii) Storage tank of 1000Lts 2 nos	No	1	Lumpsum	2.00
Pasture Reclamation.								
Total Afforestation and Nurseries								**5.59**
2 Soil & Water Conservation Endeavors								
(a) Moisture Retentively Operations								
(b) Live Hedge Fencing								
(c) Vegetative structures								
(d) Civil Structures	Ragure nala (Brano nala)	31 36'08", 78 17'09"	The nala originates from Piri top. It is a seasonal nala & the slope is steep to precipitous above. The nala has been treated during 2009-10 by constructing check wall (19nos in dry & 18no in crate) above project road. The balance part of the nala requires treatment.	(i) Staggered Bench Terracing. (ii) Construction of check dam & check wall in crate. (iii) Planting& broadcasting of seeds of Biospecies like Lonicera, spiraea, Plectranthus etc.	Ha.	1.75	84400	4.50
					Cum	184	1633	
(e) Drainage line treatment & Land slide control.								
(f) Stream Bank stabilizations								
Total Soil & Water Conservation Endeavors								**4.50**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
3 Payment for Environmental Services								
			i) It is proposed that the JFMC's of the Sub catchment will be involved in all type of forest protection activities in the areas. ii) The villagers located in the sub Catchment are mostly agriculturalist / horticulturalist and Buddhist and fell 1 no of Deo pole annually for hoisting flags in their houses. The people will be given / provided one GI pipe each to 572 nos. people situated in the sub Catchment, so that people don't fell the poles from the forest from this purpose. iii) The villagers located in the Sub Catchments are mostly agriculturalist / horticulturalist and are mostly dependant upon it. The slope of the land holding is mostly steep to very steep which leads to severe soil erosion due to wrong cropping pattern. Similarly the people in the Sub catchment are rearing sheep, goat & other domestic cattles & are having extensive rights for grazing in the forest which also requires immunition in order to prevent the contagions disease to & from wild life living in & around the Sub catchment. In addition to this other animal improvement interventions are also required so that the environment is no affected.	i) Lump sum provision has been kept for this purpose which will be given to the JFMC's, which actively involve themselves in forest protection in the micro water shed. ii) The people located in the sub Catchment shall be provided 1 no of GI pipe for the purpose. iii) Lump sum provision has been kept for Agricultural / Horticultural & Animal Husbandry support in the Sub Catchment.	**No.**	**JFMC's and 1 No of GI pipe**	**Lumpsum**	12.504
Total Payment for Environmental Services								**12.50**
5 Infraatructure built up & Forest Protection								
(a) Building for stay of staff, FRH/I Hut.	Maintenance of FG hut Pangi	31 35'25", 78 15'58"	The hut is situated just below Pangi link road & requires maintenance.	(i) Painting in CGI roofing. (ii) Painting & distempering. (iii) Development of compound	No	1	Lumpsum	1.50
	Maintenance of Beat guard store at Pangi	31 35'25", 78 15'58"	It is situated near to Fg hut Pangi. The mud roofing which is leaking requires fixing of CGI roofing.	(i) Fixing of CGI roofing.	No	1	Lumpsum	0.75

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(b) Forest Roads/ I Paths								
(c) Augmentation of Water Supply.								
(d) Vehicle & Operational Support to HPFD								
(e) Office Equipment								
(f) Silt Monitoring & Purchase of Meteorological Equipment								
(g) Construction & Repair of Boundary Pillars.	C235, C 236, C 237, C 238		The boundary pillars in C 235=16 Nos. (7 large and 9 no. small), C 236=15 Nos. (6 large and 9 no. small), C 237=26 Nos. (6 large and 20 no. small), C 238=1 Nos. (1 large) require maintenance and updating.	Maintenance of 58 boundary pillars in C235, C 236, C 237, C 238.	No.	58	Lumpsum	0.1
(h) Fire Protection Measures								
(i) Distribution of Non-conventional energy & Fuel Saving devices								
Total Infrastructure built up								**2.35**
Grand Total								**24.95**

Normal Afforestation

C 237

Nurseries

Pangi

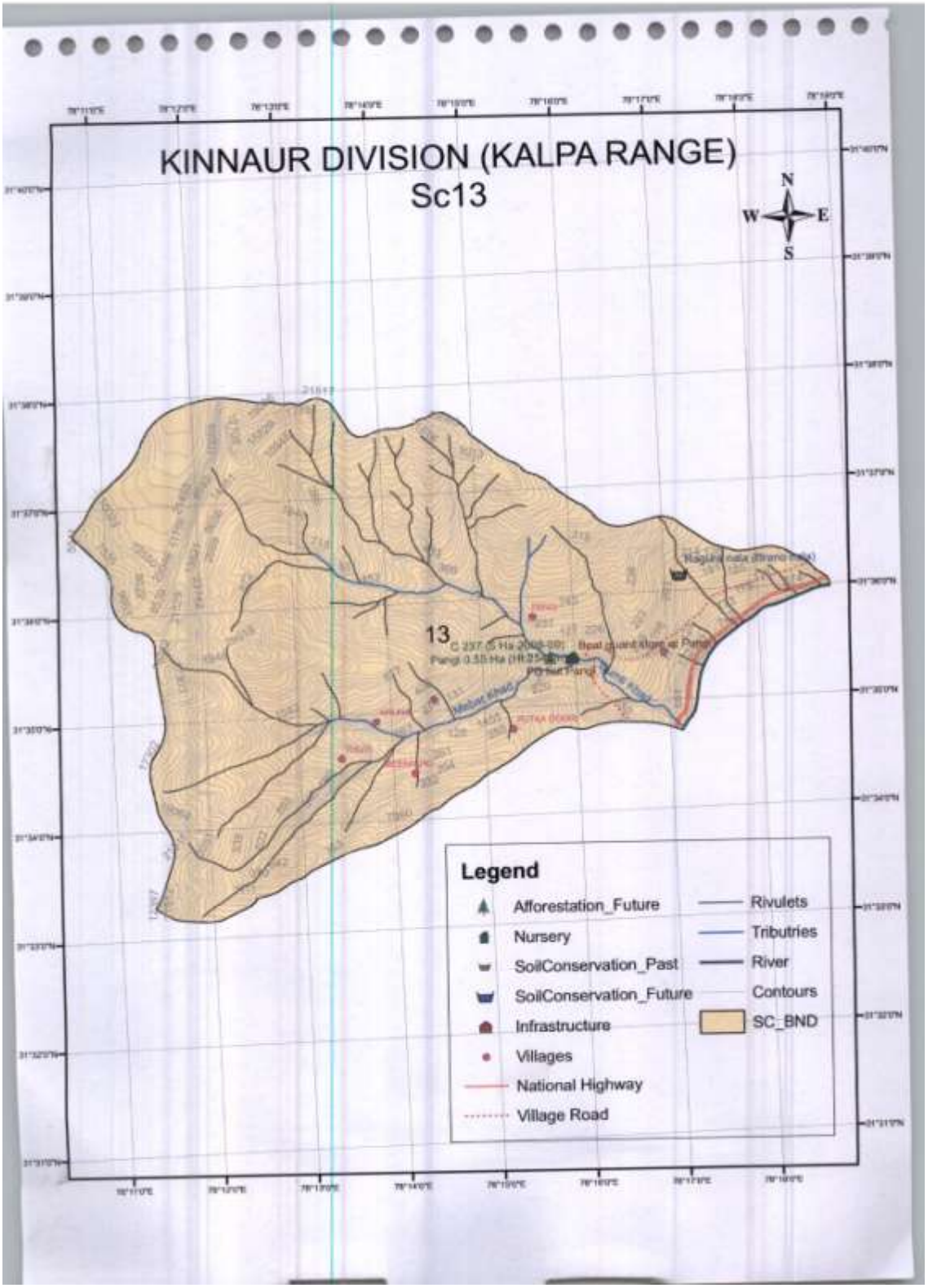
Soil & Water Conservation Endeavors

Ragura nala (Brano nala)

Infrastructure built up & Forest Protection

FG hut Pangi

Beat guard store at Pangi


KINNAUR DIVISION (KALPA RANGE)
Sc13
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W
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13
Legend
Afforestation_Future
Nursery
SoilConservation_Past
SoilConservation_Future
Infrastructure
Villages
National Highway
Village Road
Rivulets
Tributries
River
Contours
SC_BND

SUB CATCHMENT

15

MANAGEMENT PLAN OF – Sc15 Sub Catchment (UNDER KARCHAM WANGTOO HEP)

INTRODUCTION

LOCATION (BOUNDARIES)					GENERAL DESCRIPTION OF MWS				
AREA OF MWS	LATITUDE	LONGITUDE	ALTITUDE	SLOPE	SOIL	FOREST			PANCHAYAT
						RANGE	BLOCK	BEAT	
4400 ha.	31°34' to 31°39'	78°18' to 78°27'	2225 to 4365	40° to 85°	Sandy Loam	Moorang	Jangi	Rarang	Rarang

LAND USE						DEMOGRAPHY		
RF	DPF	UPF	PRIVATE LAND (Agri+Horti)	WASTE LAND	TOTAL	HOUSE HOLD	HUMAN POPULATION	LIVE STOCK POPULATION
(in HA)	(in HA)	(in HA)	(in HA)	(in HA)	(in HA)	(in Nos.)	(in Nos.)	(in Nos.)
	1302.28		169	912	2383.28	334	2367	2742

FLORA

TREES	KAIL, DEODAR, WALNUT, KUNISH, CHILGOZA, POPLUS, FRAXINUS ZANTHOXYLOIDES, JUNIPEROUS COMMUNIS ETC.
HERBS & SHRUBS	ROSA ,RUBUS ORIENTALE, COTONEASTER, DESDOMODIUM, VIOLA, POLYGONUM, FRAGERIA, THALICTRUM, PLECTRANTHUS, SALVIA, INDIGO FERA, BERBARIS, DAPHNE, LONICERA, JUNIPERUS COMMUNIS, SPIRAEA, ARTIMESIA, DEUTIZIA, NEPETA, EPHEDRA GERARDIANA ETC.
GRASSES	ARUNDO-DONAX, AGROPHRON LONGEARISTATUM, AGROSTIS ALBA ETC.
MEDICINAL HERBS	RATANJOT, GUCHHI, KALA ZIRA, DIASCORIA ETC.

FAUNA

ANIMALS	BLACK BEAR, LEOPARD, BHARAL & OTHERS SMALL MAMMALS
BIRDS/PHEASANTS	CHAKUR & OTHER BIRDS ETC.

Karcham Wangtoo HEP (Kinnaur Division)

Sub-Catchment 15

Naik Environment Research Institute Ltd

PAST HISTORY OF MANAGEMENT			
Soil & Moisture conservation			
Name of Area	**GPS Coordinates**	**Observation**	**Remarks**
Godang Nala	31 36'41", 78 19'16"	The nala originates from the top of C 231 & the length is about 1.5 - 2 Km. The slope is moderate to steep & the area consists of Deodar trees. The nala has been treated during 2008-09 by constructing 94nos (60nos Dry & 34nos in crate) & during 2009-10 by constructing 40nos 20nos Dry & 20nos in crate) structures under Karcham Wangtoo cat plan. The nala has been treated above old HT road from top. The balance part is required to be treated & no treatment is required below old HT road.	Treatment required in the nala is given under future Planning.
Shakerlungpa Slip	31 35'16", 78 23'29"	The slip originates from top of C 228 which is a Deodar & Neoza forest. The slope is moderate to steep. The slip has been treated during 2008-09 by constructing 157nos (100 nos Dry & 57 nos in crate) & during 2009-10 by constructing 43nos (23 nos Dry & 20 nos in crate) structures under Karcham Wangtoo cat plan. The nala has been treated above Jangi road from top. Bio species are coming naturally. No further treatment is required.	No further treatment is required except PWD to construct retaining wall & side drain along Jangi road.
Road Side Erosion Control			
Name of Area	**GPS Coordinates**	**Observation**	**Remarks**
Afforestation			
Name of Area	**GPS Coordinates**	**Observation**	**Remarks**
Rural Infrastructure Development			
Name of Area	**GPS Coordinates**	**Observation**	**Remarks**
Forest Infrastructure Development			
Name of Area	**GPS Coordinates**	**Observation**	**Remarks**
BOUNDARY PILLARS			
Name of Area	**GPS Coordinates**	**Observation**	**Remarks**

FUTURE PLANNING

1 Afforestation Measures

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Normal Afforestation	C 231 (3 Ha 2010-11)	31 36'53", 78 19'09"	The area has been closed under rehabilitation of degraded forest during 2010-11. The area is situated above old HT road & beyond Rarang village. The area has been planted with Robinia, Chulli, Behmi, Deodar & Chilgoza. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 2nd year)	3	6000	0.18
					Ha.(maint. 3rd year)		5100	0.153
					Ha.(maint. 4th year)		4200	0.126
					Ha.(maint. 5th year)		4200	0.126
	C 231 (3 Ha. 2008-09)	31 35'35", 78 09'14"	The area has been closed under rehabilitation of degraded forest during 2008-09 & treated under Karcham Wangtoo cat plan. The area is fenced with stone wall fencing. Slope is moderate to steep. The area is situated near Thopan village. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	3	4200	0.126
					Ha.(maint. 5th year)		4200	0.126
(b) Enrichment								
(c) Energy Plantation								
(d) Measure to handle invasive								
Nurseries	Akpa 0.50Hc (Ht 2335m)	31 35'11", 78 22'46"	The nursery is located just below Jangi link road & near to Range office complex. The aspect is Southern. It is a well laid nursery. Irrigation is through Alkathene pipe from spring situated in C 228 distance at about 4.5 Km & brought through GI pipe duly embedded & then stored in the storage tank which has been repaired during 2010-11 under Karcham wangtoo cat plan. Two nos of Vermicompost pits are available and put to use. The nursery contains following stocks: Ailanthus = 2850nos, Chilgoza = 15107nos, Chulli = 4646nos, Deodar = 3840nos, poplar = 1615nos, Chulli in P bags = 3174nos, Behmi = 650nos & 1243nos in P Bags, Wild Rose = 615nos, Robinia = 3400nos, Willow = 550nos.	(i) No scope of Extension but Improvement of nursery. (ii) Raising of Biospecies like Cotoneaster, Rubus, Lonicera, Desmodium, Spiraea, Daphne etc.	No	1	Lumpsum	1.50
Pasture Reclamation.								
Total Afforestation and Nurseries								**2.34**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
2 Soil & Water Conservation Endeavors								
(a) Moisture Retentively Operations								
(b) Live Hedge Fencing								
(c) Vegetative structures								
(d) Civil Structures	Godang Slip	31 36'41", 78 19'16"	The slip originates from the top of C 231 & the length is about 1.5 Km. It is situated on the right bank of Godang nala. The slope is steep & the area consists of Deodar trees. The damage is caused to the Govt. /Private property due to rolling down of snow which has resulted into a fil erosion in the area. About 0.5Ha area requires treatment.	(i) Staggered Bench Terracing. (ii) Construction of Monds/check wall in staggered. (iii)Construction of P/ wall in crate in the lower part. (iv) Sprinkling of BioSeeds like Artemesia, Lonicera, spiraea, Plectranthus & local grasses.	Ha.	1.2	84400	2.00
					Cum	61	1633	
	Godang Nala	31 36'41", 78 19'16"	The nala originates from the top of C 231 & the length is about 1.5 - 2 Km. The slope is moderate to steep & the area consists of Deodar trees. The nala has been treated during 2008-09 by constructing 94nos (60nos Dry & 34nos in crate) & during 2009-10 by constructing 40nos 20nos Dry & 20nos in crate) structures under Karcham Wangtoo cat plan. The nala has been treated above old HT road from top. The balance part is required to be treated & no treatment is required below old HT road.	(i) Construction of check wall/ check dam in crate. (ii) Sprinkling of BioSeeds like Artemesia, Lonicera, spiraea, Plectranthus & local grasses. (iii) Planting of Kunish, Poplar, Salix & Spireea Etc.	Ha.	1.75	84400	4.00
					Cum	153	1633	
	Krichang Nala	31 36'48", 78 19'31"	The nala originates from the top of C 231 & the length is about 0.5 Km & width is about 10m. The nala is seasonal. The slope is moderate to steep . This nala is situated just above old HT road near to Shilla pur/ Thopan. The Kashang Kuhl Is running above & if the gates of the kuhl is opened or breached than the water flows & causes erosion. Most of the erosion is due to this account.	(i) The IPH department should ensure to stop the over flow of the Kashang Khul running above. (ii) Construction of check wall/ check dam / P wall in crate. (iii) Sprinkling of BioSeeds like Artemesia, Lonicera, spiraea, Plectranthus & local grasses. (iv) Planting of Kunish, Poplar, Salix & Spiraea Etc.	Ha.	2.35	84400	5.00
					Cum	184	1633	

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(d) Civil Structures	Buroo Slip	31 36'25", 78 20'27"	It is a wide slip & is situated above old HT road / Buroo village. The slip originates from the top of C 231 & the length is about 1.5 - 2 K/m. In the top of the ridge irrigation channel through GI pipe from Kashang Khad to Akpa is running above. The slip requires treatment both above & below old HT road.	(i) The PWD to construct retaining wall along the road. (ii) Staggered Bench Terracing. (iii) Construction of check wall / P wall in crate. (iv) Sprinkling of BioSeeds like Artemesia, Lonicera, spiraea, Plectranthus, Robinia, Ailanthus, Daphne, Kunish & local grasses. (v) Planting of Bio species like Kunish, Poplar, Salix & Spiraea Etc.	Ha.	2.35	84400	7.00
					Cum	306	1633	
	Sharangti Nala (Akpa Ht 2602)	31 35'16", 78 23'49"	The nala is situated above old Akpa village & near to C 228. It is a dry & seasonal nala. The slope is moderate to steep. The nala requires treatment. The GPS Coordinates hes been given by RO Moorang.	(i) Construction of check wall / P wall in crate. (ii) Sprinkling of BioSeeds like Artemesia, Lonicera, spiraea, Plectranthus, Robinia, Ailanthus, Daphne, Kunish & local grasses.	Ha.	1.2	84400	3.00
					Cum	122	1633	
	Chhorka Nala (Ht 2262)	31 34'57", 78 24'37"	The nala is situated opposite to Rispa Jhulla & in between NH 22 & Lippa link road. It is a dry & seasonal nala. The slope is moderate to steep. The nala requires treatment. The GPS Coordinates has been given by RO Moorang.	(i) Construction of check wall / P wall in crate. (ii) Sprinkling of BioSeeds like Artemesia, Lonicera, spiraea, Plectranthus, Robinia, Ailanthus, Daphne, Kunish & local grasses.	Ha.	1.2	84400	2.75
					Cum	107	1633	
(e) Drainage line treatment & Land slide control.								
(f) Stream Bank stabilizations								
Total Soil & Water Conservation Endeavors								**23.75**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
3 Payment for Environmental Services								
			i) It is proposed that the JFMC's of the Sub catchment will be involved in all type of forest protection activities in the areas. ii) The villagers located in the sub Catchment are mostly agriculturalist / horticulturalist and Buddhist and fell 1 no of Deo pole annually for hoisting flags in their houses. The people will be given / provided one GI pipe each to 334 nos. people situated in the sub Catchment, so that people don't fell the poles from the forest from this purpose. iii) The villagers located in the Sub Catchments are mostly agriculturalist / horticulturalist and are mostly dependant upon it. The slope of the land holding is mostly steep to very steep which leads to severe soil erosion due to wrong cropping pattern. Similarly the people in the Sub catchment are rearing sheep, goat & other domestic cattles & are having extensive rights for grazing in the forest which also requires immunition in order to prevent the contagions disease to & from wild life living in & around the Sub catchment. In addition to this other animal improvement interventions are also required so that the environment is no affected.	i) Lump sum provision has been kept for this purpose which will be given to the JFMC's, which actively involve themselves in forest protection in the micro water shed. ii) The people located in the sub Catchment shall be provided 1 no of GI pipe for the purpose. iii) Lump sum provision has been kept for Agricultural / Horticultural & Animal Husbandry support in the Sub Catchment.	No.	JFMC's and 1 No of GI pipe	Lump sum	10.838
Total Payment for Environmental Services								**10.84**
5 Infrastructure built up & Forest Protection								
(a) Building for stay of staff, FRH/I Hut.	Construction of FG hut Akpa.	31 35'11", 78 22'46"	The hut is situated above Akpa nursery & below Jangi link road. The hut is being constructed under Karcham Wangtoo cat plan with an estimate of Rs 8.336 Lakhs. The hut is almost complete but more funds are required for its completion.	(i) Electrification remains to be fitted. (ii) Development of compound. For these activities additional funds of Rs 0.85 lakhs are required.	No	1	Lumpsum	0.85
	Maintenance range office/ residents Akpa.	31 35'10", 78 22'47"	The office/ residence is situated below Jangi link road & requires maintenance.	(i) There are no wire gauge shutters in the doors of residence as well as in the residence. There fore 9 nos of shutters are required to be prepared and fixed . (ii) Fixing of Vinyle flooring in 900 Sqm area. (iii) P/F of iron gate.	No	1	Lumpsum	1.50

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Building for stay of staff, FRH/I Hut.	Maintenance I/ Hut Akpa.	31 35'07", 78 22'48"	The I/ hut is situated below Jangi link road & requires maintenance.	(i) Maintenance/repair of Toilet including sanitary fitting in set no 2. (ii) varnishing/Polishing & Distempering. (iii) Fixing of Vinyle flooring in 800 Sqm area. (iv) Fixing of Gyseir in set no 1. (v) Maintenance of Electrification. (vi) Fixing of Eave boards. (vii) painting of CGI roofing.	No	1	Lumpsum	3.50
	Maintenance Chowkidar quarter Akpa.	31 35'07", 78 22'48"	The quarter is situated near to I/Hut Akpa & requires maintenance.	(i) Cement concrete flooring. (ii) Painting & Distempering.	No	1	Lumpsum	1.00
(b) Forest Roads/ I Paths								
(c) Augmentation of Water Supply.								
(d) Vehicle & Operational Support to HPFD		31 29'34", 78 09'06 "						
(e) Office Equipment								
(f) Silt Monitoring & Purchase of Meteorological Equipment								
(g) Construction & Repair of Boundary Pillars.								
(h) Fire Protection Measures								
(i) Distribution of Non-conventional energy & Fuel Saving devices								
Total Infrastructure built up								**6.83**
Grand Total								**43.78**

Normal Afforestation

Akpa

Soil & Water Conservation Endeavors

Godang Slip

Krichang Nala

Buroo Slip

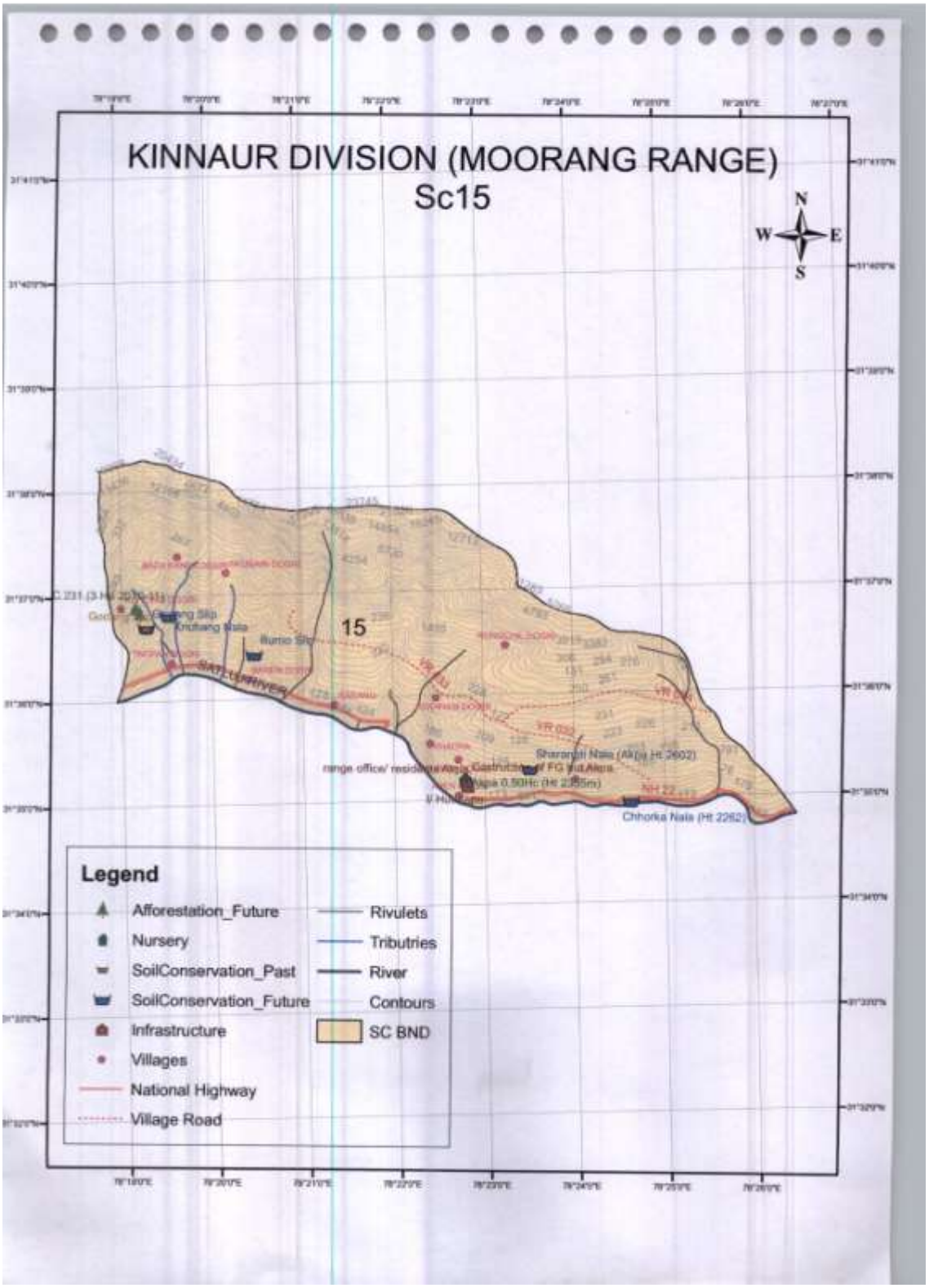
Infrastructure built up & Forest Protection

FG hut Akpa

Office/ residents Akpa

Hut Akpa

Chowkidar quarter Akpa


KINNAUR DIVISION (MOORANG RANGE)
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15
Chhorka Nala (Ht 2282)
Legend
Afforestation_Future
Nursery
SoilConservation_Past
SoilConservation_Future
Infrastructure
Villages
National Highway
Village Road
Rivulets
Tributries
River
Contours
SC BND

SUB CATCHMENT

16

MANAGEMENT PLAN OF – Sc16 Sub Catchment (UNDER KARCHAM WANGTOO HEP)

INTRODUCTION

LOCATION (BOUNDARIES)					GENERAL DESCRIPTION OF MWS				
AREA OF MWS	LATITUDE	LONGITUDE	ALTITUDE	SLOPE	SOIL	FOREST			PANCHAYAT
						RANGE	BLOCK	BEAT	
51800 ha.	31°35' to 31°52'	78°04' to 78°27'	2225 to 5848	35° to 90°	Sandy Loam, loam	Moorang	Jangi	Jangi & Lippa	Asrang, Jangi & Lippa

LAND USE						DEMOGRAPHY		
RF	DPF	UPF	PRIVATE LAND (Agri+Horti)	WASTE LAND	TOTAL	HOUSE HOLD	HUMAN POPULATION	LIVE STOCK POPULATION
(in HA)	(in HA)	(in HA)	(in HA)	(in HA)	(in HA)	(in Nos.)	(in Nos.)	(in Nos.)
	1291.8		553	2488	4332.8	541	3019	5589

FLORA

TREES	FRAXINUS, ZANTHOXYLOIDES, KAIL, DEODAR, WALNUT, KUNISH, CHILGOZA, JUNIPEROUS, POPLUS ETC.
HERBS & SHRUBS	ROSA ,RUBUS, COTONEASTER, DESMODIUM, VIOLA, POLYGONUM, FRAGERIA, THALICTRUM, PLECTRANTHUS, SALVIA, INDIGO FERA, BERBARIS, DAPHNE, LONICERA, JUNIPERUS COMMUNIS, SPIRAEA, ARTIMESIA, DEUTIZIA, THYMUS, CARAGNA, NEPETA, EPHEDRA GERARDIANA ETC.
GRASSES	ARUNDO-DONAX, AGROPHRON LONGEARISTATUM, AGROSTIS ALBA ETC.
MEDICINAL HERBS	RATANJOT, GUCHHI, KALA ZIRA, DIASCORIA, Karoo, Patish, Bankasha, Jangli Onion, Saxifera, Chukri ETC.

FAUNA

ANIMALS	BLACK BEAR, LEOPARD, BHARAL, & OTHERS SMALL MAMMALS
BIRDS/PHEASANTS	CHAKUR & OTHER BIRDS ETC.

Karcham Wangtoo HEP (Kinnaur Division)

Sub-Catchment 16

PAST HISTORY OF MANAGEMENT

Soil & Moisture conservation

Name of Area	GPS Coordinates	Observation	Remarks
Hondening nala	31 37'14", 78 25'29"	The nala originates from the top of C 224. The slope is steep to Precipitous at the top. The top portion is mostly rocky. The nala has been treated during 2007-08 by constructing 60nos structures under Karcham Wangtoo cat plan. most of the structures has been crumbled / damaged. The nala is seasonal & glacier prone. The balance part is required to be treated.	Treatment required in the nala is given under future Planning.
Langfaring Slip/Nala	31 37'14", 78 25'29"	The Nala/Slip is situated in C 224 forest of stunted Deodar & Neoza. It is located on the right side of Hondening nala. It is deep & the length is about 0.5 Km. The slope is moderate to steep. The nala has been treated during 2010-11 by constructing 67nos check walls (29nos Dry & 38nos in crate) under Karcham Wangtoo cat plan. The nala is seasonal & glacier prone & damages the Govt. as well as private properties down below. The balance part is required to be treated. The GPS coordinates has been given by RO Moorang.	Treatment required in the nala is given under future Planning.
Peger Khad/Nala	31 39'28", 78 22'51"	The nala originates from the top of Lippa Kanda & Spiti ridge. It is a perennial nala & runs along Lippa village. The slope is steep above but gentle below. During recent Flash Flood which came on 6th /7th Aug 2011 has caused huge devastation down below & the width of the nala has also widened. The nala has been treated during 2010-11 by constructing 63nos of P/walls on both the sides of the khadunder Karcham Wangtoo cat plan. The same has also been washed away. The length of the nala is about 20-25 Km. The nala requires special treatment.	Treatment required in the nala is given under future Planning.
Tepanashong Slip	31 40'13", 78 20'02"	The slip originates from Ashong ridge & above Ashong Dogri/cultivation. The slope is moderate to steep. The slip is situated on the left bank of kirang khad. The slip has been treated during 2010-11 by constructing 50 nos of check walls in crate. It is also a glacier prone area & requires treatment. The GPS coordinates has been given by RO Moorang.	Treatment required in the nala is given under future Planning.
kaling slip	31 39'25", 78 15'00"	The slip is situated above Tokto village. The slope is moderate to steep. The slip has been treated from top during 2008-09 by constructing 51 nos dry structures & during 2009-10 by constructing 38 nos structures in crate. It is also a glacier prone area & the balance area requires treatment. The GPS coordinates has been given by RO Moorang.	Treatment required in the nala is given under future Planning.
Jojrang Slip	31 39'18", 78 18'43"	The slip is situated above Asrang village & its cultivation. The slope is moderate to steep. The slip has been treated from top during 2010-11 by constructing 61 nos structures in crate. It is also a glacier prone area & the balance area requires treatment. The GPS coordinates has been given by RO Moorang.	Treatment required in the nala is given under future Planning.
C 225 Nala	31 38'52", 78 24'24"	The nala originates from the top of C 225 forest of Deodar & Neoza & is located above Lippa Jangi road. The slope is moderate to steep. The nala has been treated during 2010-11 by constructing 110nos check walls (62nos Dry & 48nos in crate) under Karcham Wangtoo cat plan. Bio Species are coming naturally. There is private cultivation of Jangi village in the top portion of the nala. No further treatment is required.	No further treatment is required.

Road Side Erosion Control			
Name of Area	GPS Coordinates	Observation	Remarks
Afforestation			
Name of Area	GPS Coordinates	Observation	Remarks
Rural Infrastructure Development			
Name of Area	GPS Coordinates	Observation	Remarks
Forest Infrastructure Development			
Name of Area	GPS Coordinates	Observation	Remarks
BOUNDARY PILLARS			
Name of Area	GPS Coordinates	Observation	Remarks

FUTURE PLANNING

1 Afforestation Measures

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Normal Afforestation	C 225 (3 Ha. 2010-11)	31 38'45", 78 24'57"	The area has been closed under rehabilitation of degraded forest during 2010-11. The area is fenced with stone wall fencing. The area is situated on the right bank of Kirang khada, near to Lippa nursery & consists of Deodar/ Neoza forest. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 2nd year)	3	6000	0.18
					Ha.(maint. 3rd year)		5100	0.153
					Ha.(maint. 4th year)		4200	0.126
					Ha.(maint. 5th year)		4200	0.126
	C 224 (5 Ha. 2009-10)	31 38'48", 78 24'10"	The area has been closed under rehabilitation of degraded forest during 2009-10. The area is fenced with stone wall fencing. Slope is moderate to steep. The area is situated on the right bank of Kiring khad & near to Jharana nala. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 3rd year)	5	5100	0.255
					Ha.(maint. 4th year)		4200	0.21
					Ha.(maint. 5th year)		4200	0.21
	C 219 a (3 Ha. 2009-10)	31 39'09", 78 20'34"	The area has been closed under rehabilitation of degraded forest during 2009-10. The area is fenced with stone wall fencing. Slope is moderate to steep. The area is situated above Lippa Asrang link road & near Lappo village. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 3rd year)	3	5100	0.153
					Ha.(maint. 4th year)		4200	0.126
					Ha.(maint. 5th year)		4200	0.126
	C 219 a (5 Ha. 2008-09)	31 39'23", 78 20'22"	The area has been closed under rehabilitation of degraded forest during 2008-09. The area is fenced with stone wall fencing. Slope is moderate to steep. The area is situated below Lippa Asrang B path. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	5	4200	0.21
					Ha.(maint. 5th year)		4200	0.21

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Normal Afforestation	Thoring Ashong (5 Ha. 2008-09)	31 41'07", 78 20'00"	The area has been closed under rehabilitation of degraded forest during 2008-09. The area is fenced with stone wall fencing. Slope is moderate to steep. The area is situated near to Ashong village. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	5	4200	0.21
					Ha.(maint. 5th year)		4200	0.21
	Lippa (5 Ha. 2010-11)	31 39'35", 78 19'56"	The area has been closed under NTFP Component during 2010-11. The area is fenced with stone wall fencing. The area is situated near to Jhojhorang nala. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 2nd year)	5	6000	0.3
					Ha.(maint. 3rd year)		5100	0.255
(b) Enrichment	C 225 (2 Ha.New)	31 38'50", 78 24'59"	The proposed area is situated above Lippa nursery. It is open to very open forest of Deodar & Neoza. The area about 2 Ha. is proposed to be taken under enrichment component so as to restock the area. The irrigation to the plantation is proposed to be provided from Jarana nala. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	1)B/wire fencing. 2)Planting of Chillgoza/Deodar from Lippa Nursery	Ha.	1	75460	0.7546
						1	64020	0.6402
	C 225 I (3 Ha.New)	31 38'50", 78 24'55"	The proposed area is situated below Lippa nursery. It is open to very open forest of Deodar & Neoza. The area about 8 (5+3) Ha. is proposed to be taken under enrichment component so as to restock the area. The irrigation to the plantation is proposed to be provided from Kutang dogri nala. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	1)B/wire fencing. 2)Planting of Chillgoza/Deodar from Lippa Nursery	Ha.	3	75460	2.2638
						5	64020	3.201
(c) Energy Plantation								
(d) Measure to handle invasive species.								

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (In lacs.)
Nurseries	Jangi 0.25Hc (Ht 2691m)	31 36'37", 78 25'42"	The nursery is located above Lippa road & near to Govt. senior secondary school Jangi & around BO quarter Jangi. The aspect is South west. Irrigation is through Alkathene pipe from permanent source of natural spring situated in C 226 distance at about 3 Km & brought through A/ pipe duly embedded.There is no storage tank. One nos of Vermicompost pit is available and put to use. The nursery contains following stocks: Chilgoza = 267nos, Chulli = 1402nos, Behmi = 914nos.	(i) No scope of Extension but improvement of nursery. (ii) Raising of Biospecies like Rosa, Rubus, Lonicera, Desmodium, Poplar, Spiraea, Daphne etc. (iii) Storage tank 1000 Lets 2 nos.	No	1	Lumpsum	1.00
	Lippa 1 Hc (Ht 2600 m)	31 38'54", 78 24'34"	The nursery is located in C 225 forest of Chilgoza & Deodar & just above Lippa road. The aspect is Northern. Irrigation is through Alkathene pipe from permanent source of nala & brought through A/ pipe direct to nursery. There is no storage tank. Two nos of Vermicompost pits are available and put to use. The nursery contains following stocks: Chilgoza = 11370 nos, Chulli = 5780 & 4185nos in P bags , Deodar = 6765 nos, Behmi = 1170 & 514 nos in P bags , Robinia = 1150 nos, Popular = 1325 nos, Willow = 2775 nos, Karoo = 25 nos, Patish = 42 nos, Bankasha = 162 nos, Jangli Onion = 94 nos, Saxifera = 15 nos , Chukri = 29 nos, Ash = 634 nos, Chora = 4nos, Kuth 6nos, Charma = 530nos.	(i) Scope fur Extension & improvement of nursery. (ii) Raising of Biospecies like Rosa, Rubus, Lonicera, Desmodium, Indigofera, Spiraea, Daphne etc. (iii) Reconstruction of Storage tank. (iv) Repair of old labour hut to be used as nursery store/ shed.	No	1	Lumpsum	3.00
Pasture Reclamation.								
Total Afforestation and Nurseries								**13.92**
2 Soil & Water Conservation Endeavors								
(a) Moisture Retentively Operations								
(b) Live Hedge Fencing								
(c) Vegetative structures								

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (In lacs.)
(d) Civil Structures	Honden nala	31 37'14", 78 25'29"	The nala originates from the top of C 224. The slope is steep to Precipitous at the top. The top portion is mostly rocky. The nala has been treated during 2007-08 by constructing 60nos structures under Karchan Wangtoo cat plan. most of the structures has been crumbled / damaged. The nala is seasonal & glacier prone. The balance part is required to be treated.	(i) Repair of old damaged structures. (ii) Staggered Bench Terracing. (iii) Construction of Minds/check wall in staggered. (iv) Construction of P/ wall in crate in the lower part. (v) Sprinkling of BioSeeds including planting like Artemesia, Wild Rose, Lonicera, Plectranthus & local grasses.	Ha.	1.75	84400	4.50
					Cum	184	1633	
	Langfaring Slip/Nala	31 37'14", 78 25'29"	The Nala/Slip is situated in C 224 forest of stunted Deodar & Neoza. It is located on the right side of Hondsning nala. It is deep & the length is about 0.5 Km. The slope is moderate to steep. The nala has been treated during 2010-11 by constructing 67nos check walls (29nos Dry & 38nos in crate) under Karcham Wangtoo cat plan. The nala is seasonal & glacier prone & damages the Govt. as well as private properties down below. The balance part is required to be treated. The GPS coordinates has been given by RO Moorang.	(i) Staggered Bench Terracing. (ii) Construction of Monda/check wall in staggered. (iii) Construction of P/ wall in crate in the lower part. (iv) Sprinkling of BioSeeds including planting like Spiraea, Artemesia, Wild Rose, Lonicera, Plectranthus & local grasses.	Ha.	184	84400	3.00
					Cum	122	1633	
	Gandumshuru Slip	31 39'50", 78 19'39"	It is situated on the right bank of Kirang khad & below Asrang village. The strata of the slip is very fragile. The slope is moderate to steep. The slip is to be treated after angle of repose is attained.	(i) Sprinkling of BioSeeds like Kail, Spiraea, Artemesia, Wild Rose, Lonicera, Plectranthus & local grasses. (ii) PWD to construct retaining wall along Asrang link road. (iii) Staggered Bench Terracing. (iv) Planting of local Bio species.	Ha.	1.2	84400	2.50
					Cum	92	1633	
	Tepan Ashong Slip	31 40'13", 78 20'02"	The slip originates from Ashong ridge & above Ashong Degri/cultivation. The slope is moderate to steep. The slip is situated on the left bank of kirang khad. The slip has been treated during 2010-11 by constructing 50 nos of check walls in crate. It is also a glacier prone area & requires treatment. The GPS coordinates has been given by RO Moorang.	(i) Staggered Bench Terracing. (ii) Construction of check / P/ wall in crate. (iii) Sprinkling of BioSeeds like Kail, Spiraea, Artemesia, Wild Rose, Lonicera, Plectranthus & local grasses. (iv) Planting of local Bio species.	Ha.	2.35	84400	5.00
					Cum	184	1633	

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(d) Civil Structures	keling slip	31 39'25", 78 15'00"	The slip is situated above Tokto village. The slope is moderate to steep. The slip has been treated from top during 2008-09 by constructing 51 nos dry structures & during 2009 10 by constructing 38 nos structures in crate. It is also a glacier prone area & the balance area requires treatment. The GPS coordinates has been given by RO Moorang.	(i) Staggered Bench Terracing. (ii) Construction of Monds/check wall in staggered. (iii) Construction of check / P/ wall in crate. (iv) Sprinkling of BioSeeds like Kail, Spiraea, Artemesia, Wild Rose, Lonicera, Plectranthus & local grasses. (v) Planting of local Bio species.	Ha.	1.75	84400	4.50
					Cum	184	1633	
	Jojrang Slip	31 39'18", 78 18'43"	The slip is situated above Asrang village & its cultivation. The slope is moderate to steep. The slip has been treated from top during 2010-11 by constructing 61 nos structures in crate. It is also a glacier prone area & the balance area requires treatment. The GPS coordinates has been given by RO Moorang.	(i) Staggered Bench Terracing. (ii) Construction of Monds/check wall in staggered. (iii) Construction of check / P/ wall in crate. (iv) Sprinkling of BioSeeds like Kail, Spiraea, Artemesia, Wild Rose, Lonicera, Plectranthus & local grasses. (v) Planting of local Bio species.	Ha.	1.75	84400	4.50
					Cum	184	1633	
	khelungpa Slip	31 39'22", 78 18'32"	The slip is situated on the left side of Jojrang slip & Asrang village. The slope is moderate to steep. It is also a glacier prone area & requires treatment. The GPS coordinates has been given by RO Moorang.	(i) Staggered Bench Terracing. (ii) Construction of Monds/check wall in staggered. (iii) Construction of check / P/ wall in crate. (iv) Sprinkling of BioSeeds like Kail, Spiraea, Artemesia, Wild Rose, Lonicera, Plectranthus & local grasses. (v) Planting of local Bio species.	Ha.	2.35	84400	7.00
					Cum	306	1633	

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(e) Drainage line treatment & Land slide control.	Peger Khad/Nala	31 39'28", 78 22'51"	The nala originates from the top of Lippa Kanda & Spiti ridge. It is a perennial nala & runs along Lippa village. The slope is steep above but gentle below. During recent Flash Flood which came on 6th /7th Aug 2011 has caused huge devastation down below & the width of the nala has also widened. The nala has been treated during 2010-11 by constructing 63nos of P/walls on both the sides of the khadunder Kercham Wangtoo cat plan. The same has also been washed away. The length of the nala is about 20-25 Km. The nala requires special treatment.	(i) Special treatment plan for both the khads Kirang & Pager are required. (ii) Construction of series of P/walls & check dams in crate on both the banks of Pager khad after proper alignment. (iii) Vegetative intervensions like poliarding of willow, Popular & Kunish. (iv) Planting of Bio species & sprinating of bio seeds like Spiraea, Artemesia, Wild Rose, Lonicera, Plectranthus & local grasses.	Ha.	4.75	84400	
					Cum	1102	1633	22
(f) Stream Bank stabilizations								
Total Soil & Water Conservation Endeavors								**53.00**
3 Payment for Environmental Services								
			i) It is proposed that the JFMC's of the Sub catchment will be involved in all type of forest protection activities in the areas. ii) The villagers located in the sub Catchment are mostly agriculturalist / horticulturalist and Buddhist and fell 1 no of Deo pole annually for hoisting flags in their houses. The people will be given / provided one GI pipe each to 541 nos. people situated in the sub Catchment, so that people don't fell the poles from the forest from this purpose. iii) The villagers located in the Sub Catchments are mostly agriculturalist / horticulturalist and are mostly dependant upon it. The slope of the land holding is mostly steep to very steep which leads to severe soil erosion due to wrong cropping pattern. Similarly the people in the Sub catchment are rearing sheep, goat & other domestic cattles & are having extensive rights for grazing in the forest which also requires immunition in order to prevent the contagions disease to & from wild life living in & around the Sub catchment. In addition to this other animal improvement intervensions are also required so that the environment is no affected.	i) Lump sum provision has been kept for this purpose which will be given to the JFMC's, which actively involve themselves in forest protection in the micro water shed. ii) The people located in the sub Catchment shall be provided 1 no of GI pipe for the purpose. iii) Lump sum provision has been kept for Agricultural / Horticultural & Animal Husbandry support in the Sub Catchment.	**No.**	**JFMC's and 1 No of GI pipe**	**Lumpsum**	12.787
Total Payment for Environmental Services								**12.79**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (In lacs.)
5 Infrastructure built up & Forest Protection								
(a) Building for stay of staff, FRH/I Hut.	Construction of FG hut Jangi.	31 36'37", 78 25'42"	The hut is situated above Jangi nursery & above Jangi link road. The hut is being constructed under Karcham Wangtoo cat plan with an estimate of Rs 9.343 Lakhs. Rs 8 lakhs has so far been released & utilized & the balance funds are required for its completion.	(i) Electrification. (ii) Development of compound. For these activities the balance funds of Rs 1.343 lakhs are required.	No	1	Lumpsum	1.34
	Maintenance BO quarter Jangi	31 36'37", 78 25'42"	The Quarter is situated above Jangi -Lippa road & below to Govt. senior secondary school Jangi. The BO quarter has been repaired during 2009-10 but compound & approach path requires maintenance.	(i) Fixing of iron railing about 55 m in the compound. (ii) Improvement of approach path (about 20 m) to BO quarter. (iii) Preparation & Fixing of iron gate.	No	1	Lumpsum	1.50
	Special repair of FG hut Lippa	31 39'23", 78 22'55"	It is situated on the left bank of kirang khad & just above link road to Lippa. The hut is in a dilapidated condition & requires special repair. Presently the Forest Guard is residing in hired accommodation.	(i) Replacement of windows & doors. (ii) Flooring & cement plastering. (iii) Replacement of CGI roofing. (iv) Plinth protection & construction of side drain. (v) Repair of electricity & sanitary fitting.	No	1	Lumpsum	4.50
(b) Forest Roads/ I Paths								
(c) Augmentation of Water Supply.								

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(d) Vehicle & Operational Support to HPFD								
(e) Office Equipment								
(f) Silt Monitoring & Purchase of Meteorological Equipment								
(g) Construction & Repair of Boundary Pillars.	C188 a, C 189 a & C 190		The boundary pillars in C188 a=25 Nos. (15 large and 10 no. small), C189 a =23nos.(9 large and 14 no. small) , C190 =5nos.(5 large)require maintenance and updating.	Maintenance of 53 boundary pillars in C 188a, 189 a & 190.	No.	53		0.18
(h) Fire Protection Measures								
(i) Distribution of Non-conventional energy & Fuel Saving devices								
Total Infrastructure built up								**7.53**
Grand Total								**87.23**

Normal Afforestation

Lippa

Soil & Water Conservation Endeavors

Hondening nala

Langfaring Slip/Nala

Gandumshurku Slip

Peger Khad/Nala

Tepanashong Slip

kaling slip

khalungpa Slip

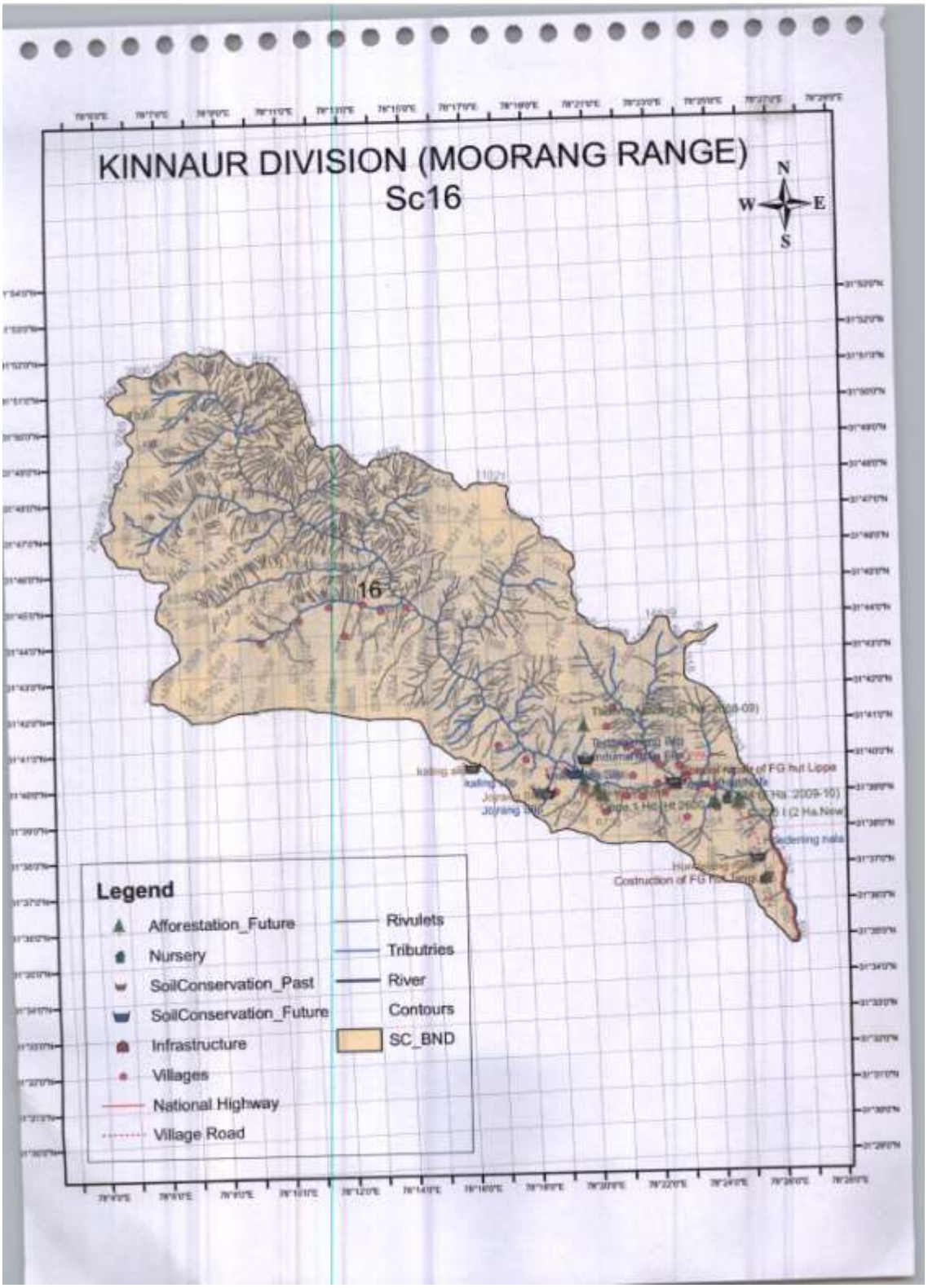
Naik Environment Research Institute Ltd

Infrastructure built up & Forest Protection

FG hut Jangi

BO quarter Jangi

FG hut Lippa


KINNAUR DIVISION (MOORANG RANGE)
Sc16
N
W
E
S
16
Legend
Afforestation_Future
Nursery
SoilConservation_Past
SoilConservation_Future
Infrastructure
Villages
National Highway
Village Road
Rivulets
Tributries
River
Contours
SC_BND

SUB CATCHMENT

17

MANAGEMENT PLAN OF – Sc17 Sub Catchment (UNDER KARCHAM WANGTOO HEP)

INTRODUCTION

LOCATION (BOUNDARIES)					GENERAL DESCRIPTION OF MWS				
AREA OF MWS	LATITUDE	LONGITUDE	ALTITUDE	SLOPE	SOIL	FOREST			PANCHAYAT
						RANGE	BLOCK	BEAT	
6100 ha.	31'37' to 31'44'	78'23' to 78'32'	2300 to 5092	40' to 90'	Clay Loam/Dry & Gritty	Pooh	Kanam	Kanam	

LAND USE						DEMOGRAPHY		
RF	DPF	UPF	PRIVATE LAND (Agri+Horti)	WASTE LAND	TOTAL	HOUSE HOLD	HUMAN POPULATION	LIVE STOCK POPULATION
(in HA)	(in HA)	(in HA)	(in HA)	(in HA)	(in HA)	(in Nos.)	(in Nos.)	(in Nos.)
	393.75		321	1758	2472.75	470	2718	4138

FLORA

TREES	KAIL, DEODAR, WALNUT, KUNISH, CHILGOZA, JUNIPEROUS, POPLUS, FRAXINUS ZANTHOXYLOIDES ETC.
HERBS & SHRUBS	ROSA ,RUBUS, COTONEASTER, DESDOMODIUM, VIOLA, POLYGONUM, CARAGANA,EPHEDRA, NEPETA, THALICTRUM, PLECTRANTHUS, SALVIA, INDIGO FERA, BERBARIS, DAPHNE, LONICERA, ASTRALAGUS, JUNIPERUS COMMUNIS, SPIRAEA, ARTIMESIA, DEUTIZIA, THYMUS, BALSOM, SEABUCKTHORN ETC.
GRASSES	ARUNDO-DONAX, AGROPHRON LONGEARISTATUM, AGROSTIS ALBA ETC.
MEDICINAL HERBS	RATANJOT, GUCHHI, KALA ZIRA, DIASCORIA ETC.

FAUNA

ANIMALS	BLACK BEAR, LEOPARD, BHARAL, & OTHERS SMALL MAMMALS
BIRDS/PHEASANTS	CHAKUR & OTHER BIRDS ETC.

Karcham Wangtoo HEP (Kinnaur Division)

Sub-Catchment 17

PAST HISTORY OF MANAGEMENT			
Soil & Moisture conservation			
Name of Area	**GPS Coordinates**	**Observation**	**Remarks**
Spillow Slip/nala	31 39'12", 78 26'28"	The slip originates from above the old HT road & is situated n C 213 DPF. The length is about 2.5 Km. The slope is moderate to steep to very steep. It is a dry & seasonal nala & meets with Sutluj below BO quarter. The slip has been treated during 2007-08 by constructing 100 nos of check walls in crate & 137nos in dry. The slip has been treated in patches/parts & balance part requires treatment.	Treatment required in the nala is given under future Planning.
Road Side Erosion Control			
Name of Area	**GPS Coordinates**	**Observation**	**Remarks**
Afforestation			
Name of Area	**GPS Coordinates**	**Observation**	**Remarks**
Rural Infrastructure Development			
Name of Area	**GPS Coordinates**	**Observation**	**Remarks**
Forest Infrastructure Development			
Name of Area	**GPS Coordinates**	**Observation**	**Remarks**
BOUNDARY PILLARS			
Name of Area	**GPS Coordinates**	**Observation**	**Remarks**

FUTURE PLANNING

1 Afforestation Measures

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Normal Afforestation	UF Surpoo-II (5 Ha. 2008-09)	31 48'38", 78 26'52"	The area has been closed under rehabilitation of degraded forest during 2008-09. The area is fenced with stone wall fencing. Slope is moderate to steep. The area is situated near Kanam nursery. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Pooh.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	5	4200	0.21
					Ha.(maint. 5th year)		4200	0.21
	UF Chhare-Chhatang (5 Ha. 2008-09)	31 40'41", 78 29'05"	The area has been closed under rehabilitation of degraded forest during 2008-09. The area is fenced with stone wall fencing. Slope is moderate to steep. The area is situated above NH 22 & beyond Shrimati dak temple. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Pooh.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	5	4200	0.21
					Ha.(maint. 5th year)		4200	0.21
(b) Enrichment								
(c) Energy Plantation								
(d) Measure to handle invasive species.								
Nurseries	Kanam/Surpoo 0.5 He (Ht 2853m)	31 40'31", 78 26'55"	The nursery is situated just below Kanam to PHC Kanam Motarable road. The nursery is being maintained in two parts. The second part of the nursery is located on the left bank of Runpung tributary of Kanam nala ahead of Surpa Bouth temple. It is about two Km from motarable road. The aspect is South East. Irrigation is through IPH pipe line & direct to nursery in kanam & from Runpung nala / spring which is about 1.5 Km from the nursery through A pipe in second part. No Vermicompost pits are available. The first part of the nursery contains Chilgoza & Deodar. The total nursery stock both nursery is: Chilgoza = 5700-nos,Deodar = 1200nos, Seabuckthorn = 8000nos, Ash = 400nos, Robinia = 500nos, Willow = 10000nos.	(i) No scope of Extension but improvement in the first part of the nursery & scope for extension in the second part. (ii) Raising of Biospecies like Wild Rose, Colutea, Cotoneaster, Rubus, Lonicera, Desmodium, Spiraea, Daphne etc.	No	1	Lumpsum	1.50
Pasture Reclamation.								
Total Afforestation and Nurseries								**2.34**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
2 Soil & Water Conservation Endeavors								
(a) Moisture Retentively Operations								
(b) Live Hedge Fencing								
(c) Vegetative structures								
(d) Civil Structures	Spillow Slip/nala	31 39'12", 78 26'28"	The slip originates from above the old HT road & is situated n C 213 DPF. The length is about 2.5 Km. The slope is moderate to steep to very steep. It is a dry & seasonal nala & meets with Sutluj below BO quarter. The slip has been treated during 2007-08 by constructing 100 nos of check walls in crate & 137nos in dry. The slip has been treated in patches/parts & balance part requires treatment.	(i) Construction of check dams/check wall in crate. (ii) Sprinkling of BioSeeds including planting like Firal, Colutea, Ash, Verbascum, Spiraea, Artemesia, Wild Rose, Lonicera, Plectranthus & local grasses.	Ha.	1.75	84400	4.50
					Cum	184	1633	
	Rinang nala	31 41'11", 78 29'40"	The nala originates from Glamil kanda & C 211 DPF forest of Ash, Neoza & Juniperus & is seasonal. The nala runs on the right side of kanam village cultivation. The nala is steep to very steep & the length is about 3.5 Km. The nala runs above old HT road & meets with Sutluj river down below NH 22 ahead of Nesang bridge which is also known as Chhrachattang dogri. It is also a glacier prone nala & requires treatment.	(i) Construction of check dams/check wall in crate. (ii) Staggered Bench Terracing. (iii)Sprinkling of BioSeeds including planting like Firal, Colutea, Ash, Chilgoza, Verbascum, Spiraea, Artemesia, Wild Rose, Lonicera, Plectranthus & local grasses.	Ha.	3.5	84400	8.00
					Cum	306	1633	
(e) Drainage line treatment & Land slide control.	Kanam nala	31 41'12", 78 26'36"	The nala originates from the Tapang top & ridges of Labrang & kanam kanda. The length is about 4.5 Km. There are three tributaries at the top namely Purti on the right side, Hurling in the middle & Runpung on the left side. All the tributaries are perennial & meets at Kawa dogri. The nala meets with River Sutluj below NH 22 near Shrimati Dhara temple. The slope is moderate to steep. The two branches of the nala runs through private land which also requires treatment.	(i) Construction of check dams/R/ wall in crate. (ii) Sprinkling of BioSeeds like Firal, Colutea, Ash, Verbascum, Spiraea, Artemesia, Wild Rose, Lonicera, Cannabis Plectranthus & local grasses. (iii) Planting of Popular, kunish, Willow, Lonicera, Rosa etc.	Ha.	3.5	84400	12.50
					Cum	582	1633	
(f) Stream Bank stabilizations								
Total Soil & Water Conservation Endeavors								**25.00**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
3 Payment for Environmental Services								
	Kanam nala		The nala originates from the Tapang top & ridges of Labrang & kanam kanda. The length is about 4.5 Km. There are three tributaries at the top namely Purti on the right side, Hurling in the middle & Rungpung on the left side. All the tributaries are perennial & meets at Kawa dogri. The nala meets with River Sutluj below NH 22 near Shrimati Dhank temple. The slope is moderate to steep. The two branches of the nala runs through private land which also requires treatment.	(i) The private owners be exhorted to plant Bio species like Popular, kunish, Willow, Lonicera, Rosa etc. & to Construct P/ wall in crate.				2.50
			i) It is proposed that the JFMC's of the Sub catchment will be involved in all type of forest protection activities in the areas. ii) The villagers located in the sub Catchment are mostly agriculturalist / horticulturalist and Buddhist and fell 1 no of Deo pole annually for hoisting flags in their houses. The people will be given / provided one GI pipe each to 470 nos. people situated in the sub Catchment, so that people don't fell the poles from the forest from this purpose. iii) The villagers located in the Sub Catchments are mostly agriculturalist / horticulturalist and are mostly dependant upon it. The slope of the land holding is mostly steep to very steep which leads to severe soil erosion due to wrong cropping pattern. Similarly the people in the Sub catchment are rearing sheep, goat & other domestic cattles & are having extensive rights for grazing in the forest which also requires immunition in order to prevent the contagions disease to & from wild life living in & around the Sub catchment. In addition to this other animal improvement interversions are also required so that the environment is no affected.	i) Lump sum provision has been kept for this purpose which will be given to the JFMC's, which actively involve themselves in forest protection in the micro water shed. ii) The people located in the sub Catchment shall be provided 1 no of GI pipe for the purpose. iii) Lump sum provision has been kept for Agricultural / Horticultural & Animal Husbandry support in the Sub Catchment.	No.	JFMC's and 1 No of GI pipe	Lumpsum	11.79
Total Payment for Environmental Services								**14.29**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
5 Infraestructure built up & Forest Protection								
(a) Building for stay of staff, FRH/I Hut.	Maintenance BO quarter Kanam at Spillow (Ht 3326)	31 39'12", 78 26'28"	The Quarter is situated just below NH 22 & on the right bank of Satluj. The BO quarter has been constructed during 2004-05 but compound & approach path requires maintenance.	(i) Construction of approach path (about 300 m) to BO quarter since the existing path runs through private land. (ii) Painting & Distempering. (iii)Development of compound.	No	1	Lumpsum	2.50
	Maintenance FG hut Kanam	31 40'52", 78 26'55"	The hut is situated below motarable road & near to Kanam nursery. The hut is in a dilapidated condition & requires maintenance.	(i) Cement plastering in the walls. (ii) Painting & whitewashing. (iii) Repair/replacement of door & window. (iv) Ceiling in veranda. (v) Fixing of eave boards. (vi) sanitary fitting.	No	1	Lumpsum	3.00
(b) Forest Roads/ I Paths								
(c) Augmentation of Water Supply.								
(d) Vehicle & Operational Support to HFD								
(e) Office Equipment								
(f) Silt Monitoring & Purchase of Meteorological Equipment								
(g) Construction & Repair of Boundary Pillars.								
(h) Fire Protection Measures								
(i) Distribution of Non-conventional energy & Fuel Saving devices								
Total Infraestructure built up								**5.50**
Grand Total								**47.13**

Nurseries

Kanam/Surpoo

Soil & Water Conservation Endeavors

Spillow Slip/nala

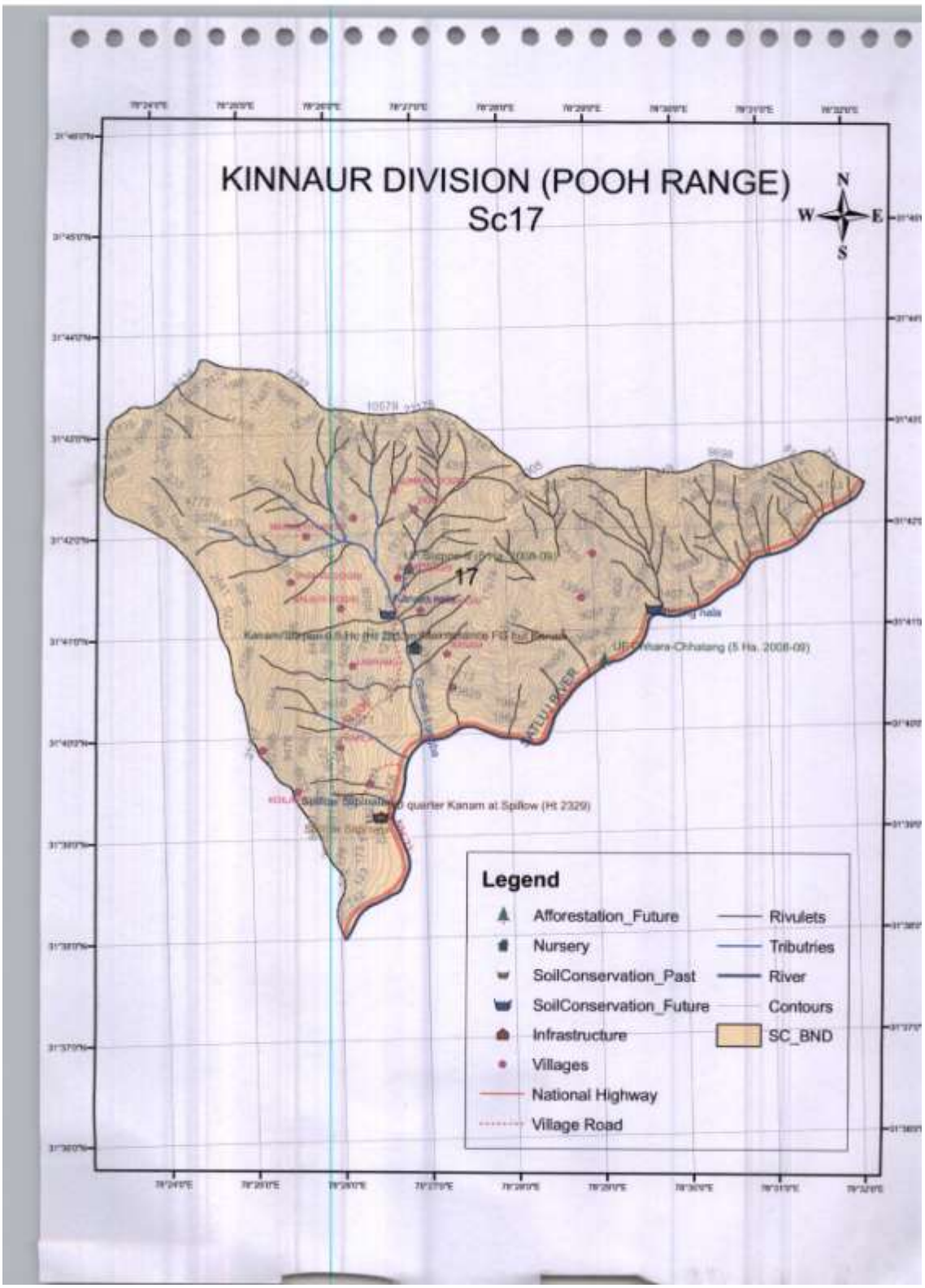
Rinang nala

Kanam nala

Infrastructure built up & Forest Protection

BO quarter Kanam at Spillow

FG hut Kanam


KINNAUR DIVISION (POOH RANGE)
Sc17
N
W
E
S
17
SUTLUJ RIVER
Legend
Afforestation_Future
Nursery
SoilConservation_Past
SoilConservation_Future
Infrastructure
Villages
National Highway
Village Road
Rivulets
Tributries
River
Contours
SC_BND

SUB CATCHMENT

18

MANAGEMENT PLAN OF – Sc18 Sub Catchment (UNDER KARCHAM WANGTOO HEP)

INTRODUCTION

LOCATION (BOUNDARIES)					GENERAL DESCRIPTION OF MWS				
						FOREST			
AREA OF MWS	LATITUDE	LONGITUDE	ALTITUDE	SLOPE	SOIL	RANGE	BLOCK	BEAT	PANCHAYAT
66400 ha.	Na	Na	2365 to 5905	40° to 85°	sandyLoam/ Dry	Pooh	Pooh & Kanam	Pooh, Sunam & Glahang	Pooh, Ropa, Sunam & Glahang

LAND USE						DEMOGRAPHY		
RF	DPF	UPF	PRIVATE LAND (Agri+Horti)	WASTE LAND	TOTAL	HOUSE HOLD	HUMAN POPULATION	LIVE STOCK POPULATION
(In HA)	(in HA)	(in HA)	(in HA)	(in HA)	(in HA)	(in Nos.)	(in Nos.)	(in Nos.)
	688.26		509	15580	16777.3	706	2940	14956

FLORA

TREES	KAIL, DEODAR, WALNUT, KUNISH, CHILGOZA, JUNIPEROUS, POPLUS, SEABUCKTHORN ETC.
HERBS & SHRUBS	ROSA CEBBIANA, VERBASCUM, INULA, RUBUS, COTONEASTER, DESDOMODIUM, VIOLA, POLYGONUM, FRAGERIA, THALICTRUM, PLECTRANTHUS, SALVIA, INDIGO FERA, BERBARIS, DAPHNE, LONICERA, JUNIPERUS COMMUNIS, SPIRAEA, ARTIMESIA, CARAGANA, EPHEDRA, NEPETA, DEUTIZIA, THYMUS, BALSOM, SEABUCKTHORN ETC.
GRASSES	ARUNDO-DONAX, AGROPHRON LONGEARISTATUM, AGROSTIS ALBA ETC.
MEDICINAL HERBS	RATANJOT, GUCHHI, KALA ZIRA ETC.

FAUNA

ANIMALS	BROWN BEAR, LEOPARD, BHARAL, & OTHERS SMALL MAMMALS
BIRDS/PHEASANTS	CHAKUR & OTHER BIRDS ETC.

Karcham Wangtoo HEP (Kinnaur Division)

Sub-Catchment 18

PAST HISTORY OF MANAGEMENT

Soil & Moisture conservation

Name of Area	GPS Coordinates	Observation	Remarks
Ropa Nala	31 47'41", 78 25'21"	The nala originates from Yoto top. It is a perennial nala & the slope is steep above & moderate below. The nala meets with Siasoo khad down below to Ropa. The nala has been treated during 2008-09 by constructing 70nos P/walls in crate & during 2009-10 by constructing 77 nos P/wall in crate structures under Karcham Wangtoo cat plan. Few structures has been crumbled & requires maintanance.	Treatment required in the nala is given under future Planning.
Thorpa slip	31 48'42", 78 24'38"	It is situated in UF Thorpa which is a forest of Chilgoza & Juniperous. It is situated on theleft bank of Ropa kahd. The slope is moderate to steep. The slip has been treated during 2009-10 by constructing 62 nos check walls in dry. Bio species like Spiraea, Rosa, Cotoneaster etc are coming naturaly.	No treatment is required.
Gialbapangchelung pha nala (Askhroo nala)	31 45'48", 78 27'35"	The nala originates Askhroo kanda. It is a seasonal nala & the slope is steep . The nala has been treated during 2010-11 by constructing 36nos P/walls in crate at the top under Karcham Wangtoo cat plan. The balance lower part requires treatment.	Treatment required in the nala is given under future Planning.
Limpadardar Yolam nala	31 43'37", 78 3	It is situated in C 205 which is a forest of Chilgoza, Deodar & Juniperous & opposite to Ropa village & on the right bank of Ropa khad. The nala is steep. It originates from Limpa dhar & down below it is known as Yolam nala. There is perennial under ground water. the length is about 3 Kms. It is wide & open at the top but narrows down below. It is a glacier prone & flood prone area creates havoc down below. The geological erosion is rampant. It has been treated during 2010-11 by constructing 10 nos check walls in crate & during 2011-12 by constructing 26 nos check walls in crate. The nala runs through private land down below which also requires treatment. The work be executed after proper demarcation.	Treatment required in the nala is given under future Planning.
Shiasoo Slip		It is situated just above Shiasoo village. The slip originates from Lapchast dhar. The slope is steep to very steep. The slip has been treated by constructing check walls in dry & the area has also been closed under DDP during past. The Robinia plants are surviving in patches. The old B wire is require to be retrived.	No treatment is required.

Name of Area	GPS Coordinates	Observation	Remarks
Changnakh Nala/slip	31 43'46", 78 30'48"	The nala is situated on the right side of Shiasoo village & it has many tributries at the top namely Arma on right side, Kuanglunggpha, Dardar, kuramongche, labchaslunggpha in the middle & Askrow nala is on the extreme right side. All the tributries form a common nala known as Changnakh nala. The slope is steep to precipitous above & moderate to steep down below. It is a seasonal nala. There is natural spring known as Changas which also flows through this nala. Part of Askro tributary has been treated through NREGA by constructing check walls during 2011-12. THe tributries of this nala has also been treated under karcham Wangtoo cat plan as under. (i)Dardar: This has been treated during 2009-10 by constructing check walls 26 nos dry. (ii) Askrow: This has been treated during 2011-12 by constructing check walls 44 nos in crate. The main nala meets with Ropa khad / Shiasoo khad below Giabong road & before NH 22. The top is quite wide (about 350-400 mt) & it is also a glacier prone & Geological erosion is also rampant which causes heavy damages down below.	Treatment required in the nala is given under future Planning.

Road Side Erosion Control			
Name of Area	GPS Coordinates	Observation	Remarks

Afforestation			
Name of Area	GPS Coordinates	Observation	Remarks

Rural Infrastructure Development			
Name of Area	GPS Coordinates	Observation	Remarks

Forest Infrastructure Development			
Name of Area	GPS Coordinates	Observation	Remarks

BOUNDARY PILLARS			
Name of Area	GPS Coordinates	Observation	Remarks

FUTURE PLANNING

1 Afforestation Measures

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Normal Afforestation	C 205 Ropa (5 Ha. 2009-10)	31 47'27", 78 25'23"	The area has been closed under rehabilitation of degraded forest during 2009-10. The area is fenced with stone wall fencing. Slope is moderate to steep. The area is situated on the right bank of Ropa khad. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Pooh.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 3rd year)	5	5100	0.255
					Ha.(maint. 4th year)		4200	0.21
					Ha.(maint. 5th year)		4200	0.21
	UF Tam-C 205 (5 Ha. 2008-09)	31 79'44", 78 42'43"	The area has been closed under rehabilitation of degraded forest during 2009-10. The area is fenced with stone wall fencing. Slope is moderate to steep. The area is situated on the right bank of Ropa khad and adjoining to C 205 Ropa 5 Ha. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Pooh.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	5	4200	0.21
					Ha.(maint. 5th year)		4200	0.21
	UF Ropa (5 Ha. 2008-09)	31 78'68", 78 43'38"	The area has been closed under rehabilitation of degraded forest during 2009-10. The area is fenced with stone wall fencing. Slope is moderate to steep. The area is situated on the right bank of Ropa khad and adjoining to C 205 Ropa 5 Ha and UF Tam-C 205 (5 Ha). The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Pooh.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	5	4200	0.21
					Ha.(maint. 5th year)		4200	0.21
(b) Enrichment								
(c) Energy Plantation								
(d) Measure to handle invasive species.								
Nurseries								
Pasture Reclamation.								
Total Afforestation and Nurseries								**1.52**

2 Soil & Water Conservation Endeavors								
(a) Moisture Retentively Operations								
(b) Live Hedge Fencing								
(c) Vegetative structures								
(d) Civil Structures	Yutildhar nala	31 47'09", 78 26'09"	The nala originates from the top of C 204 & is seasonal. The slope is steep to very steep. The nala is deep & narrow, & requires treatment.	(i) Gully plugging.(ii) Construction of brushwood check dams / check dams in crate. (iii) Sprinkling of Bioseeds like Artemesia, Lonicera, Caragana etc.	Ha.	1.2	84400	3.00
					Cum	122	1633	
	Ropa Nala	31 47'41", 78 25'21"	The nala originates from Yoto top. It is a perennial nala & the slope is steep above & moderate below. The nala meets with Siasoo khad down below to Ropa. The nala has been treated during 2008-09 by constructing 70nos P/walls in crate & during 2009-10 by constructing 77 nos P/wall in crate structures under Karcham Wangtoo cat plan. Few structures has been crumbled & requires maintenance.	(i) Repair of damaged structures.(ii) Planting /pollarding of Poplus, Salix & Seabuckthorn .	Ha.	0.6	84400	2.50
					Cum	122	1633	
	Glatbapangche lungpha nala (Askhroo nala)	31 45'48", 78 27'35"	The nala originates Askhroo kanda. It is a seasonal nala & the slope is steep . The nala has been treated during 2010-11 by constructing 36nos P/walls in crate at the top under Karcham Wangtoo cat plan. The balance lower part requires treatment.	(i) Construction of P/wall check dams in crate. (ii) Sprinkling of Bioseeds like Artemesia, Lonicera, Caragana, Ash etc.	Ha.	1.75	84400	4.00
					Cum	153	1633	
	Telenque nala	31 44'28", 78 28'52"	The nala originates from the Telenque top. It is a seasonal nala & the slope is moderate to steep . the length is about 2 Km & the nala meets with Siasoo khad below Glabong road. The nala requires treatment.	(i) Construction of P/wall check dams in crate. (ii) Sprinkling of Bioseeds like Artemesia, Fraxinus, Lonicera, Caragana etc. (iii) Planting of Fraxinus, Willow & Robinia etc.	Ha.	3	84400	6.00
					Cum	214	1633	

(d) Civil Structures	Limpadardar Yolam nala	31 43'37", 78 30'55"	It is situated in C 205 which is a forest of Chilgoza, Deodar & Juniperous & opposite to Ropa village & on the right bank of Ropa khad. The nala is steep. It originates from Limpa dhar & down below it is known as Yolam nala. There is perennial under ground water. the length is about 3 Kms. It is wide & open at the top but narrows down below. It is a glacier prone & flood prone area creates havoc down below. The geological erosion is rampant. It has been treated during 2010-11 by constructing 10 nos check walls in crate & during 2011-12 by constructing 26 nos check walls in crate. The nala runs through private land down below which also requires treatment. The work be executed after proper demarcation.	(i) Staggered Bench Terracing. (ii) Construction of Ponds/check wall / Contour trenching in staggered. (iii) Construction of check dam / P/ wall in crate in the lower part. (iv) Sprinkling of BioSeeds like Salvia, Colutea, Artemesia, Lonicera, spiraea, Plectranthus & local grasses. (v) Planting of Willow & Popular.	Ha.	4.75	84400	14.00
					Cum	612	1633	
	Chukku nala	31 47'53", 78 24'55"	It is situated opposite to Thropa village path & on the right bank of Ropa khad. The nala is steep above & gentle to moderate down below. The nala originates from Neobal top. There is a small lake at the top. The nala is perennial. Bio species are coming naturally. The nala meets with Ropa khad just below Yallan bridge.	(i) Construction of P/ wall in crate. (ii)Planting of Willow & Popular.	Ha.	1.2	84400	3.50
					Cum	153	1633	
	Omperia nala I	31 46'36", 78 26'49"	The nala originates from the Omperia DPF top which is a forest of Neoza. It is a dry, seasonal & narrow nala. The slope is steep above & moderate below .The length is about 1 Km above Sunam Glabong road. The nala meets with Siasoo khad below Glabong road after passing through private land on Glabong village. The nala requires treatment.	(i) Construction of P/ wall / check dams in crate. (ii) Sprinkling of BioSeeds like Salvia, Ephedra, Robinia, Colutea, Artemesia, Rosa, Fraxinus & local grasses.	Ha.	1.2	84400	3
					Cum	122	1633	
	Omperia nala II	31 46'36", 78 26'49"	The nala is situated just above Glabong village & on the left of Omperia nala I. The nala originates from the Omperia DPF top which is a forest of Neoza. It is a dry, seasonal, deep & narrow nala. The slope is steep above & moderate below. Neoza & Ash trees are coming naturally. The nala requires treatment.	(i) Construction of check dams in crate. (ii) Sprinkling of BioSeeds like Salvia, Ephedra, Robinia, Colutea, Artemesia, Rosa, Fraxinus & local grasses.	Ha.	0.6	84400	2.00
					Cum	92	1633	

(d) Civil Structures	Sursey nala I	31 46'33", 78 26'53"	The nala originates from the Omperia DPF top which is a forest of Neoza. It is a dry, seasonal, deep & narrow nala. The slope is steep above & moderate below. The length of nala is about 1.5 Km. The nala requires treatment above & below Giabong road.	(i) Construction of check dams in crate. (ii) Sprinkling of BioSeeds like Salvia, Ephedra, Robinia, Colutea, Artemesia, Rosa, Fraxinus & local grasses.	Ha.	1.2	84400	4.00
					Cum	184	1633	
	Sursey nala II	31 46'29", 78 26'59"	The nala is situated on the left side of Sursey nala I & above Rushkalang village. The nala originates from the Omperia DPF top which is a forest of Neoza. It is a dry, seasonal, deep & narrow nala. The slope is steep above & moderate below. The nala requires treatment above road.	(i) Construction of check dams in crate. (ii) Sprinkling of BioSeeds like Salvia, Ephedra, Robinia, Colutea, Artemesia, Rosa, Fraxinus & local grasses.	Ha.	1.2	84400	3.00
					Cum	122	1633	
	Changnakh Nala/slip	31 43'46", 78 30'48"	The nala is situated on the right side of Shiasoo village & it has many tributaries at the top namely Arma on right side, Kuanglungpha, Dardar, kuramongche, labchaslungpha in the middle & Askrow nala is on the extreme right side. All the tributaries form a common nala known as Changnakh nala. The slope is steep to precipitous above & moderate to steep down below. It is a seasonal nala. There is natural spring known as Changes which also flows through this nala. Part of Askro tributary has been treated through NREGA by constructing check walls during 2011-12. The tributaries of this nala has also been treated under karcham Wangtoo cat plan as under. (i)Dardar: This has been treated during 2009-10 by constructing check walls 26 nos dry. (ii) Askrow: This has been treated during 2011-12 by constructing check walls 44 nos in crate. The main nala meets with Roga khad / Shiasoo khad below Giabong road & before NH 22. The top is quite wide (about 350-400 mt) & it is also a glacier prone & Geological erosion is also rampant which causes heavy damages down below.	(i) Staggered Bench Terracing. (ii) Construction of Monds/check wall / Contour trenching in staggered. (iii) Construction of P/ wall in crate in the lower part. (iv) Construction of check dam in crate & Gully plugging. (v) Sprinkling of BioSeeds like Salvia, Colutea, Artemesia, Lonicara, Cannabis, spiraea, Plectranthus, Rosa & local grasses. (vi) Planting of Willow & Popular.	Ha.	3	84400	10.00
					Cum	459	1633	

(e) Drainage line treatment & Land slide control.	Shiva Nala	31 46'55", 78 26'27"	The nala originates from Komoshiva. The nala is steep above & gentle down below. The nala meets with Ropa khad below Tutu vikas camp. The length is about 7-8 Km. It is a perennial & drinking water supply to Giabong village is tapped from this nala. It is flooded every year during summer & black slush / slurry usually flows in this khad. The nala is deep & has attained its course for the time being. The nala brings huge silt & causes heavy devastation down below to govt. as well as private properties. The nala runs in between C 200, 203 on left side & C 201, 204 on right side. Special treatment plan is required to be framed with the consultation of geological survey of India because the geological erosion is rampant in the catchment.	(i) Construction of P/ wall, Check dams in crate in the strategic locations after thorough alignment. (ii) Sprinkling of BioSeeds like Salvia, Colutea, Artemesia, Rosa, Fraxinus & local grasses.	Ha. Cum	3.5 1041	84400 1633	0.00
(f) Stream Bank stabilizations								
Total Soil & Water Conservation Endeavors								**55.00**
3 Payment for Environmental Services								
	Limpedardar Yolam nala	31 43'37", 78 30'55"	It is situated in C 205 which is a forest of Chilgoza, Deodar & Juniperous & opposite to Ropa village & on the right bank of Ropa khad. The nala is steep. It originates from Limpa dhar & down below it is known as Yolam nala. There is perennial under ground water. the length is about 3 Kms. It is wide & open at the top but narrows down below. It is a glacier prone & flood prone area creates havoc down below. The geological erosion is rampant. It has been treated during 2010-11 by constructing 10 nos check walls in crate & during 2011-12 by constructing 26 nos check walls in crate. The nala runs through private land down below which also requires treatment. The work be executed after proper demarcation.	(i) The private owners be exhorted to plant Bio species like Popular, kunish, Willow, Lonicara, Rosa etc. & to Construct P/ wall in crate.				**1.00**

			i) It is proposed that the JFMC's of the Subcatchment will be involved in all type of forest protection activities in the areas. ii) The villagers located in the sub Catchment are mostly agriculturalist / horticulturalist and Buddhist and fell 1 no of Deo pole annually for hoisting flags in their houses. The people will be given / provided one GI pipe each to 706 nos. people situated in the sub Catchment, so that people don't fell the poles from the forest from this purpose. iii) The villagers located in the Sub Catchments are mostly agriculturalist / horticulturalist and are mostly dependant upon it. The slope of the land holding is mostly steep to very steep which leads to severe soil erosion due to wrong cropping pattern. Similarly the people in the Sub catchment are rearing sheep, goat & other domestic cattle's & are having extensive rights for grazing in the forest which also requires ammunition in order to prevent the contagions disease to & from wild life living in & around the Subcatchment. In addition to this other animal improvement interventions are also required so that the environment is no affected.	i) Lump sum provision has been kept for this purpose which will be given to the JFMC's, which actively involve themselves in forest protection in the micro water shed. ii) The people located in the sub Catchment shall be provided 1 no of GI pipe for the purpose. iii) Lump sum provision has been kept for Agricultural / Horticultural & Animal Husbandry support in the Sub Catchment.	**No.**	**JFMC's and 1 No of GI pipe**	**Lumpsum**	11.942
Total Payment for Environmental Services								**12.94**
5 Infrastructure built up & Forest Protection								
(a) Building for stay of staff, FRH/I Hut.	Maintenance of Type II quarter (BO residence)	31 45'39", 78 34'57"	It is situated near to range office / residence at Pooh & requires maintenance.	(i) Construction of side drain & Plinth protection. (ii) Painting & Distempering. (iii) Fixing of Tiles in flooring of toilet & kitchen. (iv) Fixing of wire mash in the window.	No	1	Lumpsum	1.00
	Maintenance of Type II quarter (Range assistant residence)	31 45'39", 78 34'57"	It is situated just above range office / residence at Pooh & below Defunct Division office & requires maintenance.	(i) Maintenance of toilet including replacement of toilet seat. (ii) Painting in CGI roofing. (iii) Fixing of Tiles in flooring.	No	1	Lumpsum	1.50

(a) Building for stay of staff, FRH/I Hut.	Maintenance of Type III quarter no 2	31 45'39", 78 34'57"	It is situated just below to approach road to FRG Pooh & requires maintenance.	(i) The breast wall is damaged & has crumbled & requires reconstruction . (ii) Distempering & Painting.	No	1	Lumpsum	1.50
	Maintenance of Type II quarter no 5	31 45'39", 78 34'57"	It is situated adjoining to Range assistant quarter & requires maintenance.	(i) Repair of electrification.	No	1	Lumpsum	0.10
	Maintenance of FRH Pooh	31 45'37", 78 34'55"	It is situated above forest colony & requires maintenance.	(i) Refixing of GI pipe including maintenance of internal water supply in set no 2 . (ii) Maintenance of sanitary.	No	1	Lumpsum	0.50
	Maintenance of Chowkidar quarter Pooh	31 45'37", 78 34'54"	It is situated on the right side of FRH Pooh & requires maintenance.	(i) Refixing of toilet seat including maintenance of sanitary. (ii) Construction of side drain. (iii) Painting in CGI roofing. (iv) Painting & Distempering.	No	1	Lumpsum	1.00
	Maintenance of FG hut Gialbong (Ht 2899m)	31 46'28", 78 26'32"	It is located on the left bank of Shiasoo khad & at the bottom of Gailbong village & requires maintenance.	(i) Replacement of rotton wooden flooring. (ii) sanitary fitting. (iii) Plinth protection & construction of side drain. (iv) Painting & Distempering.	No	1	Lumpsum	2.00
	Maintenance of I hut Gialbong	31 46'43", 78 26'33"	It is situated about 50m down to Ropa motorable road & requires maintenance.	(i) Painting in CGI roofing. (ii) Addition of one room and kitchen.	No	1	Lumpsum	5.00
	Construction of FG hut Sunam	31 45'58", 78 27'36"	The hut is being constructed above Sunam - Gailbong road & above Rushkalag village. The hut is being constructed under Karcham Wangtoo cat plan with an estimate of Rs 10.19 Lakhsout of this Rs 10 lakhs stands released. The Plinth level of the hut is complete & work is in progress, but more funds are required for its completion.	(i) For completion of the FG hut additional funds of Rs 1 lakhs is required due to wage hike/escalation cost.	No	1	Lumpsum	1.50

(b) Forest Roads/ I Paths	Maintenance of Approach path to Range office from FRH Pooh	31 45'39", 78 34'57"	The condition of Approach path from FRH Pooh to Range office is not good & requires maintenance	(i) Maintenance of Approach path to Range office from FRH Pooh (100m length) including construction of foot steps.	Km	100mt	Lumpsum	1.00
	Maintenance of Path from Siasoo khad to Sunam (6 Km)	31 43'32", 78 30'54"	The path runs from Sisoo village (Siasoo khad bridge on NH 22) to Sunam. The condition of the path is not good & requires maintenance.	(i) Maintenance of path from Sisoo village (Siasoo khad bridge on NH 22) to Sunam.	Km	6	Lumpsum	2.00
(c) Augmentation of Water Supply.	Maintenance of FG hut Gaibong (Ht 2899m)	31 46'28", 78 26'32"	It is located on the left bank of Shiasoo khad & at the bottom of Gaibong village & requires maintenance.	Augmentation of Water Supply from IPH line about 100m.	No	1	Lumpsum	1.00
(d) Vehicle & Operational Support to HPFD								
(e) Office Equipment								
(f) Silt Monitoring & Purchase of Meteorological Equipment								
(g) Construction & Repair of Boundary Pillars.								
(h) Fire Protection Measures								
(i) Distribution of Non-conventional energy & Fuel Seving devices								
Total Infrastructure built up								**18.10**
Grand Total								**87.56**

Soil & Water Conservation Endeavors

Yullidhar nala

Ropa Nala

Glalbapangchelungpha nala (Askhroo nala)

Telenque nala

Limpadardar Yolam nala

Chukku nala

Naik Environment Research Institute Ltd

Omperia nala I

Omperia nala II

Sursey nala I

Sursey nala II

Changnakh Nala/slip

Shiva Nala

Infrastructure built up & Forest Protection

Type II quarter(BO residence)

Type II quarter(Range assisttant residence)

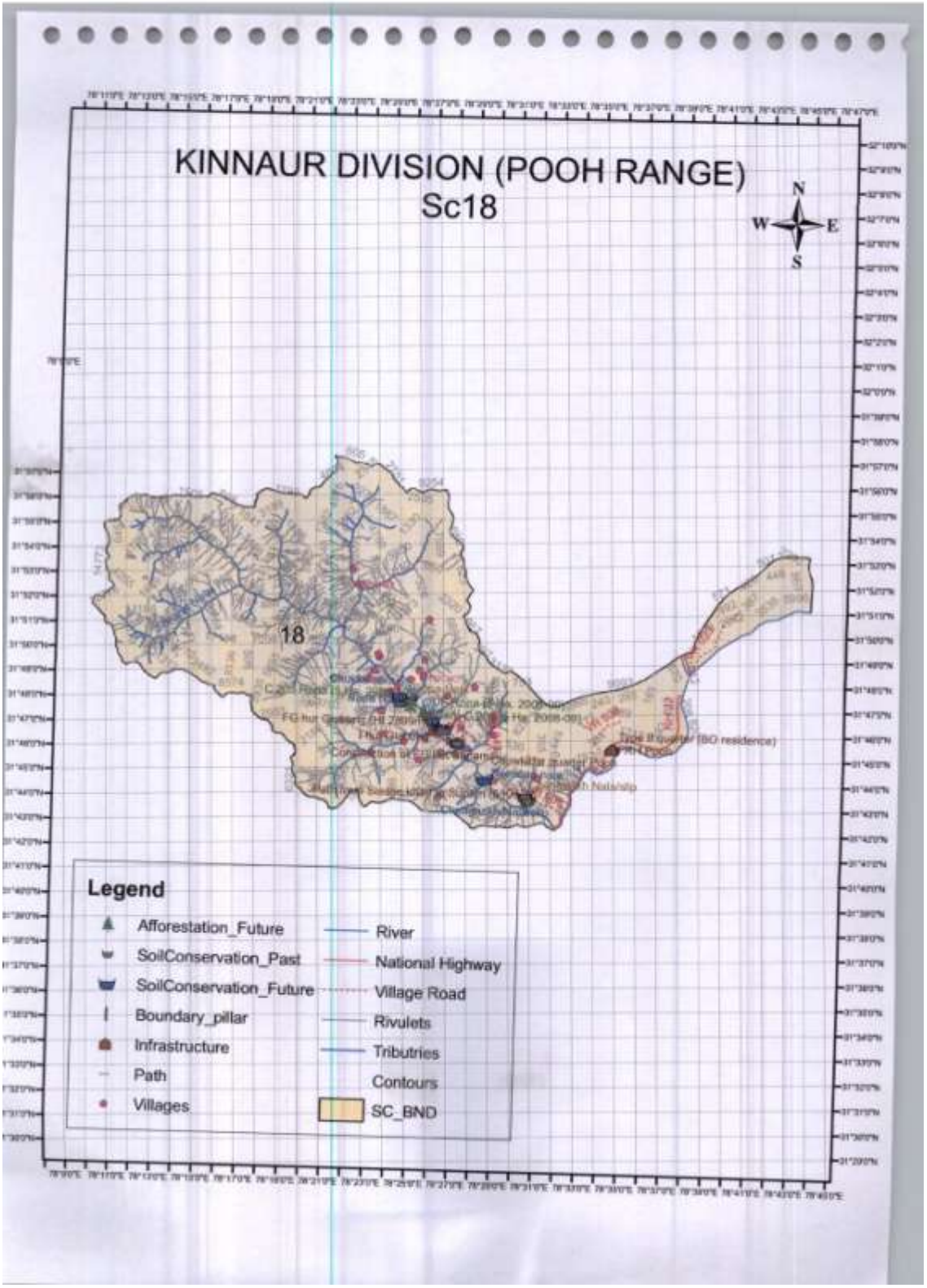
Type III quarter no 2 & 5

FRH Pooh

Chowkidar quarter Pooh

Range office from FRH Pooh

Siasoo khad to Sunam


KINNAUR DIVISION (POOH RANGE)
Sc18
N
W
E
S
18
Legend
Afforestation_Future
SoilConservation_Past
SoilConservation_Future
Boundary_pillar
Infrastructure
Path
Villages
River
National Highway
Village Road
Rivulets
Tributries
Contours
SC_BND

MANAGEMENT PLAN OF – Sc19 a Sub Catchment (NOT UNDER KARCHAM WANGTOO HEP)

INTRODUCTION

LOCATION (BOUNDARIES)					GENERAL DESCRIPTION OF MWS				
						FOREST			
AREA OF MWS	LATITUDE	LONGITUDE	ALTITUDE	SLOPE	SOIL	RANGE	BLOCK	BEAT	PANCHAYAT
68200	31 53'03"	78 34'52"			Sandy & Calcarious	Malling	Malling & Chango	Malling, Chango, Leo, Hango Chuling	Nako

LAND USE						DEMOGRAPHY		
RF	*DPF*	*UPF*	*PRIVATE LAND (Agri+Horti)*	*WASTE LAND*	*TOTAL*	*HOUSE HOLD*	*HUMAN POPULATION*	*LIVE STOCK POPULATION*
(in HA)	*(in HA)*	*(in HA)*	*(in HA)*	*(in HA)*	*(in HA)*	*(in Nos.)*	*(in Nos.)*	*(in Nos.)*
					0	1031	4062	

FLORA

TREES	KAIL,JUNIPEROUS ETC.
HERBS & SHRUBS	ROSA, ARTIMESIA, CARAGANA, EPHEDRA, COLUTEA, CARAGANA, THYMUS, SEABUCKTHORN ETC.
GRASSES	Local Grasses
MEDICINAL HERBS	RATANJOT, DHUP, KARU, KALAJEERA,

FAUNA

ANIMALS	BHARAL, & OTHERS SMALL MAMMALS
BIRDS/PHEASANTS	CHAKUR & OTHER BIRDS ETC.

Karcham Wangtoo HEP (Kinnaur Division)

Sub-Catchment 20

Naik Environment Research Institute Ltd

FUTURE PLANNING								
1 Afforestation Measures								
Name of Sub Component	***Name of Area***	***GPS Coordinates***	***Observation***	***Treatment Prescribed***	***Unit***	***Physical (Appx)***	***Rate***	***Approximate Financial Outlay (in lacs.)***
(a) Normal Afforestation								0
(b) Enrichment								0
(c) Energy Plantation								
(d) Measure to handle invasive species.								
Nurseries		31°29'35", 78°09'14"						
Pasture Reclamation.								
Total Afforestation and Nurseries								**0.00**
2 Soil & Water Conservation Endeavors								
(a) Moisture Retentively Operations								
(b) Live Hedge Fencing								
(c) Vegetative structures								
(d) Civil Structures								
(e) Drainage line treatment & Land slide control.								
(f) Stream Bank stabilizations								
Total Soil & Water Conservation Endeavors								**0.00**

3 Payment for Environmental Services								
Total Payment for Environmental Services								**0.00**
5 Infrastructure built up & Forest Protection								
(a) Building for stay of staff, FRH/I Hut.	Construction of Range office / Residence Malling at Nako.	31 53'13", 78 37'42"	The Range office cum Residence Malling is being constructed at Nako. Although it does not fall under Karcham Wangtoo HEP yet it is being constructed under Karcham Wangtoo cat plan with an approved estimate of Rs 17.9 Lakhs out of which 10 lakhs stands released & utilized. For the completion of the work the balance amount of Rs 9lakhs is required.	(i) For completion of the Range office cum Residence Malling additional funds of Rs 9 lakhs is required.				9.00
(b) Forest Roads/ I Paths								
(c) Augmentation of Water Supply.								
(d) Vehicle & Operational Support to HFFD								
(e) Office Equipment								
(f) Silt Monitoring & Purchase of Meteorological Equipment								
(g) Construction & Repair of Boundary Pillars.								
(h) Fire Protection Measures								
(i) Distribution of Non-conventional energy & Fuel Saving devices								
Total Infrastructure built up								**9.00**
Grand Total								**9.00**

SUB CATCHMENT

20

MANAGEMENT PLAN OF – Sc20 Sub Catchment (UNDER KARCHAM WANGTOO HEP)

INTRODUCTION

LOCATION (BOUNDARIES)					GENERAL DESCRIPTION OF MWS				
AREA OF MWS	LATITUDE	LONGITUDE	ALTITUDE	SLOPE	SOIL	FOREST			PANCHAYAT
						RANGE	BLOCK	BEAT	
30900 ha.	Na	Na	2534 to 5905	30' to 90'	SandyLoam & Calcarious	Pooh	Pooh	Dubling & Nangia	Pooh & Namgia

LAND USE						DEMOGRAPHY		
RF	DPF	UPF	PRIVATE LAND (Agri+Horti)	WASTE LAND	TOTAL	HOUSE HOLD	HUMAN POPULATION	LIVE STOCK POPULATION
(in HA)	(in HA)	(in HA)	(in HA)	(in HA)	(in HA)	(in Nos.)	(in Nos.)	(in Nos.)
	53.02	145.76	182	17179	17559.78	199	1183	1447

FLORA

TREES	KAIL, DEODAR, WALNUT, KUNISH, CHILGOZA, JUNIPEROUS, FRAXINUS ETC.
HERBS & SHRUBS	ROSA ,RUBUS, COTONEASTER, DESDOMODIUM, VIOLA, POLYGONUM, FRAGERIA, THALICTRUM, PLECTRANTHUS, SALVIA, INDIGO FERA, BERBARIS, DAPHNE, LONICERA, JUNIPERUS COMMUNIS, SPIRAEA, ARTIMESIA, CARAGANA, EPHEDRA, COLUTEA, THYMUS, SEABUCKTHORN ETC.
GRASSES	ARUNDO-DONAX, AGROPHRON LONGEARISTATUM, AGROSTIS ALBA ETC.
MEDICINAL HERBS	RATANJOT, KALA ZIRA, DIASCORIA ETC.

FAUNA

ANIMALS	BLACK BEAR, LEOPARD, BHARAL, & OTHERS SMALL MAMMALS
BIRDS/PHEASANTS	CHAKUR & OTHER BIRDS ETC.

PAST HISTORY OF MANAGEMENT

Soil & Moisture conservation

Name of Area	GPS Coordinates	Observation	Remarks
Namgia Nala	31 48'21", 78 39'23"	The main nala is situated just above Namgia village & on the left side of Namgia cultivation. The slope is steep & full of boulders. The nala has been treated during 2010-11 by constructing check wall 29 nos in crate. Few check wall has been tilted / partially damaged. The nala is perennial but the water has been diverted to open kuhl for irrigation. The nala originates from the top of Namgia ridge from natural spring. The total length is about 1.5 km. The nala / slip has been treated upto Namgia cultivation & the balance part (about 300m) requires treatment.	Treatment required in the nala is given under future Planning.
Tashigang Slip	31 44'38", 78 37'33.6"	The slip originates from the top ridge of Tashigang village & the length is about 2 Km. The slip is situated on the left side of Tashigang village. The slope is steep to very steep. The flood during July / August 2010 has caused heavy damage & also has posed threat to the village. The slip has been treated during 2010-11 by constructing check wall 18 nos in crate near to village. The GPS coordinates has been given by RO Pooh.	Treatment required in the nala is given under future Planning.
Trivsurti Slip	31 48'60", 78 40'55"	The slip is situated just below Shipkila NH 5. The slope is steep to very steep. The slip has been treated during 2010-11 by constructing check wall 21 nos in crate to save the Namgia kuhl.	Treatment required in the nala is given under future Planning.
Havsang Slip	31 48'60", 78 40'55"	The slip is situated just below Shipkila NH 5. The slope is steep to very steep. The slip has been treated during 2010-11 by constructing check wall 31 nos in crate to save the Namgia kuhl & cultivation. Bio species are coming naturally.	No further treatment is required.
Namgia Nala I	31 48'13", 78 39'55"	The nala originates from the top of Namgia ridge from natural spring. The slope is moderate to steep. It is a seasonal nala & runs on the left side of Namgia village. The nala meets with river Satluj below Namgia village & before Khab bridge. The slip has been treated during 2010-11 by constructing check wall 23 nos in crate. Bio species like Salix is coming naturally. The nala has been treated above & below the road.	No further treatment is required.
Dubling Nala/slip II	31 48'03", 78 39'45"	The slip is situated on the left bank of Dubling nala. The nala originates from the Dubling top from permanent natural spring. The length is about 4 Km & the nala meets with Satluj river down below just ahead of Dubling village. The slip on the left side of the Dubling nala has been treated during 2010-11 by constructing check wall 24 nos in crate. Chilgoza, Deodar, Wild Rose & Artemesia are coming naturally. The nala requires treatment.	Treatment required in the nala is given under future Planning.
Dabling Slip	31 45'14", 78 37'56"	The slip is situated just below Dabling village & on the left bank of river Sutluj. The slope is steep to very steep. The slip is full of grit's The nala has been treated during 2010-11 by constructing check wall 19 nos in crate. No treatment required.	No further treatment is required.

Road Side Erosion Control			
Name of Area	GPS Coordinates	Observation	Remarks

Afforestation			
Name of Area	GPS Coordinates	Observation	Remarks

Rural Infrastructure Development			
Name of Area	GPS Coordinates	Observation	Remarks

Forest Infrastructure Development			
Name of Area	GPS Coordinates	Observation	Remarks

BOUNDARY PILLARS			
Name of Area	GPS Coordinates	Observation	Remarks

FUTURE PLANNING

1 Afforestation Measures

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Normal Afforestation	Yangti Dogri (5 Ha. 2010-11)	31 44'48", 78 38'29"	The area has been closed under rehabilitation of degraded forest during 2010-11. The area is fenced with Stone wall fencing. The area is situated beyond Dubling towards Namgia about 2 kms from Dubling nursery. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Pooh.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 2nd year)	5	6000	0.3
					Ha.(maint. 3rd year)		5100	0.255
					Ha.(maint. 4th year)		4200	0.21
					Ha.(maint. 5th year)		4200	0.21
	Habsang (5 Ha. 2010-11)	31 41'38", 78 36'14"	The area has been closed under rehabilitation of degraded forest during 2010-11. The area is fenced with Stone wall fencing. The area is situated beyond Dubling towards Namgia about 12 kms from Namgia and below NH 5. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Pooh.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 2nd year)	5	6000	0.3
					Ha.(maint. 3rd year)		5100	0.255
					Ha.(maint. 4th year)		4200	0.21
					Ha.(maint. 5th year)		4200	0.21
	Tashigang (5 Ha. 2010-11)	31 50'38", 78 41'52"	The area has been closed under rehabilitation of degraded forest during 2010-11. The area is fenced with Stone wall fencing. The area is situated below Tashigang village. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Pooh.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 2nd year)	5	6000	0.3
					Ha.(maint. 3rd year)		5100	0.255
					Ha.(maint. 4th year)		4200	0.21
					Ha.(maint. 5th year)		4200	0.21
	DPF Doubling II (5 Ha. 2009-10)	31 44'37", 78 38'19"	The area has been closed under rehabilitation of degraded forest during 2009-10. The area is fenced with Stone wall fencing. The area is situated about 1 km from Dubling nursery towards Namgia. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Pooh.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 3rd year)	5	5100	0.255
					Ha.(maint. 4th year)		4200	0.21
					Ha.(maint. 5th year)		4200	0.21
	DPF Dubling (5 Ha. 2008-09)	31 44'39", 78 38'13"	The area has been closed under rehabilitation of degraded forest during 2008-09. The area is fenced with Stone wall fencing. The area is adjacent to DPF dubling Site and is situated below the plantation. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Pooh.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	5	4200	0.21
					Ha.(maint. 5th year)		4200	0.21

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Normal Afforestation	DPF Dubling (5 Ha. 2007-08)	31 44'39", 78 38'13"	The area has been closed under rehabilitation of degraded forest during 2007-08. The area is fenced with Stone wall fencing. The area is adjacent to DPF dubling 5Ha and is situated below the plantation. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Pooh.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	5	4200	0.21
					Ha.(maint. 5th year)		4200	0.21
(b) Enrichment	NC-01 Dubling (3 Ha.New)	31 44'32", 78 37'55"	The proposed area is situated near to and adjoining to Dubling nursery. It is open to very open forest of Deodar & Chilgoza. The area about 3 Ha. is proposed to be taken under enrichment component so as to restock the area. The area will be irrigated through Yangti kuhl running above. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Pooh.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Dubling Nursery	Ha.	2	75460	1.5092
						1	64020	0.6402
(c) Energy Plantation								
(d) Measure to handle invasive species.								
Nurseries	Dubling (1 Ha Ht 2994m)	31 44'32", 78 37'55"	The nursery is located just below NC 1 DPF & about 0.5 Km above Dubling motorable road. The aspect is Northern. It is a well laid nursery. Irrigation is through Alkathene pipe from storage tank which has been constructed above nursery during 2010-11 under karcham Wangtoo cat plan. The water is brought from near by Dubling nalawhich is a permanent source which is about 300m from the nursery. Five nos of Vermicompost pits are available but only one has been put to use. The nursery contains fallowing stocks: Fraxinus = 4350nos, Chilgoza = 8600nos, Chuli = 3000nos, Deodar = 4670nos, Behmi = 2300nos, Robinia = 9000nos, Willow = 20000nos, Chenna = 10000nos, Karoo = 1100nos, Rattanjot = 20nos.	(i) Improvement of nursery. (ii) Raising of Biospecies like Cotoneaster, Fraxinus, Wild Rose, Juniperous etc.	No	1	Lumpsum	2.00
Pasture Reclamation.								
Total Afforestation and Nurseries								**8.59**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
2 Soil & Water Conservation Endeavors								
(a) Moisture Retentively Operations								
(b) Live Hedge Fencing								
(c) Vegetative structures	Trimurti Slip	31 48'58", 78 40'18"	The slip is situated just below Shipkila NH 5. The slope is steep to very steep. The slip has been treated during 2010-11 by constructing check wall 21 nos in crate to save the Namgia kuhl.	(i) Sprinkling of BioSeeds like Artemesia, Wild Rose, Fraxinus, Ephedra, Seabuckthorn, spiraea, & local grasses.	Ha.	0.25	84400	0.20
(d) Civil Structures	Namgia Nala	31 48'21", 78 39'23"	The main nala is situated just above Namgia village & on the left side of Namgia cultivation. The slope is steep & full of boulders. The nala has been treated during 2010-11 by constructing check wall 29 nos in crate. Few check wall has been tilted / partially damaged. The nala is perennial but the water has been diverted to open kuhl for irrigation. The nala originates from the top of Namgia ridge from natural spring. The total length is about 1.5 km. The nala / slip has been treated upto Namgia cultivation & the balance part (about 300m) requires treatment.	(i) Repair of old structures. (ii) Staggered Bench Terracing. (iii) Construction of check wall in staggered. (iv) Sprinkling of BioSeeds like Artemesia, Lonicera, Ephedra, Seabuckthorn, spiraea, & local grasses. (v) Planting of Willow, poplar & Fraxinus.	Ha.	2.35	84400	6.00
					Cum	245	1633	
	Tashigang Slip	31 44'38", 78 37'33.6"	The slip originates from the top ridge of Tashigang village & the length is about 2 Km. The slip is situated on the left side of Tashigang village. The slope is steep to very steep. The flood during July / August 2010 has caused heavy damage & also has posed threat to the village. The slip has been treated during 2010-11 by constructing check wall 18 nos in crate near to village. The GPS coordinates has been given by RO Pooh.	(i) Construction of diversion channel. (ii) Staggered Bench Terracing. (iii) Construction of check wall, R/walls in crate. (iv) Sprinkling of BioSeeds like Artemesia, Wild Rose, Fraxinus, Lonicera, Ephedra, Seabuckthorn, spiraea, & local grasses. (v) Planting of Juniperous & Fraxinus.	Ha.	1.75	84400	8.00
					Cum	306	1633	
					Rmt	445	338	

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(d) Civil Structures	Habsang nala	31 46'60", 78 40'55"	The nala originates from the top of Habsang & the slope is steep to very steep. The length is about 3 Km. The nala meets with river Satluj below Namgia village & before Khab bridge. Small part of this nala above Shigkila road requires treatment.	(i) Construction of check dams in crate. (ii) Sprinkling of BioSeeds like Artemesia, Wild Rose, Fraxinus, Lonicera, Ephedra, Seabuckthorn, spiraea, & local grasses. (iii) Planting of Fraxinus, Willow & poplar.	Ha.	1.75	84400	5.00
					Cum	214	1633	
	Namgia Nala II	31 48'03", 78 39'45"	The nala originates from the top of Namgia ridge from natural spring. The slope is moderate to steep. It is a perennial nala & the length is about 3 Km. The nala meets with river Satluj below Namgia village & before Khab bridge. The nala requires treatment.	(i) Construction of check dams in crate. (ii) Sprinkling of BioSeeds like Artemesia, Wild Rose, Fraxinus, Lonicera, Ephedra, Seabuckthorn, spiraea, & local grasses. (iii) Planting of Salix & poplar.	Ha.	1.2	84400	3.50
					Cum	153	1633	
	Dakthal Slip/Slide	31 45'14", 78 37'56"	It is located just above NH 22 & behind primary school Dubling. The rolling stones are causing threat down below. The slope is steep.	(i) Staggered Bench Terracing. (ii) Construction of check wall in crate & Staggered. (iii) Sprinkling of BioSeeds like Artemesia, Wild Rose, Fraxinus, Lonicera, Ephedra, spiraea, & local grasses.	Ha.	1.2	84400	2.50
					Cum	92	1633	
	Dubling Nala/slip II	31 44'39" 78, 37'33"	The slip is situated on the left bank of Dubling nala. The nala originates from the Dubling top from permanent natural spring. The length is about 4 Km & the nala meets with Satluj river down below just ahead of Dubling village. The slip on the left side of the Dubling nala has been treated during 2010-11 by constructing check wall 24 nos in crate. Chilgoza, Deodar, Wild Rose & Artemesia are coming naturally. The nala requires treatment.	(i) Gully plugging. (ii) Staggered Bench Terracing. (iii) Construction of check wall, Check dams in crate. (iv) Sprinkling of BioSeeds like Artemesia, Wild Rose, Colutea, Fraxinus, Lonicera, Ephedra, spiraea, & local grasses. (v) Planting of Willow & poplar.	Ha.	1.75	84400	5.00
					Cum	214	1633	
(e) Drainage line treatment & Land slide control.								
(f) Stream Bank stabilizations								
Total Soil & Water Conservation Endeavors								**30.20**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
3 Payment for Environmental Services								
			i) It is proposed that the JFMC's of the Subcatchment will be involved in all type of forest protection activities in the areas. ii) The villagers located in the sub Catchment are mostly agriculturalist / horticulturalist and Buddhist and fell 1 no of Deo pole annually for hoisting flags in their houses. The people will be given / provided one GI pipe each to 199 nos. people situated in the sub Catchment, so that people don't fell the poles from the forest from this purpose. iii) The villagers located in the Sub Catchments are mostly agriculturalist / horticulturalist and are mostly dependant upon it. The slope of the land holding is mostly steep to very steep which leads to severe soil erosion due to wrong cropping pattern. Similarly the people in the Sub catchment are rearing sheep, goat & other domestic cattle's & are having extensive rights for grazing in the forest which also requires ammunition in order to prevent the contagions disease to & from wild life living in & around the Subcatchment. In addition to this other animal improvement interventions are also required so that the environment is no affected.	i) Lump sum provision has been kept for this purpose which will be given to the JFMC's, which actively involve themselves in forest protection in the micro water shed. ii) The people located in the sub Catchment shall be provided 1 no of GI pipe for the purpose. iii) Lump sum provision has been kept for Agricultural / Horticultural & Animal Husbandry support in the Sub Catchment.	No.	JFMC's and 1 No of GI pipe	Lumpsum	8.393
Total Payment for Environmental Services								**8.39**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
5 Infrastructure built up & Forest Protection								
(a) Building for stay of staff, FRH/1 Hut.	Maintenance Malli hut Dubling	31 45'07", 78 37'38"	The U hut is situated above police check post on NH 22 & requires maintenance.	(i) Cement plastering (ii) Painting & Distempering. (iii) Replacement of CGI roofing. (iv) Maintenance of Electrification & sanitary fitting including water supply.	No	1	Lumpsum	2.00
	Construction of FG hut Dubling	31 44'35", 78 37'54"	The hut is being constructed in Dubling nursery. The hut is being constructed under Karcham Wangtoo cat plan with an estimate of Rs 9.5 Lakhs which stands released. The Plinth level of the hut is complete & work is in progress, but more funds are required for its completion.	(i) For completion of the FG hut additional funds of Rs 1 lakhs is required due to wage hike/escalation cost.	No	1	Lumpsum	1.00
	Construction of Range office / Residence Malling at Nako.		The Range office cum Residence Malling is being constructed at Nako. Although it does not fall under Karcham Wangtoo HEP yet it is being constructed under Karcham Wangtoo cat plan with an approved estimate of Rs 17.9 Lakhs out of which 10 lakhs stands released & utilized. For the completion of the work the balance amount of Rs 9lakhs is required.	(i) For completion of the Range office cum Residence Malling additional funds of Rs 9 lakhs is required.				0.00
(b) Forest Roads/ Paths								
(c) Augmentation of Water Supply.								
(d) Vehicle & Operational Support to HPFD								

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (In lacs.)
(e) Office Equipment								
(f) Silt Monitoring & Purchase of Meteorological Equipment								
(g) Construction & Repair of Boundary Pillars.								
(h) Fire Protection Measures								
(i) Distribution of Non-conventional energy & Fuel Saving devices								
Total Infrastructure built up								3.00
Grand Total								50.18

Nurseries

Dubling

Naik Environment Research Institute Ltd

Soil & Water Conservation Endeavors

Namgia Nala

Habsang nala

Namgia Nala II

Dakthal Slip/Slide

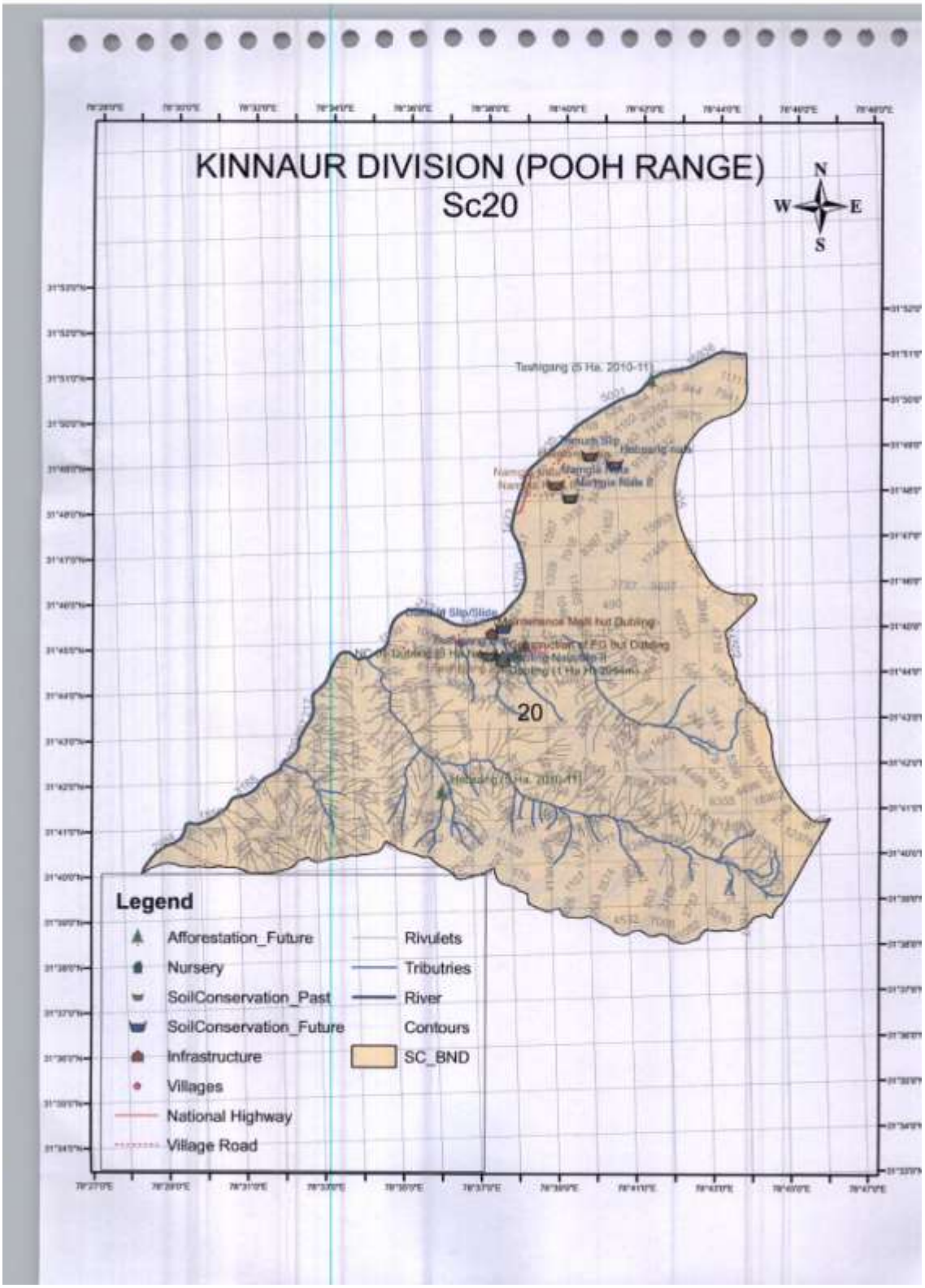
Dubling Nala/slip II

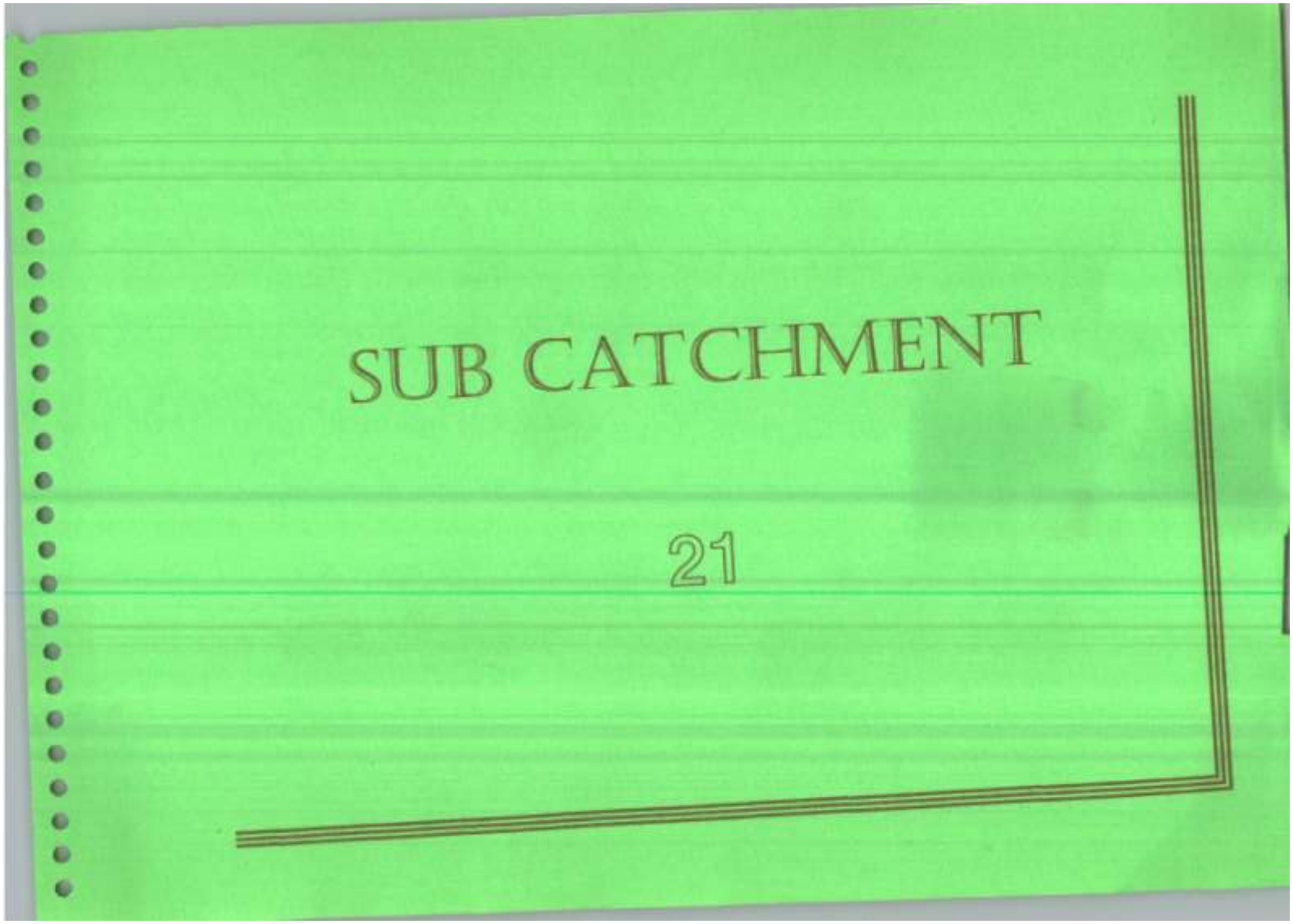
Naik Environment Research Institute Ltd

Infrastructure built up & Forest Protection

Malli hut Dubling

FG hut Dubling


KINNAUR DIVISION (POOH RANGE)
Sc20
N
W
E
S
20
Legend
Afforestation_Future
Nursery
SoilConservation_Past
SoilConservation_Future
Infrastructure
Villages
National Highway
Village Road
Rivulets
Tributries
River
Contours
SC_BND


SUB CATCHMENT
21

MANAGEMENT PLAN OF – Sc21 Sub Catchment (UNDER KARCHAM WANGTOO HEP)

INTRODUCTION

LOCATION (BOUNDARIES)					GENERAL DESCRIPTION OF MWS				
AREA OF MWS	LATITUDE	LONGITUDE	ALTITUDE	SLOPE	SOIL	FOREST			PANCHAYAT
						RANGE	BLOCK	BEAT	
40200 ha.	31°31' to 31°41'	78°25' to 78°58'	2259 to 6095	45° to 90°	ClayLoam/Shallow	Moorang	Ribba	Moorang	Nesang

LAND USE						DEMOGRAPHY		
RF	*DPF*	*UPF*	*PRIVATE LAND (Agri+Horti)*	*WASTE LAND*	*TOTAL*	*HOUSE HOLD*	*HUMAN POPULATION*	*LIVE STOCK POPULATION*
(in HA)	*(in HA)*	*(in HA)*	*(in HA)*	*(in HA)*	*(in HA)*	*(in Nos.)*	*(in Nos.)*	*(in Nos.)*
	441.54		85	680	1206.54	122	640	2805

FLORA

TREES	KAIL, DEODAR, WALNUT, KUNISH, CHILGOZA, JUNIPEROUS, POPLUS,FRAXINUS ZANTHOXYLUM ETC.
HERBS & SHRUBS	ROSA ,RUBUS, COTONEASTER, DESDOMODIUM, VIOLA, POLYGONUM, FRAGERIA, THALICTRUM, PLECTRANTHUS, SALVIA, INDIGO FERA, BERBARIS, DAPHNE, LONICERA, JUNIPERUS COMMUNIS, SPIRAEA, ARTIMESIA, THYMUS, SEABUCKTHORN ETC.
GRASSES	ARUNDO-DONAX, AGROPHRON LONGEARISTATUM, AGROSTIS ALBA ETC.
MEDICINAL HERBS	RATANJOT, KALA ZIRA ETC.

FAUNA

ANIMALS	BLACK BEAR, SNOW LEOPARD, BHARAL & OTHERS SMALL MAMMALS
BIRDS/PHEASANTS	CHAKUR & OTHER BIRDS ETC.

Karcham Wangtoo HEP (Kinnaur Division)

Sub-Catchment 21

PAST HISTORY OF MANAGEMENT

Soil & Moisture conservation

Name of Area	GPS Coordinates	Observation	Remarks

Road Side Erosion Control

Name of Area	GPS Coordinates	Observation	Remarks

Afforestation

Name of Area	GPS Coordinates	Observation	Remarks
UF Nesang 5Ha. (2009-10)	313855, 783017	The area is situated just above Nesang approach road & the area has been closed during 2009-10 under Afforestation scheme in Karcham Wangtoo cat plan. The area have been planted with Chulli, Behmi, Ailanthus, Robinia etc. The slope is steep & irrigation is being done from karanidar spring. The overall survival % is about 35 - 40%.	The area be maintained & well protected as per availability of funds given under future planning.

Rural Infrastructure Development

Name of Area	GPS Coordinates	Observation	Remarks

Forest Infrastructure Development

Name of Area	GPS Coordinates	Observation	Remarks

BOUNDARY PILLARS

Name of Area	GPS Coordinates	Observation	Remarks

FUTURE PLANNING

1 Afforestation Measures

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Normal Afforestation	UF Nesang Sha. (2009-10)	31 38'55", 78 30'17"	The area is situated just above Nesang approach road & the area has been closed during 2009-10 under Afforestation scheme in Karcham Wangtoo cat plan. The area have been planted with Chulli, Behmi, Ailanthus, Robinia etc. The slope is steep & irrigation is being done from karanidar spring. The overall survival % is about 35 40%.	Fence require repair and the area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 3rd year)	5	5100	0.255
					Ha.(maint. 4th year)		4200	0.21
					Ha.(maint. 5th year)		4200	0.21
(b) Enrichment								
(c) Energy Plantation								
(d) Measure to handle invasive species.								
Nurseries								
Pasture Reclamation.								
Total Afforestation and Nurseries								**0.68**

2 Soil & Water Conservation Endeavors

(a) Moisture Retentively Operations								
(b) Live Hedge Fencing								
(c) Vegetative structures								

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(d) Civil Structures	Soyangati nala	31 38'58", 78 30'19"	The nala originates from the Tumnango top. The slope is steep at the top & moderate below. The length is about 1.5 Km. It is a perennial nala & the source is spring. The nala is situated above Nasang road. The nala is required to be treated.	(I) Construction of P/ wall & check dams in crate. (II) Planting of Bio Species like Poplar, Willow, Fraxinus, Wild Rose, Lonicera, Plectranthus & Spiraea.	Ha.	2.35	84400	7.00
					Cum	306	1633	
	Tharche Nala/slip	31 38'37", 78 31'11"	The nala originates from the Tungnago top. The slope is moderate to steep at places. The slip has been treated during past by constructing fw check walls but still require treatment down below. It is a Snow sliding area & causes damages to the Govt. as well as private properties down below. The nala runs through cultivated land of Nesang village. The nala is required to be treated after proper demarcation.	(i) Contour Staggered Bench Terracing.(ii) Construction of check wall, P/ wall & check dams in crate. (iii) Planting of Bio Species like Poplar, Willow, Fraxinus, Wild Rose, Lonicera, Plectranthus & Spiraea.	Ha.	1.2	84400	4.00
					Cum	184	1633	
	Namchang Slip	31 38'28", 78 31'17"	It is located on he right side of Govt. high school Nesang. The slope is steep to very steep. It is a Snow sliding area & causes damages to the Govt. as well as private properties down below.	(i) Contour Staggered Bench Terracing. (ii) Construction of Mondo/check wall in staggered. (iii) Construction of P/ wall in crate in the lower part. (iv) Sprinkling of BioSeeds like Artemesia, Lonicera, spiraea, Wild Rose, Verbascum, Cotoneaster, Plectranthus & local grasses. (v) Planting of Poplar etc.	Ha.	1.75	84400	4.50
					Cum	184	1633	
	Tongtong nala	31 38'37", 78 31'26"	The nala originates from the Thungdar peak. The slope is moderate to steep to very steep. It is a seasonal nala & the water is diverted from the main Lungbechepoman nala for irrigation of private land. This nala is narrow above but widen down below before meeting Talakha khad. The nala also runs through private land which also requires treatment.	(I) Construction of P/ wall & check walls in crate. (II) Planting of Bio Species like Poplar, Willow, Fraxinus, Wild Rose, Lonicera, Plectranthus & Spiraea.	Ha.	1.2	84400	2.50
					Cum	92	1633	
(e) Drainage line treatment & Land slide control.								
(f) Stream Bank stabilizations								
Total Soil & Water Conservation Endeavors								**18.00**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
3 Payment for Environmental Services								
	Tongtong nala	31 38'37", 78 31'26"	The nala originates from the Thungdar peak. The slope is moderate to steep to very steep. It is a seasonal nala & the water is diverted from the main Lumgbachepoman nala for irrigation of private land. This nala is narrow above but widen down below before meeting Talakha khad. The nala also runs through private land which also requires treatment.	(i) The private owners be exhorted to plant Bio species like Popular, kunish, Willow, Lonicera, Rosa etc. & to Construct P/ wall in crate.				1.00
			i) It is proposed that the JFMC's of the Subcatchment will be involved in all type of forest protection activities in the areas. ii) The villagers located in the sub Catchment are mostly agriculturalist / horticulturalist and Buddhist and fell 1 no of Deo pole annually for hoisting flags in their houses. The people will be given / provided one GI pipe each to 122 nos. people situated in the sub Catchment, so that people don't fell the poles from the forest from this purpose. iii) The villagers located in the Sub Catchments are mostly agriculturalist / horticulturalist and are mostly dependant upon it. The slope of the land holding is mostly steep to very steep which leads to severe soil erosion due to wrong cropping pattern. Similarly the people in the Sub catchment are rearing sheep, goat & other domestic cattle's & are having extensive rights for grazing in the forest which also requires ammunition in order to prevent the contagions disease to & from wild life living in & around the Subcatchment. In addition to this other animal improvement interventions are also required so that the environment is no affected.	i) Lump sum provision has been kept for this purpose which will be given to the JFMC's, which actively involve themselves in forest protection in the micro water shed. ii) The people located in the sub Catchment shall be provided 1 no of GI pipe for the purpose. iii) Lump sum provision has been kept for Agricultural / Horticultural & Animal Husbandry support in the Sub Catchment.	No.	JFMC's and 1 No of GI pipe	Lumpsum	7.354
Total Payment for Environmental Services								8.35

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
5 Infrastructure built up & Forest Protection								
(a) Building for stay of staff, FRH/I Hut.								
(b) Forest Roads/ I Paths								
(c) Augmentation of Water Supply.								
(d) Vehicle & Operational Support to HPFD								
(e) Office Equipment								
(f) Silt Monitoring & Purchase of Meteorological Equipment								
(g) Construction & Repair of Boundary Pillars.								
(h) Fire Protection Measures								
(i) Distribution of Non-conventional energy & Fuel Saving devices								
Total Infrastructure built up								0.00
Grand Total								27.03

Nurseries

UF Nesang

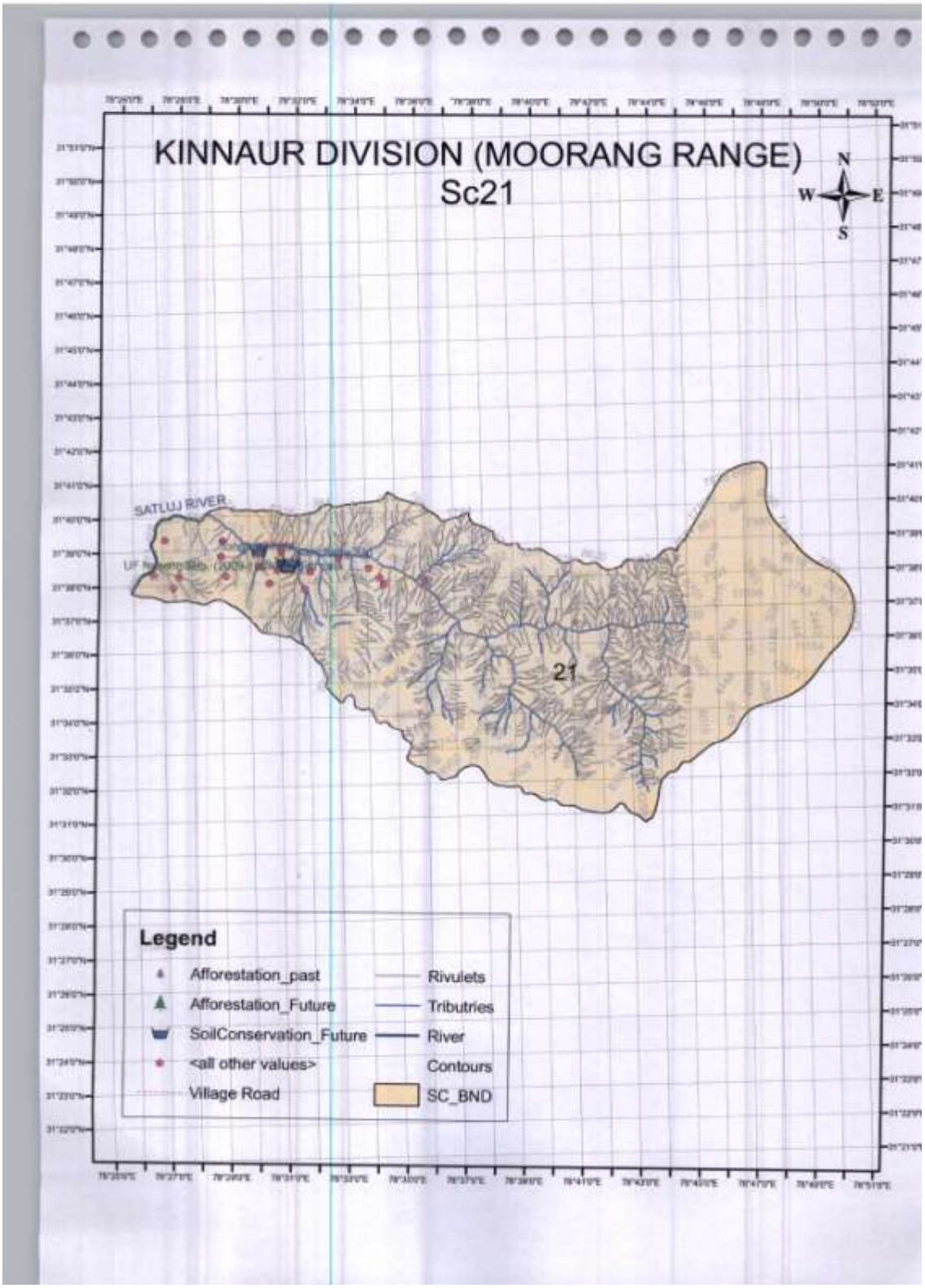
Soil & Water Conservation Endeavors

Soyangati nala

Tharche Nala/slip

Namchang Slip

Tongtong nala


KINNAUR DIVISION (MOORANG RANGE)
Sc21
N
W
E
S
SATLUJ RIVER
21
Legend
Afforestation_past
Afforestation_Future
SoilConservation_Future
<all other values>
Village Road
Rivulets
Tributries
River
Contours
SC_BND

SUB CATCHMENT

22

MANAGEMENT PLAN OF – Sc22 Sub Catchment (UNDER KARCHAM WANGTOO HEP)

INTRODUCTION

LOCATION (BOUNDARIES)					GENERAL DESCRIPTION OF MWS				
						FOREST			PANCHAYAT
AREA OF MWS	LATITUDE	LONGITUDE	ALTITUDE	SLOPE	SOIL	RANGE	BLOCK	BEAT	
80500 ha.	31°20'38"	78°24'60"	2225 to 6465	40° to 85°	Loam & Clay Loam	Moorang	Ribba	Moorang	Moorang, Thangi & Kunu Charang

LAND USE						DEMOGRAPHY		
RF	DPF	UPF	PRIVATE LAND (Agri+Horti)	WASTE LAND	TOTAL	HOUSE HOLD	HUMAN POPULATION	LIVE STOCK POPULATION
(in HA)	(in HA)	(in HA)	(in HA)	(in HA)	(in HA)	(in Nos.)	(in Nos.)	(in Nos.)
	762.13				762.13	651	3010	3504

FLORA

TREES	KAIL, DEODAR, WALNUT, KUNISH, CHILGOZA, JUNIPEROUS, BETULA, POPLUS ETC.
HERBS & SHRUBS	ROSA ,RUBUS, COTONEASTER, DESDOMODIUM, VIOLA, POLYGONUM, FRAGERIA, PLECTRANTHUS, SALVIA, INDIGO FERA, BERBARIS, DAPHNE, LONICERA, VIBURNUM, JUNIPERUS COMMUNIS, CARAGENA, SPIRAEA, FRAXINUS ZANTHOXYLOIDES, ARTIMESIA, LONICERA, DEUTIZIA, THYMUS ETC.
GRASSES	ARUNDO-DONAX, AGROPHRON LONGEARISTATUM, AGROSTIS ALBA ETC.
MEDICINAL HERBS	RATANJOT, GUCHHI, KALA ZIRA, DIASCORIA ETC.

FAUNA

ANIMALS	BLACK BEAR, LEOPARD, BHARAL & OTHERS SMALL MAMMALS
BIRDS/PHEASANTS	CHAKUR & OTHER BIRDS ETC.

Karcham Wangtoo HEP (Kinnaur Division)

Sub-Catchment 22

Naik Environment Research Institute Ltd

PAST HISTORY OF MANAGEMENT

Soil & Moisture conservation

Name of Area	GPS Coordinates	Observation	Remarks

Road Side Erosion Control

Name of Area	GPS Coordinates	Observation	Remarks

Afforestation

Name of Area	GPS Coordinates	Observation	Remarks

Rural Infrastructure Development

Name of Area	GPS Coordinates	Observation	Remarks

Forest Infrastructure Development

Name of Area	GPS Coordinates	Observation	Remarks
Construction of FG hut Moorang	31 35'54", 78 26'59"	The hut is being constructed below Moorang approach road & just above PWD rest house. The hut is being constructed under Tribal Sub plan with an estimate of Rs ---- Lakhs which stands released. The hut is likely to be completed by this year & more funds are required for its completion.	

BOUNDARY PILLARS

Name of Area	GPS Coordinates	Observation	Remarks

FUTURE PLANNING

1 Afforestation Measures

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Normal Afforestation	UF Lalnen (5 Ha. 2010-11)	31 36'29", 78 26'49"	The area has been closed under rehabilitation of degraded forest during 2010-11. The area is fenced with stone wall fencing. The area is situated above Mali hut at Lalnen. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per	Ha.(maint. 2nd year)	5	6000	0.3
					Ha.(maint. 3rd year)		5100	0.255
					Ha.(maint. 4th year)		4200	0.21
					Ha.(maint. 5th year)		4200	0.21
	Shilling (3 Ha. 2009-10)	31 35'46", 78 27'01"	The area has been closed under rehabilitation of degraded forest during 2009-10. The area is fenced with stone wall fencing. Slope is moderate to steep. The area is situated above PWD RH. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 3rd year)	3	5100	0.153
					Ha.(maint. 4th year)		4200	0.126
					Ha.(maint. 5th year)		4200	0.126
	UF Thangi (10 Ha. 2008-09)	31 33'17", 78 29'32"	The area has been closed under rehabilitation of degraded forest during 2008-09. The area is fenced with stone wall fencing. Slope is moderate to steep. The area is situated above Thangi village & above ITBP coloney.The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	10	4200	0.42
					Ha.(maint. 5th year)		4200	0.42
(b) Enrichment	UF Lanan (8 Ha.New)	31 36'33", 78 26'52"	The proposed area is situated above Mali hut at Lalnen. It is open to very open forest of Deodar & Neoza. The area about 8 Ha(4 Ha each). is proposed to be taken under enrichment component so as to restock the area. The irrigation to the plantation is proposed to be provided from Guring khad. The prsposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Moorang Nursery	Ha.	4	75460	3.0184
						4	64020	2.5608

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(b) Enrichment	UF Thowaring (10 Ha.New)	31 36'32", 78 26'51"	The proposed area is situated above Thowaring village. It is open to very open forest of Deodar & Neoza. The area about 10 Ha(5 Ha each). is proposed to be taken under enrichment component so as to restock the area. The irrigation to the plantation is proposed to be provided from Thowaring nala. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Moorang Nursery	Ha.	5	75460	3.773
						5	64020	3.201
(c) Energy Plantation								
(d) Measure to handle invasive species.								
Nurseries	Moorang (0.65 Ha) Ht-2629	31 60'63", 78 44'76"	The nursery is located just above Lalan village which is about 200m above motorable road. Irrigation is through kuhl (open channel) from Moorang khad which is about 3.5 Km from Nursery. The storage tank though available but requires repair. Three nos of Vermicompost pits are available but has not been put to use. The nursery contains following stocks: Fraxinus = 400nos, Chilgoza = 5000nos, Chulli = 125nos, Deodar = 8000nos, Behmi = 5000nos, Robinia = 4380nos.	(i) No scope for extension but Improvement of nursery (II) As per field staff the nursery is being abandoned after exhausting the existing stock. (iii) Raising of Biospecies like Spiraea, Poplar, Kurish, Rosa, Cotoneaster, Fraxinus etc.	No	1	Lumpsum	1.50
Pasture Reclamation.								
Total Afforestation and Nurseries								**16.27**
2 Soil & Water Conservation Endeavors								
(a) Moisture Retentively Operations								
(b) Live Hedge Fencing								
(c) Vegetative structures								

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(d) Civil Structures	Nokulkua nala	31 38'37", 78 26'39"	The nala originates from the top of UPF Moorang. The slope is steep to very steep. The nala is dry & seasonal. It is narrow & deep. The nala meets with satluj below cultivation & requires treatment down below. The GPS coordinates have been given by RO Moorang.	i) Construction of P wall/ Check dam in Crate . ii) Planting of Bio-engineering species like Poplar, Kunish, Desmodium, Firal and Kashmal etc.	Ha.	1.2	84400	0.00
					Cum	122	1633	
(e) Drainage line treatment & Land slide control.	Moorang Nala	31 36'03", 78 26'24"	The nala originates from above Thowaring village (Chottakumo). The length is about 4-5 Km. It is a perennial nala. The slope of the nala is gentle below & steep above. The top portion is rocky & steep. No treatment is required above Thowaring kuhl. The lower part of the nala is running in a Zigzag mannar. It is flooded almost every year with muddy slush. There are three branches / tributaries at the top & form Moorang nala near to Rema dogri. The nala meets with river Satluj just below Moorang link road & habitation. The lower part on the right bank of river satluj also requires treatment. Some part of the nala also runs through private lands which also requires treatment. Proper demarcation of the nala be taken before treating the nala.	i) Construction of P wall/ Check dam in Crate after proper alignment & Construction of T/walls in crate. ii) Planting of Bio-engineering species like Poplar, Kunish, Desmodium, Firal and Kashmal etc. iii) Pollarding of Poplar, kunish and Willow	Ha.	3.5	84400	19
					Cum	980	1633	
(f) Stream Bank stabilizations								
Total Soil & Water Conservation Endeavors								**19.00**
3 Payment for Environmental Services								
	Moorang Nala	31 36'03", 78 26'24"	The nala originates from above Thowaring village (Chottakumo). The length is about 4-5 Km. It is a perennial nala. The slope of the nala is gentle below & steep above. The top portion is rocky & steep. No treatment is required above Thowaring kuhl. The lower part of the nala is running in a Zigzag mannar. It is flooded almost every year with muddy slush. There are three branches / tributaries at the top & form Moorang nala near to Rema dogri. The nala meets with river Satluj just below Moorang link road & habitation. The lower part on the right bank of river satluj also requires treatment. Some part of the nala also runs through private lands which also requires treatment. Proper demarcation of the nala be taken before treating the nala.	(i) The private owners be exhorted to plant Bio species like Popular, kunish, Willow, Lonicera, Rosa etc. & to Construct P/ wall in crate.	Ha.	**0.6**	84400	**1.50**
					Cum	**61**	1633	

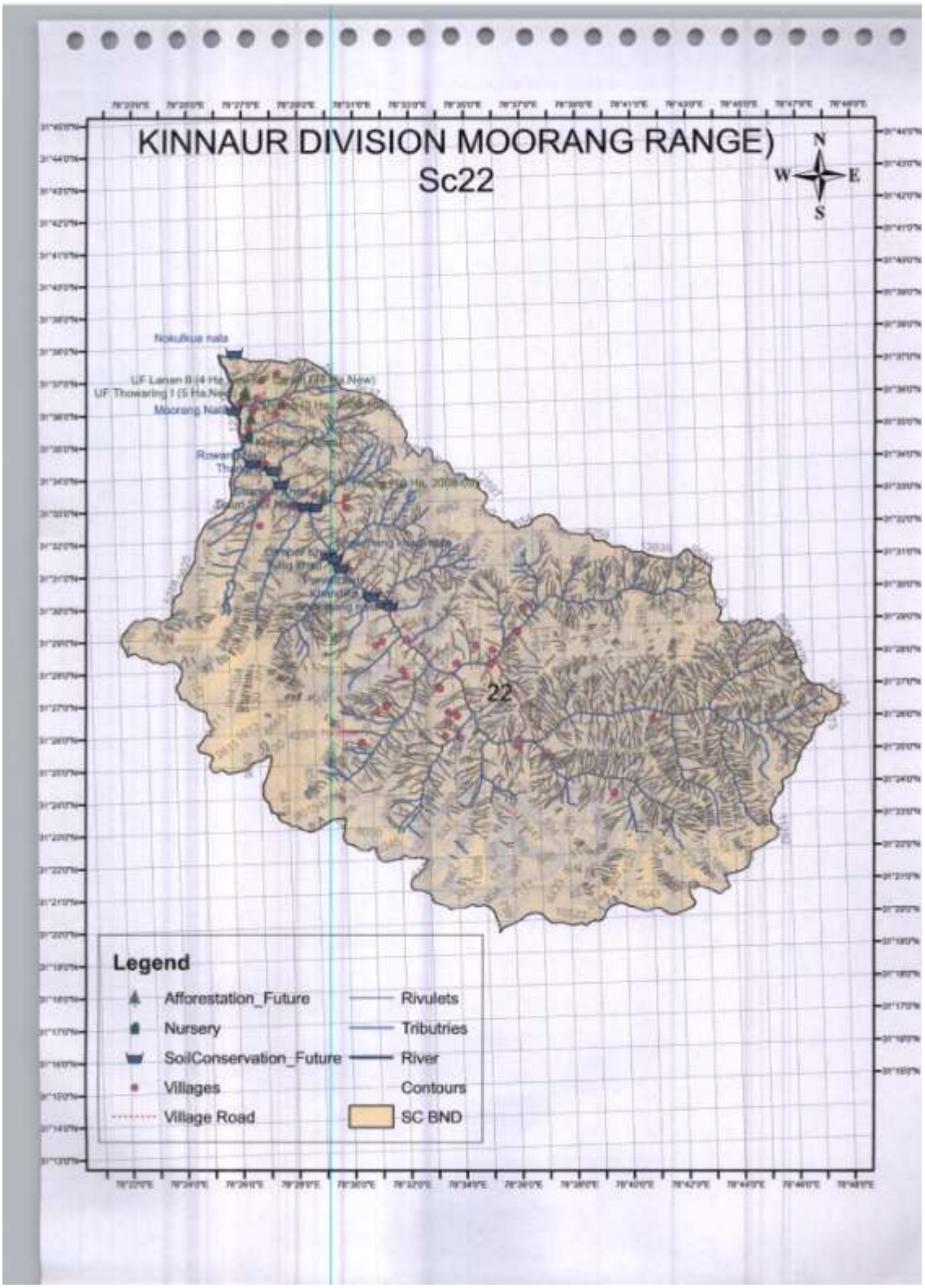
Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
			i) It is proposed that the JFMC's of the Subcatchment will be involved in all type of forest protection activities in the areas. ii) The villagers located in the sub Catchment are mostly agriculturalist / horticulturalist and Buddhist and fell 1 no of Deo pole annually for hoisting flags in their houses. The people will be given / provided one GI pipe each to 651 nos. people situated in the sub Catchment, so that people don't fell the poles from the forest from this purpose. iii) The villagers located in the Sub Catchments are mostly agriculturalist / horticulturalist and are mostly dependant upon it. The slope of the land holding is mostly steep to very steep which leads to severe soil erosion due to wrong cropping pattern. Similarly the people in the Sub catchment are rearing sheep, goat & other domestic cattle's & are having extensive rights for grazing in the forest which also requires ammunition in order to prevent the contagions disease to & from wild life living in & around the Subcatchment. In addition to this other animal improvement interventions are also required so that the environment is no affected.	i) Lump sum provision has been kept for this purpose which will be given to the JFMC's, which actively involve themselves in forest protection in the micro water shed. ii) The people located in the sub Catchment shall be provided 1 no of GI pipe for the purpose. iii) Lump sum provision has been kept for Agricultural / Horticultural & Animal Husbandry support in the Sub Catchment.	No.	JFMC's and 1 No of GI pipe	Lumpsum	8.057
Total Payment for Environmental Services								**9.56**
5 Infrastructure built up & Forest Protection								
(a) Building for stay of staff, FRH/I Hut.								
(b) Forest Roads/ I Paths								
(c) Augmentation of Water Supply.								
(d) Vehicle & Operational Support to HFD								
(e) Office Equipment								

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Apps)	Rate	Approximate Financial Outlay (in lacs.)
(f) Silt Monitoring & Purchase of Meteorological Equipment								
(g) Construction & Repair of Boundary Pillars.	C193		The boundary pillars in C193=15 Nos. (6nos large and 9 nos. small) require maintenance and updation.	Maintenance of 15 boundary pillars in C 193	No.	15		0.65
(h) Fire Protection Measures								
(i) Distribution of Non-conventional energy & Fuel Saving devices								
Total Infrastructure built up								**0.65**
Grand Total								**45.48**

Soil & Water Conservation Endeavors

Nokulkua nala

Moorang Nala


KINNAUR DIVISION MOORANG RANGE)
Sc22
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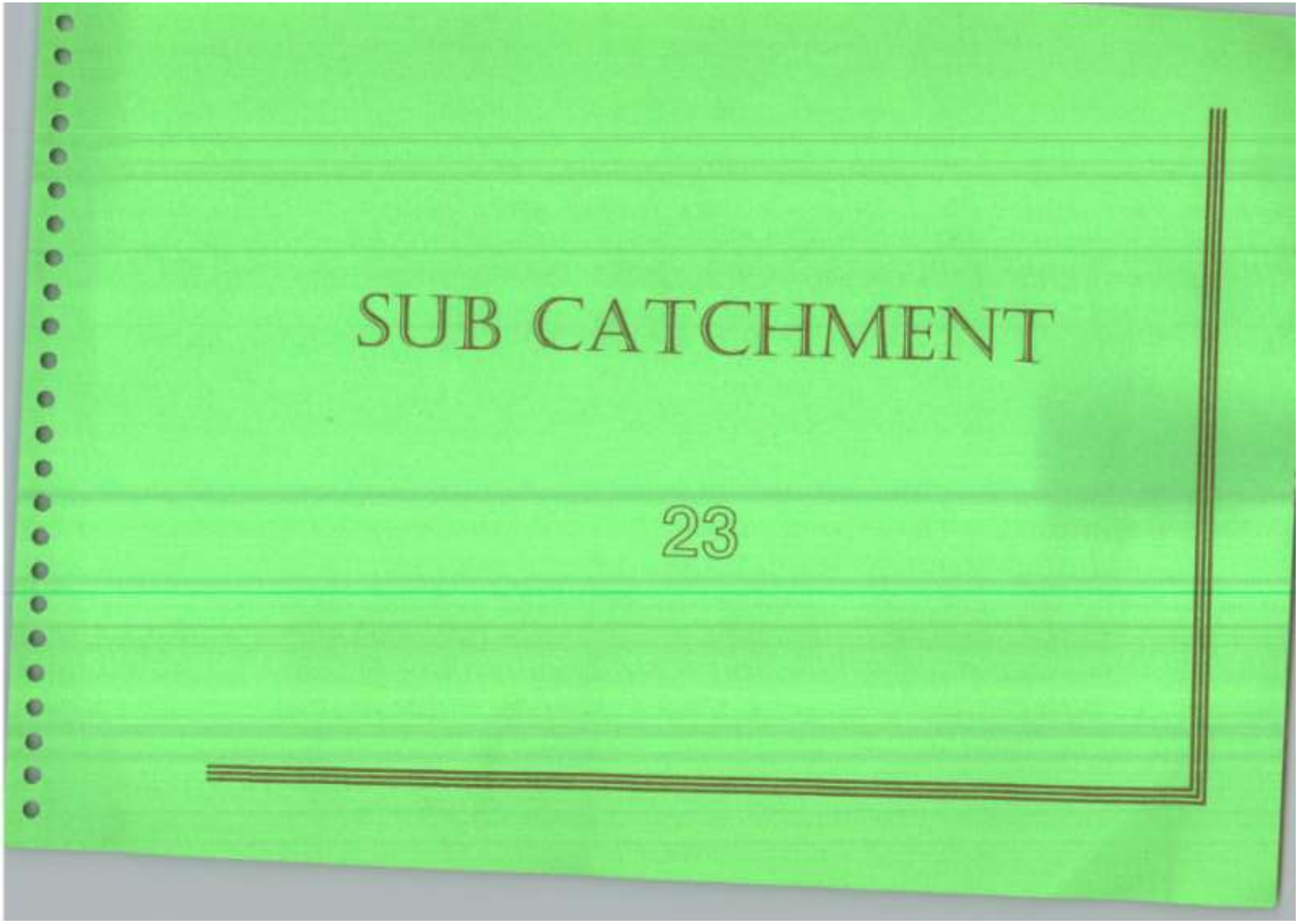
Nokulkua nala
22
Legend
Afforestation_Future
Nursery
SoilConservation_Future
Villages
Village Road
Rivulets
Tributries
River
Contours
SC BND


SUB CATCHMENT
23

MANAGEMENT PLAN OF – Sc23 Sub Catchment (UNDER KARCHAM WANGTOO HEP)

INTRODUCTION

LOCATION (BOUNDARIES)					GENERAL DESCRIPTION OF MWS				
AREA OF MWS	LATITUDE	LONGITUDE	ALTITUDE	SLOPE	SOIL	FOREST			PANCHAYAT
						RANGE	BLOCK	BEAT	
8600 ha.	31°28'36"	78°18'26"	2105 to 5712	30° to 85°	Loam/ Clay Loam	Moorang	Ribba	Ribba, Rispa	Ribba, Rispa

LAND USE						DEMOGRAPHY		
RF	*DPF*	*UPF*	*PRIVATE LAND (Agri+Horti)*	*WASTE LAND*	*TOTAL*	*HOUSE HOLD*	*HUMAN POPULATION*	*LIVE STOCK POPULATION*
(in HA)	*(in HA)*	*(in HA)*	*(in HA)*	*(in HA)*	*(in HA)*	*(in Nos.)*	*(in Nos.)*	*(in Nos.)*
	1108.03		205	2615	3928.03	500	2878	3820

FLORA	
TREES	KAIL, DEODAR, WALNUT, KUNISH, CHILGOZA, POPLUS ETC.
HERBS & SHRUBS	ROSA, RUBUS, COTONEASTER, DESDOMODIUM, VIOLA, POLYGONUM, FRAGERIA, THALICTRUM, PLECTRANTHUS, SALVIA, INDIGO FERA, BERBARIS, DAPHNE, LONICERA, CARAGANA, ARTEMESIA, NEPETA, DIANTHUS, SPIRAEA, ARTIMESIA, DEUTIZIA, THYMUS, BALSOM, SEABUCKTHORN ETC.
GRASSES	ARUNDO-DONAX, AGROPHRON LONGEARISTATUM, AGROSTIS ALBA ETC.
MEDICINAL HERBS	RATANJOT, GUCHHI, KALA ZIRA, DIASCORIA ETC.

FAUNA	
ANIMALS	BLACK BEAR, LEOPARD, BHARAL, & OTHERS SMALL MAMMALS
BIRDS/PHEASANTS	CHAKUR & OTHER BIRDS ETC.

Karcham Wangtoo HEP (Kinnaur Division)

Sub-Catchment 23

Naik Environment Research Institute Ltd

PAST HISTORY OF MANAGEMENT

Soil & Moisture conservation

Name of Area	GPS Coordinates	Observation	Remarks
Raldang Nala	31 35'05", 78 22'19"	The nala originates from above Ribba village & runs in-between Ribba village. The length is about 0.5 -1 Km. The slope is moderate to steep. The nala has been treated during past, the record of which was not made available. The nala meets with Satluj just below NH 22 & opposite to Khadra dhank. The nala is deep & wide down below. The balance part requires treatment.	Treatment required in the nala is given under future Planning.
Holdo River bank stabilization	31 34'41", 78 24'23"	It is situated just below Rispa Govt. middle school & on the left bank of river Satluj. The river bank has been treated during 2010-11 by constructing T wall about 360Rmt. About 70 - 80 Rmt is required to be extended towards Tidong khad.	Treatment required in the nala is given under future Planning.
Gramong Nala	31 34'24", 78 25'38"	The nala originates from Asno kanda. The slope is steep to very steep above. The nala has been treated during past, the record of which was not made available. Most of the structures have been washed away. There are three tributaries above Rispa to Dua khad path & meets down below. The balance part requires treatment.	Treatment required in the nala is given under future Planning.
Markarang nala	31 34'24", 78 25'47"	It is situated near to Loshodan cultivation of Rispa village. It is a seasonal & glacier prone nala. The nala has been treated during 2009-10 by constructing check walls 54 nos (12nos in dry & 42nos in crate) above Rispa to Dua khad path. No treatment required except Biological Interventions. The nala runs mostly in C 192.	Treatment required in the nala is given under future Planning.
Rakshash Nala	31 35'05", 78 22'19"	The nala originates Brahala Peak. The slope is steep to very steep. It is a dry & seasonal nala. The length is about 1.5-2 Km. The nala meets Satluj just above Rattakhan. The nala is situated in C 192 which is a Deodar & Neoza forest. The nala has been treated during 2009-10 by constructing check walls 5 n in crate. It is also a glacier/snow sliding prone area.	Treatment required in the nala is given under future Planning.

Road Side Erosion Control			
Name of Area	**GPS Coordinates**	**Observation**	**Remarks**
Afforestation			
Name of Area	**GPS Coordinates**	**Observation**	**Remarks**
Rural Infrastructure Development			
Name of Area	**GPS Coordinates**	**Observation**	**Remarks**
Forest Infrastructure Development			
Name of Area	**GPS Coordinates**	**Observation**	**Remarks**
BOUNDARY PILLARS			
Name of Area	**GPS Coordinates**	**Observation**	**Remarks**
C 192	31 34'29", 78 26'03"	Boundary pillar no 180 was located in C 192 which was in bad condition. The staff was directed to locate all the boundary pillars of all the forests in the catchment area & maintained/repaired accordingly.	The boundary pillars of all the forests in the catchment area requires rechecking & up keeping.

FUTURE PLANNING

1 Afforestation Measures

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Normal Afforestation	Pyakutang III (3Ha. 2010-11)	31 34'33", 78 22'38"	The area has been closed under rehabilitation of degraded forest during 2010-11. The area is fenced with stone wall fencing. The area is situated above Skiba village & above Block forest office at Ribba & consists of Deodar & Biaoza forest. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 2nd year)	3	6000	0.18
					Ha.(maint. 3rd year)		5100	0.153
					Ha.(maint. 4th year)		4200	0.126
					Ha.(maint. 5th year)		4200	0.126
	Pyangse (5Ha. 2010-11)	31 35'08", 78 20'05"	The area has been closed under rehabilitation of degraded forest during 2010-11. The area is fenced with stone wall fencing. The area is situated in C 186 & above Ribba village & consists of Deodar/ Kail forest. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 2nd year)	5	6000	0.3
					Ha.(maint. 3rd year)		5100	0.255
					Ha.(maint. 4th year)		4200	0.21
					Ha.(maint. 5th year)		4200	0.21
	C 191 (3 Ha. 2009-10)	31 34'27", 78 24'26"	The area has been closed under rehabilitation of degraded forest during 2009-10. The area is fenced with stone wall fencing. Slope is moderate to steep. The area is situated above Rispa village. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 3rd year)	3	5100	0.153
					Ha.(maint. 4th year)		4200	0.126
					Ha.(maint. 5th year)		4200	0.126
	UF Haldo (2 Ha. 2009-10)	31 34'28", 78 24'53"	The area has been closed under rehabilitation of degraded forest during 2009-10. The area is fenced with stone wall fencing. Slope is moderate to steep. The area is situated above Rispa village. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 3rd year)	2	5100	0.102
					Ha.(maint. 4th year)		4200	0.084
					Ha.(maint. 5th year)		4200	0.084

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Normal Afforestation	Rispa Gorbang nala (2 Ha. 2009-10)	31 34'28", 78 25'02"	The area has been closed under rehabilitation of degraded forest during 2009-10. The area is fenced with stone wall fencing. Slope is moderate to steep. The area is situated near to & above Rispa village. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	Fence require repair, The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 3rd year)	2	5100	0.102
					Ha.(maint. 4th year)		4200	0.084
					Ha.(maint. 5th year)		4200	0.084
	C 186 (5 Ha. 2009-10)	31 35'17", 78 21'00"	The area has been closed under rehabilitation of degraded forest during 2009-10. The area is fenced with stone wall fencing. Slope is moderate to steep. The area is situated above Ribba village. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	Fence require repair, The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 3rd year)	5	5100	0.255
					Ha.(maint. 4th year)		4200	0.21
					Ha.(maint. 5th year)		4200	0.21
	C 187 b (3 Ha. 2009-10)	31 35'16", 78 20'44"	The area has been closed under rehabilitation of degraded forest during 2009-10. The area is fenced with stone wall fencing. Slope is moderate to steep. The area is situated adjoining to C 186 (5 Ha) & above Ribba village. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 3rd year)	3	5100	0.153
					Ha.(maint. 4th year)		4200	0.126
					Ha.(maint. 5th year)		4200	0.126
(b) Enrichment	C 191 (10 Ha.New)	31 34'24", 78 25'20"	The proposed area is situated near & above Rispa village. It is open to very open forest of Deodar & Neoza. The area about 10 Ha (5 Ha each). is proposed to be taken under enrichment component so as to restock the area. The irrigation to the plantation is proposed to be provided from Chhering khad. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Skiba Nursery	Ha.	5	75460	3.773
						5	64020	3.201

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(b) Enrichment	C 192 (6 Ha.New)	31 34'22", 78 25'38"	The proposed area is situated beyond Rispa village. It is open to very open forest of Deodar & Neoza. The area about 6 Ha(3 Ha each). is proposed to be taken under enrichment component so as to restock the area. The irrigation to the plantation is proposed to be provided from Grumang nala. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Skibba Nursery	Ha.	3	75460	2.2638
						3	64020	1.9206
	C 188 a (8 Ha.New)	31 34'57", 78 30'18"	The proposed area is situated near to & above Ribba village. It is open to very open forest of Deodar, kail & Neoza. The area about 8 Ha(4 Ha each). is proposed to be taken under enrichment component so as to restock the area. The irrigation to the plantation is proposed to be provided from Rognagus nala. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Ribba/Skibba Nursery	Ha.	4	75460	3.0184
						4	64020	2.5608
	C 188 b (6 Ha.New)	31 35'58", 78 31'19"	The proposed area is situated behind Ribba village. It is open to very open forest of Deodar, kail & Neoza. The area about 6 Ha(3 Ha each). is proposed to be taken under enrichment component so as to restock the area. The irrigation to the plantation is proposed to be provided from Rognagus nala. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Ribba/Skibba Nursery	Ha.	3	75460	2.2638
						3	64020	1.9206
	C 189 a (8 Ha.New)	31 34'11", 78 22'13"	The proposed area is situated above Skiba village. It is open to very open forest of Deodar & Neoza. The area about 8 Ha(4 Ha each). is proposed to be taken under enrichment component so as to restock the area. The irrigation to the plantation is proposed to be provided from Raldang nala. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Ribba/Skibba Nursery	Ha.	4	75460	3.0184
						4	64020	2.5608

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (In lacs.)
(c) Energy Plantation								
(d) Measure to handle invasive species.								
Nurseries	Ribba/Skibba (0.25 Ha. Ht 2320m)	31 34'42", 78 22'46"	The nursery is being maintained in two parts. one part is located above Ribba village which is about 1.5Km above village & the second part is located around forest complex Skibba. The aspect is Southwest. Irrigation is through Kanala nala which is about 0.5Km from the nursery & then through Alkathene pipe & direct to nursery. No storage is available. In the second part of the nursery irrigation is through adjoining water source & then direct to the nursery. Three nos of Vermicompost pits are available in part two nursery and put to use. The nursery contains following stocks: Ailanthus = 3300nos, Chulli = 200nos, Deodar = 18800nos, Behmi = 1200nos, Walnut = 6200nos, Khanor = 8300nos, Robinea = 8900nos, Poplar = 1300nos, Ash = 1300nos.	(i) No scope of Extension but improvement of nursery. (ii) Raising of Biospecies like Cotoneaster, Rubus, Lonicera, Desmodium, Spiraea, Daphne etc.	No	1	Lumpsum	2.50
	Skibba (0.5 Ha. Ht 2227m)	31 34'49", 78 22'56"	The nursery is situated about 150m down to NH 22from Recong Peo to Pooh & above river Satluj. The nursery is established during 2010-11 under Tidong HEF. The aspect is South west. Irrigation is through Alkathene pipe from Kanala nala & direct to nursery. No Vermicompost pits are available The nursery contains following stocks: Chilagoza = 9500nos, Chulli = 3800nos, Behmi = 3800nos, Walnut = 2000nos, Khanor = 5000nos, Robinea = 5020nos.	(i) Scope for Extension & improvement of nursery. (ii) Raising of Biospecies like Cotoneaster, Rubus, Lonicera, Desmodium, Spiraea, Daphne, Firal etc. (iii) Vermicompost pits	No	1	Lumpsum	0.00
Pasture Reclamation.								
Total Afforestation and Nurseries								**32.59**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
2 Soil & Water Conservation Endeavors								
(a) Moisture Retentively Operations								
(b) Live Hedge Fencing								
(c) Vegetative structures	Markarang nala	31 34'24", 78 25'47"	It is situated near to Loshodan cultivation of Rispa village. It is a seasonal & glacier prone nala. The nala has been treated during 2009-10 by constructing check walls 54 nos (12nos in dry & 42nos in crate) above Rispa to Dua khad path. No treatment required except Biological Interventions. The nala runs mostly in C 192	(i) Planting of Spiraea, Willow, Kunish & poplar.	Ha.	1.75	84400	1.50
(d) Civil Structures	Raldang Nala	31 35'05", 78 22'19"	The nala originates from above Ribba village & runs in-between Ribba village. The length is about 0.5 -1 Km. The slope is moderate to steep & is also glacier prone area. The nala has been treated during past, the record of which was not made available. The nala meets with Satluj just below NH 22 & opposite to Khadra dhank. The nala is deep & wide down below. The balance part requires treatment.	(i) Construction of check dams, P/walls in crate. (ii) Staggered Bench Terracing. (iii) Construction of Brushwood check dam at the top. (iv) Sprinkling of BioSeeds like Spiraea, Rosa, Lonicera, Seabuckthorn & local grasses. (v) Planting of Fraxinus, Willow, Kunish & poplar.	Ha.	3.5	84400	12.00
					Cum	551	1633	
	Holdo (Chirrang) Khad	31 34'37", 78 24'04"	The khad originates from Kinnaur kailash. The slope is steep to very steep above bridge & stable. It is a perennial khad. The length is about 4-5 Km.	(i) Construction of check dams, P/walls in crate. (ii) Sprinkling of BioSeeds like Spiraea, Rosa, Firsi, Poplar & local grasses.	Ha.		84400	0.00
					Cum		1633	
	Gramong Nala	31 34'24", 78 25'38"	The nala originates from Aano kanda. The slope is steep to very steep above. The nala has been treated during past, the record of which was not made available. Most of the structures have been washed away. There are three tributaries above Rispa to Dua khad path & meets down below. The balance part requires treatment.	(i) Construction of check dams, P/walls in crate. (ii) Sprinkling of BioSeeds like Spiraea, Rosa, Lonicera, Seabuckthorn & local grasses. (iv) Planting of Spiraea, Willow, Kunish & poplar.	Ha.	1.75	84400	6.00
					Cum	276	1633	
	Rakshash Nala	31 34'29", 78 26'04"	The nala originates Brahala Peak. The slope is steep to very steep. It is a dry & seasonal nala. The length is about 1.5-2 Km. The nala meets Satluj just above Rattakhan. The nala is situated in C 192 which is a Deodar & Neoza forest. The nala has been treated during 2009-10 by constructing check walls 5 n in crate. It is also a glacier/snow sliding prone area.	(i) Staggered Bench Terracing. (ii) Construction of Staggered check walls, P/walls in crate. (iii) Sprinkling of BioSeeds including planting like Spiraea, Cotoneaster Rosa, Lonicera, Artemesia, Plectranthus, Desmodium & local grasses.	Ha.	1.75	84400	4.50
					Cum	184	1633	

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(e) Drainage line treatment & Land slide								
(f) Stream Bank stabilizations	Holdo River bank stabilization (Tidong)	31 34'41", 78 24'23"	It is situated just below Rispa Govt. middle school & on the left bank of river Satluj. The river bank has been treated during 2010-11 by constructing T wall about 360Rmt. About 70 - 80 Rmt is required to be extended towards Tidong khad.	(I) Construction of T/walls in crate. (II) Sprinkling of BioSeeds like Firal & local grasses.	Ha.	1.75	84400	5.00
					Cum	214	1633	
Total Soil & Water Conservation Endeavors								**29.00**

3 Payment for Environmental Services								
			i) It is proposed that the JFMC's of the Subcatchment will be involved in all type of forest protection activities in the areas. ii) The villagers located in the sub Catchment are mostly agriculturalist / horticulturalist and Buddhist and fell 1 no of Deo pole annually for hoisting flags in their houses. The people will be given / provided one GI pipe each to 500 nos. people situated in the sub Catchment, so that people don't fell the poles from the forest from this purpose. iii) The villagers located in the Sub Catchments are mostly agriculturalist / horticulturalist and are mostly dependant upon it. The slope of the land holding is mostly steep to very steep which leads to severe soil erosion due to wrong cropping pattern. Similarly the people in the Sub catchment are rearing sheep, goat & other domestic cattle's & are having extensive rights for grazing in the forest which also requires ammunition in order to prevent the contagions disease to & from wild life living in & around the Subcatchment. In addition to this other animal improvement interventions are also required so that the environment is no affected.	i) Lump sum provision has been kept for this purpose which will be given to the JFMC's, which actively invslve themselves in forest protection in the micro water shed. ii) The people located in the sub Catchment shall be provided 1 no of GI pipe for the purpose. iii) Lump sum provision has been kept for Agricultural / Horticultural & Animal Husbandry support in the Sub Catchment.	**No.**	**JFMC's and 1 No of GI pipe**	**Lumpsum**	12
Total Payment for Environmental Services								**12.00**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (In lacs.)
5 Infrastructure built up & Forest Protection								
(a) Building for stay of staff, FRH/I Hut.	Maintenance FG hut Rispa	31.34'43", 78.25'15"	It is located in the Goraden which is surrounded by habitation / land. It is situated just below dispensary. The condition of the FG hut is not good & requires maintenance.	(i) Maintenance of flooring. (ii) sanitary fitting. (iii) Plinth protection & construction of side drain. (iv) Painting & Distempering. (v) Replacement of glasses in windows. (vi) Painting of CGI roofing. (vii) Repair of water supply.	No	1	Lumpsum	1.50
	Maintenance of SO quarter Ribba	31.34'43", 78.22'45"	It is situated about 70-75m down to Ribba link road. The condition of the SO quarter is not good & requires maintenance.	(i) Plinth protection & construction of side drain. (ii) Painting & Distempering. (iii) Painting of CGI roofing.	No	1	Lumpsum	1.50
	Maintenance FG hut Ribba	31.34'43", 78.22'45"	It is situated about 70-75m down to Ribba link road & adjoining to SO quarter. The condition of the FG hut is not good & requires maintenance.	(i) Plinth protection & construction of side drain. (ii) Painting & whitewashing. (iii) Replacement of glasses in windows. (iv) Repair of store.	No	1	Lumpsum	1.25
(b) Forest Roads/ I Paths	Maintenance of B Path from Holdo to Tirung khad (5 Km)		The B path runs parallel to Satluj & it has been damaged in many places. The condition of the path is not good & requires maintenance.	(i) Maintenance of B Path from Holdo to Tirung khad.	Km	5	Lumpsum	1.50
	Maintenance /Construction of Approach road to forest colony Skibba	31.34'42", 78.22'46"	The existing road to forest colony from Ribba link road is not in good condition & about 100m moterable road is required to be constructed from the Ribba road running above the forest colony.	Maintenance/Construction of Approach road to forest colony Skibba about 100m length.	Km	100mt	Lumpsum	3.00
(c) Augmentation of Water Supply								
(d) Vehicle & Operational Support to HPFD								
(e) Office Equipment								

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Apps)	Rate	Approximate Financial Outlay (in lacs.)
(f) Silt Monitoring & Purchase of Meteorological Equipment								
(g) Construction & Repair of Boundary Pillars.	C187, C 188 b, C 189 b, C 191 & C 192		The boundary pillars in C187=31 Nos. (14 large and 17 no. small), C188 b =7nos.(7 large) , C189 b =9nos.(9 large), C191=16 Nos. (12 large and 4 no. small), C192=7 Nos. (7 large), require maintenance and updation.	Maintenance of 70 boundary pillars in C 187, 188 b, 189 b, 191 & 192.	No.	70	Lumpsum	0.12
(h) Fire Protection Measures								
(i) Distribution of Non-conventional energy & Fuel Saving devices								
Total Infrastructure built up								**8.87**
Grand Total								**82.46**

Nurseries

Ribba/Skibba

Skibba

Soil & Water Conservation Endeavors

Raidang Nala

Holdo (Chirrang) Khad

Gramong Nala

Rakshash Nala

Holdo River bank stabilization

Naik Environment Research Institute Ltd

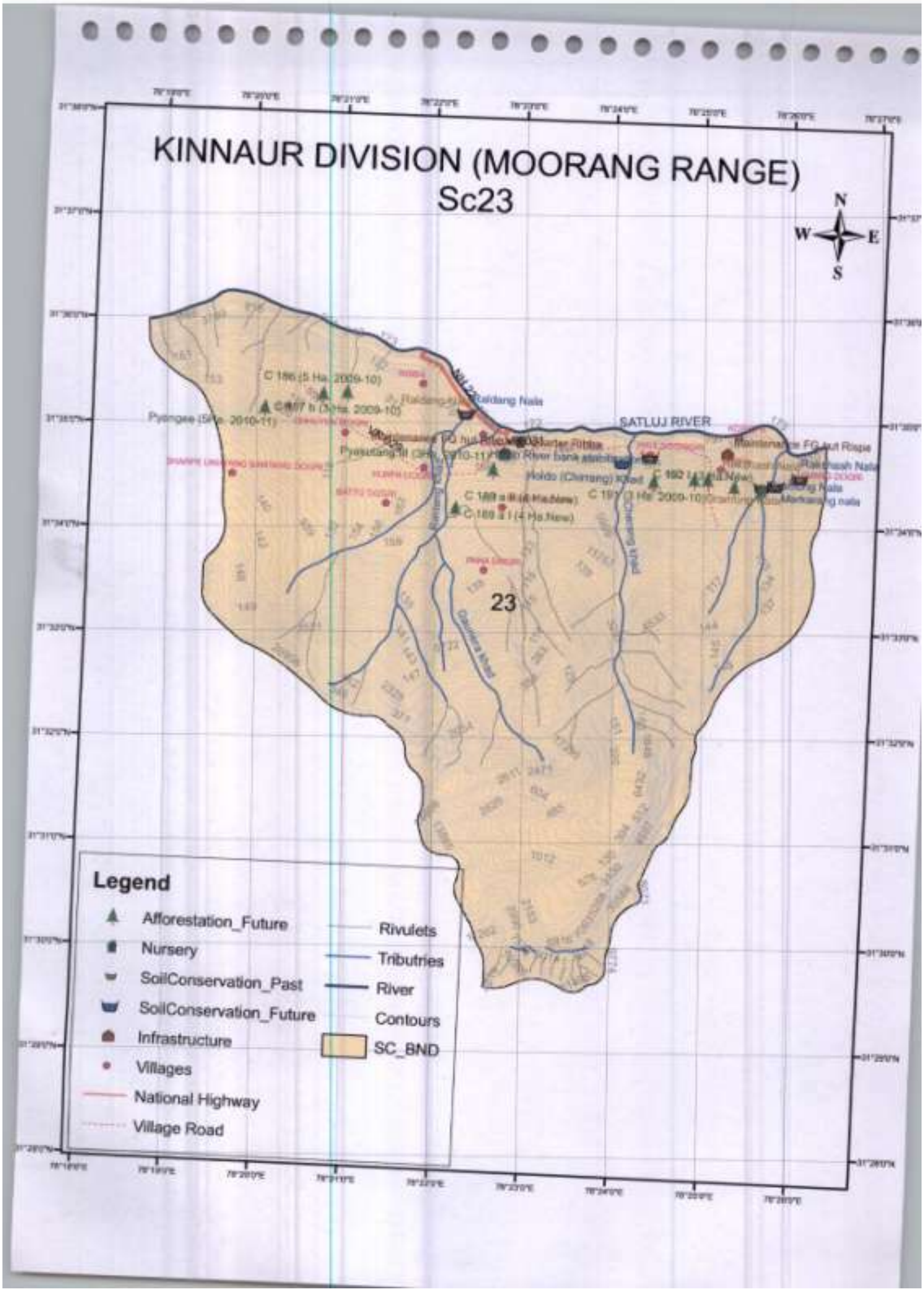
Infrastructure built up & Forest Protection

FG hut Rispa

BO quarter Ribba

FG hut Ribba

Road to forest colony Skibba


KINNAUR DIVISION (MOORANG RANGE)
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Legend
Afforestation_Future
Nursery
SoilConservation_Past
SoilConservation_Future
Infrastructure
Villages
National Highway
Village Road
Rivulets
Tributries
River
Contours
SC_BND

SUB CATCHMENT

24

MANAGEMENT PLAN OF – Sc24 Sub Catchment (UNDER KARCHAM WANGTOO HEP)

INTRODUCTION

LOCATION (BOUNDARIES)					GENERAL DESCRIPTION OF MWS				
						FOREST			PANCHAYAT
AREA OF MWS	LATITUDE	LONGITUDE	ALTITUDE	SLOPE	SOIL	RANGE	BLOCK	BEAT	
17800 ha.	31°11' to 31°26'	78°27' to 78°36'	1720 to 6473	40° to 85°	Loam/ sandy loam	Kalpa & Part of kilba	Shongtong & part of karcham	Purbani, Tangaling, Barang & Ralli	Purbani, Powari, Tangaling, Barang & Mebar-Ralli

LAND USE						DEMOGRAPHY		
RF	DPF	UPF	PRIVATE LAND (Agri+Horti)	WASTE LAND	TOTAL	HOUSE HOLD	HUMAN POPULATION	LIVE STOCK POPULATION
(in HA)	(in HA)	(in HA)	(in HA)	(in HA)	(in HA)	(in Nos.)	(in Nos.)	(in Nos.)
	2652.27				2652.27	671	3661	2143

FLORA

TREES	FIR, SPRUCE, KAIL, DEODAR, WALNUT, KUNISH, CHILGOZA, POPLUS, QUERCUS ILEX, BIRD CHERRY, ALDERS, JUNIPEROUS RECURVA, SALIX ETC.
HERBS & SHRUBS	ROSA ,RUBUS, COTONEASTER, DESDOMODIUM, VIOLA, POLYGONUM, FRAGERIA, THALICTRUM, PLECTRANTHUS, SALVIA, INDIGO FERA, BERBARIS, DAPHNE, LONICERA, JUNIPERUS COMMUNIS, SPIRAEA, ARTIMESIA, DEUTIZIA, VIBURNUM, GERANIUM, NEPTA, ASTRALAGUS, GNAPHALIUM, CARAGANA, AARON'S ROD, THYMUS, BALSOM, SEABUCKTHORN ETC.
GRASSES	ARUNDO-DONAX, AGROPHRON LONGEARISTATUM, AGROSTIS ALBA ETC.
MEDICINAL HERBS	RATANJOT, GUCHHI, KALA ZIRA, DIASCORIA, DHOOP, KARU, PATISH, CHUKRI, CHORA ETC.

FAUNA

ANIMALS	BLACK BEAR, LEOPARD, BHARAL & OTHERS SMALL MAMMALS
BIRDS/PHEASANTS	CHAKUR & OTHER BIRDS ETC.

Karcham Wangtoo HEP (Kinnaur Division)

Sub-Catchment 24

PAST HISTORY OF MANAGEMENT

Soil & Moisture conservation

Name of Area	GPS Coordinates	Observation	Remarks
Ralli nala	31 29'45", 78 12'35"	The nala originates from below Ralli village & drains upto NH 22 near Ralli nursery. The slope is moderate to steep. It is a seasonal nala. The nala has been treated during 2006-07 but the record was not produced. The silt has also deposited behind the structures. No Engineering structures are required but some Biological Interventions are required.	Treatment required in the nala is given under future Planning.
Poonalang nala	31 29'19", 78 12'34"	The nala originates from C 167 (Harang top). The slope is steep to very steep. It is a Snow sliding/Glacier prone area & causes damages to the Govt. as well as private properties down below. It is a seasonal nala. The nala has been treated during 2008-09, 2009-10 & 2010-11 by constructing 138nos of check wall in crate. The area is full of Bio Shrubs like Plectranthus, Bray etc. The balance area requires treatment.	Treatment required in the nala is given under future Planning.
Purbani Slip (Rawa C 184)	31 35'10", 78 18'56"	The slip originates from the top of Rawa Dhar. The slope is moderate to steep to very steep. The slip has been treated during 2010-11 by constructing 18nos of check wall in crate & requires treatment.	Treatment required in the nala is given under future Planning.
Tangling nala	31 31'36", 78 16'50"	The nala has two branches / tributaries & originates from Kinnaur kailash on right side & Raukmo peak on left side. Both the branches / tributaries meets above kangrang village. The slope is steep to precipitous above. It is a perennial nala. the length is about 12-15 Km. & meets with River Satluj above Shongtong bridge. The nala has been treated during 2008-09 by constructing 169nos of P wall (77nos in crate & 92 dry), 2007-08 by constructing 51nos of P wall (15nos in crate & 36 dry). The balance area requires treatment.	Treatment required in the nala is given under future Planning.
Membar nala	31 30'05", 78 13'40"	It is situated on the left side of Membar village. It is steep to precipitous above & moderate to steep in the middle & steep down ward. The nala has three to four branches/tributaries above Membar village. The nala has been treated during 2010-11 but the record was not produced. It is a Snow sliding/Glacier prone area & causes damages to the Govt. as well as private properties down below & also to NH 22. The nala meets with River Satluj below NH 22 & requires treatment.	Treatment required in the nala is given under future Planning.
Barang nala	31 30'31", 78 16'11"	It is situated on the right side of Barang village. It is steep to precipitous above & moderate to gentle in the middle & down ward. The nala has four branches/tributaries & meets near Barang village to form one nala i.e. Shongtong nala which is also a beat boundary of Barang & Tangling. The nala has been treated during 2007-08 by constructing 34nos of check walls (22nos in crate & 12 dry). The length is about 3.5-4 Km. The nala meets with River Satluj below NH 22 near to FRH Shongtong & requires treatment.	Treatment required in the nala is given under future Planning.

Name of Area	GPS Coordinates	Observation	Remarks
Tichro slip	31 30'40", 78 16'17"	It is situated on the left side of Barang khad & below Barang cultivation. It is steep. He erosion is due to Scouring action of Barang khad & snow sliding/glecier. The nala has been treated during 2007-08 by constructing 32nos of check walls (12nos in crate & 20 dry) but maximum structure has been damaged & requires treatment.	Treatment required in the nala is given under future Planning.

Road Side Erosion Control

Name of Area	GPS Coordinates	Observation	Remarks

Afforestation

Name of Area	GPS Coordinates	Observation	Remarks
C 167 (10Ha. 2008-09)	31 29'25", 78 12'28"	The closed area is situated around Fg hut Ralli & above Ralli village. It is a forest of Bray & Deodar. The ground flora consists of Plenctranthus , cannabis etc. The area has been closed during 2008-09 under karcham Wangtoo cat plan under afforestation scheme. The area has been planted with Neoza, Deodar, Chulli, Behmi, Robinia & Ailanthus. Only Deodar & Neoza are surviving. The area be beaten up with Deodar, Neoza & Bray. The overall survival % is 30-35% only.	Fence require repair and the area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.

Rural Infrastructure Development

Name of Area	GPS Coordinates	Observation	Remarks

Forest Infrastructure Development

Name of Area	GPS Coordinates	Observation	Remarks

BOUNDARY PILLARS

Name of Area	GPS Coordinates	Observation	Remarks
C 184	31 35'07", 78 18'43"	Boundery pillar no 76 was located in C 184 which was in bad condition. The staff was directed to locate all the boundary pillars of all the forests in the catchment area & maintained/repaired accordingly.	The boundary pillars of all the forests in the catchment area requires rechecking & up keeping.

FUTURE PLANNING

1 Afforestation Measures

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Normal Afforestation	C 167 (10Ha. 2008-09)	31 29'25", 78 12'28"	The closed area is situated around Fg hut Ralli & above Ralli village. It is a forest of Bray & Deodar. The ground flora consists of Plectranthus , cannabis etc. The area has been closed during 2008-09 under karcham Wangtoo cat plan under afforestation scheme. The area has been planted with Neoza, Deodar, Chulli, Behmi, Robinia & Allanthus. Only Deodar & Neoza are surviving. The area be beaten up with Deodar, Neoza & Bray. The overall survival % is 30-35% only.	Fence require repair and the area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	10	870	0.087
					Ha.(maint. 5th year)		870	0.087
	UF Landhar (5Ha. 2008-09)	31 34'07", 78 17'02"	The closed area is situated just above Shongtong - Purbani link road. It is a forest of Neoza & Deodar. The area has been closed during 2008-09 under karcham Wangtoo cat plan under afforestation scheme. The area has been planted with Neoza, Deodar, Chulli, walnut, Behmi, Robinia & Allanthus. Beside this 14nos of check walls has also been constructed in the slip which is running in the closed area in other scheme. Only Deodar & Neoza should be planted in the beating up. The overall survival % is below 20.	Fence require repair and the area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	5	870	0.0435
					Ha.(maint. 5th year)		870	0.0435
	C 172 Barang(5 Ha. 2009-10)	31 30'01", 78 15'39"	The area has been closed under rehabilitation of degraded forest during 2009-10. The area is fenced with barbed wire fencing. Slope is moderate to steep. The area is situated near Anodan. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 3rd year)	5	1740	0.087
					Ha.(maint. 4th year)		870	0.0435
					Ha.(maint. 5th year)		870	0.0435
	C 179 (5 Ha. 2009-10)	31 32'41", 78 17'18"	The area has been closed under rehabilitation of degraded forest during 2009-10. The area is fenced with barbed wire fencing. Slope is moderate to steep. The area is situated above Chhatrang Pee. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 3rd year)	5	1740	0.087
					Ha.(maint. 4th year)		870	0.0435
					Ha.(maint. 5th year)		870	0.0435

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Normal Afforestation	C 181 (5 Ha. 2009-10)	31 34'27", 78 17'38"	The area has been closed under rehabilitation of degraded forest during 2009-10. The area is fenced with barbed wire fencing. Slope is moderate to steep. The area is situated above Purbani village & Kisrang nala. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 3rd year)	5	1740	0.087
					Ha.(maint. 4th year)		870	0.0435
					Ha.(maint. 5th year)		870	0.0435
	C 167 (10 Ha. 2008-09)	31 29'25", 78 11'27"	The area has been closed under rehabilitation of degraded forest during 2008-09. The area is fenced with barbed wire & stone wall fencing. Slope is moderate to steep. The area is situated near to Ralli village. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kilba.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	10	870	0.087
					Ha.(maint. 5th year)		870	0.087
	C 172 a (5 Ha. 2008-09)	31 30'21", 78 15'14"	The area has been closed under rehabilitation of degraded forest during 2008-09. The area is fenced with barbed wire fencing. Slope is moderate to steep. The area is situated near to & above Anodan. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	5	870	0.0435
					Ha.(maint. 5th year)		870	0.0435
	C 174 (4 Ha. 2008-09)	31 30'24", 78 16'29"	The area has been closed under rehabilitation of degraded forest during 2008-09. The area is fenced with barbed wire fencing. Slope is moderate to steep. The area is situated above B path Ralli to Barang. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	4	870	0.0348
					Ha.(maint. 5th year)		870	0.0348

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Normal Afforestation	C 181 a (4 Ha. 2008-09)	31 34'36", 78 17'56"	The area has been closed under rehabilitation of degraded forest during 2008-09. The area is fenced with barbed wire fencing. Slope is moderate to steep. The area is situated above Korang nala. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	4	870	0.0348
					Ha.(maint. 5th year)		870	0.0348
	Member kanda (5 Ha. 2010-11)	31 28'25", 78 13'24"	The area has been closed under NTFP Component during 2010-11. The area is fenced with barbed wire fencing. The area is situated above Member village. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kilba.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 2nd year)	5	870	0.0435
					Ha.(maint. 3rd year)		870	0.0435
(b) Enrichment	C 179 Tangling Powari I(5 Ha. New)	31 32'37", 78 17'19"	The proposed area is situated above Kangrang dogri. It is open to very open forest of Deodar & Neoza. The area about 5 Ha. is proposed to be taken under enrichment component so as to restock the area. The water supply from kangrang-Talampi khad. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Shongtong Nursery	Ha.	2.5	75460	1.8865
						2.5	64020	1.6005
	C 179 Tangling Powari II (3 Ha. New)	31 32'33", 78 17'33"	The proposed area is situated above kangrang-Talampi kuhl/ Powari-talampi road. It is open to very open forest of Deodar & Neoza. The area about 3 Ha. is proposed to be taken under enrichment component so as to restock the area. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Shongtong Nursery	Ha.	1.5	59025	0.885375
						1.5	46890	0.70335
	C 179 Tangling Powari III (3 Ha. New)	31 32'17", 78 17'45"	The proposed area is situated below kangrang-Talampi kuhl/ Powari-talampi road. It is open to very open forest of Deodar & Neoza. The area about 3 Ha. is proposed to be taken under enrichment component so as to restock the area. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Shongtong Nursery	Ha.	1.5	59025	0.885375
						1.5	46890	0.70335

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(b) Enrichment	C 180 Landhar (5 Ha. New)	31 33'36", 78 17'02"	The proposed area is situated above Shongtong-Purbani link road. It is open to very open forest of Deodar & Neoza. The area about 5 Ha. is proposed to be taken under enrichment component so as to restock the area. The water supply from kangrang-Talampi khad. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Shongtong Nursery	Ha.	2.5	75460	1.8865
						2.5	64020	1.6005
	C 171 b Barang (5 Ha. New)	31 30'15", 78 15'1	The proposed area is situated towards Mebar village & below I hut Anodan. It is open to very open forest of Deodar & Kail. The area about 5 Ha. is proposed to be taken under enrichment component so as to restock the area. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Deodar from Shongtong Nursery	Ha.	5	46890	2.3445
	C 171 a Anodan (5 Ha. New)	31 30'32", 78 15'28"	The proposed area is situated above I hut Anodan & towards towards Mebar village. It is open to very open forest of Deodar & Neoza. The area about 5 Ha. is proposed to be taken under enrichment component so as to restock the area. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Shongtong Nursery	Ha.	2.5	59025	1.475625
						2.5	46890	1.17225
	C 173 Barang (3 Ha. New)	31 30'15", 78 15'1	The proposed area is situated above B path Rafi to Sharmi. It is open to very open forest of Deodar & Kail. The area about 3 Ha. is proposed to be taken under enrichment component so as to restock the area. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Deodar from Shongtong Nursery	Ha.	3	46890	1.4067
	C 172 b Anodan (2 Ha. New)	31 30'22", 78 15'1	The proposed area is situated near to I hut Anodan. It is open to very open forest of Deodar & Kail. The area about 2 Ha. is proposed to be taken under enrichment component so as to restock the area. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Deodar from Shongtong Nursery	Ha.	2	46890	0.9378
	C 174 b Barang (2 Ha. New)	31 35'17", 78 18'40"	The proposed area is situated on the left bank of Shongtong khad & above Barang village. It is open to very open forest of Deodar & Neoza. The area about 2 Ha. is proposed to be taken under enrichment component so as to restock the area. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Purbani Nursery	Ha.	1	59025	0.59025
						1	46890	0.4689

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(b) Enrichment	C 183 b (5 Ha. New)	31 34'55", 78 18'0	The proposed area is situated near Kibbar kanda. It is open to very open forest of Deodar & Kail. The area about 5 Ha. is proposed to be taken under enrichment component so as to restock the area. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Deodar from Purbani Nursery	Ha.	5	46890	2.3445
	C 182 a Purbani (5 Ha. New)	31 35'00", 78 18'10"	The proposed area is situated above link road Purbani. It is open to very open forest of Deodar & Neoza. The area about 5 Ha. is proposed to be taken under enrichment component so as to restock the area. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Shongtong Nursery	Ha.	2.5	59025	1.475625
						2.5	46890	1.17225
	C 181 a Purbani (5 Ha. New)	31 35'00", 78 17'39"	The proposed area is situated above Govt. Middle School Purbani. It is open to very open forest of Deodar, Bray & Neoza. The area about 5 Ha. is proposed to be taken under enrichment component so as to restock the area. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Shongtong Nursery	Ha.	2.5	59025	1.475625
						2.5	46890	1.17225
	C 184 (5 Ha. New)	31 35'23", 78 18'4	The proposed area is situated at Rawa. It is open to very open forest of Deodar & Kail. The area about 5 Ha. is proposed to be taken under enrichment component so as to restock the area. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Deodar from Purbani Nursery	Ha.	5	46890	2.3445
	UF Shongtong (5 Ha. New)	31 30'52", 78 15'18"	The proposed area is situated above NH 22 & below Rarang village. It is open to very open forest of Neoza & Bray. The area about 5 Ha. is proposed to be taken under enrichment component so as to restock the area. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Kalpa.	1)B/wire fencing. 2)Planting of Chilgoza & Bray from Shongtong Nursery	Ha.	4	59025	2.361
						1	35360	0.3536
(c) Energy Plantation								

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(d) Measure to handle invasive species.								

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
Nurseries	Shongtong (0.25 Ha, Ht 1928m)	31 30'59", 78 16'03"	The nursery is situated just below NH 22 & near to FRH Shongtong. The aspect is North west. Irrigation is through permanent source above NH 22 about 300m from nursery & then stored in the storage tank. Six nos of Vermicompost pits are available & are put to use. The nursery seedlings are full of dust due to winding of NH 22. The nursery contains following stocks: Chilogoza = 7640nos, Chulli = 18760nos, Behmi = 1900nos, Walnut = 1430nos, Khanor = 9000nos, Robinea = 21865nos, Deodar = 12700nos, Ramban = 40400nos, Bekhal = 3100nos, Kunish = 3410nos, Rosa = 8100nos, Ipomea = 1500nos, Ilex = 5648nos.	(i) Scope for Extension & improvement of nursery. (ii) Raising of Biospecies like Cotoneaster, Rubus, Lonicera, Desmodium, Spiraea, kashmal, Daphne etc. (iii) Poly house with sprinklers. (iv) Ramban should not be raised & only Deodar, Neoza & Biospecies mentioned above should be raised.	No	1	Lumpsum	5.00
	Ralli (0.50 Ha, Ht 1849m)	31 29'49", 78 12'42"	The nursery is situated just below NH 22. The aspect is North west. Irrigation is through Alkathene pipe from Shilli nala across Satluj river & direct to nursery. There is no storage. No Vermicompost pits are available. There is danger to the nursery due to Satluj river which is flowing down to the nursery. During past due to flood in Satluj maximum area has been flooded away. The nursery contains following stocks: Chilogoza = 12000nos, Chulli = 2900nos, Behmi = -1400nos, Robinea = 18150nos, Deodar = 24920nos, Orak = 6000nos, Walnut = 1225nos, Bray = 100nos, Poplar = 4500nos.	(i) No scope for Extension but improvement of nursery. (ii) Raising of Biospecies like Cotoneaster, Rubus, Bekhal, Desmodium, Spiraea, kashmal, Daphne, Rosa etc. (iii) Repair of existing water storage tank. (iv) The existing Hall hut needs special repair.	No	1	Lumpsum	3.00
	Purbani (0.20 Ha., Ht 2567m)	31 35'16", 78 18'25"	The nursery is situated in C 182 b & above FRH Purbani. The aspect is North west. Irrigation is through Alkathene pipe from natural source about 200m distance. The storage tank is being constructed at the top of the nursery. No Vermicompost pits are available. The nursery contains following stocks: Chilogoza = 2640nos, Chulli = 1450nos, Behmi = 200nos, Robinea = 150nos, Deodar = 6438nos, Willow = 220Onos, Poplar = 1180nos.	(i) Scope for Extension & improvement of nursery. (ii) Raising of Biospecies like Indigofera, Cotoneaster, Rubus, Lonicera, Desmodium, Spiraea, kashmal, Daphne etc. (iii) Vermicompost pits.	No	1	Lumpsum	3.00
Pasture Reclamation.								
Total Afforestation and Nurseries								43.52
2 Soil & Water Conservation Endeavors								
(a) Moisture Retentively Operations								

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(b) Live Hedge Fencing								
(c) Vegetative structures	Ralli nala	31 29'43", 78 12'35"	The nala originates from below Ralli village & drains upto NH 22 near Ralli nursery. The slope is moderate to steep. It is a seasonal nala. The nala has been treated during 2006-07 but the record was not produced. The silt has also deposited behind the structures. No Engineering structures are required but some Biological Interventions are required.	(i) Planting of Bio species like Plectranthus, Desmodium, Prenscepia, Berbaris etc.	Ha.	1.2	84400	1.00
(d) Civil Structures	Poonalang nala	31 29'19", 78 12'34"	The nala originates from C 167 (Harang top). The slope is steep to very steep. It is a Snow sliding/Glacier prone area & causes damages to the Govt. as well as private properties down below.. It is a seasonal nala. The nala has been treated during 2008-09, 2009-10 & 2010-11 by constructing 138nos of check wall in crate. The area is full of Bio Shrubs like Plectranthus, Bray etc. The balance area requires treatment.	(i) Contour Staggered Bench Terracing. (ii) Construction of Monds/check wall in staggered. (iii) Construction of P/ wall in crate in the lower part. (iv) Sprinkling of BioSeeds like Plectranthus, Bray, Lonicera, spiraea, Wild Rose, Verbascum, Cotoneaster, Plectranthus & local grasses including planting.	Ha.	5.9	84400	20.00
					Cum	919	1633	
	Purbani Slip (Rawa C 184)	31 35'10", 78 18'56"	The slip originates from the top of Rawa Dhar. The slope is moderate to steep to very steep. The slip has been treated during 2010-11 by constructing 18nos of check wall in crate & requires treatment.	(i) Construction of check walls in crate. (iv) Sprinkling of BioSeeds like Plectranthus, Lonicera, Artemesia, spiraea, Wild Rose, Verbascum & local grasses .	Ha.	0.6	84400	2.50
					Cum	122	1633	
	Landhar nala (Kurang nala)	31 34'09", 78 17'04"	The nala originates from C 180 top & meets with river Satluj before pangi village on NH 22. The slope is steep & it is a seasonal nala. It is a Snow sliding/Glacier prone area & causes damages to the Govt. as well as private properties down below. Some stones are natural barriers & need not to be disturbed which are checking erosions. Bio species like Lonicera are coming naturally. No treatment is required above Shongtong Purbani road. This nala is also a beat boundary of Purbani & Tangling & requires treatment.	(i) Construction of check walls/ dams in crate. (iv) Sprinkling of BioSeeds like Plectranthus, Lonicera, Aretmesia, spiraea, Wild Rose, Verbascum & local grasses .	Ha.	0.6	84400	2.00
					Cum	92	1633	

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(d) Civil Structures	Landhar nala II	31 33'49", 78 16'54"	The nala originates from C 180 top which is a forest of Neoza & Deodar & meets with river Satluj below Tangling village. The slope is moderate to steep & it is a dry & seasonal nala. There are two benches above the road & meets below Purbani Shongtong road. The length of the nala is about 1 Km. There is a khul running above road which is also causing erosion. Stones are being Quarried / taken away from the area which should be stopped.	(i) Stopping of surplus / overflowing water from the Khul. (ii) Stopping of quarrying of stones. (iii) Construction of check walls/ dams in crate. (iv) Sprinkling of BioSeeds like Plectranthus, Lonicera, Aretmesia, Bray, Wild Rose, Verbascum & local grasses .	Ha.	1.2	84400	4.00
					Cum	184	1633	
	Tallampi nala I	31 32'41", 78 17'04"	The nala originates from Tallampi road. The slope is steep above & moderate below. At the top there is Rill erosion. The nala runs in C 179 forest of Neoza. There are two branches above & requires treatment.	(i) Gully plugging. (ii) Construction of brushwood check dam. (iii) Construction of check walls/ dams in crate down below. (iv) Sprinkling of BioSpecies like Plectranthus, Lonicera, Aretmesia, Verbascum & local grasses .	Ha.	1.75	84400	3.50
					Cum	122	1633	
	Tallampi nala II	31 32'43", 78 17'05"	IT is situated adjoining to & on the right side of Tallampi I nala. The slope is steep & wide above & moderate below. The nala runs in C 179 forest of Neoza, Deodar & Bray. It is a dry & seasonal nala. There are two branches which runs in parallel below Tallampi dogri & requires treatment.	(i) Construction of brushwood check dam. (ii) Construction of check walls/ dams in crate down below. (iii) Sprinkling of BioSpecies like Plectranthus, Lonicera, Aretmesia, Daphne, Verbascum & local grasses .	Ha.	1.75	84400	5.00
					Cum	214	1633	

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(d) Civil Structures	Thittarodhan slip		IT is situated in C 179 & on the right side of Tangling village & in front of ITBP colony at Recong Peo. It is a wide slip having effect of wind erosion with appearance of small Rills. The slope is steep to very steep above & wide & moderate below. The nala runs in forest of Necza, Deodar & Bray. The slip extends up to Kangrang dogri. All the small rills form a common nala down below beyond Tangling jhulla & meets river Satluj which is a seasonal & dry nala. About 5-6 Ha area requires treatment.	(i) Construction of check walls/ P walls in crate at strategic locations after proper alignment. (ii) Sprinkling of BioSpecies like cannabis, Plectranthus, Lonicera, Artetmesia, Daphne, Verbascum & local grasses .	Ha.	2.35	84400	0.00
					Cum	184	1633	
	Tichro slip	31 30'40", 78 16'17"	It is situated on the left side of Barang khad & below Barang cultivation. It is steep. He erosion is due to Scouring action of Barang khad & snow sliding/glacier. The nala has been treated during 2007-08 by constructing 32nos of check walls (12nos in crate & 20 dry) but maximum structure has been damaged & requires treatment.	(i) Repair of damaged structures. (ii) Construction of P walls in crate at the bottom. (iii) Staggered vegetative Pallisade / Hbl. (iv) Sprinkling of BioSpecies like Rumex, Spiraea, Kunish, cannabis, Plectranthus, Lonicera, Verbascum & local grasses . (v) Planting of Kunish, Willow & poplar.	Ha.	1.75	84400	5.00
					Cum	214	1633	
	Sharmi nala/slip	313032, 781611	It originates from Sharmi kanda & meets with main Shongtong khad just below Barang road & Sai Engineering Foundation HEP. It is a perennial nala. The slope is steep & precipitous above. There is a small slip on the right side of the nala & above Barang road. The Geological erosion is rampant & hence the slip. One check wall has been constructed under NREGA through GP Barang.	(i) Construction of check walls in crate. (ii)Construction of P walls in crate along Sharmi nala at the bottom of the slip. (iii) Sprinkling of BioSpecies like Firel, Artemesia, Rumex, Spiraea, Kunish, cannabis, Plectranthus, Lonicera, Verbascum & local grasses.	Ha.	1.2	84400	4.00
					Cum	184	1633	
	Shayang khad	31 30'32", 78 16'11"	It is an tributary of Shongtong khad & on the right side of Shayang khad. Gully erosion has started due to flushing of water by Sai Engineering Foundation HEP which is causing the damages.	(i) Stoppage of flushing of water by Sai Engineering Foundation HEP. (ii) As per field staff the Sai Engineering Foundation has promise to treat the erosion created by them.	Ha.		84400	0.00
					Cum		1633	

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Drainage line treatment & Land slide control.	Tangling nala	31 31'36", 78 16'50"	The nala has two branches / tributaries & originates from Kinnaur kailash on right side & Raukmo peak on left side. Both the branches / tributaries meets above kangrang village. The slope is steep to precipitous above. It is a perennial nala. the length is about 12-15 Km. & meets with River Sathuj above Shongtong bridge. The nala has been treated during 2008-09 by constructing 169nos of P wall (77nos in crate & 92 dry), 2007-08 by constructing 51nos of P wall (15nos in crate & 36 dry). Most of the structures has been damaged. The balance area requires treatment.	(i) Repair of damaged structures. (ii) Construction of P/ wall in crate. (iv) Planting of BioSpecies like Bray, Lonicera, spiraea, Wild Rose, poplar, Willow, Cotoneaster, Plectranthus etc.	Ha.	3	84400	7.00
					Cum	276	1633	
	Lanka garang nala	31 30'20", 78 14'06"	It is situated on the right side of Member village It is steep to precipitous above & moderate to steep in the middle & steep down ward. The nala has two branches/tributaries above Member village. It is a perennial nala & its length is about 4-5 Km. It is a Snow sliding/Glacier prone area & causes damages to the Govt. as well as private properties down below. The nala meets with River Sathuj below NH 22. About half of the length requires treatment. The GPS coordinates has been given by RO Kilba.	(i) Contour Staggered Bench Terracing. (ii) Construction of Monds in staggered. (iii) Construction of check wall/dams in crate. (iv) Sprinkling of BioSeeds like Bray, Lonicera, spiraea, Wild Rose, Verbascum, Cotoneaster, Plectranthus & local grasses including planting.	Ha.	4	84400	15.00
					Cum	704	1633	
	Member nala	31 28'51", 78 14'31"	It is situated on the left side of Member village. It is steep to precipitous above & moderate to steep in the middle & steep down ward. The nala has three to four branches/tributaries above Member village. The nala has been treated during 2010-11 but the record was not produced. It is a Snow sliding/Glacier prone area & causes damages to the Govt. as well as private properties down below & also to NH 22. The nala meets with River Sathuj below NH 22 & requires treatment. The GPS coordinates has been given by RO Kilba.	(i) Contour Staggered Bench Terracing. (ii) Construction of Monds in staggered. (iii) Construction of check wall/dams in crate. (iv) Sprinkling of BioSeeds like Bray, Lonicera, spiraea, Wild Rose, Verbascum, Cotoneaster, Plectranthus & local grasses including planting.	Ha.	4	84400	15.50
					Cum	735	1633	

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(e) Drainage line treatment & Land slide control.	Barang nala	31 30'31", 78 16'11"	It is situated on the right side of Barang village. It is steep to precipitous above & moderate to gentle in the middle & down ward. The nala has four branches/tributaries & meets near Barang village to form one nala i.e. Shongtong nala which is also a beat boundary of Barang & Tanging. The nala has been treated during 2007-08 by constructing 34nos of check walls (22nos in crate & 12 dry). The length is about 3.5-4 Km. The nala meets with River Satluj below NH 22 near to FRH Shongtong & requires treatment.	(i) Construction of P walls, check wall/dams in crate. (ii) Planting of of BioSpecies like kunish, Willow, Poplar, Plectranthus, Bray, Lonicera, spiraea, Wild Rose.	Ha.	1.75	84400	4.00
					Cum	153	1633	
(f) Stream Bank stabilizations								
Total Soil & Water Conservation Endeavors								**88.50**
3 Payment for Environmental Services								
			i) It is proposed that the JFMC's of the Subcatchment will be involved in all type of forest protection activities in the areas. ii) The villagers located in the sub Catchment are mostly agriculturalist / horticulturalist and Buddhist and fell 1 no of Deo pole annually for hoisting flags in their houses. The people will be given / provided one GI pipe each to 671 nos. people situated in the sub Catchment, so that people don't fell the poles from the forest from this purpose. iii) The villagers located in the Sub Catchments are mostly agriculturalist / horticulturalist and are mostly dependent upon it. The slope of the land holding is mostly steep to very steep which leads to severe soil erosion due to wrong cropping pattern. Similarly the people in the Sub catchment are rearing sheep, goat & other domestic cattle's & are having extensive rights for grazing in the forest which also requires ammunition in order to prevent the contagions disease to & from wild life living in & around the Subcatchment. In addition to this other animal improvement interventions are also required so that the environment is no affected.	i) Lump sum provision has been kept for this purpose which will be given to the JFMC's, which actively involve themselves in forest protection in the micro water shed. ii) The people located in the sub Catchment shall be provided 1 no of GI pipe for the purpose. iii) Lump sum provision has been kept for Agricultural / Horticultural & Animal Husbandry support in the Sub Catchment.	No.	JFMC's and 1 No of GI pipe	Lumpsum	17.697
Total Payment for Environmental Services								**17.70**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
5 Infrastructure built up & Forest Protection								
(a) Building for stay of staff, FRH/I Hut.	Maintenance of Chowkidar quarter Shongtong	31 30'38", 78 16'04"	It is situated above FRH Shongtong & requires maintenance.	(i) Cement plastering. (ii) Sanitary fitting. (iii) Construction of side drain. (iii) Painting in CGI roofing. (iv) Painting & Distempering. (v) Maintenance of electricity.	No	1	Lumpsum	2.00
	Maintenance of BO quarter Shongtong & mail hut	31 30'54", 78 16'05"	It is situated by the side of NH 22 & is in a dilapidated condition & requires maintenance. The Malli hut is also situated in the same complex/attached with the building which also requires maintenance	(i) Repair of varandah. (ii) Ceiling below Eave boards. (iii) Repair of bathroom & kitchen.(iv) Maintenance of store room. (v) Painting & Distempering. (vi) Painting in CGI roofing. (vii) Development of compound.	No	1	Lumpsum	3.50
	Maintenance of FG hut including store Shongtong	31 30'54", 78 16'05"	It is situated just below BO quarter & is in good condition. The store of the FG hut is in a dilapidated condition & requires maintenance.	(i) Replacement of wooden roofing of the store room with CGI sheets. (ii) Plastering. (iii) Painting & Distempering.	No	1	Lumpsum	1.00
	Maintenance of FRH Shongtong	31 30'54", 78 16'05"	It is located near to army campus & below NH 22. The FRH has recently been maintained under Eco Tourism but requires external maintenance.	(i) Maintenance of side drain. (ii) Construction of Septic tank. (iii) Development of compound including Air house. The wooden roofing is leaking & requires refixing. (iv) Painting of Air house.	No	1	Lumpsum	4.00
	Maintenance of FG hut Ralli	31 29'25", 78 12'28"	The FG hut is situated above Ralli village. It was constructed during 2005. The hut requires maintenance.	(i) Plinth protection. (ii) Ceiling below Eave boards. (iii) Painting & whitewashing. (iv) The Cracks in the room to be filed up. (v) Development of compound. ()the old fencing around FG hut be removed & used elsewhere.	No	1	Lumpsum	1.50

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(a) Building for stay of staff, FRH/I Hut.	Maintenance of FG hut Purbani	31 35'18", 78 18'25"	It is situated just above FRH Purbani & below nursery. The hut has been maintained by doing Painting & distempering recently but other repair is required to be done.	(i) Wooden rotten flooring to be replaced. (ii) Fixing of Eave boards including Ceiling. (iii) Construction of side drains & Development of compound.	No	1	Lumpsum	1.50
	Maintenance of Chowkidar quarter Purbani	31 35'18", 78 18'25"	It is situated just above FRH Purbani & special repair is required to be done.	(i) Cement plastering. (ii) Construction of bathroom.(iii)Sanitar fitting. (iv) Fixing of Glasses in the windows & doors.	No	1	Lumpsum	2.00
	Maintenance of FRH Purbani	313519, 781825	It is located above purbani village. The FRH has recently been maintained under Eco Tourism but requires development of compound.	(i) Fixing of iron railing(75m).	No	1	Lumpsum	1.50
	Maintenance of FG hut Tangling	31 31'33", 78 17'02"	It is located near to Tangling village & below Barang Tangling road. The FG hut has recently been maintained internally during 2010-11 but requires maintenance externally including development of compound.	(i) Development of compound including maintenance of approach path. (ii) Plinth protection & Construction of side drains. (iii) Ceiling below Eave boards.(iii)maintenance of electricity.	No	1	Lumpsum	0.80
(b) Forest Roads/ Paths	Maintenance of Approach road to FRH Shongtong	31 30'59", 78 16'09"	The approach road leading to FRH Shongtong from NH 22 requires maintenance.	(i) Metalling / Coal tarring of Approach road to FRH about 65m. (ii) Construction of side drain.	Km	60Mt	Lumpsum	2.50
	Construction of Approach road to FRH Purbani & Maintenance of path to FG hut.	31 35'19", 78 18'25"	The approach road leading to FRH Purbani from link road is required to be constructed. Similarly the path leading to nursery FG hut also needs maintenance.	(i) Construction of Approach road to FRH about 75m. (ii) Construction of side drain. (iii) Maintenance of path to FG hut about 200m.	Km	75Mt	Lumpsum	4.00

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacs.)
(c) Augmentation of Water Supply.	Maintenance of Chowkidar quarter Shongtong	31 30'59", 78 16'04"	It is situated above FRH Shongtong & requires maintenance.	(i) Water supply fitting. (Both internal & external fitting)	No	1	Lumpsum	0.50
(d) Vehicle & Operational Support to HPFD								
(e) Office Equipment								
(f) Silt Monitoring & Purchase of Meteorological Equipment								
(g) Construction & Repair of Boundary Pillars.	C166, C 167, C 168, C 169 a, C 169 b		The boundary pillars in C166=3nos large, C167=7Nos large, C168=34nos large, C169 a=9nos large, C169 b=14nos large require maintenance and updating.	Maintenance of 67 boundary pillars in C 166, 167, 168, 169 a & 169 b.	No.	67	Lumpsum	0.11
(h) Fire Protection Measures								
(i) Distribution of Non-conventional energy & Fuel Saving devices								
Total Infrastructure built up								**24.91**
Grand Total								**174.62**

Soil & Water Conservation Endeavors

Poonalang nala

Purbani Slip (Rawa C 184)

Landhar nala (Kurang nala)

Landhar nala II

Tallampi nala I

Tichro slip

Sharmi nala/slip

Shayang khad

Tangling nala

Lanka garang nala

Membar nala

Naik Environment Research Institute Ltd

Barang nala

Infrastructure built up & Forest Protection

Chowkidar quarter Shongtong

BO quarter Shongtong

FG hut including store

FRH Shongtong

FG hut Ralli

FG hut Purbani

Chowkidar quarter Purbani

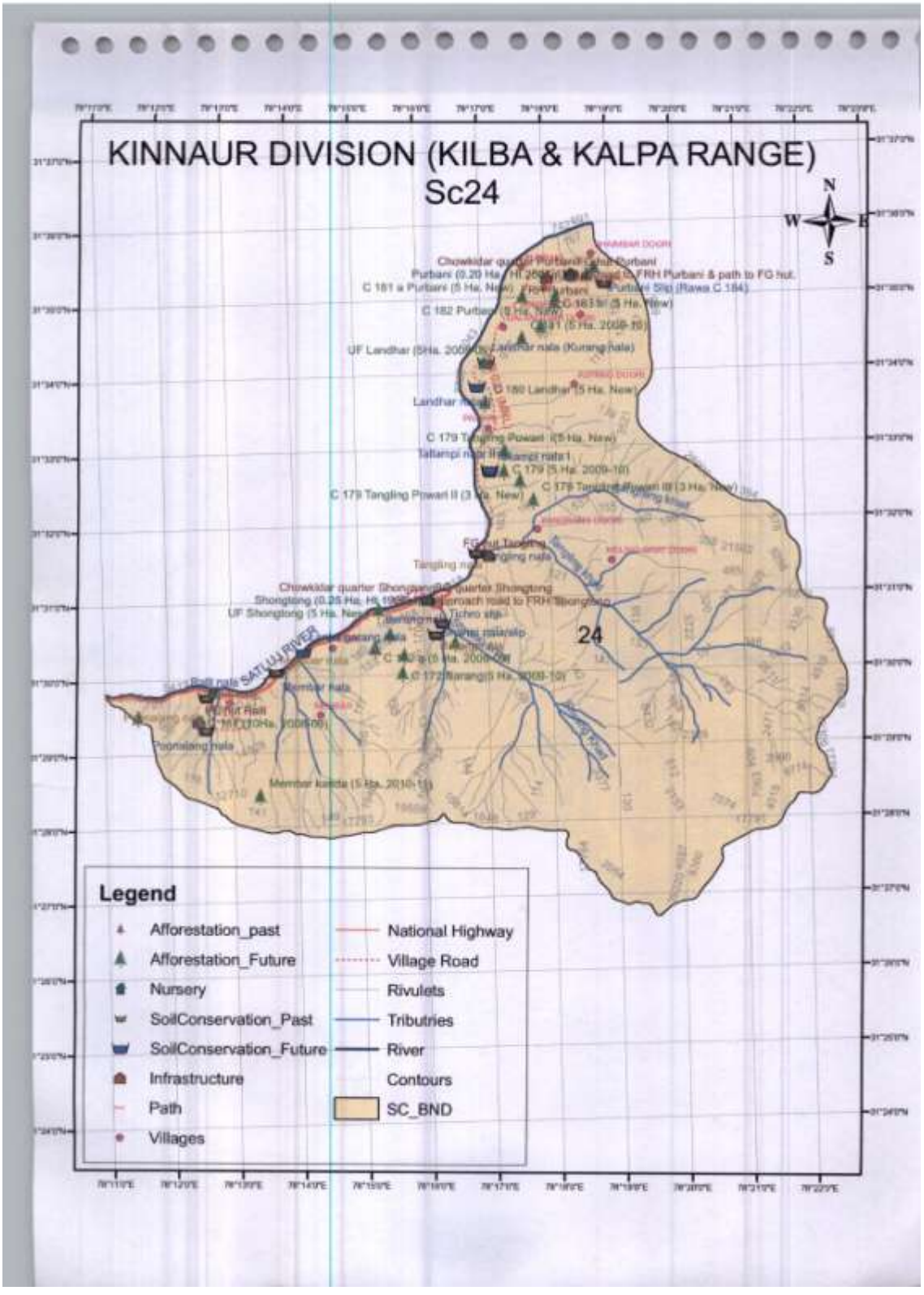
FRH Purbani

FG hut Tangling

Road to FRH Shongtong

FRH Purbani & Maintenance of path to FG hut

Chowkidar quarter Shongtong


KINNAUR DIVISION (KILBA & KALPA RANGE)
Sc24
N
W
E
S
24
SATLUJ RIVER
Legend
Afforestation_past
Afforestation_Future
Nursery
SoilConservation_Past
SoilConservation_Future
Infrastructure
Path
Villages
National Highway
Village Road
Rivulets
Tributries
River
Contours
SC_BND

ANNEXURE

ANNEXURE-I ANNEXURE – A

GUIDELINES FROM H.P. FOREST DEPARTMENT FOR WRITING CAT PLANS .

1. *AFFORESTATION MEASURES*:-
   A. Normal afforestation (3 strand barbed wire fencing with creosoted wooden fence posts & two layers of live-hedge plants to reinforce fencing, 1100 plants per ha of which at least 20% would be trees of medicinal value and 10% of fruit species, maintenance for 3 years)
   B. Enrichment planting (in degraded forest areas to improve stocking, 600 plants per notional ha. and protection of thorny bushes/twigs for individual plants, no maintenance)
   C. Energy plantations (around habitations in small patches, 5 strand barbed wire fencing with creosoted wooden fence posts & two layers of live-hedge to reinforce fencing, 5000 plants per ha of fuel and fodder value, no maintenance)
   D. Measures to handle invasive species—(e.g. lantana eradication and planting with tall plants (1100 Nos. Per ha./ bamboo (500 Nos./ ha); maintenance once in 3rd year)

2. *SOIL AND WATER CONSERVATION ENDEAVORS*:-
   A. Moisture retentivity operations—contour trenching, bio-engineering species planting
   B. Live hedge fencing
   C. Vegetative structures—fascines, brush-wood check dams, bamboo crib etc. wherever applicable
   D. Civil structures—masonary crate-wire check dams, masonry dams (dry stone & cement concrete), check/ protection walls
   E. Drainage line treatment & Landslide control, with site specific estimates, using interventions mentioned at A-D above.
   F. Stream bank stabilization—protection walls, spurs etc. with live hedge support

   ❖ *50% of all funds under soil & water conservation measures prescribed would be spent on bio-engineering and 50% of the funds earmarked for bio-engineering techniques, would in turn be spent on raising quality plants of the suitable bio-engineering species in nurseries.*

3. *NURSERIES*:-

   Normal plants @ Rs. 3.50 per plant, bio-engineering plants @ Rs. 2/50- per plant, medicinal plants @ Rs... /- per plant. Provide for relevant increases for Chilgoza, Fir/Spruce plants.

4. *PASTURE RECLAMATION*:-
   Rotational closures with fencing (live hedge fencing), sodding with local grasses, measures to reclaim the moisture regime etc.

5. *PAYMENTS FOR ENVIRONMENTAL SERVICES*:-

   Provision be made for conducting catchment specific study to identify routes and activities to be undertaken under PES in the early years and then keep provision for implementation of these identified activities (after approval by the HPFD) in the later years of the Annual phasing of activities under the CAT Plan.

6. *RESEARCH(including experimental plots; seed banks), TRAINING AND CAPACITY BUILD-UP, PUBLICITY AND AWARENESS, DOCUMENTATION*:-
   a) Understanding perceptions of benefits accruing from the catchment area (water quality, biodiversity, or otherwise) from different stakeholders (service providers, hydroelectric facilities, and downstream consumers) and how this differs among socioeconomic groups; b) Highlighting economic efficiency through a mix of qualitative and quantitative methods to assess demand; costs of status quo catchment area management; initial opportunity cost of land-use change and potential for asset-building alternatives on foregone land, and intervening costs

(associated with institutional, transaction monitoring, technical support necessary etc.); c) Empirically analyse the impacts of applying different fairness criteria and their impacts on transaction efficiency, why they may be justified considering the context, and how they may change over time.

7. *INFRASTRUCTURE BUILD-UP & FOREST PROTECTION:-*

a) Buildings for stay of staff, FRHs/Inspection huts,
b) Forest roads/inspection paths,
c) Augmentation of water supply,
d) Vehicle and operational support to HPFD (replacement vehicles and their maintenance/repair)
e) Office equipment--- purchase and repair (computers with accessories(printers, photocopiers etc---hardware and software)) and furniture, digitalised cameras, GPS.
f) Silt monitoring and purchase of basic meteorological equipment, procurement of related data
g) Construction and repair of boundary pillars
h) Fire protection measures
i) Distribution of Non-conventional Energy and Fuel Saving Devices in catchment area on a cost-sharing basis, such as, LPG, Tandoors, Pressure cookers and Solar devices.

8. *WILDLIFE MEASURES:-*

In CAT Plans involving Protected Areas, the financial outlay of the CAT Plan for Wildlife activities, be apportioned to the percentage extent of Protected Area in the catchment and the activity plan be got vetted from the Chief Wildlife Warden/ Pr.CCF (WL), H.P, before incorporation in the CAT Plan. However, in catchments having no Protected Area, recommendations for wildlife management and reduction of human-animal conflicts in the area, may be included in due consultation with the Chief Wildlife Warden/ Pr.CCF (WL), H.P would be sought.

9. *MONITORING AND EVALUATION:-*

Provision for 3rd party monitoring of the CAT Plan works, silt monitoring, Impact studies. All works under the CAT Plan be Geo-referenced for ease/ authenticity of location & future monitoring. M & E studies including impact evaluation studies should be scheduled for the later years of the CAT Plan implementation calendar.

❖ *The basis for calculating financial outlays for all of the above activities, the prevailing HPFD schedule of rates for the works and the daily wage rate of the year of writing of the CAT Plan.*

The percentage allocation of total CAT Plan outlay is broadly stipulated as under:

	Item	%
1.	**Afforestation, Maintenance, Pastures & Nurseries***	**20%**
2.	**Soil and water conservation measures***	**25%**
3.	**PES including study and its implementation**	**10%**
4.	**Research, Capacity build-up, publicity**	**5%**
5.	**Institutional charges/Departmental charges**	**7%**
6.	**Monitoring & Evaluation**	**3%**
7.	**Wildlife related interventions**	**5%**
8.	**Infrastructural build-up**	**15%**
9.	**Contingencies**	**10%**
	Total	**100%**

**In CAT plans involving Protected Areas, these funds (S.no. 1 & 2) be re-allocated for Wild life activities, keeping in view specific requirements of the area.*

No. Ft. CAMPA/2010/CAT Plans/General
H.P. Forest Department.

Dated Shimla-1 the 12 AUG 2011

From: Addl. Pr.CCF(CAT&ES),H.P. Talland Shimla-1.

To:1. Pr.CCF(Wild Life) H.P. Talland, Shimla-1
2.All CFs(T) in H.P.

Subject: Recommendations/suggestions to improve the execution of CAMPA works.

Memo

Kindly refer to office order No. FFE-B-F(2)-72/2004-Pt(CAMPA) dated 5.5.2011 issued by Addl. Chief Secretary(Forests) to the Govt. of H.P. vide which nine teams headed by CCFs were constituted for spot inspections and verification of field works carried out during 2010-11 under CAMPA. The recommendations/suggestions that have emerged from the monitoring reports of the CCFs are enclosed herewith for your guidance and implementation of the ongoing CAMPA works.

Addl. Pr.CCF(CAT&ES),H.P. Talland, Shimla-1.

Endst. No./ Dated/
Copy to ARO DFO SB for information
& w/c.

CF Rampur.

Annexure B_1

RECOMMENDATIONS/ SUGGESTIONS TO IMPROVE CAMPA WORKS EXECUTION

(BASED ON MONITORING REPORT OF CCF'S SUBMITTED AFTER INSPECTION OF WORKS IN DIFFERENT CIRCLES, DURING MAY, 2011)

Nine teams, comprising two members each, led by CCFs, were constituted vide ACS(Forests) to the Govt. of HP, office order No FFE-B-F(2)-72/2004-Pt.(CAMPA) dated 9.5.2011 for spot inspection and verification of field works carried out during 2010-11 under CAMPA. Following suggestions/ recommendations have emerged from the reports, submitted by the officers after the field inspections of different circles.

A) SUGGESTIONS received FOR PLANTATIONS:-

1) Natural Regeneration with live hedge closure instead of increased concentration on artificial regeneration is a better strategy for future afforestation programs, especially in areas having harsh conditions, degraded soil and refractory terrain.
2) Tree planting in high altitude grassy blanks should be disallowed as it is not ecologically advisable.
3) The subject of protection against grazing needs to be debated at length within the Department. Some out of the box new ideas like rotational grazing, user groups, propagating native grasses are required to achieve success in the pasture improvement program. Payments for environmental services experimentation could also be tried.
4) The present norm to provide 3 year maintenance for plantations needs to be examined, especially for high altitude areas where slow growth in trees is seen. The 5 year maintenance as of old could continue here.
5) The CAT plans should be site specific and must be prepared after exhaustive land survey. Target mode of afforestation in terms of hectare and civil structures in numbers must stop. Bio-engineering methodology, moisture retentivity work and protection of planted areas especially from grazing are a priority.
6) A detailed Plantation Policy should be prepared in the HP Forest Department to prevent the degradation of old plantation in the absence of adequate maintenance period & funds. The present plantation policy needs to be dramatically changed. Moisture retentivity through bio-engineering (natives) species planting, contour trenching and other soil and water conservation measures be tried in the first two years—protection should be the focus in the first 2 years through live hedge fencing. Plantations should only be done only in the third year with tall plants (around 700 numbers per hectare, with 2-3 year old nursery plants). DFOs/CFs need to be made personally responsible for all the species to be raised in their permanent nurseries—No stock of Fir/Spruce available for planting is not a healthy sign!
7) The aim under plantation strategy should be to establish/nourish afforestation areas we take up (even if it takes as much as 50 years to maintain and establish) and not be guided by mere annual plantation targets. No plantation should be opened up until it has established itself completely particularly with regard to biotic pressure. There should be a mechanism in the HPFD to write off failed areas—many areas fail for no fault of the field staff.
8) The budget for plantations under compensatory afforestation may be diverted to other circles/divisions where the areas (land bank) are available for plantations, in consultation with MoEF, especially since there is a dearth of available areas in some Divisions/Circles, i.e.

Annexure B-2

may be allowed by the Conservator stating specific reasons in writing; otherwise, prioritizing permanent nurseries is in order.

D) GENERAL SUGGESTIONS:-

1) Any meaningful benefit from a CAT Plan treatment gets diluted with other projects coming up uphill very close. CAT plan works are rendered useless, because of muck disposal involved in road/project construction activity.

2) It would be appropriate to use CAT Plan funds for those activities of the Forest Department (such as boundary demarcation and consolidation, survey of bio-diversity, wild life conservation, protection infrastructure etc) for which normal state and central funds are generally inadequate/not available. The recasting of CAT plans should address incorporating activities (that were not addressed earlier) that were not being done earlier.

3) An independent officer of the rank of ACF for CAT Plan works is mandatory in each division for proper execution and monitoring of the soil and water conservation works. The officer posted may also be provided an independent vehicle with technical field staff—surveyors/draftsman etc. for proper technical estimation/scrutiny/vigil over the works. The territorial staff is already overly burdened. A CCF be made accountable to a circle and made responsible for monitoring of CAMPA works, WP write-up and other important assignments. There are many ACFs now available (12 direct officers)—these are an invaluable resource for CAT plan write-up, WP write-up etc. At present this pool is used only to conduct enquiries and other non-important work which the DFO is reluctant to do.

4) The quality of works shall improve considerably if younger staff (with less than 40 years of age) is posted in tough/rough terrain—Kinnaur Forest Division & other remote areas. Some Ranges in Kinnaur Forest Division e.g. Malling, Pooh & Bhawanagar Ranges should be reorganized/merged with other Ranges keeping in view the quantum of work & forestry activities and the surplus staff from this merger should be posted in CAT Plan areas of the Kinnaur division for their proper utilization. We could only try and impress as a transfer policy[.]

5) Many of the misgivings/misinformation about the CAT plan works shall be dispelled through regular monitoring of the works by the officers in the direction office. By placing a CCF incharge of a circle for monitoring and providing right impetus for WP, lot of progress in field work would emerge. The Direction Office should delegate authority of CFs to concerned CCF.

6) The sanctions for procurement of P-bags, rate contract items like interlink chain, barbed wire etc need to be conveyed in advance so that the targets are achieve on time. With delegation available to the DFOs as of now, delays would reduce.

- 3 -

Annexure - C

36

DGD

Office of HP State Compensatory Afforestation Fund Management and Planning Authority
(H.P.State CAMPA), Forest Headquarters, Talland, Shimla- 171 001.

No. Ft. CAMPA/79/2011/Norms/ Dated Shimla-1, the

From: Chairperson, Executive Committee,
HP State CAMPA –cum- Pr. CCF HP.

To: Pr. CCF W.L. H.P.
All CF, H.P (T & WL)

Subject: Maintenance of Plantation under CAT Plans and Compensatory Afforestation.

Memo:

A meeting was held under the Chairpersonship of ACS (Forests) to GoHP on 4th January, 2012 and it was decided that since many of the areas which are taken up for plantations under CAT Plans and Compensatory Afforestation are refractory/ difficult; maintenance of plantation in such areas for three years is not sufficient and therefore, maintenance of plantation in such areas should be done for 5 years. Quality plants will continue to be raised in nurseries to ensure better survival.

It is, therefore, requested to take further action accordingly.

Chairperson, Executive Committee,
HP State CAMPA –cum-
Pr. CCF HP.

Endst-No 75541-58 dt 23-1-2012
Copy is forwarded to all DFOs for information & further necessary action.
Copy to Accountant one/ office Reader for information & further w/c.

Jt. CF Ranger
23/1/12

Per Hac. cost Model for Afforestation (Normal)					
S. No				Non Tribal	Tribal
1	Survey and demarcation of plantation and area I/C marking of seditions, path preparation of map.	1 hac	75.05	75.05	93.81
2	Cutting and preparation of wooden posts 1.8 mtr and 8 to 10 CM dia I/C debarking and fashioning the top 15 cm in conical shape	60 Nos	949.9	569.94	712.43
3	Carriage of fence posts upto 2 mtr long and 8 to 10 cm dia over distance 0.5 KM	60 Nos	499.95 per % per KM	149.99	187.48
4	Charing and coaltaring of the ends of the posts 45cm bottom and 15 cm conical taring	60 Nos.	204.90 per % per no.	122.94	153.68
5	Preparation and digging of holes 20-30 cm dia & 45 cm deep	60 Nos	665.1 per %	399.06	498.83
6	Fixing of wooden posts I/C strutting	60 Nos	510.45 per %	306.27	382.84
7	Carriage of barbed wire bundles up hill over an overage distance of 1 km	0.90 qtls.	125.10 per qtl per Km.	112.59	140.74
8	Streching and fixing of barbed wire with U-stapple in each strand	540 Rmt.	3.45 per Rmt.	1863.00	2328.75
9	Interlacing of live-hedge plants to reinforce fencing of barbed wire obtained from planting side	160 Rmt.	9.75 per Rmt	1560.00	1950.00
10	Preparation of inspection path 60 cm wide	150 Rmt.	7.95 per Rmt	1192.50	1490.63
12	Layout of pits/patches	1 ha.	124.90 per hac.	124.90	156.13
13	Digging of pits (30x30x30) cm	600 No.	350 per %	2100.00	2625.00
14	Digging of pits (45x45x45) cm (20% medicinal & 10% fruit species)	500 No.	699.9 per %	3499.50	4374.38
15	Filling of pits (30x30x30) cm	600 No.	139.95 per %	839.70	1049.63
16	Filling of pits (45x45x45) cm	500 No.	200.50 per %	1002.50	1253.13
17	Carriage of Plants in P/bags from Nursery site over an average distance of 1 Km.	1100 No.	133.25 per % per Km.	1465.75	1832.19
18	Planting of entire Plants I/C ramming raised in P/bages	1100 No.	160.05 per %	1760.55	2200.69
			Sub-Total:-	**17144.24**	**21430.29**
	Add 9.09% increase			**1558.41**	**1948.01**
19	Cost of B/Wire/U-nail			4600.00	4600.00
20	Nursery Cost of P/bags raised Plants	1100 No.	3.80 per plant	4180.00	4785.00
		Tribal /Plant	4.35		
			G.Total	**27482.65**	**32763.31**
			Or Say	**27400.00**	**32700.00**

Maintenance

	I year Maintenance (30% Mortality)			4140	5040
	II year Maintenance (20% Mortality)			2700	3120
	III year Maintenance (15% Mortality)			1320	1740
	I Vyear Maintenance (10% Mortality)			650	870
	V year Maintenance (10% Mortality)			650	870
			Sub Total maintenance	**9460**	**11640**
			G Total	**36860**	**44340**

Per Hac. Cost Model for Enrichment Planting Chilgoza

S. No	Particulars	Qty	Unit	Rate	unit	Tribal
1	Survey and demarcation of plantation and area I/C marking of seditions, path preparation of map.	1	Hac	75.05	Hac	93.81
2	Cutting and preparation of wooden posts 1.8 mtr and 8 to 10 CM dia I/C debarking and fashioning the top 15 cm in conical shape	60	Nos	949.90	Per %	712.43
3	Carriage of fence posts upto 2 mtr long and 8 to 10 cm dia over distance 0.5 KM	60	Nos	499.95	per % per KM	187.48
4	Charing and coaltaring of the ends of the posts 45cm bottom and 15 cm conical taring	60	Nos	204.90	per % per no.	153.68
5	Preparation and digging of holes 20-30 cm dia & 45 cm deep	60	Nos	665.10	per %	498.83
6	Fixing of wooden posts I/C strutting	60	Nos	510.45	per %	382.84
7	Carriage of barbed wire bundles up hill over an overage distance of 1 km	0.9	qtls	125.10	per qtl per Km.	140.74
8	Streching and fixing of barbed wire with U-stapple in each strand	540	Rmt	3.45	per Rmt	2328.75
9	Interlacing ofthorny bushes with barbed wire obtained from planting side	160	Rmt	3.00	per Rmt	600.00
10	Preparation of inspection path 60 cm wide	150	Rmt	7.5	Rmt	1406.25
11	Layout of pits/patches	1	Hac	124.9	Hac	156.13
12	Digging of pits (60x60x60) cm	800	No	1279.9	Per %	12799.00
13	Filling of pits (60x60x60)cm	800	No	259.85	Per %	2598.50
14	Carriage of Plants in P/bags from Nursery site over an average distance of 1 Km.	800	No	133.25	Per %/Km	1332.50
15	Planting of entire Plants I/C ramming raised in P/bages	800	No	160.05	Per %	1600.50
16					**Sub Total**	**24991.42**
17	Add Increase 9.09%					2271.72
18	Nursery Cost of P/bags raised Plants	800	No NT	5.55	Per plant	5560.00
19			Tribal	6.95		
20	cost of B wire and other material					4300.00
					G.Total	**37123.14**
					Or Say	**37120.00**
	Maintenance:-					
	I year Maintenance (30% Mortality)					7660.00
	II year Maintenance (20% Mortality)					5105.00
	III year Maintenance (15% Mortality)					3870.00
	I Vyear Maintenance (10% Mortality)					2635.00
	V year Maintenance (10% Mortality)					2635.00
					Sub Total maintenance	**21905**
					G Total	**59025.00**

Per Hac. Cost Model for Enrichment Planting Deodar and Fir							
S. No	Particulars	Qty	Unit	Rate	unit	Non Tribal	Tribal
1	Survey and demarcation of plantation and area I/C marking of seditions, path preparation of map.	1	Hac	75.05	Hac	75.05	93.81
2	Cutting and preparation of wooden posts 1.8 mtr and 8 to 10 CM dia I/C debarking and fashioning the top 15 cm in conical shape	60	Nos	949.90	Per %	569.94	712.43
3	Carriage of fence posts upto 2 mtr long and 8 to 10 cm dia over distance 0.5 KM	60	Nos	499.95	per % per KM	149.99	187.48
4	Charing and coaltaring of the ends of the posts 45cm bottom and 15 cm conical taring	60	Nos	204.90	per % per no.	122.94	153.68
5	Preparation and digging of holes 20-30 cm dia & 45 cm deep	60	Nos	665.10	per %	399.06	498.83
6	Fixing of wooden posts I/C strutting	60	Nos	510.45	per %	306.27	382.84
7	Carriage of barbed wire bundles up hill over an overage distance of 1 km	0.9	qtls	125.10	per qtl per Km.	112.59	140.74
8	Streching and fixing of barbed wire with U-stapple in each strand	540	Rmt	3.45	per Rmt	1863.00	2328.75
9	Interlacing ofthorny bushes with barbed wire obtained from planting side	160	Rmt	3.00	per Rmt	480.00	600.00
10	Preparation of inspection path 60 cm wide	150	Rmt	7.5	Rmt	1125.00	1406.25
11	Layout of pits/patches	1	Hac	124.9	Hac	124.90	156.13
12	Digging of pits (45x45x45) cm	800	No	699.9	Per %	5599.20	6999.00
13	Filling of pits (45x45x45) cm	800	No	200.5	Per %	1604.00	2005.00
14	Carriage of Plants in P/bags from Nursery site over an average distance of 1 Km.	800	No	133.25	Per %/Km	1066.00	1332.50
15	Planting of entire Plants I/C ramming raised in P/bages	800	No	160.05	Per %	1280.40	1600.50
16				**Sub Total**		**14878.34**	**18597.92**
17	Add Increase 9.09%					1352.44	1690.55
18	Nursery Cost of P/bags raised Plants	800	No NT	5.55	Per plant	4440.00	5560.00
19			Tribal	6.95			
20	cost of B wire and other material					4300.00	4300.00
				G.Total		**24970.78**	**30148.47**
				Or Say		**24900.00**	**30100.00**
	Maintenance:-						
	I year Maintenance (30% Mortality)					4760.00	5950.00
	II year Maintenance (20% Mortality)					3170.00	3960.00
	III year Maintenance (15% Mortality)					2410.00	3010.00
	I Vyear Maintenance (10% Mortality)					1550.00	1935.00
	V year Maintenance (10% Mortality)					1550.00	1935.00
				Sub Total maintenance		**13440**	**16790**
				G Total		**38340.00**	**46890.00**

Per Hac. Cost Model for Enrichment Planting Normal

S. No	Particulars	Qty	Unit	Rate	unit	Non Tribal	Tribal
1	Survey and demarcation of plantation and area I/C marking of seditions, path preparation of map.	1	Hac	75.05	Hac	75.05	93.81
2	Cutting and preparation of wooden posts 1.8 mtr and 8 to 10 CM dia I/C debarking and fashioning the top 15 cm in conical shape	60	Nos	949.90	Per %	569.94	712.43
3	Carriage of fence posts upto 2 mtr long and 8 to 10 cm dia over distance 0.5 KM	60	Nos	499.95	per % per KM	149.99	187.48
4	Charing and coaltaring of the ends of the posts 45cm bottom and 15 cm conical taring	60	Nos	204.90	per % per no.	122.94	153.68
5	Preparation and digging of holes 20-30 cm dia & 45 cm deep	60	Nos	665.10	per %	399.06	498.83
6	Fixing of wooden posts I/C strutting	60	Nos	510.45	per %	306.27	382.84
7	Carriage of barbed wire bundles up hill over an overage distance of 1 km	0.9	qtls	125.10	per qtl per Km.	112.59	140.74
8	Streching and fixing of barbed wire with U-stapple in each strand	540	Rmt	3.45	per Rmt	1863.00	2328.75
9	Interlacing ofthorny bushes with barbed wire obtained from planting side	160	Rmt	3.00	per Rmt	480.00	600.00
10	Preparation of inspection path 60 cm wide	150	Rmt	7.5	Rmt	1125.00	1406.25
11	Layout of pits/patches	1	Hac	124.9	Hac	124.90	156.13
12	Digging of pits (30x30x30) cm	400	No	350	Per %	1400.00	1750.00
13	Digging of pits (45x45x45) cm	400	No	699.9	Per %	2799.60	3499.50
14	Filling of pits (30x30x30) cm	400	No	139.95	Per %	559.80	699.75
15	Filling of pits (45x45x45) cm	400	No	200.5	Per %	802.00	1002.50
16	Carriage of Plants in P/bags from Nursery site over an average distance of 1 Km.	800	No	133.25	Per %/Km	1066.00	1332.50
17	Planting of entire Plants I/C ramming raised in P/bages	800	No	160.05	Per %	1280.40	1600.50
				Sub Total		**13236.54**	**16545.67**
18	Add Increase 9.09%					1203.20	1504.00
19	Nursery Cost of P/bags raised Plants	800	No NT	3.8	Per plant	3040.00	3480.00
			Tribal	4.35			
20	cost of B wire and other material					4300.00	4300.00
				G.Total		**21779.74**	**25829.67**
				Or Say		**21700.00**	**25700.00**
	Maintenance:-						
	I year Maintenance (30% Mortality)					3228	3996
	II year Maintenance (20% Mortality)					2092	2424
	III year Maintenance (15% Mortality)					864	1218
	I Vyear Maintenance (10% Mortality)					450	600
	V year Maintenance (10% Mortality)					450	600
				G Total		**28784**	**34538**

Annexure 5

Per M3 Notional Cost norms for Civil Works				
Sr.No.	Partuculars of works	Volume M3	Non-Tribal Amount	Tribal Amount
1	Check Wall in Creat Wire 2 Mt	3.52	3600	4500
2	Check Wall in Creat Wire 3 Mt	5.28	5800	7500
3	Check Wall in Creat Wire 5 Mt	8.8	9200	11500
4	Check Wall in Creat Wire 7 Mt	12.32	13350	16700
5	Protection Wall in Creat Wire10 Mt	31.24	32900	41125
	Sub Total	**61.16**	**64850**	**81325**
	Cost per M3		**1060**	**1325**
5	Check Dam 2 Mtrs Creat Wire Mts Length	9.3	7850	9800
6	Check Dam 2 .5 Mts Creat Wire Length	11.17	18900	23600
	Sub Total	**20.47**	**26750**	**33400**
	Cost per M3		**1307**	**1633**
8	**Diversion Drain Per 100 Mtrs**		**27100**	**33800**

Per ha Notional Cost norms for Bio-Engineering Species			
Sr.No.	Partuculars of works	Non-Tribal Amount	Tribal Amount
1	Broadcasting of Bio Seed I/C Collection cost Etc	3100	3900
2	Planting of Bio Species	63100	79000
3	Brush Layering	78400	98000
4	Polarding/ Wattling	75000	93750
5	Palisade	107100	133800
6	Fascines	78250	97800
	Grand Total	**404950**	**506250**
	Average Cost	**67492**	**84375**
	Or say	**67500**	**84400**

Per Hac. Cost Model for Enrichment Planting Deodar and Fir (Pooh Subdivision)

S. No	Particulars	Qty	Unit	Rate	unit	Tribal
1	Survey and demarcation of plantation and area I/C marking of seditions, path preparation of map.	1	Hac	75.05	Hac	93.81
2	Cutting and preparation of wooden posts 1.8 mtr and 8 to 10 CM dia I/C debarking and fashioning the top 15 cm in conical shape	60	Nos	949.90	Per %	712.43
3	Carriage of fence posts upto 2 mtr long and 8 to 10 cm dia over distance 0.5 KM	60	Nos	499.95	per % per KM	187.48
4	Charing and coaltaring of the ends of the posts 45cm bottom and 15 cm conical taring	60	Nos	204.90	per % per no.	153.68
5	Preparation and digging of holes 20-30 cm dia & 45 cm deep	60	Nos	665.10	per %	498.83
6	Fixing of wooden posts I/C strutting	60	Nos	510.45	per %	382.84
7	Carriage of barbed wire bundles up hill over an overage distance of 1 km	0.9	qtls	125.10	per qtl per Km.	140.74
8	Streching and fixing of barbed wire with U-stapple in each strand	540	Rmt	3.45	per Rmt	2328.75
9	Interlacing ofthorny bushes with barbed wire obtained from planting side	160	Rmt	3.00	per Rmt	600.00
10	Preparation of inspection path 60 cm wide	150	Rmt	7.50	per Rmt	1406.25
11	Layout of pits/patches	1	Hac	124.9	Hac	156.13
12	Digging of pits (45x45x45) cm	800	No	699.9	Per %	6999.00
13	Filling of pits (45x45x45) cm	800	No	200.5	Per %	2005.00
14	Carriage of Plants in P/bags from Nursery site over an average distance of 1 Km	800	No	133.25	Per %/Km	1332.50
15	Planting of entire Plants I/C ramming raised in P/bages	800	No	160.05	Per %	1600.50
16	Mulching of Plants	800	No	43.85	Per %	438.50
				Sub Total		**19036.42**
17	Add Increase 9.09%					1602.58
18	Watering of Plants for 5 months	800	No		Lumpsum	2250.00
19	Nursery Cost of P/bags raised Plants	800	Tribal	6.95	Per plant	5560.00
20	Cost of Alkathene Pipe (on average 150 Rmt)				Lumpsum	3900.00
21	cost of B wire and other material					4300.00
				G.Total		**36649.00**
				Or Say		**36640.00**
	Maintenance:-					
	I year Maintenance (30% Mortality)					7880.00
	II year Maintenance (20% Mortality)					6000.00
	III year Maintenance (15% Mortality)					5100.00
	I Vyear Maintenance (10% Mortality)					4200.00
	V year Maintenance (10% Mortality)					4200.00
				Sub Total maintenance		**27380**
					G Total	**64020.00**

Per Hac. Cost Model for Enrichment Planting Chilgoza (Pooh Subdivision)						
S. No	Particulars	Qty	Unit	Rate	unit	Tribal
1	Survey and demarcation of plantation and area I/C marking of seditions, path preparation of map.	1	Hac	75.05	Hac	93.81
2	Cutting and preparation of wooden posts 1.8 mtr and 8 to 10 CM dia I/C debarking and fashioning the top 15 cm in conical shape	60	Nos	949.90	Per %	712.43
3	Carriage of fence posts upto 2 mtr long and 8 to 10 cm dia over distance 0.5 KM	60	Nos	499.95	per % per KM	187.48
4	Charing and coaltaring of the ends of the posts 45cm bottom and 15 cm conical taring	60	Nos	204.90	per % per no.	153.68
5	Preparation and digging of holes 20-30 cm dia & 45 cm deep	60	Nos	665.10	per %	498.83
6	Fixing of wooden posts I/C strutting	60	Nos	510.45	per %	382.84
7	Carriage of barbed wire bundles up hill over an overage distance of 1 km	0.9	qtls	125.10	per qtl per Km.	140.74
8	Streching and fixing of barbed wire with U-stapple in each strand	540	Rmt	3.45	per Rmt	2328.75
9	Interlacing ofthorny bushes with barbed wire obtained from planting side	160	Rmt	3.00	per Rmt	600.00
10	Preparation of inspection path 60 cm wide	150	Rmt	7.50	per Rmt	1406.25
11	Layout of pits/patches	1	Hac	124.9	Hac	156.13
12	Digging of pits (60x60x60) cm	800	No	1279.9	Per %	12799.00
13	Filling of pits (60x60x60)cm	800	No	259.85	Per %	2598.50
14	Carriage of Plants in P/bags from Nursery site over an average distance of 1 Km.	800	No	133.25	Per %/Km	1332.50
15	Planting of entire Plants I/C ramming raised in P/bages	800	No	160.05	Per %	1600.50
16	Mulching of Plants	800	No	43.85	Per %	438.50
				Sub Total		**25429.92**
17	Add Increase 9.09%					2183.75
18	Watering of Plants for 5 months	800	No		Lumpsum	2250.00
19	Nursery Cost of P/bags raised Plants	800	Tribal	6.95	Per plant	5560.00
20	Cost of Alkathene Pipe (on average 150 Rmt)				Lumpsum	3900.00
21	cost of B wire and other material					4300.00
				G.Total		**43623.67**
				Or Say		**43620.00**
		Maintenance:-				
	I year Maintenance (30% Mortality)					9450.00
	II year Maintenance (20% Mortality)					7050.00
	III year Maintenance (15% Mortality)					5890.00
	I Vyear Maintenance (10% Mortality)					4725.00
	V year Maintenance (10% Mortality)					4725.00
				Sub Total maintenance		**31840**
				G Total		**75460.00**