MINING PLAN
PART OF SALANDRI NAL,
MINOR MINERAL LEASE
FOR SAND, STONE AND BAJRI
1.0520 HECTARE
MAUZA JANNA, TAHSIL BHALAI,
DISTRICT CHAMBA, HIMACHAL PRADESH.

MINING LEASE GRANTED IN FAVOUR OF
Shri AMAR CHAND
VILLAGE LACHHORI & P O
THAKURMATTI,
TAHSIL BHALAI & DISTRICT CHAMBA,
HIMACHAL PRADESH.

2015

Subhash Sharma

Seal of Mining Industries Dept. Govt. of H.P. APPROVED

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PREPARED BY
Subhash Sharma, #207, Basant Vihar,
Kasumpti, Shimla, 171009.
RQP No. HP/RQP/01/1/2004

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Map 2 : Contour and Geological Map
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MINING PLAN
OF SALANDRI KHAD, MINOR MINERAL LEASES FOR SAND, STONE AND BAJRI, SITUATED IN KHASRA No. 673/484/1 MEASURING 13-00 BIGHAS, (1.0520 HECTARES) FALLING IN MAUZA JANNA, TAHSIL BHALAI, DISTRICT CHAMBA, GRANTED IN FAVOUR OF Shri AMAR CHAND SHARMA, VILLAGE LACHHORI, POST OFFICE THAKURMATTI, SUB TEHSIL BHALAE, DISTRICT CHAMBA, HIMACHAL PRADESH

INTRODUCTION:

Shri Amar Chand Sharma, Village Lachori, P.O. Thakurmatti, Sub-Tahsil Bhalai, District Chamba, Himachal Pradesh as sole owner, have been granted mining leases for mining sand, stone and bajri vide letters Nos. Udyog-Bhu(Khani-4)Laghu-48/96-15929 dated 27-03-2010 for a period of ten years.

In accordance with Rule 35 of the Himachal Pradesh Minor Minerals (Concession) and Prevention of Illegal Mining and Storage)Rules 2015, the lessee has to submit 'Mining Plan' of the area granted or applied for mining lease for a period of five years. After expiry of five years the lessee has to resubmit the mining plan for the further period of five years. Therefore, lessee requested for the preparation of Mining Plan of the area. Accordingly this Mining Plan is prepared in accordance to the PLAN FORMAT for the Mining Plan appended with the Himachal Pradesh Minor Minerals (Concession) and Prevention of Illegal Mining and Storage)Rules 2015.

The leased block is a part of Salandri Khad, a primary tributary of the Siul Khad/Chamera Lake. It lies at a distance of about 26 Km. from Chamba, the headquarter town of the district.

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…कीय शाखा
उद्योग विभाग शिमला
Geological wing
Deptt. of Industries
Shimla
APPROVED
With Condition
शर्तों के साथ अनुमोदित
Vide Letter No. Udyog - Bhu (Khani-4) Laghu-48/96
Dated...
दिनांक 3/7/15
State Geologist,
Himachal Pradesh

1. General

1.1 Name and address of the applicant

1.1. A. Name of the applicant --

Shri Amar Chand Sharma
Son of Shri Luxmi Dhar Sharma.

1.1. B. Address of the applicant –

Village Lachhori
Post Office Thakumatti,
Sub Tahsil Bhalai,
District Chamba.

1.2 Status of the applicant

Shri Amar Chand Sharma, as individual is sole owner.

1.3Minerals which the Applicant intends to mine

The applicants intend to mine stone, bajri and sand. The stone and bajri will be used in already established crushing unit for making angular grit. The River - borne sand, after being sieved will be sold for construction industry depending upon the market demand.

1.4 Period for which the mining leases are granted and further renewed.

Fifteen years.

1.5 Name and address of the RQP preparing the Mining Plan:

Subhash Sharma
Flat No. 207, Basant Vihar
Kasumpti, Shimla-171009.
Registration No.HP/RQP/01/2004
Valid up to – 31/5/2008
Telephone No. 0177-2621548

1.6 Name and address of the prospecting agency.

The base data is collected from various Geological reports of the Geological Survey of India and Geological Wing, Department of Industries, Udyog Bhawan, Shimla – 171001. The base contour map of the leased area was prepared by the Survey Section of the Geological Wing of Industries Department. The detailed prospecting of the area was carried out by the R Q P.

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2. Location and Approach of the area

(Location Map – MAP No 1)

2.1 Topo-sheet No.

Survey of India sheet No.	I43W2 (Old **52D/2)**
Scale	1:50,000
Surveyed in	1984-85 upgrades in 2005-06,
First Edition	2010

Figure 1: Location of leased out area (Also see map 1)

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The area lies between the latitude and longitude given below in table 1 and shown in the figure 2.

Table 1: Showing latitude and longitude of the area

Latitude	Longitude
32^0 39' 21.7" N	76^0 01' 10.3"
32^0 39' 11.7" N	76^0 01' 18.6"

Figure 2: Co-ordinate of the Mining Lease Site.

2.2 Location of area of area

Village: -	Janna
Patwar circle: -	Thakurmatti
Post Office: -	Thakurmatti
Tahsil: -	Salooni
District:-	Chamba
Sub-Divisional Office (Civil):-	Salooni
Divisional Office (Forest):-	Salooni
Range Office (Forest):-	Bhalaii
Sub Divisional Office (IPH):-	Bhalai
Sub Divisional Office (PWD):-	Bhalai
State :	Himachal Pradesh

2.3 Distances from Important Places:

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The important distances, from the lease area are given below in table 2.

Table 2: Showing important distances from the area

Sr. No	Place	Distance
1	Chamba (District Headquarter) • **Road**	26 Km
2	Shimla (State Capital), • **Road** • **Narrow gauge Railway** • **Airport**	406 Km
3	Pathankot (Punjab) • **Road** • **Broad gauge Railway**	152 Km
4	Chandigarh, (U.T.) **Road** • **Broad Gauge Railway** • **Airport**	390 Km
5	Dharamsala • **Road** • **Air port**	175 Km

2.3 Details of area

The detail of the area is given below in table 3

Table 3: The detail of the leased out area

Sr. No	Khasra Number	Area In Hectare	Status	Owner of Land	Kism	Mauza
1	673/484/1	13-00 Bighas	Kabja swayam	Chamera Project	Gair Mumkin Khad	Janna
Total		**13-00 Bigha (1.0520 Hectare)**				

3. Physiographical Aspect of the Area

3. 1 General

The area in general is a part of the Lesser Himalaya. The Lesser Himalayas, located in north-western India in the states of Himachal Pradesh and Uttar Pradesh, in north-central India in the state of Sikkim, and in north-eastern India in the state of Arunachal Pradesh, ranges from 1,500 to 5,000 meters in height.

Chamba district can be divided into following four distinct zone as per elevation (Figure 3).

1. Above 5000 meters.
2. 3000 – 5000 meters.
3. 1000 – 3000 meters.
4. Less than 1000 meters.

Relief Map of District Chamba

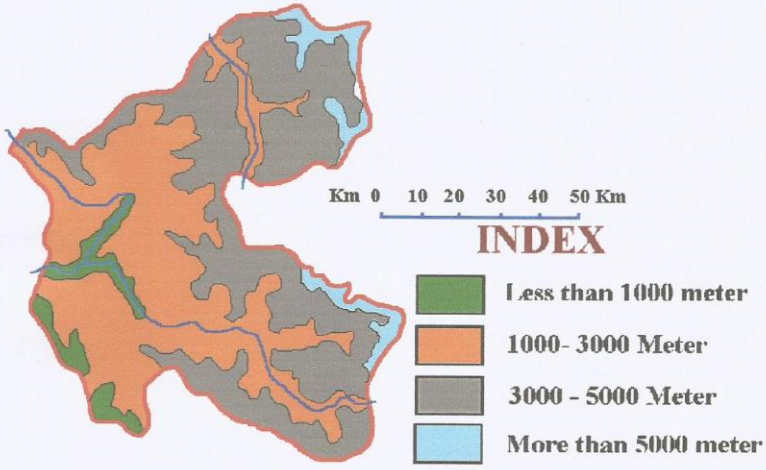

Figure 3: Relief Map of District Chamba.

The district can be divided into three distinct zones as per slope (Figure 4)

1. 400 -600 meters/km
2. 250 – 400 meters/km
3. Less than 250 meters/km

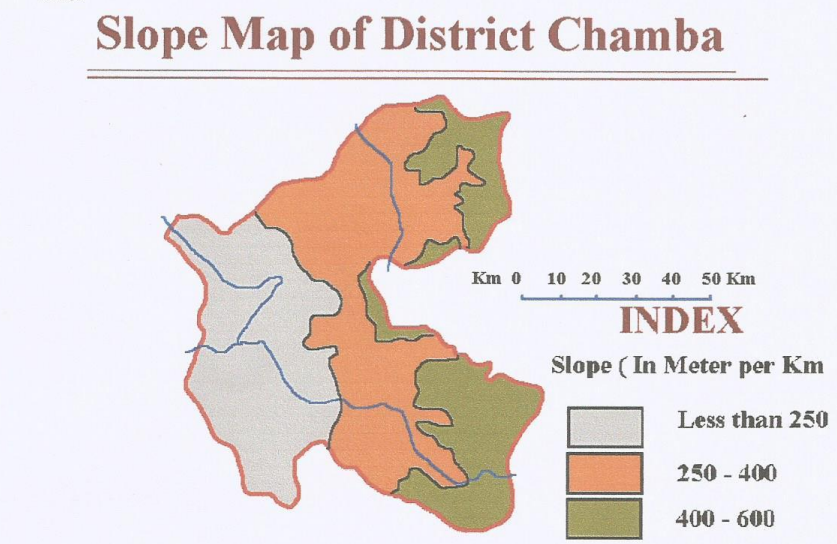

Figure 4: Slope Map of District Chamba.

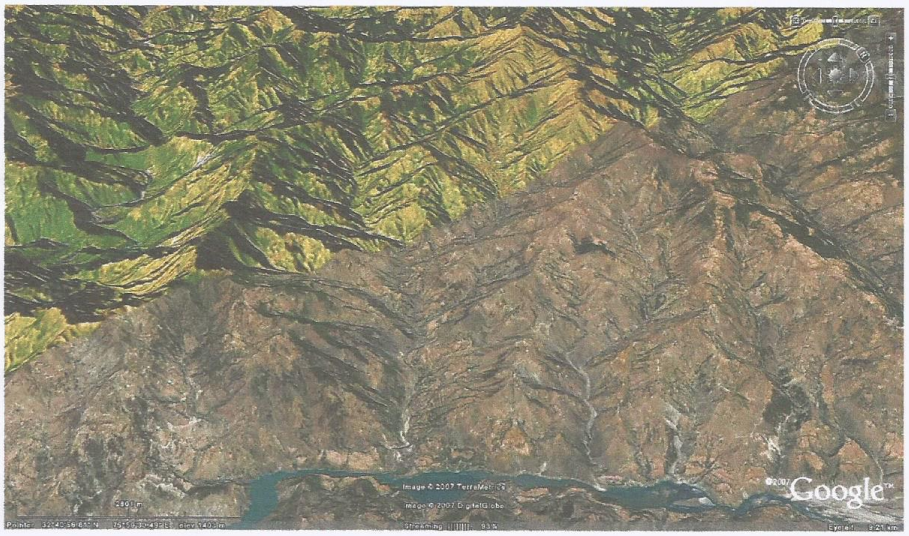

Figure 5: Satellite Imagery Showing Physiographic features of the Area.

3.2 Altitude of the area

- The highest point of the area is 716 meters above mean sea level.
- The lowest point of the area is 707 meters above mean sea level.

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4. Description of River/Stream Bed in which the Lease is situated

4.1 General

The lease is situated in the Salandri Khad, a primary tributary of the Siul River

Salandri Khad originate at a height of 2835 meters above mean sea level, south east of Chinglanu , the general flow is South- -East.

The altitude at confluence with Siul Nala 707 meters (As per Survey of India Topo-Sheet No. 52 D/2) above mean sea level.

General Geometry

Geometry of Salandri Da Nal
Courtesy Google Earth

A right bank tributary of Siul Khad/ Chamera Reservoir.

Altitude at origin:	2835 metres from M S L.
Altitude at Confluence with Reservoir:	758 metres from M S L.
Length of Perimeter:	74 kms.
Catchment Area of Salandri Nal:	55 Square Kms.
Total length Khad course:	20.8 kms
Elevation loss per kilometer:	100 metre

Table 4 Showing drainage analysis of the Salandri Khad Catchments

Sr .No	Drainage	No of Stream	Total Length Km	Average Length Km
1	Ist Order	76	89	1.17
2	2nd order	19	45	2.38
3	3rd order	1	16.5	16.5

- From origin to the 1100 meters above mean sea level
  The zone of active erosion—Young stage
- From 1100 meters contour to confluence with Siul Nala

The zone of erosion during high floods; otherwise deposition – Semi-Maturity stage

The lease area is situated in the zone of Semi-Maturity.
The catchments of the Salandri Khad can be divided into following two parts as per altitude

1. High — More than 1100 meters above Mean Sea Level
2. Medium — Less than 1100 meters above Mean Sea Level.

The Catchments of Salandri Khad: Catchments is given below in the figure 6-7.

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Figure 6: Showing catchments of the Salandri Nal/Khad on Topo-sheet cut out.

Figure 7: Showing Three D Google Imagery of catchments of the Salandri Khad.

4.2 Name of River/ Stream in which the lease is situated

The lease is situated in the Salandri Khad, a primary tributary of the Siul Nala/Chamera Lake.

4.3 Drainage System

Ravi

4.4 Type of Drainage

Dendritic.

4.5 Origin of River/Stream

Salandri Khad originates at a height of 2835 meters above mean sea level, South East of Chinglanu.

4.6 Altitude at Origin

2835 meters above mean sea level.

4.7 Width of River at the place of Mining

100 Meters to 130 Meters.

4.8 The annual deposition at the place of mining:

The deposition is thirty Centimeters in the leased out area depending upon the Location. This is because of the confluence with Chamera Lake

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4.9 The Competency of the River/ Stream at the mining site

The general competency at the mining area is Eight to ten Kg approx. The largest boulders vary 12 to 24 cm X 12 to 30 cm X 9 to 18 cm (length X breath X height) (Photo WP-1)

4.10 The level of HFL

During monsoon floods the water level rises by about one metres at the mining area, at times for short spells. Most of the lease area remains under Chamera lake water for some time during and post monsoon period.

4.11 The thread of deepest water in meandering.

The landform being depositional the meandering thread is constantly changing during the rains depending upon the water level.

4.12 Other Important Features.

The Salandri Nal /Khad drains into Siul Khad, but now this part of the Siul Khad is submerged in Chamera Lake due to impounding of River Ravi at Chamera. The catchment area of the dam is 472.5 km^2. The reservoir has a live storage capacity of 110 MCN and mean annual inflow of 1,273 BCM. Its water rises to maximum of 763m, while minimum is at 747m.

In view of the fact that almost all lease area falls below the maximum level of 763 metres from M S L and is submerged during Monsoons, in the Chamera lake, the flood waters of Salandri Nal gets blocked at the lease area which at that stage is part of Chamera lake. Thus due to obstruction to the normal flow of the Salandri Nal the eroded stone and bajri being heavy gets blocked and deposited in the lease area.

Keeping this in view, the N H P C authorities have conveyed their willingness for mining and removal of stone bajri and sand from the area.

The area is mineable only for about six to seven months when the reservoir level falls.

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5. Geology

5.1 Regional Geology

GEOLOGICALLY Himachal Pradesh can be broadly divided into two major geo-tectonic zones viz. the Lesser Himalayan tectogen in the south and the Tethys Himalayan Tectogen in the north. These two tectonic zones are juxtaposed with each other along a major tectonic break collectively designated as Main Central Thrust in the sense defined by Srikantia (1988). Mandi District lying within the Lesser Himalaya and the Shiwalik Foothill comprises rocks ranging in age from Proterozoic to Quarternary. The oldest rocks are of undifferentiated Proterozoic age, comprising canrbonaceous phyllite, schist, gneiss, quartzite and marble. The Ghoghar Dhar (Undifferentiated Proterozoic age) occurs as an intrusive body within the Chail Group of rock. This granite body is well foliated and composed of gneisses, granite with minor aplite and basic veinlets. The Sundernagar Group of Rocks of Meso- Proterozoic age is represented by quartzite with basic flows. The Shali Group of Rocks (Meso-Proterozoic) Comprising limestone, dolomite, (at places stromatolytic) slate, & quartzite. The Subathu consists mainly, of olive green shales and grey shales. At the top, a band of white quartzite is exposed; this band of white quartzite has been taken as the marker, defining the top of the Subathu sequence. The thick sequence of brackish and fresh water sediments immediately succeeding the fossiliferous marine Subathu are classified as Dharamshala Formation .The Dharamshala Formation are widely exposed in the Mandi parautochthon, further west in the autochthon, these rocks are exposed, in the core of the Sarkaghat anticline. The Shiwalik Group of Middle Miocene of Early Pleistocene age comprises coarse clastic fluviatile deposits of sandstone, clay and conglomerates. The Quaternary sediments (Older Alluvium and Newer Alluvium) along prominent channels consisting of sand, silt, clay, pebbles and cobbles occurring along present channels of Middle to Late Pleistone and Holocene age.

5.2 Local Geology

The stratigraphic sequence established in the area in the systematic mapping by Geologists of Geological Survey of India is given below in the figure 8.

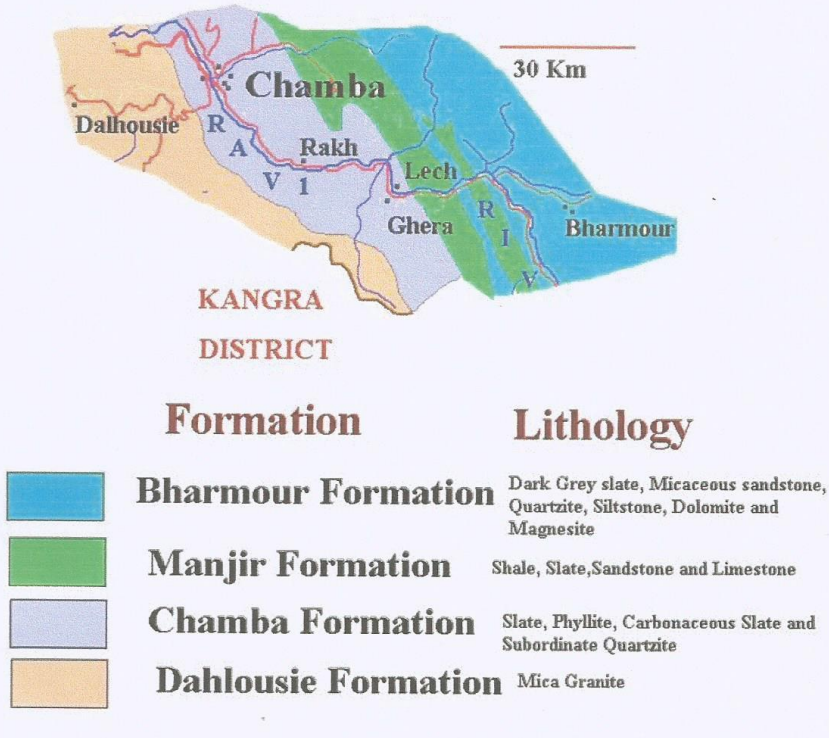

Figure 8: Geology of the surrounding area

The Bharmour formation comprises of schistose quartzite, slate, phyllites, limestone and magnesite. The manjir Formation comprises of conglomeratic quartzite, slate and phyllite. The Chamba formation consists of slate, phyllite, quartzite and greywacke. The Dalhausie /Dhauladhar/Pangi formation consist of granites belonging to Lower Palaeozoic age.

5.3 Geology of the lease area

The leased out area forms a part of the stream bed covered with boulders, cobbles, pebbles, river born bajri, and sand and clay deposit of Channel alluvium. The rocks in the catchments of Salandri Khad are of Chamba and Manjir Formations.

The area is comprising predominantly the Sandstone, slate, Limestone and quartzite Boulders, Sand and river born bajri.

The boulders are grey, greenish white, dark grey and dark green in colour.

5.4 Nature of the Boulder/ Cobble/ Sand

The area lies within the regular course of the Salandri Khad gets flooded in the rainy season.

All the deposit comprises quartzite, sandstone and fraction of slaty, limestone and breccias- fragments. The boulders are grey, spotted white, greenish, dark grey and dark green in colour. Quartzite fragments are rounded, sub- rounded and dis-coidal in shape having smooth surface. Their size varies from gravel to boulder. Thickness of the deposit varies from three to six meters

During the monsoon this mined area of Khad bed are replenished with the eroded material from the Manjir and Chamba Formations due to erosion by heavy rainfall in higher reaches. There sudden decrease in the carrying capacity of Khad due to blocking of its flow by the Chamera Lake Waters, thus the annual deposition of up to thirty cms is received at this point.

5.5 The Nature of the rock along the bank

The rocks along the bank belong to old river terrace and Upper Chamba Formation consisting of Phyllite and slate bands.

Photo 1: Geology of Khad bed and banks.

6 Reserve Estimate

6.1 Method

General Considerations:

The basic requirement of the lessee is material for making angular grit. Hence the applicants is mining mainly stone and bajri. The requirement of the applicant is Khad bed Material of more than 12 mm, i.e. which can be fed in the stone crusher. The stone and bajri is removed manually and transported to the crusher site and rest of the material is separated as sand by primary screening.

The stone and bajri so separated is fed into crusher to convert it into angular grit which has better market potential. Hence calculation of Reserve is done on the basis of market terminology rather than the Geological classification. The total handling of material/ river bed material is classified into following five categories as shown in the table -5. The boulders of more than 24 inch diameters are not generally allowed to be lifted.

Classificationof River bed Material According to Size (in Millimetres).

CATEGORY / MINERAL / MATERIAL	SIZE	END USE
Boulders	More than 64 mm	To be manually mined for use in crusher of lessee
River Borne Bajri Cobbles & Pebbles	64 mm to 12 mm	
Sand	12 mm to 1/16 mm	To be sold in open market after screening, depending on the demand in local market
Silt/ Sand- Clay Mixture	1/16 mm to 1/256 mm	To be left in pits as back fill.
Clay	Less than 1/256 mm	

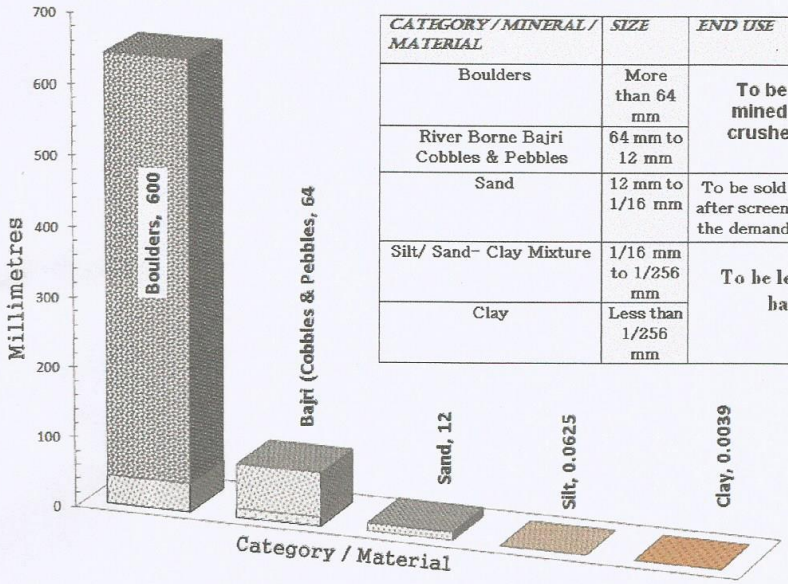

Figure 9:-Depicting Five Categories of River Bed Material in the Lease Area and its End Use.

As observed during the field study the entire mining lease area comprises of stone, bajri and sand. However to verify the surface observations, a trial pit was dug having

dimensions of 1 m. * 1 m. * 1 m. (Length * width * depth). The content of the total material dug out from the pits were separated into above said five categories. The percentage of the each category is as given in the figure 12.

Geometry of Salandri Da Nal
Courtesy Google Earth

A right bank tributary of Siul Khad/ Chamera Reservoir.

Altitude at origin:	2835 metres from M S L.
Altitude at Confluence with Reservoir:	758 metres from M S L.
Length of Perimeter:	74 kms.
Catchment Area of Salandri Nal:	55 Square Kms.
Total length Khad course:	20.8 kms
Elevation loss per kilometer:	100 metre

At Mining Lease of Amar Chand Sharma

Length of Salandri Nal course up to Lease Area:	20.4 km
Loss of elevation up to lease area:	2068 metres
Loss of elevation per kilometer:	101 metres
Loss of Elevation near Lease (from 2.5 kms up stream)	107 metres
Loss of elevation per kilometer near lease area:	43 metre.
Angle of Slope near Mining lease area	2^0 14'

The lease area has reached 'Young Stage' which is zone of erosion during floods and deposition

Figure 10: Geometry of Salandri Nal at the place of mining lease.

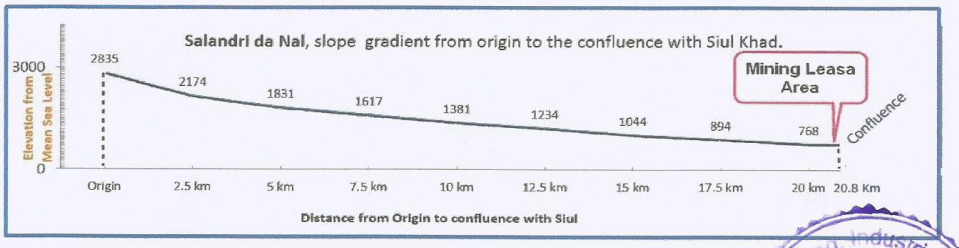

Figure 11; Slope gradient of Salandri nal and position of lease area.

The lease area falls in the Semi Maturity age stage of the Salandri Nal (figure 11) with 43 metre loss of elevation per kilometre, i.e. the angle of slope of the Khad is 2^0 14'

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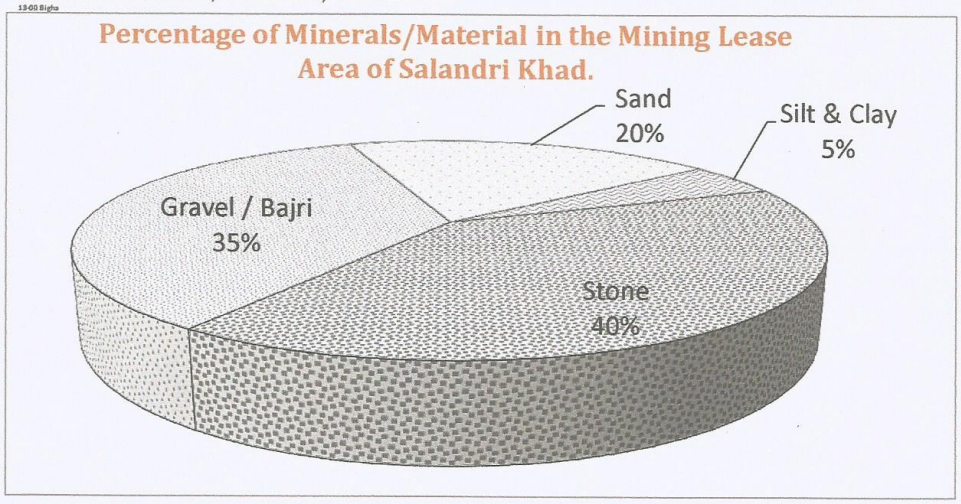
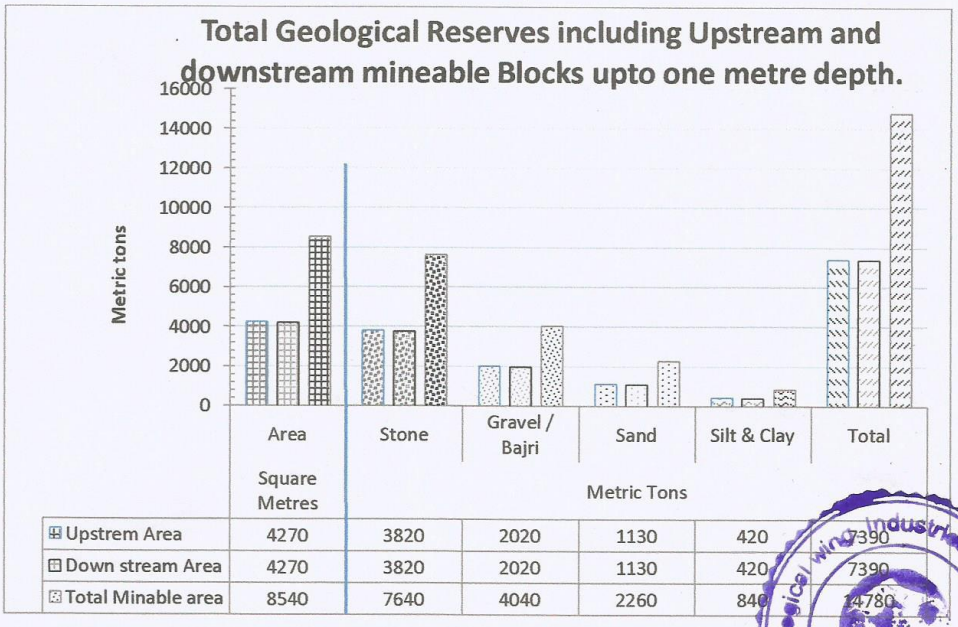


Figure 12: Percentage of Each Category of Mineral/Material Present in the Lease Area.

As per the policy guidelines, no mining shall be allowed within 1/10th of river bed or five meters whichever is higher. Here width is 40 to 125 meters. Hence no mining shall be allowed within 5 to13 meters of the bank, depending upon width at that particular site. Safe distance from the Sundla Benikhet Bridge has been maintained for its safety while planning the yearly mining operation.



	Area	Stone	Gravel / Bajri	Sand	Silt & Clay	Total
	Square Metres	Metric Tons				
Upstrem Area	4270	3820	2020	1130	420	7390
Down stream Area	4270	3820	2020	1130	420	7390
Total Minable area	8540	7640	4040	2260	840	14780

Figure 13: Geological Reserve up to One Metre depth.

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6.2. Mine-able area

As per the policy guidelines issued by the State Government for Mining of River / Khad bed,

- ✓ No mining is to be undertaken along the periphery of the lease area if the mining is likely to cause any adverse impact on the adjoining land or the owners of the adjoining land has not given his consent for mining.
- ✓ In this case only one meter area is proposed as safety zone as the depth of mining is constrained to one metre.
- ✓ Mining is not permitted within 10^{th} of riverbed or 5 metres from the bank of the river / khad whichever is higher. The width of the khad in lease area varies fron 100 metres to 130 metres, thus no mining is proposed in the area up to 10 to 13 metres from the banks.
- ✓ The area is to be divided in two blocks as per the State Government guidelines, with a view to mine only one block in a year and allow the other block to be replenished during two consecutive monsoons.

The mining operations are planned keeping in the mind the possible effect on the meandering of Khad. Moreover, year wise mining is proposed, in a way that mined area gets replenish during succeeding rainy season. Though, the khad is perennial, but it is only during heavy rains the area gets flooded and submerged, hence, mining will be possible in all the area during dry season. Thus, mining operations are planned keeping in mind above-mentioned constrains. The boulder more than 24 inch is not allowed to be lifted.

Thus the total mine-able area is 10000 square metres.

However mining in 1^{st} , 3^{rd} and 5^{th} will be in almost same block (5000 square metres) similarly the Mining in 2^{nd} and 4^{th} Year will also be in the other block (5000 square metres). The year wise mine-able area is given below in figure 15.

6.3. Depth

One metres depth from the surface is considered for calculation of the reserve and mining.

6.4. Specific Gravity.

The specific gravity of Quartzite and other boulders and bajri is 2.65 and of wet sand is 1.92. Hence, average specific gravity of 2.25 is taken for calculation of the deposit.

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6.5. Replenishment

The Lease area falls in the acquired reservoir zone of the Chamera Hydro-electric Project. The removal of sand, stone and bajri from the area prevents the silting of the reservoir. The more the removal, less the silting of reservoir, therefore, it is suggested that entire mining area may allowed to be exploited, instead of dividing it into two blocks, thus the entire removal of minerals would be in the interest of the Project and increase the life of the project. However, keeping in view the prevalent guidelines the lease area is divided in two blocks for active mining.

The factor of thirty cm annual replenishment is taken into consideration, while calculating the reserve. It is observed in this area that as the water level during the monsoon rises in the Chamera reservoir, it blocks the flood waters from the Salandri Nal, resulting in heavy deposition of eroded rocks in the mining lease area which at the confluence with the Chamera lake. Hence mined out area of the pre- monsoon gets completely filled with mineral during monsoon. It is, thus assumed that the entire pit will be filled after monsoon.

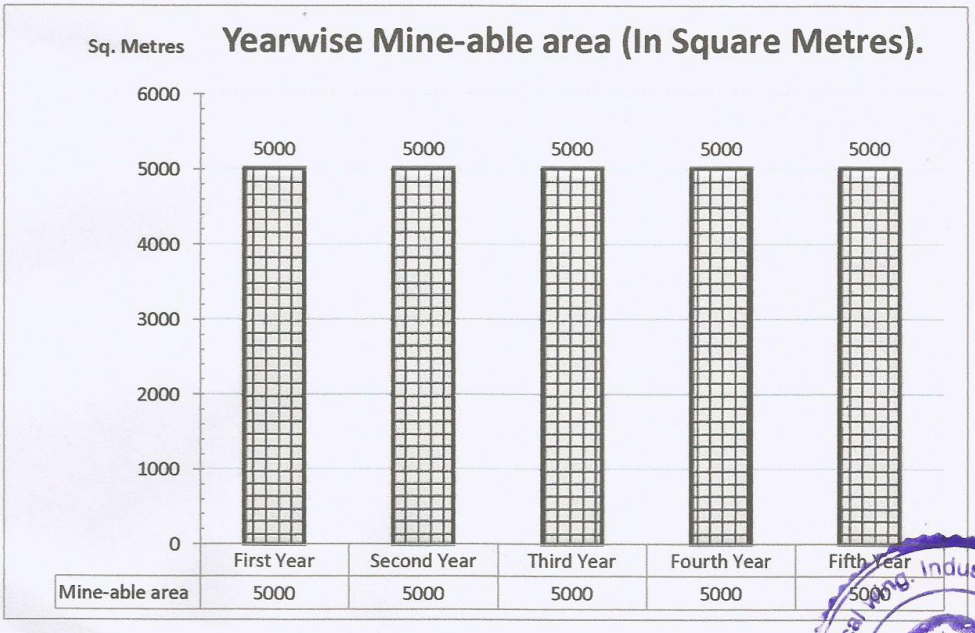

Figure 14:- Showing Year wise mine-able Area of the Mining Lease.

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6.6. Total Reserves.

The reserves of all the constituents of khad bed have been calculated for the mine-able area of 10000 square metres as shown in para 6.2., and considering the specific gravity as 2.25 as shown in para 6.4. The reserves have been calculated for next five years mining, of mine-able deposit up to permissible quarry depth of one metre (Figure 13). Depending upon normal rainfall from year to year causing erosion in the catchments and flooding of khad bed, the minerals are inexhaustible, but presently these deposits are part of Geological Formations of catchments.

6.7. Rotation in mining area

The area on rotation basis is suggested in such a way that pit of previous year's mining will act as depository for the post monsoon season. The preceding year's pit will reduce the velocity of the of water flow in the khad, reducing its carrying capacity until the pits are filled up. In totality, the principal of the Placer Deposit is followed. Hence, following rotation plan is recommended (Figure 16):

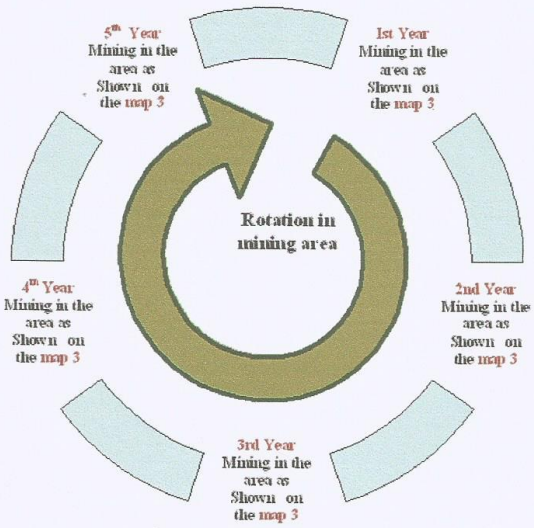

Figure 15:- Showing Annual Rotational Mining Plan.

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7. Development and Production Programme for the next five Years:

As already discussed at 6.5 the Khad deposition conditions at the spot are conducive for mining the entire leased area during the six to seven months when the reservoir level falls and there is no need of planning block wise annual mining. In case it is so allowed the yearly production would be as shown in figure 16.

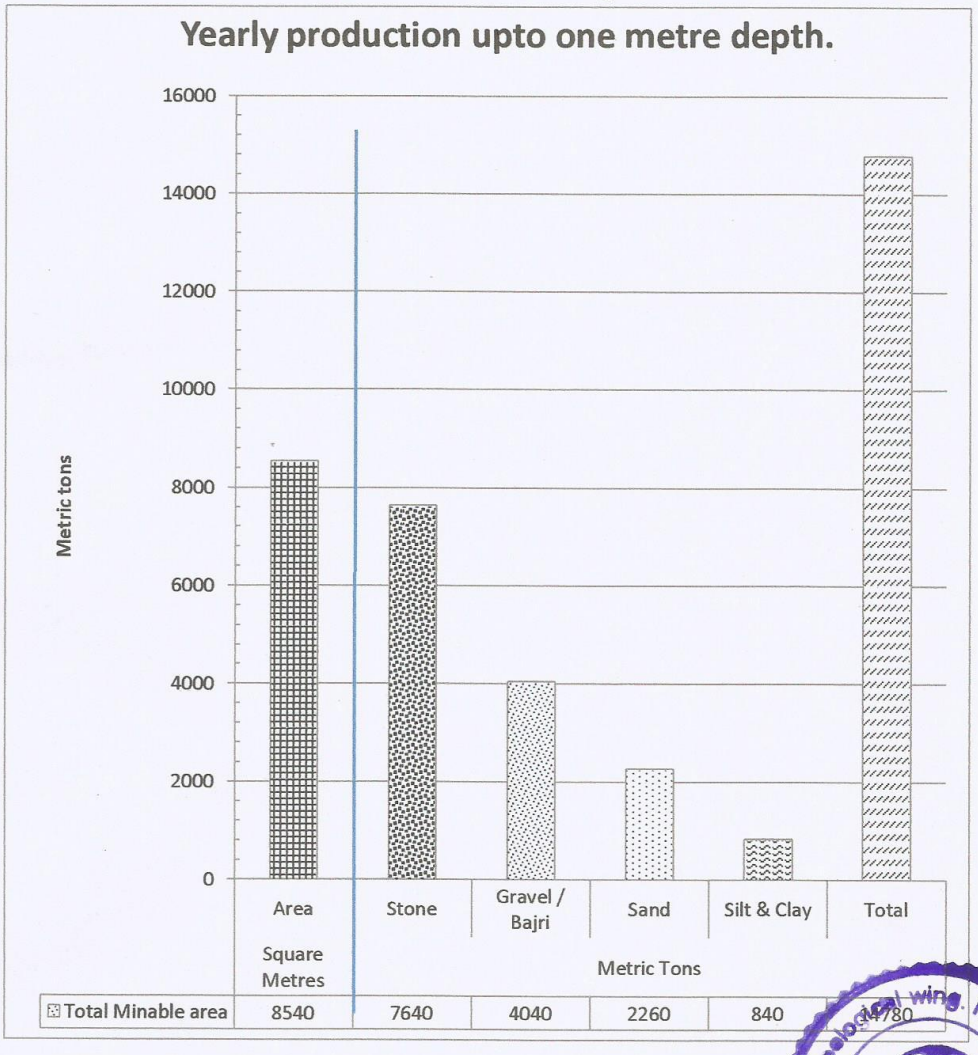

Figure 16: Yearly production if mining is undertaken in the entire lease area.

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However, as per the present guidelines the mining is projected considering two blocks, as discussed below.

The mining / collection of minerals shall involve shoveling by simple hand-tool, manual sorting / picking and stacking in the form of dumps at site and loading into truck / tractors-trailers for transporting them to the crusher site.

Considerations

- No blasting is required.
- Only manual extraction of stone, bajri & sand shall be undertaken.
- The lease area is having gentle slope with the gradient of about 2^0, hence, tracks for the movement of tipper trucks and tractors can be made and maintained in any part of the lease area.
- Trenches and pits for the mining purposes shall be made in such a way so that these are not deeper than one metre and follow the general / normal channel direction of the khad.
- With the replenishment of the pits and trenches during the floods, the process of controlled mining can continue year after year. The erosion and weathering of Siwalik boulders in the catchments have inexhaustible supply of required minerals.
- Mining activity will be undertaken only during the dry seasons only.

The proposed total production in the first five year is as given in the figure 17. The proposed production is sufficient to for commercial venture of a crusher based on extraction of stone and bajri and free sale of sand.

The year wise production / collection of sand and bajri (pebbles) during the five years period of mining plan / present lease is shown in **figure 17 (first year), 18 (second year), 19 (third year), 20 (fourth year) and 21 for fifth year.** *mine-able Reserves of each category of minerals have been rounded off to nearest ten.*

The year wise mine working planned for the Quarry is presented in the map 3.

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7.1 Proposed Production of the first Year.

- 4270 metric tons of Stone and 3820 metric tons of bajri will be produced which will be used for making grit in the captive stone crusher.
- 2020 metric tons of sand will be produced and sold in open market depending upon demand.
- 1130 metric tons of silt will be disturbed as associated minerals and would be left in the pits as back fill.
    - The entire lease area falls within the Khad bed corridor of the Salandri Nal, therefore no area is available for plantation.
    - This part of the Salandri Nal is mostly part of the Chamera Lake and blocks the flow of Khad during monsoons, thus causing high deposition of Khad bed material. The banks are of in situ rocks moreover, because of being a Hill Khad, the Khad course is quite narrow therefore no check dams are necessary for bank protection.

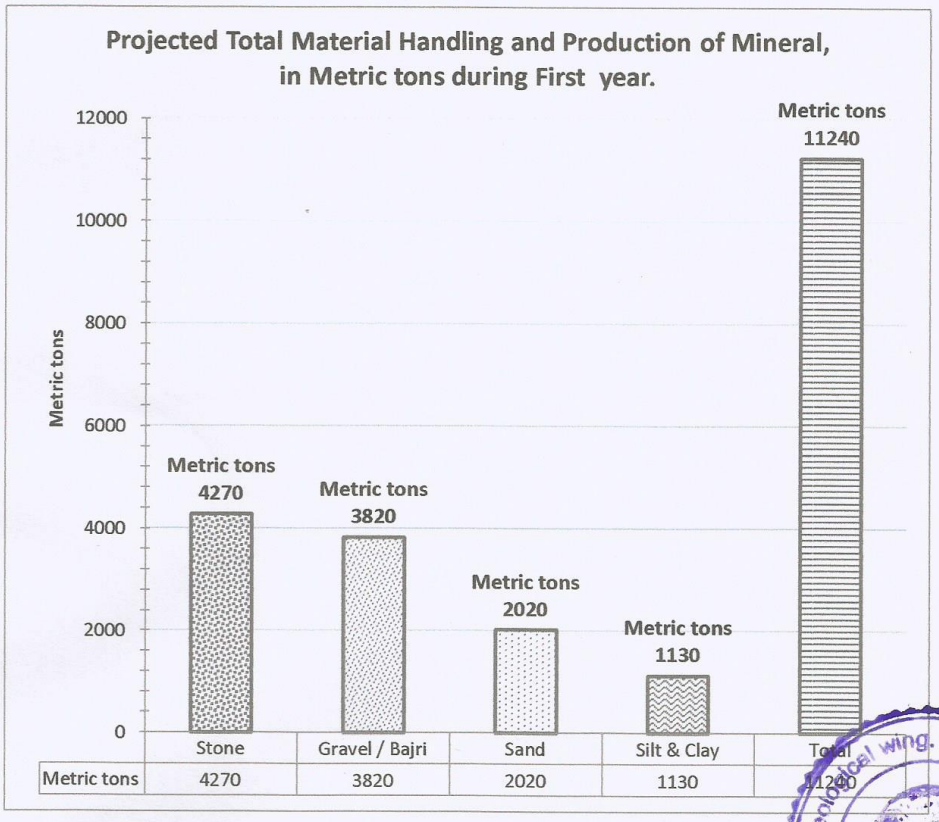

Figure 17:- Proposed Production and Material Handling in the First Year of Mining.

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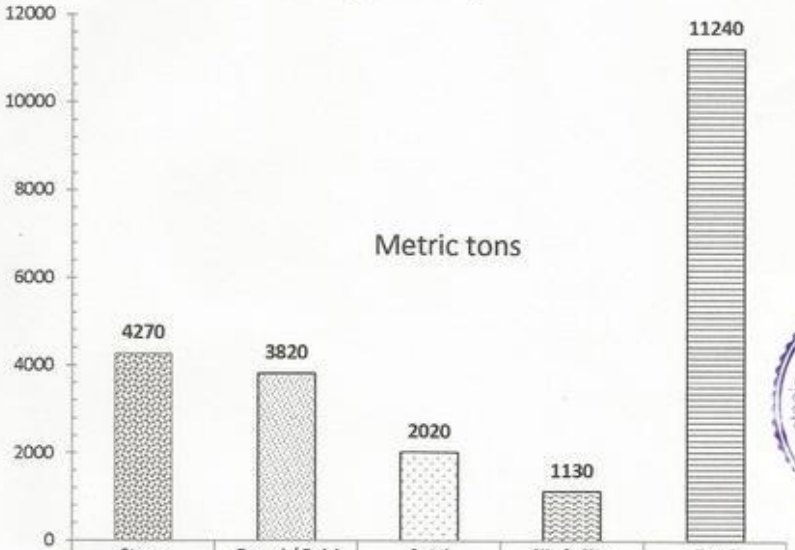
7.2 Proposed Production of the Second Year

- 4270 metric tons of Stone and 3820 metric tons of bajri will be produced which will be used for making grit in the captive stone crusher.
- 2020 metric tons of sand will be produced and sold in open market depending upon demand.
- 1130 metric tons of silt will be disturbed as associated minerals and would be left in the pits as back fill.
    - The entire lease area falls within the Khad bed corridor of the Salandri Nal, therefore no area is available for plantation.
    - This part of the Salandri Nal is mostly part of the Chamera Lake and blocks the flow of Khad during monsoons, thus causing high deposition of Khad bed material. The banks are of in situ rocks moreover, because of being a Hill Khad, the Khad course is quite narrow therefore no check dams are necessary for bank protection.

Projected Total Material Handling and Production of Mineral, in Metric tons during Second year.



	Stone	Gravel / Bajri	Sand	Silt & Clay	Total
Metric tons	4270	3820	2020	1130	11240

Figure 18:- Proposed Production and Material Handling in the Second Year of Mining.

7.3 Proposed Production of the Third Year:

- 4270 metric tons of Stone and 3820 metric tons of bajri will be produced which will be used for making grit in the captive stone crusher.
- 2020 metric tons of sand will be produced and sold in open market depending upon demand.
- 1130 metric tons of silt will be disturbed as associated minerals and would be left in the pits as back fill.
  - ✓ The entire lease area falls within the Khad bed corridor of the Salandri Nal, therefore no area is available for plantation.
  - ✓ This part of the Salandri Nal is mostly part of the Chamera Lake and blocks the flow of Khad during monsoons, thus causing high deposition of Khad bed material. The banks are of in situ rocks moreover, because of being a Hill Khad, the Khad course is quite narrow therefore no check dams are necessary for bank protection.

Projected Total Material Handling and Production of Mineral, in Metric tons, during Third year.

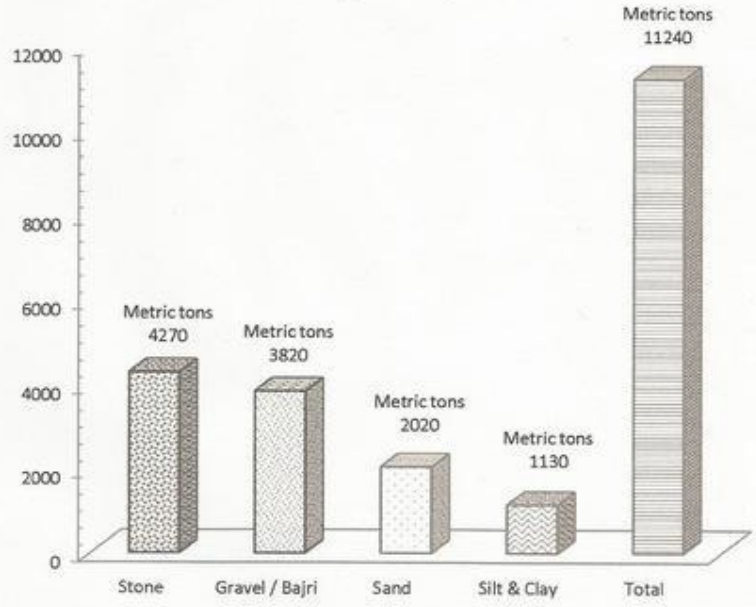


Figure 19:- Proposed Production and Material Handling in the Third Year of Mining.

7.4 Proposed Production of the Fourth Year:

- 4270 metric tons of Stone and 3820 metric tons of bajri will be produced which will be used for making grit in the captive stone crusher.
- 2020 metric tons of sand will be produced and sold in open market depending upon demand.
- 1130 metric tons of silt will be disturbed as associated minerals and would be left in the pits as back fill.
  - ❖ The entire lease area falls within the Khad bed corridor of the Salandri Nal, therefore no area is available for plantation.
  - ❖ This part of the Salandri Nal is mostly part of the Chamera Lake and blocks the flow of Khad during monsoons, thus causing high deposition of Khad bed material. The banks are of in situ rocks moreover, because of being a Hill Khad, the Khad course is quite narrow therefore no check dams are necessary for bank protection.

Projected Total Material Handling and Production of Mineral, in Metric tons during Fourth year.

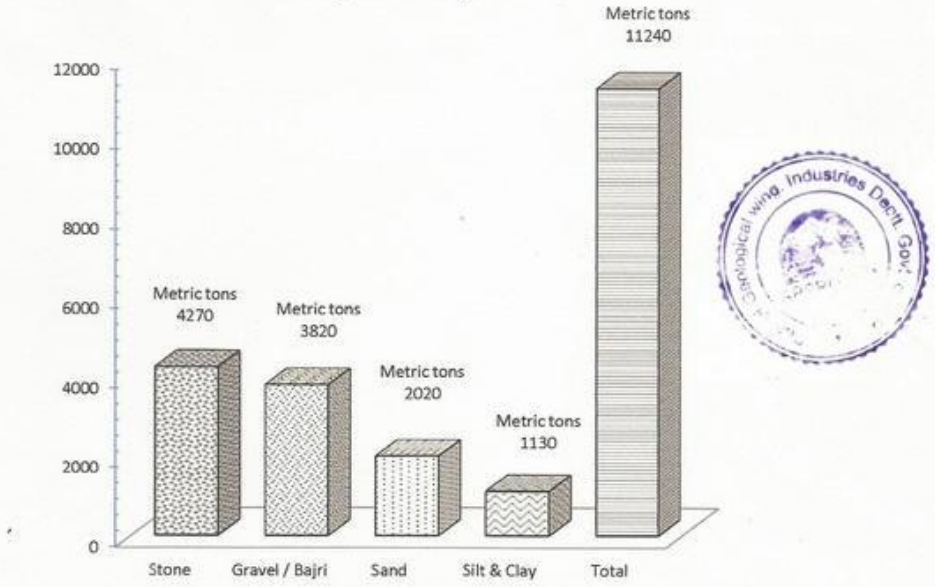


Figure 20:- Proposed Production and Material Handling in the Fourth Year of Mining.

7.5 Proposed Production of the Fifth Year:

- 4270 metric tons of Stone and 3820 metric tons of bajri will be produced which will be used for making grit in the captive stone crusher.
- 2020 metric tons of sand will be produced and sold in open market depending upon demand.
- 1130 metric tons of silt will be disturbed as associated minerals and would be left in the pits as back fill.
  - ✓ The entire lease area falls within the Khad bed corridor of the Salandri Nal, therefore no area is available for plantation.
  - ✓ This part of the Salandri Nal is mostly part of the Chamera Lake and blocks the flow of Khad during monsoons, thus causing high deposition of Khad bed material. The banks are of in situ rocks moreover, because of being a Hill Khad, the Khad course is quite narrow therefore no check dams are necessary for bank protection.

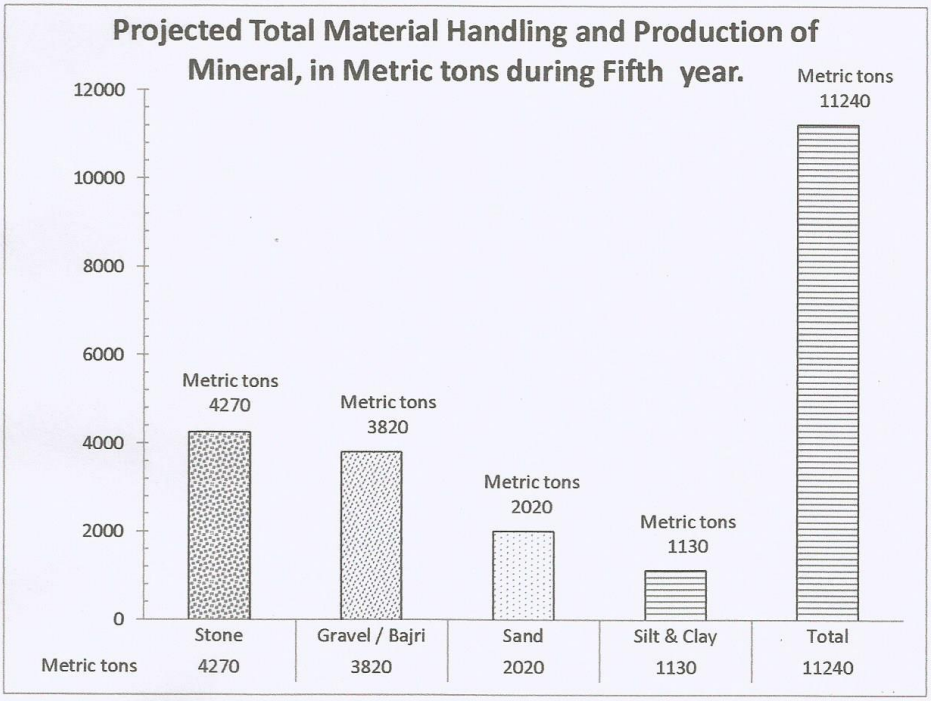


Figure 21: Proposed Production and Material Handling in the Fifth Year of Mining.

The total year wise production of all category of river bed **leased** material during five year is shown below in the figure 22.

Year wise proposed production of minerals for feeding the stone crusher is given below in the figure 23.

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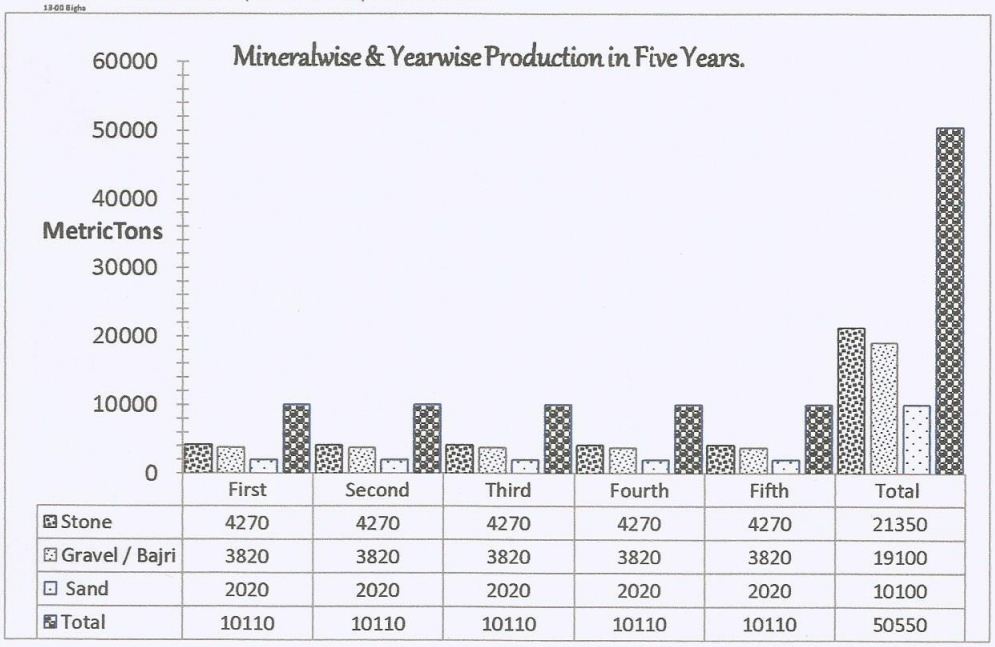
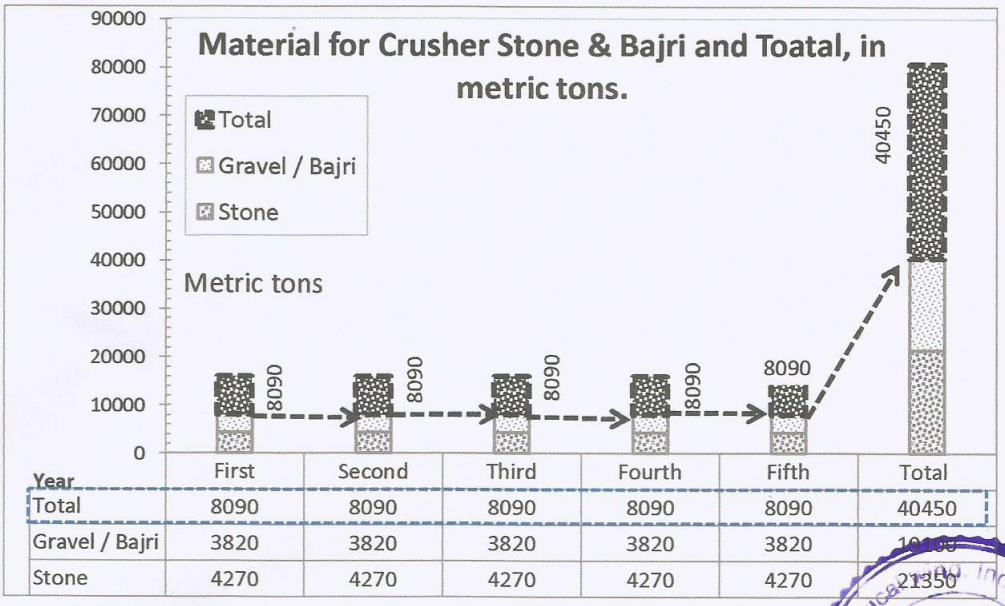


	First	Second	Third	Fourth	Fifth	Total
Stone	4270	4270	4270	4270	4270	21350
Gravel / Bajri	3820	3820	3820	3820	3820	19100
Sand	2020	2020	2020	2020	2020	10100
Total	10110	10110	10110	10110	10110	50550

Figure 22:- Year wise Proposed Production of Mineral in Five Years of Planned Period.



Year	First	Second	Third	Fourth	Fifth	Total
Total	8090	8090	8090	8090	8090	40450
Gravel / Bajri	3820	3820	3820	3820	3820	19100
Stone	4270	4270	4270	4270	4270	21350

Figure 23: Year wise Production of Stone & Bajri for feeding the Stone Crusher, during Planned Five years.

Figure 24: Year wise availability of sand for free sale.

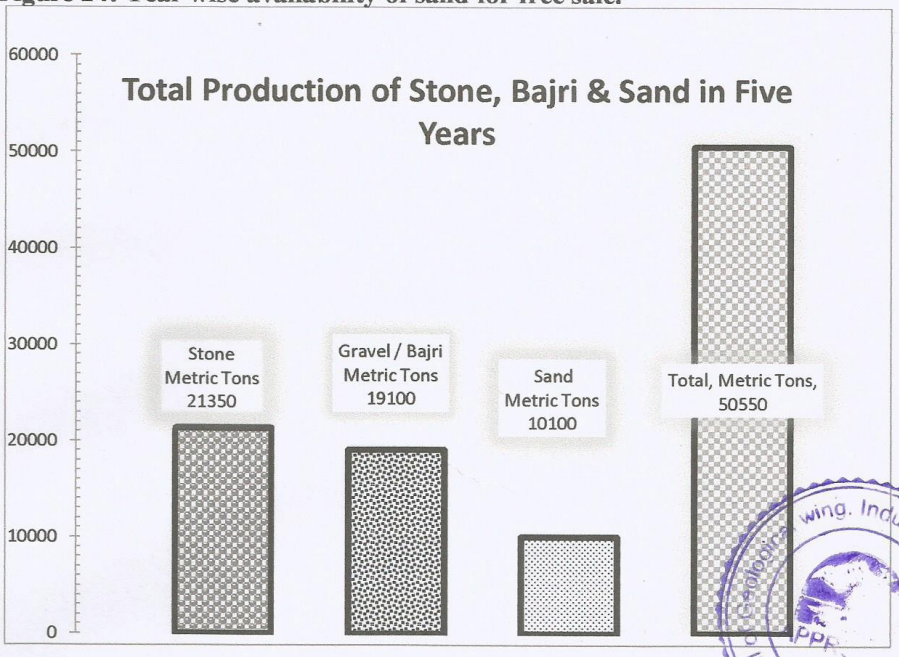


Figure 25: Total production during the year.

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7. Environment Management Plan

7.1 Introduction

The impact on environment due to mining operation is generally:-

- Change in Topography& land use pattern.
- Effect on Flora & Fauna
- Ground Vibrations and Fly Rocks.
- Effect on Hydrology
- Effect on Climate
- Air Pollution
- Noise Pollution
- Visual Impact
- Socio- economic Impact
- Accumulation of Scree

7.2 Base Line Data

7.2.1 General

Location of area

The area is location of area is given in the map 1

7.2.2. Zone of influence

The mining activity will remain restricted to very small area hence the zone of influence will be only surrounding grazing land of the leased out area. In the hilly the zone of influence will be micro shed that is along the ridges. However extended zone of influence with radius of five kilometers is shown below in figure 26.

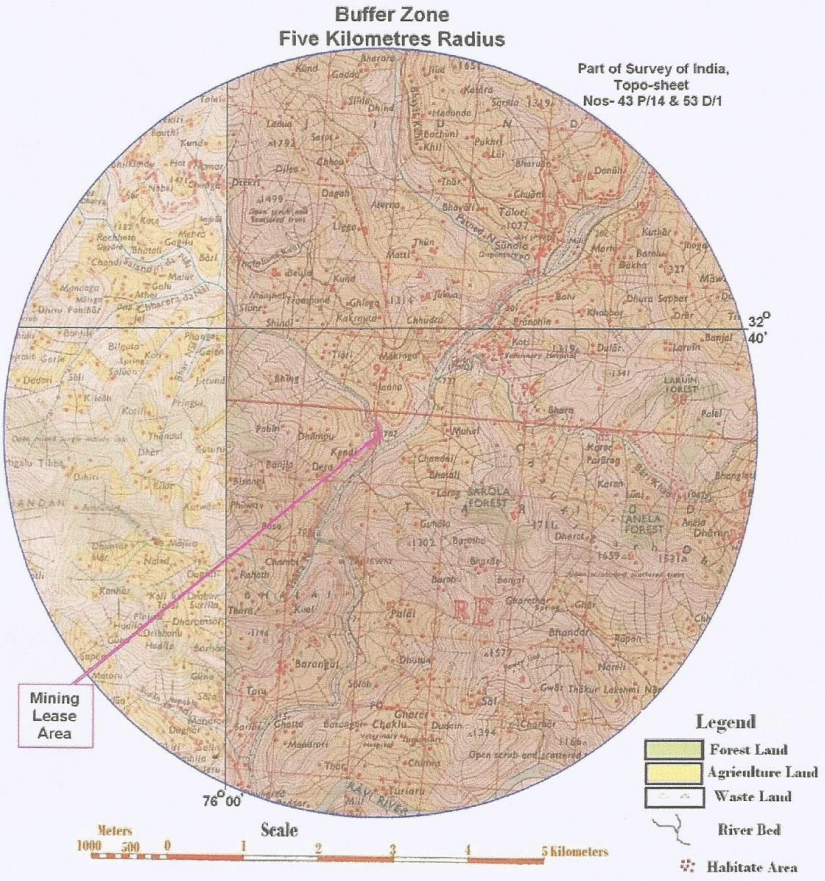

Figure 26: Shows the extended (Five kms Radius) zone of influence.

7.2.3. Demography of the area

The total population of the surrounding area, as per the 2001 Census is given below in the figure 27.

Education wise and employment wise break of population in surrounding villages is given in figure 28. The population details of Chamba District and Chamba Tahsil are given in figure 29.

Village & Tahsil	Kandi	Bhing	Janna (66)	Tiari	Parnohin	Muhal (300)	Chandi
	Tahsil Bhalai					Tahsil Chamba	
Total House Hold	86	53	72	103	91	39	133
Population	452	239	307	496	381	166	606
Male	219	122	148	247	197	78	298
Female	233	117	159	249	184	88	308
Schedule Caste	145	62	24	85	115	32	140
SC_Male	75	31	12	44	55	13	65
SC_Female	70	31	12	41	60	19	75
Schedule Tribe	0	0	0	0	0	1	0
ST_Male	0	0	0	0	0	1	0
ST_Female	0	0	0	0	0	0	0

Figure 27; Population of the villages of the zone of influence.

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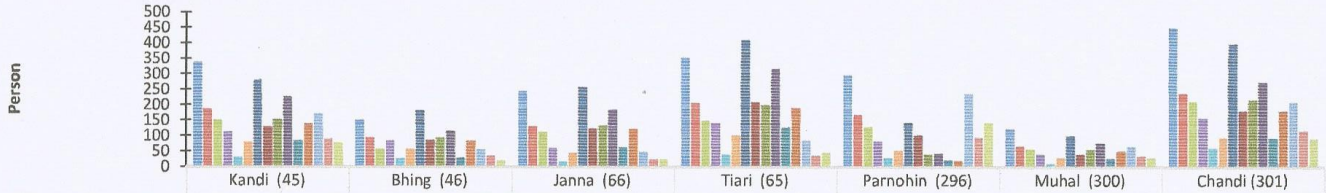
WORKING CATEGORISATION OF POPULATION OF VILLAGES SURROUNDINGTHE LEASE AREA - FALLING IN TAHSILS BHALAI & CHAMBA OF DISTRICT CHAMBA - (CENSUS 2011).



	Kandi (45)	Bhing (46)	Janna (66)	Tiari (65)	Parnohin (296)	Muhal (300)	Chandi (301)
Total Literate	338	153	245	355	298	125	449
Male Literate	186	95	131	207	168	67	237
Female Literate	152	58	114	148	130	58	212
Total Illiterate	114	86	62	141	83	41	157
Malel Iliterate	33	27	17	40	29	11	61
Female Illiterate	81	59	45	101	54	30	96
Total Workers	281	182	258	411	142	99	397
Male Workers	128	87	124	210	101	42	180
Female Workers	153	95	134	201	41	57	217
Marginal Workers	226	116	185	318	43	76	274
Marginal Workers M	85	30	63	129	23	26	93
Marginal Workers Fe	141	86	122	189	20	50	181
Non-Workers	171	57	49	85	239	67	209
Non-Workers M	91	35	24	37	96	36	118
Non-Workers Fe	80	22	25	48	143	31	91

Figure 28: Break up of literacy and employment of Population in Surrounding Villages (Census 2011).

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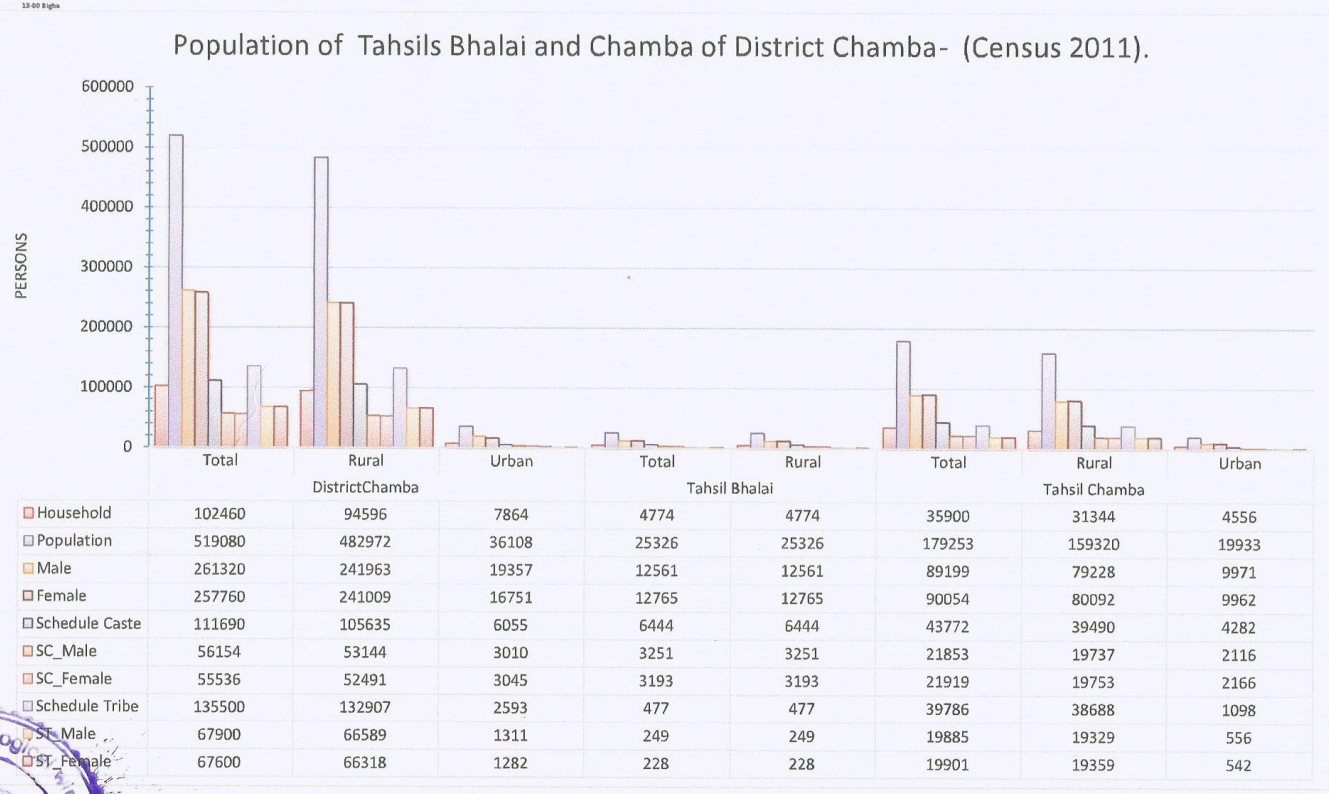

	DistrictChamba			Tahsil Bhalai		Tahsil Chamba		
	Total	Rural	Urban	Total	Rural	Total	Rural	Urban
Household	102460	94596	7864	4774	4774	35900	31344	4556
Population	519080	482972	36108	25326	25326	179253	159320	19933
Male	261320	241963	19357	12561	12561	89199	79228	9971
Female	257760	241009	16751	12765	12765	90054	80092	9962
Schedule Caste	111690	105635	6055	6444	6444	43772	39490	4282
SC_Male	56154	53144	3010	3251	3251	21853	19737	2116
SC_Female	55536	52491	3045	3193	3193	21919	19753	2166
Schedule Tribe	135500	132907	2593	477	477	39786	38688	1098
ST_Male	67900	66589	1311	249	249	19885	19329	556
ST_Female	67600	66318	1282	228	228	19901	19359	542

Figure 29: Population break up of Tahsil Chamba, District Chamba (Census 2011).

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7.3. Land Use Pattern

Primarily the land of the district can be classified in following 6 categories as

1. Land under Forest Cover.
2. Barren and un-cultivable land.
3. Permanent Pastures & other Grazing Land.
4. Land under Misc.Tree Crops and Groves.
5. Culturable waste
6. Other Fallow Land.
7. Cultivable Land.

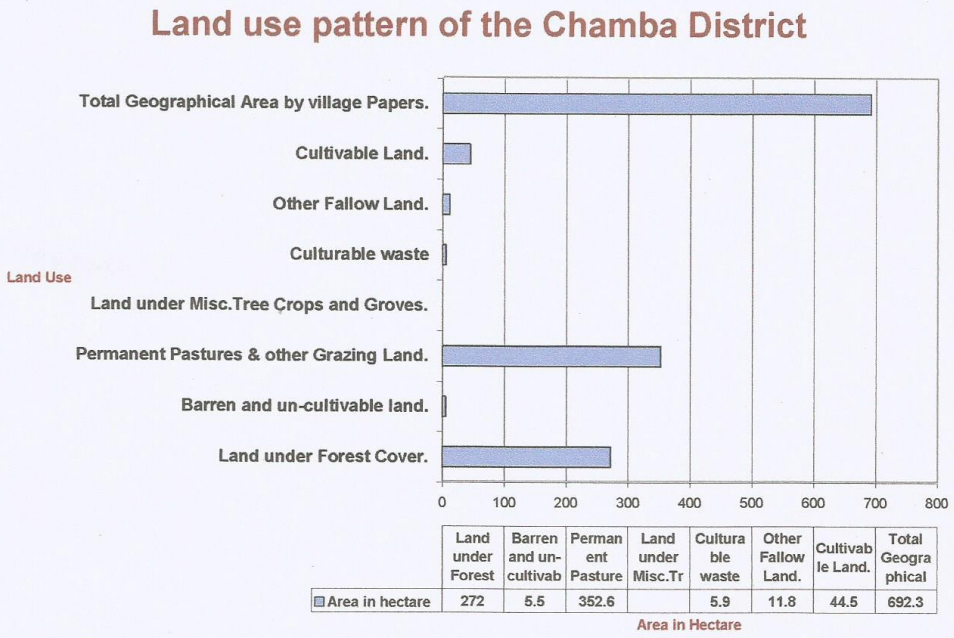


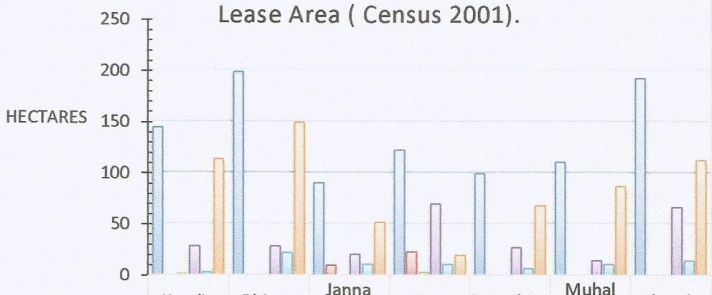
Figure 30: Figure Showing Land use pattern of the Chamba District.

The District Census 2001 classified the land available in surrounding villages into following five categories as shown in figure 31 and its percentage wise break up is given in figure 32.

1. Area not available for cultivation
2. Un-irrigated
3. Cultivable waste
4. Irrigated
5. Forest

Subhash Sharma
Flat No. 207, Basant Vihar, Kasumpti, Shimla-171009.
RQP registration No. HP/RQP/01/A/2004
Telephone No. 0177-2621548

Land Use Pattern of Villges Around:- Kandi, Bhing, Janna (66), Tiari, Parnohin, Muhal (300) & Chandi :- Mining Lease Area (Census 2001).



VILLAGES	Kandi	Bhing	Janna (66)	Tiari	Parnohin	Muhal (300)	Chandi
	Tahsil Bhalai				Tahsil Chamba		
Total Area	144	198	90	122	99	110	192
Forest Land	0	0	9	22	0	0	0
Total Irrigated	1	0	0	2	0	0	0
Unirrigated	28	28	20	69	26	14	66
Culturable waste	2	21	10	10	6	10	14
Area not available for cultivation	113	149	51	19	67	86	112

Figure 31: Showing Land use Pattern of villages around the mining lease area.

Percentage Wise Land Use Pattern of Villages:- Kandi, Bhing, Janna (66), Tiari, Parnohin, Muhal (300) and Chandi -Around Mining Lease Area.

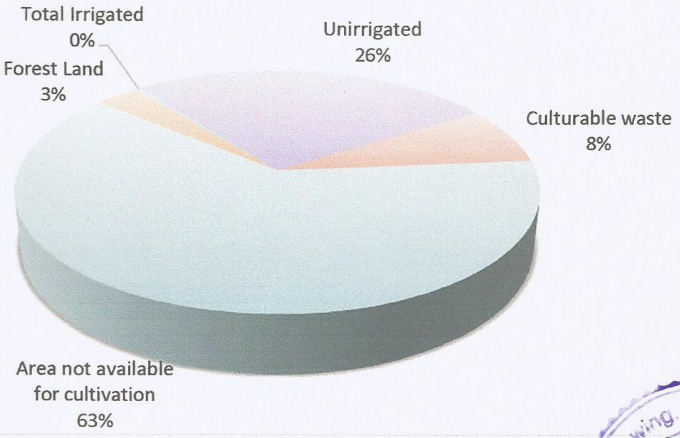


Figure 32: Percentage wise Land Use Pattern of Surrounding Villages.

Subhash Sharma
Flat No. 207, Basant Vihar, Kasumpti, Shimla-171009.

RQP registration No. HP/RQP/01/1/2004
Telephone No. 0177-2621548

For comparison the land use pattern of Chamba Tahsil is depicted in figure 33.
Percentage wise land use pattern of Chamba Tahsil is depicted in figure 34.

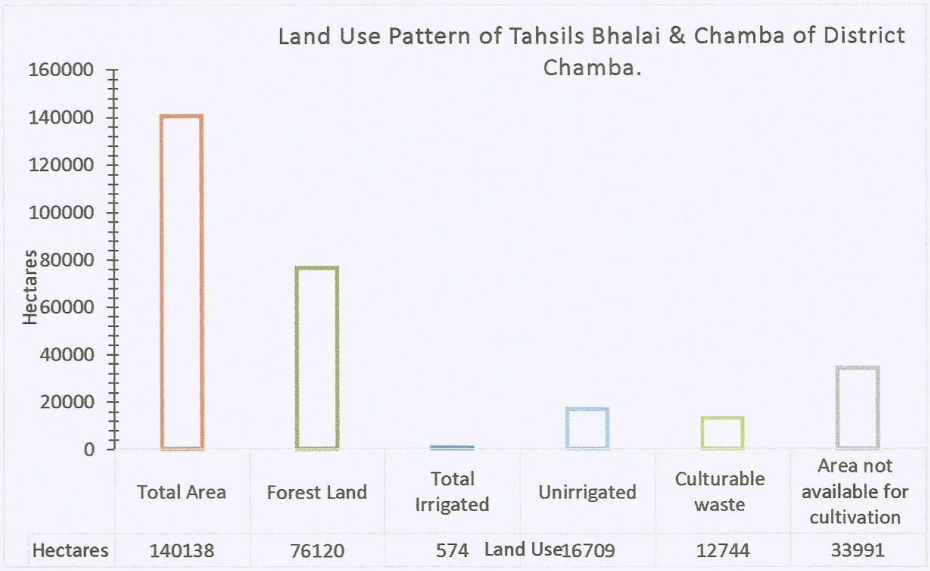


Figure 33: Land Use Pattern of Chamba tehsil.

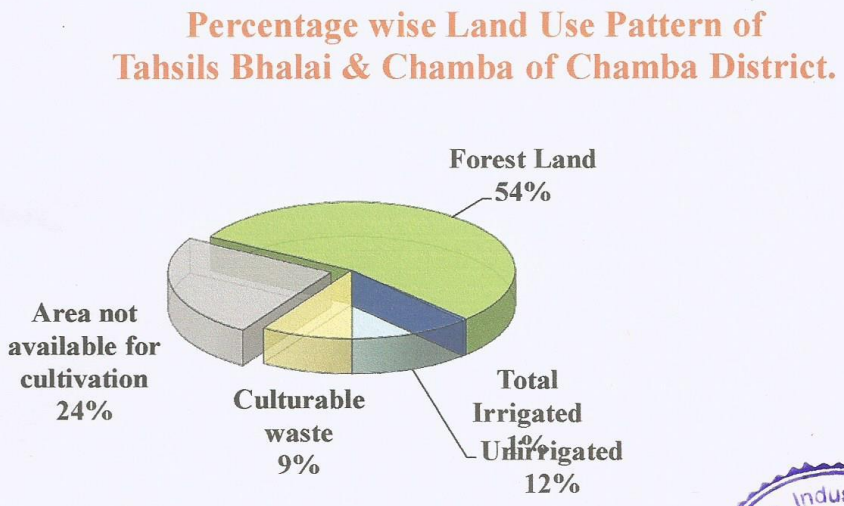


Figure 34: Land Use Pattern of Chamba tehsil.

Subhash Sharma
Flat No. 207, Basant Vihar, Kasumpti, Shimla-171009.
RQP registration No. HP/RQP/01/1/2004
Telephone No. 0177-2621548

7.4 AGRICULTURE:-

The economy of Chamba district is predominately agrarian and majority of population is dependent on agriculture and activities allied to it for earning their livelihood.

The soil in the district is generally clay and clayey loam with or without gravel. The soil depth varies inversely to hill slope. On ridges spurs precipitous slopes and southern aspect of the hills, the soil teds to be shallow and dry with barren rocks and boulders. The moisture retention capacity of the area is poor due mainly to the fact the bed rocks are argillaceous and the land the uneven. The crops usually face moisture stress during the remaining period of the year due to inadequate and irregular rainfall. The irrigation facilities are provided by lifting water from steams, shallow dug wells and medium to deep tube wells in the valley area.

The source of water and irrigation in district Chamba can be classified into following five classes

1. Lift Irrigation Scheme
2. Kuhls
3. Well used for domestic purposes
4. Well used for irrigation
5. Tube wells.

Generally two crops are taken from the land in the district. These crops categorized as *rabi* comprising of wheat, barley, sarson and kharf crops comprising of maize, paddy and potato.

Major food crops are grouped into three categories:

1. Cereals
2. Pulses
3. Other food crops like Chilies, ginger, sugarcane and turmeric.

Non- food crop area is of two kinds:

1. Oil seeds
2. Other non-food crops such as cotton, tobacco and fodder crop

The area under each category of the crop is given below in figure 35 and percentage of area is given in figure 36. Figure 37 and 38 shows production and percentage of production of each crop in district Chamba. The annual rotation of the crop is given in the figure 39. The area under vegetables and their production is given in the figure 40.

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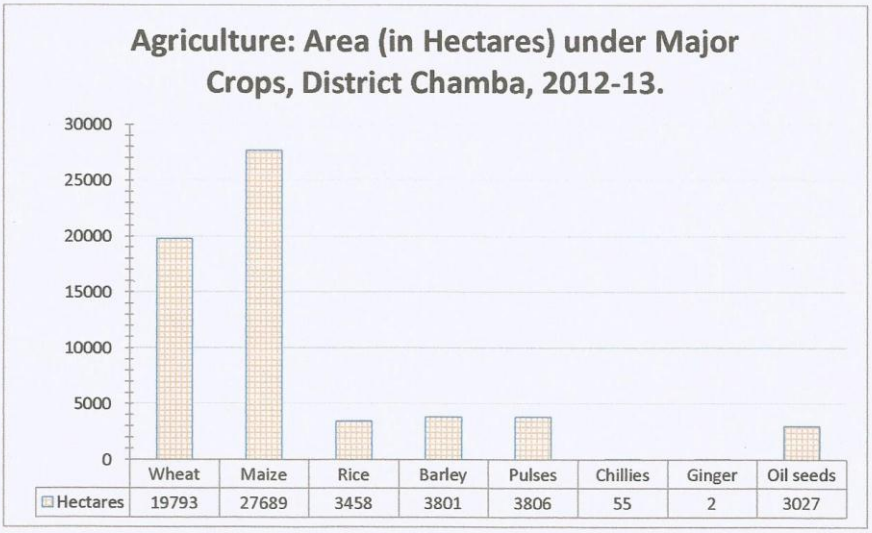

Figure 35 Showing area under different crops in Chamba District.

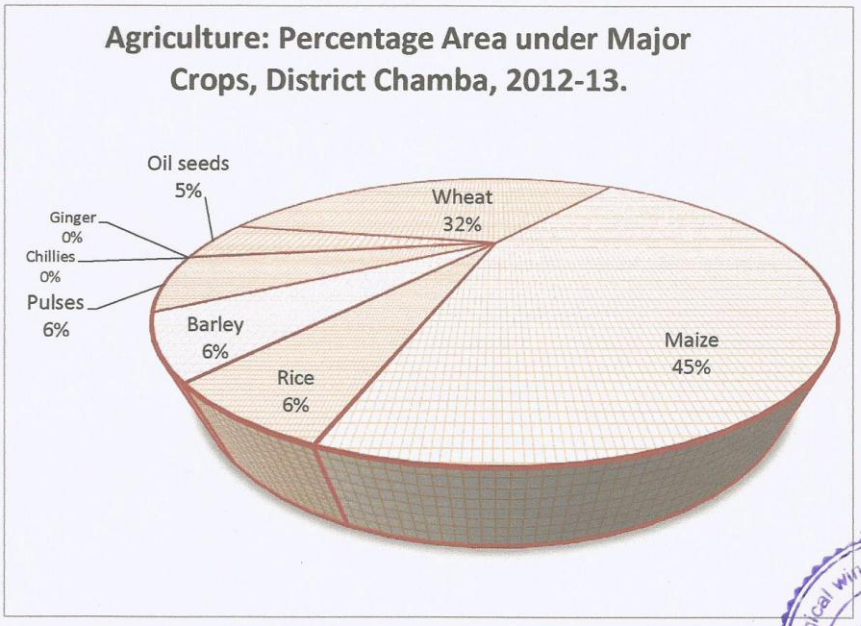

Figure 36: Showing Percentage of area under each crop in District Chamba.

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Telephone No. 0177-2621548

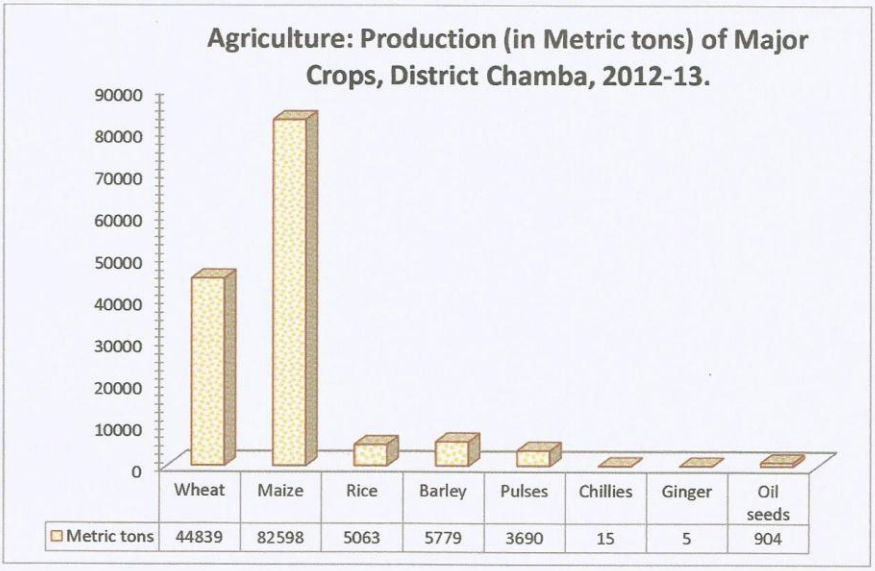

Figure 37: Showing Production of each category of crop in District Chamba

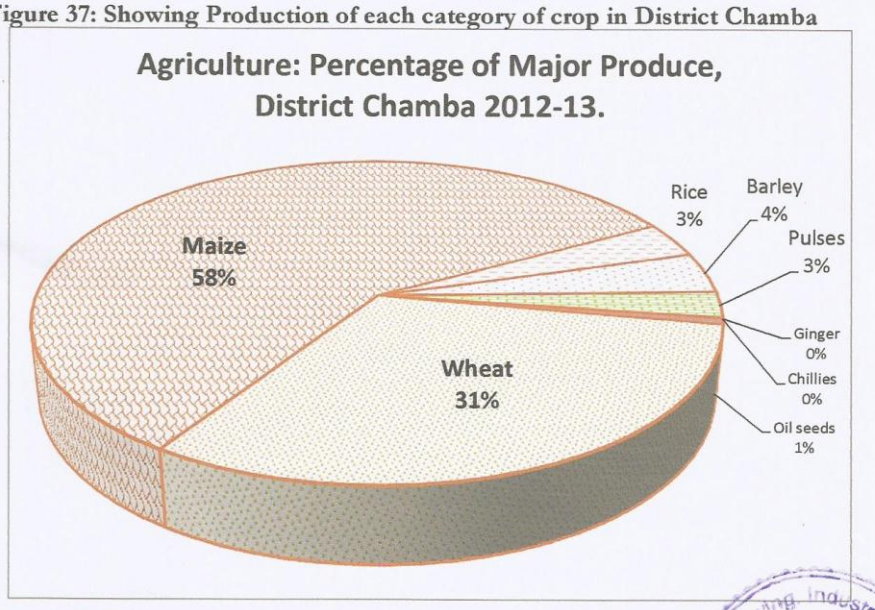

Figure 38: Showing Percentage of Production of each category of crop in Chamba District.

Subhash Sharma
Flat No. 207, Basant Vihar, Kasumpti, Shimla-171009.

RQP registration No. HR/RQP/01/1/2004
Telephone No. 0177-2621548

Crop Rotation Pattern in the Surroundings of the Mining Lease area.

June	July	August	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May
Maize						Wheat				Maize	
Maize			Toria			Wheat				Maize	
Maize			Potato			Wheat				Maize	
Maize			Potato			Potato				Maize	
Bhindi				Cauliflower					French bean / tomato / brinjal/ capsicum/ cucurbits		
Sesame						Sarson /G. Sarson/Raya					
Ginger / Colocasia / turmeric			Potato			Wheat			Ginger		
Paddy						Wheat					
Paddy						Berseem					
Paddy						Potato					
Kulthi /Mash			B. Sarson / Raya / G. Sarson /Taramira (Eruca Sativa)								
Mash						Wheat					
Maize + Mash						Wheat					
Arhar											

Figure 39: Crop rotation pattern in surrounding of the area.

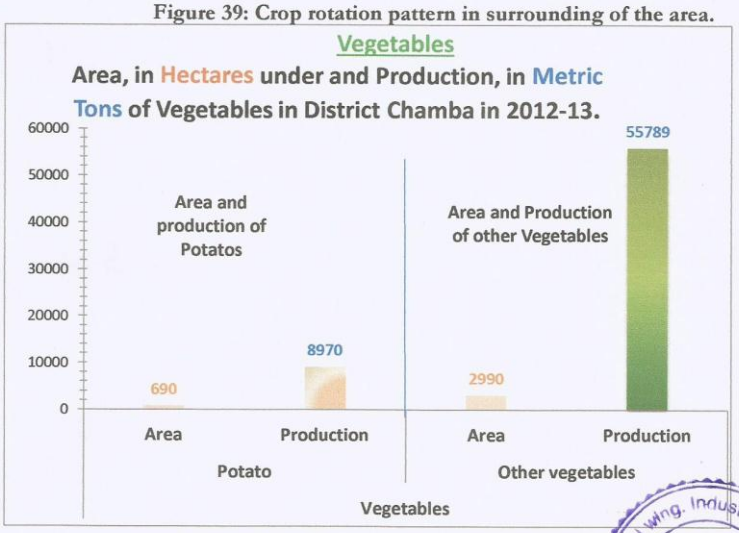

Figure 40: Showing area under vegetable in Hectare and their Production in Metric tons in District Chamba.

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7.5 HORTICULTURE:-

The topography and the agro- climatic conditions of the district are quite suitable for the production of the various fruits. Horticulture plays a an important role in the socio-economic upliftment and prosperity of the inhabitants of the district. The variation in climatic conditions prevailing in the district is viable for the production of temperate fruits, citrus, nuts and dry fruits apple as well as tropical fruits. The topography of the district can be grouped into three categories namely high hill areas located at a higher elevation, mid hill areas and low lying valley areas. Fruits of various kinds depending upon the terrain, climatic condition and soil are grown in the district.

The main horticulture produce of the area can be classified into following five categories.

1. Apple
2. Other temperate fruits
3. Subtropical fruits
4. Nuts and dry fruits
5. Citrus fruits

The area under each fruit and percentage of area to total district area as well as the percentage of the area under fruit in each category is given in the table 5. The table also shows the production of each fruit in district Chamba. Figure 41 and Figure 42 showing actual area and percentage wise covered under each category of fruit and the total production as per 2012-13 survey is shown in 43 and percentage of production in figure 44.

Table 5: Area under each fruit and their production in District Chamba

Status of Horticulture District Chamba, 2012-13		
Name of Fruit	Area in Hectares	Production in Metric tons
Apple	**12509**	**2739**
Plum	364	193
Peach	182	129
Apricot	359	230
Pear	358	245
Cherry	6	2
Kiwi	3	1

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Pomegranate	31	8
Olive	3	2
Persimmon	4	4
Strawberry	0	42
O T F	**1310**	**856**
GreenAlmonds	0	**0**
Almonds	248	42
Walnut	1288	415
Piccanut	41	26
Nuts & Dry Fruits	**1577**	**483**
Orange	29	47
Malta	0	0
K. Lime	344	353
Galgal	293	509
Others	0	0
Citrus	**666**	**909**
Mango	502	129
Litchi	118	22
Gauva	40	52
Aonala	33	32
Jackfruit	1	0
Papaya	1	0
Grapes	2	3
Loquat	1	4
Others	2	1
O S T F	**700**	**243**

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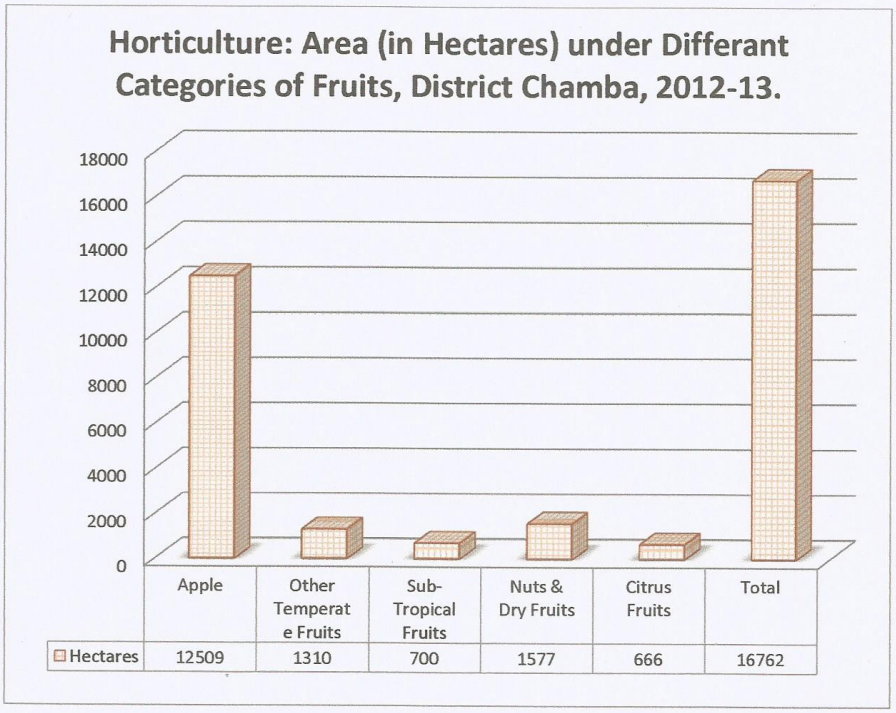

Figure 41; Showing Area of each category of fruit in District Chamba.

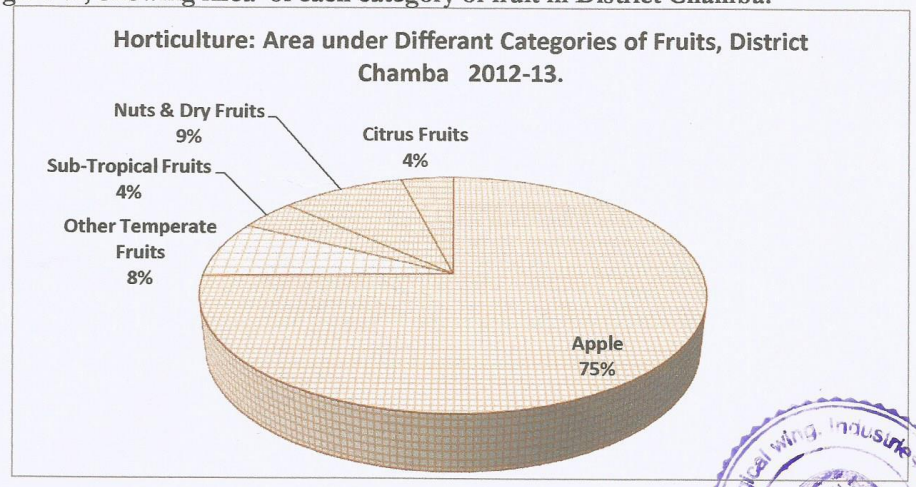

Figure 42: Percentage of area under Each Category of Fruit in District Chamba.

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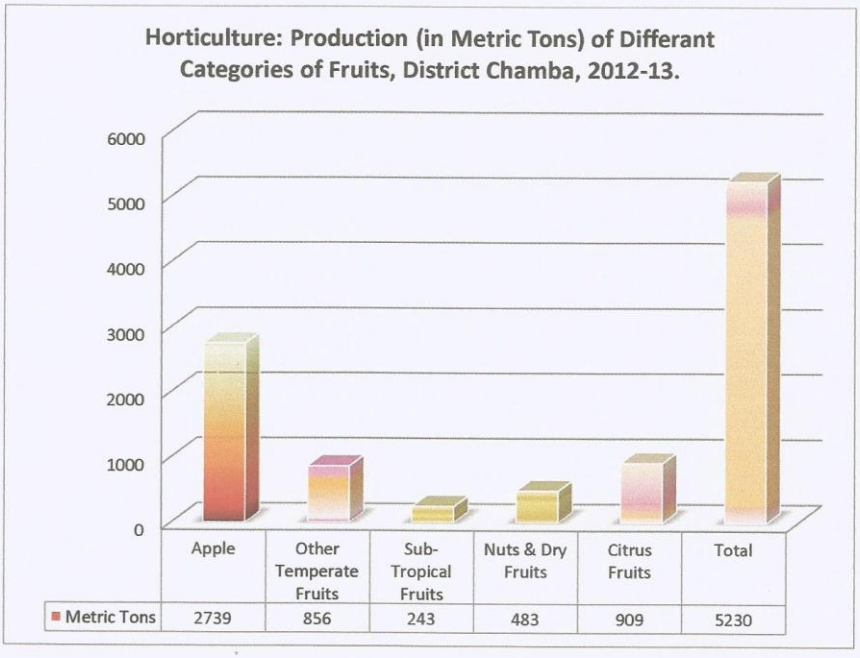

Figure 43 : Showing production of each fruit in District Chamba

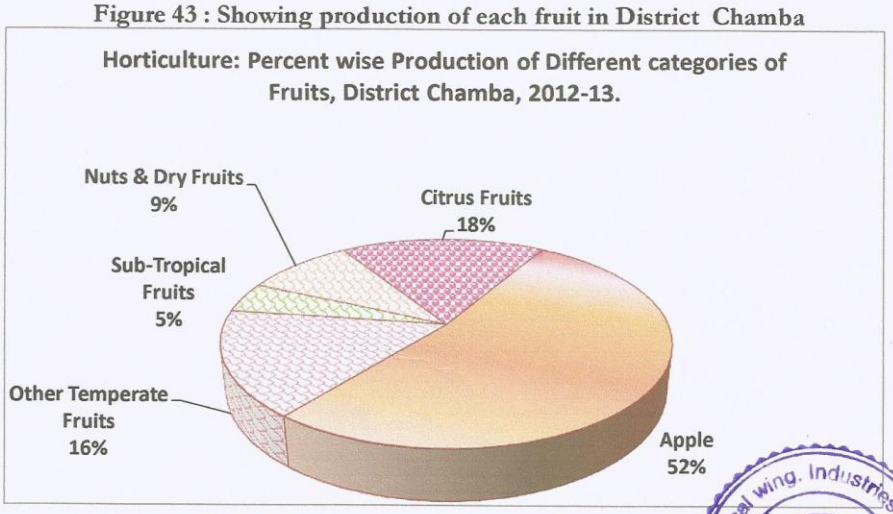

Figure 44; Percentage of Fruit Production of each Category of Fruit, District Chamba.

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7.6 Animal Husbandry

Economy of the district is predominantly agrarian but role of Animal Husbandry is equally important as the farmers have to keep the cattle for the purpose of ploughing and to obtain manure for maintaining fertility of the fields and to meet daily need of milk of their family.

The total population of the livestock in District Chamba is given in the figure 45 The population of the Buffaloes and Cattle in District Chamba is given in the figure 46.

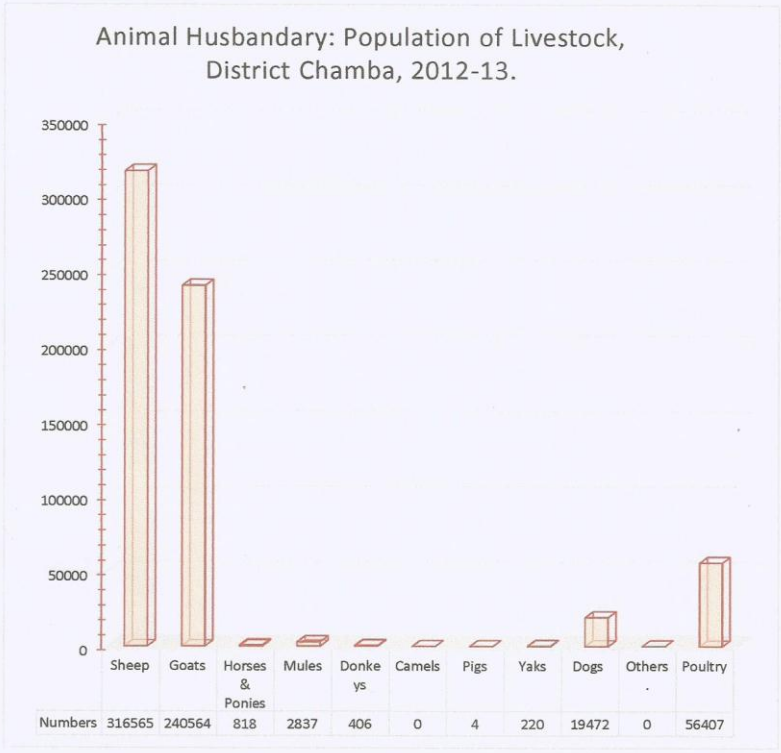

Figure 45: Livestock population of District Chamba.

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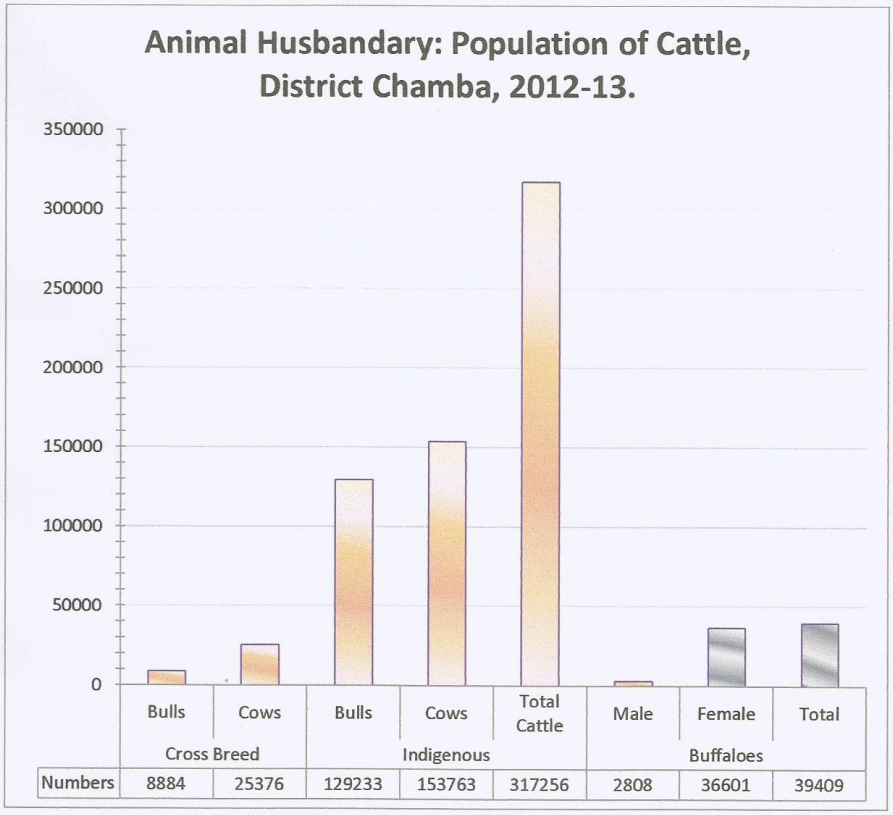

Figure 46: Showing Population of Cattle Buffaloes in District Chamba.

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7.7 Fisheries

There is a vast network of perennial rivers, khads and streams in the district. Following prominent of fish family are found in the rivers and streams of Chamba district:

Trout

Mahasir

Gid Seviyon

Dise Gugli and

Mirror Carps

The small fishes are observed only at selected places in the Khads; No fishing spot is available in the surrounding area.

The yield and value of fish catch is given in figure 47.

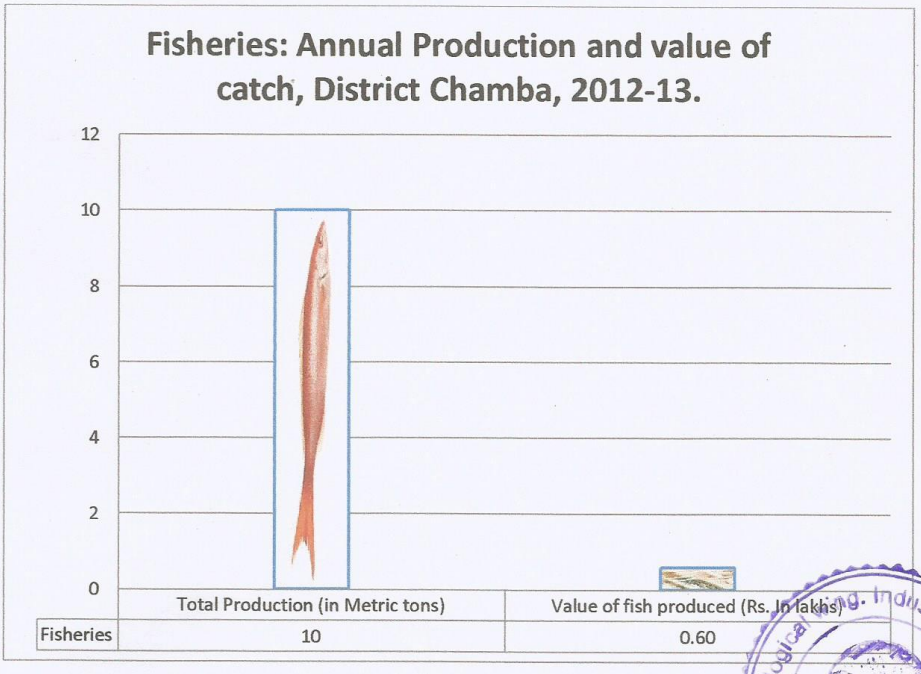

Figure 47: The yield and value of fish catch.

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7.8 Flora and Fauna

7.8.1 Flora

The Chil is considered the prevailing conifer up to about 1950 meters when it gives place to the Deodar and the blue pines. In Chamba district the forest range between scrub, sal and bamboo forest of the low hills to the fur and alpine forests of the higher elevation. In the area under consideration following are the most common trees

The most prominent varieties of trees found in the area are

Simbal (Bombex malabaricum),

Mango (Magniferaindica)

Tun (Cedrela toana)

Several species of acacia and albizia

Salambra (Odina wodier)

Termnalia

Jamun (Engenia jambolana

Larger tour

Bamboo

Shrubs

The most common shrub at the higher elevation is Barberis, indigopera and Desmodium and following other shrubs are also found

1. Vitex
2. Munj
3. Ber
4. Ipomea
5. Dodonea &
6. Bamboo.

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7.8.2 Fauna

Animals

Due to wide variations in the attitude a large variety of fauna is available in the forests of the district. The black bears are common in the higher valley. The leopards are found throughout the district. Barking dears and gural are found at medium elevation the musk deer or Kastura and serao are found in certain areas. . Most commonly found is the porcupine, which is found in almost in the entire district. Common Mammals & Birds in the Chamba District is given in the Table 6.

Table 6: Mammals in Chamba

Zoological Name	English Name	Common Name
Felis bengalensis	Leapard Cat	Mirag, Bagh
Felis Chane	Jungle Cat	Jangli Billi
Muntucus muntisk	Barking Dear	Kakkar
Vaulpes bengalensis	Fox	Lomari, Fohiki
Camis aureus	Jackal	Gidder
Macaca mulatta	Ressus monkey	Lal Bander
Preshytes entellus	Languor	Languor
Sus sacrofa	Boar	Suar
Hystrix indica	Porcupine	Sehal
Lepus nigricoilis	Hare	Khargosh, Sherru, farru
Moschus moschifarus	Musk deer	Kastura
Capra ibex Ibex	Ibex	
Hemitragus jemlahicus	Himalayan Thar	Thar
Selenarctos thebatanus	Black Bear	
Ursus arctos	Brown Bear	
Panthera unica	Snow leopard	
Sus scrofa	Wild Boar	
Axis axis	Spotted deer	Chital
Cervus unicolor	Samber	
Hylopetes fimbriatus	Flying squirrel	
Panthera pardus	Leopard	Cheetah
Felis chaus	Jungle cat	
Paradoxurus hermaphroditus	Indian Civet	Sakralu
Hipposideros armiger	The great Himalayan leafnosed Bat	Chamgadar
Paguma larvata	Himalayan Palm Civet	

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Table 7: Birds in the Chamba District

Birds		
Zoological Name	**English Name**	**Common Name**
Milvus migrants	Vulture	Cheel, Gidh, Eell
Eudynamys scolopacca	Koel	Koel
Columbia livia	Pigeon	Kabuttar
Coracias bengalensis	Blue jay	Nilkantha
Colums livia	Hawk	Baj
Francolius francolinus	Black partridge	Kala Tittar
Francolius pondicerians	Grey partridge	Safed Tittar
Payo crisslatus	Peacock	Mor
Coturnix coturnix	Common quail	Bater
Alectoris graeca	Chakor	Chakor
Crovus splendens	Crow	Kanwa
Prottacula Karneri	Parrot	Totta
Lophophorus impejanus	Monal	Monal / Karadi
Tertaogallus himalayanensis	Snow cock	
Tragopan melanocephalus	Western horned Tragopan	Phulgar/Jujurana
Picoides macei	Fulvourbreasted Pied Woodpecker	Kathfowra
Streptopelia decaocto	Ring dove	Gughi
Streptopelia chinesis	Spotted dove	Gughi
Accipiter badius	Shikra	
Aquila rapax vindhian	Tawny eagle	
Ducula bicolor	Green Pigeon	
Parus rufonuchalis	Tits	
Picus canus	Black napped Woodpecker	Woodpecker
Drycocopus javensis	Woodpecker	
Muscicapa subrubra	Himalayan Fly Catcher	
Acidotheres tristis	Common Myna	Ghatari
Terpsiphone paradisi	Paradise flycatcher	Choti- Pinja
Grus spp.	Cranes	
Grus antigone	Sarus Crane	Saras
Passer domesticus	House sparrow	
Carduelis spinoides	Himalayan Green Finch	Chiria

In the area and surrounding hills following are the common animals:-

- Leopard (Bagher)
- Hare
- Wild Bore (Jangli Soor)

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- Jackal
- Barking Deer (Kakkar)
- Monkey
- Sambar
- Pig
- Monkey

Birds

- Chakor
- Crow
- Red Jungle Fowl (Jangli Murga)
- Black Partridge (Kala Titar)
- Grey Partridge (Safed Titar)
- Woodpecker

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7.9 Climate

7.9.1 Climatic condition

The Climate of the lease out area can be classified into following three categories

1. Winter
2. Summer
3. Rainy

The climatic information given below is based on the data obtained from Revenue Department of Himachal Pradesh. The Indian Meteorological Department is maintaining a Meteorological Station at D.C office Chamba

Climate of the area, District Chamba, Himachal Pradesh			
Climate	**Winter**	**Summer**	**Rainy**
Period	**Oct. to Mid March**	**Mid-March to June**	**July to September**
Weather	**Cool**	**Hot**	**Humid**

7.9.2 Temperature

Mean monthly maximum and minimum temperature recorded at Chamba varies from 5^0 C to 38^0 C.

7.9.3. Rainfall

The average annual rainfall of Chamba district is given below in the figure 48.

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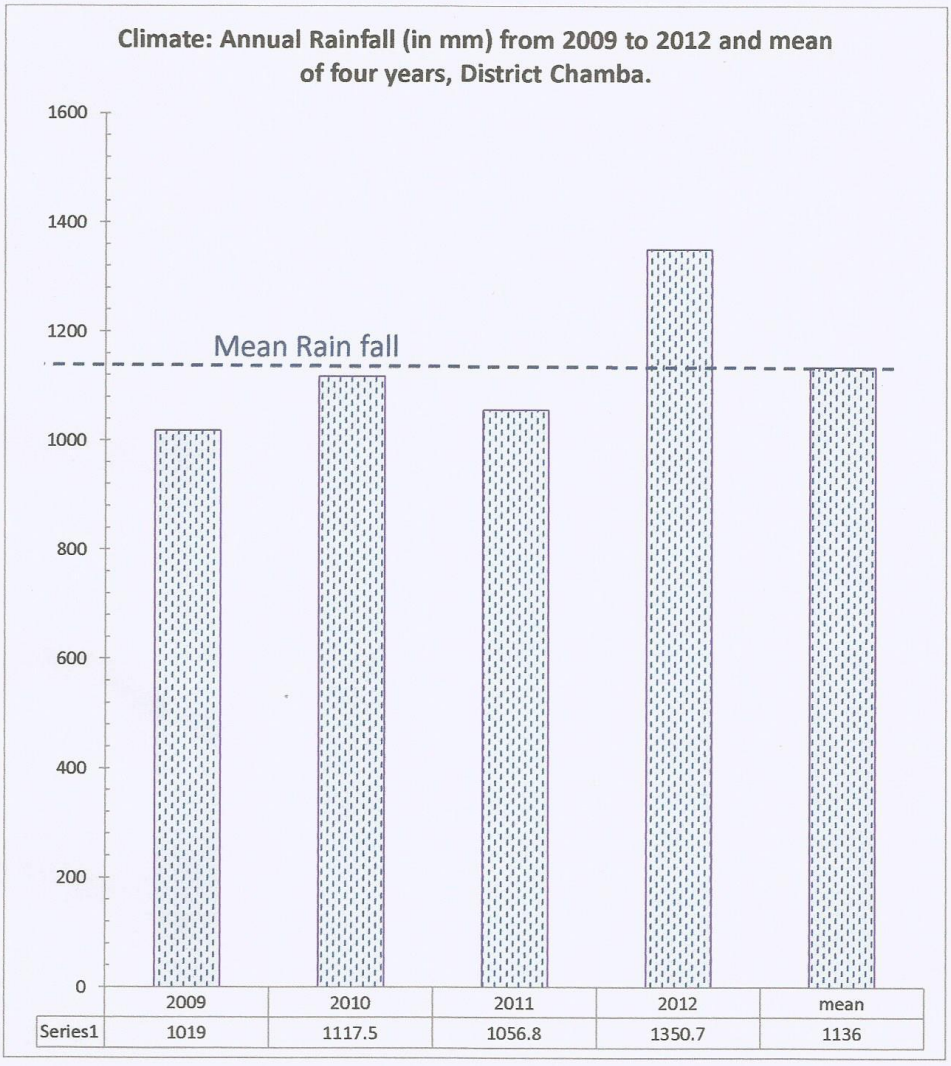

Figure 48: Annual rainfall recorded at IMD Chamba.

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8.10 IMPACT OF MINING ACTIVITY & CONTROL MEASURES

Any development activity such as mining is likely to have beneficial as well as adverse impact on existing environment on following parameters:

- Change in Topography
- Climate
- Air Quality,
- Drainage,
- Water Resources and Quality,
- Noise level and Ground vibrations,
- Soils,
- Flora & Fauna
- Land use Pattern and
- Socio- economic conditions.

8.10.1 CHANGE IN TOPOGRAPHY & LAND USE PATTERN.

IMPACT & MITIGATION

- The lease area is part of Himalayan range.
- It is part of a khad bed.
- The highest point of the lease area is at 716 metre above mean sea level.
- The lowest point is at 707 m above MSL.
- Mine Area is divided in two block.
- Each block would be rested for two consecutive monsoons.
- The mining shall be confined to well within the river bed corridor.

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- No mining near the banks up to $1/10^{th}$ of its width can be undertaken as per guidelines, i.e. 10 to 13 metres, from banks.
- Mining shall be undertaken to a depth of one metre only.
- The lease area is and shall remain river bed.
- Thus the topography or land use of the Khad bed *per se* will not be changed.
- The mining lease area is devoid of any vegetation.
- The land use of the mining lease area is defined in the Revenue record as 'Gair Mumkin Khad' (Un-useable river).
- The land under active mining would always remain river bed, during as well as post mining.

8.10.2 EFFECT ON FLORA & FAUNA

- The mining lease area is river bed.
- There is hardly any flora or fauna on the river bed to attract any protective or mitigating measures

8.10.3 SOIL COVER

- The mining will be confine to Khad bed.
- It has no soil cover as the area gets frequently flooded during monsoons.
- Thus, there shall be no impact on any natural soil cover.

8.10. 4 EFFECT ON HYDROLOGY

- The mining area is part of river bed.
- The mining will be confine to top one metre of river bed.

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- The mining will be confine to central part of river bed, away from banks.
- Thus, mining would be dredging the river bed and reducing the silt burden downstream.
- The mining will be undertaken during dry seasons.
- The ground water (under current of the river) will not be disturbed

8.10.5 EFFECT ON CLIMATE

- The mining lease area is very small, only 1.0520 hectares.
- The mining will be confined to, within the river banks.
- The mining will be confine to top one metre.
- Some micro level impact near the freshly exposed surface may happen for short duration as some humid material may be exposed
- The impact will need no mitigating measures.

8.10.6 AIR POLLUTION

- No blasting material is to be used.
- The major contributors of air pollution in open cast mining are excavation, loading and transportation, generating dust, which leads to momentary rise in the suspended particulate matter (SPM).
- The mining activity will be limited to excavation of about 40 metric tons of stone and bajri for crusher and 10 tons of sand for free sale per day.
- One tipper trucks / two tractor trolleys will be able to move the required stone and bajri from mine to crusher which is within one kilometre from the mine, in about four trips and

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sand to market for free sale depending upon market requirement.

- This activity would generate negligible disturbance to air quality.

8.10.7 NOISE POLLUTION

IMPACT

- The mining area represents calm surroundings.
- The mining shall be manual causing hardly any noise.
- The noise would be generated by the movement of trucks / tractor trolleys engaged in the transportation of the mined material.
- About five trucks trips would be required for transporting mined material per working day from mining area to crusher.

MITIGATION MEASURES

- The dedicated tipper truck would properly and regularly undergo maintenance so as to create minimum noise.
- Special care would be taken to properly maintain the silencers of the vehicles.
- No use of horn shall be allowed in or near the mining area.
- A thick belt of broad leaf trees, bushes and shrubs would be planted near the banks of Khad to screen the noise.

8.10.8 SOCIO- ECONOMIC IMPACT

- No adverse impact on the socio-economic condition of the area is envisaged.
- The induction of mining sector development in and around predominantly agricultural area is bound to create its impact on the socio-economic life of the local inhabitants. The

impact is generally positive. As can be seen in figure 49 there is high percentage of *unemployed (23%)* and *underemployed (32%)* people in the area despite moderately high level, (74 percent literates, figure 50) of literacy. The mining activity though with small direct employment potential but would create jobs for at least 15 persons directly and indirectly.

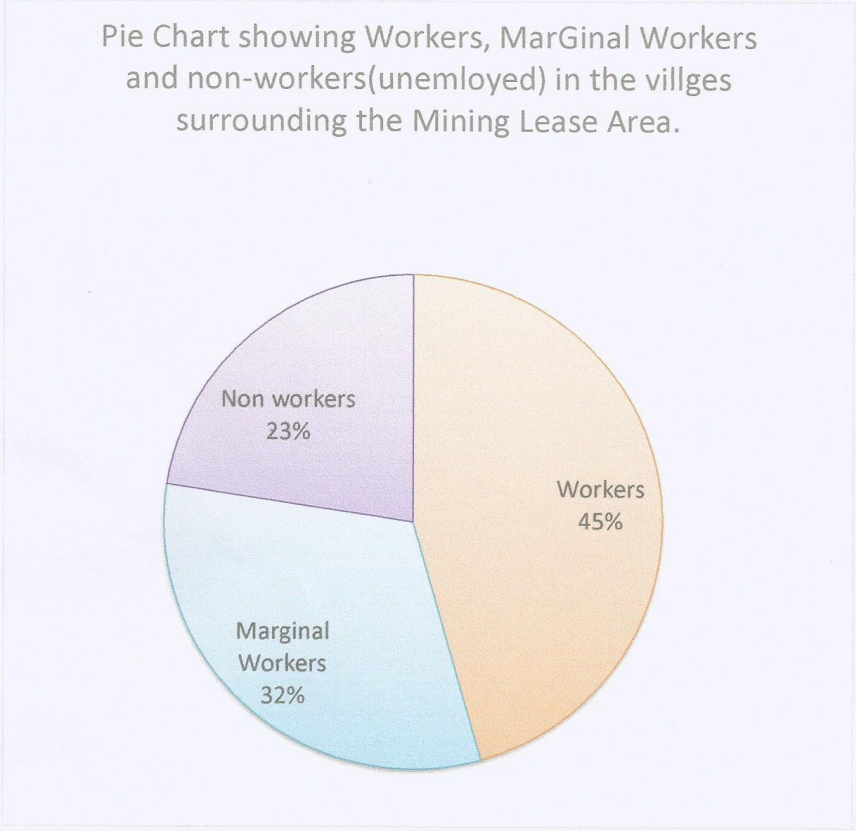

Figure 49: Percentage wise break up of employment in the villages adjoining the mining lease.

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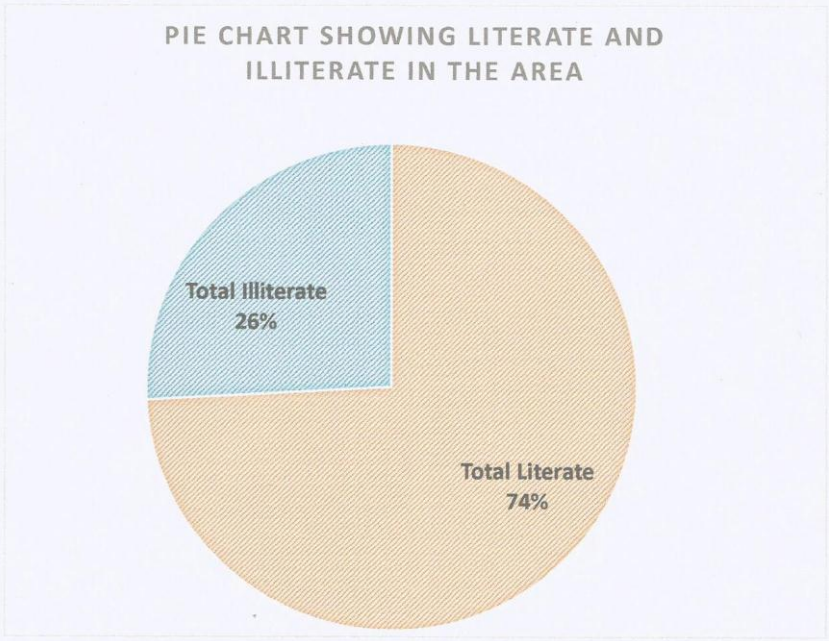

Figure 50: Percent wise rate of literacy in the adjoining villages.

- However the mining project in the area will have various positive impacts in the area. The mining project and *its downstream* project construction activity will provide work to as many as 15 persons. Considered their total minimum earning per day to a tune of Rs. 3750 per day (@Rs.250/= per person per day), the area will get a supplementation in its financial and social wellbeing.

8.11 RECLAMATION PLANNING

- The mined area being part of the river course cannot be reclaimed for any other purpose.
- The land under active mining would always remain river bed, during as well as post mining.

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Flat No. 207, Basant Vihar, Kasumpti, Shimla-171009.
RQP registration No. HP/RQP/01/1/2004
Telephone No. 0177-2621548

- However, mid-stream mining in accordance with approved mining plan would lead to systematic reduction of silt load in the Chamera Project.

8.12. WASTE MANAGEMENT

As explained earlier the following category of the waste is generally generated during river bed mining.

- Silt/ Sand- Clay Mixture

The quantity of waste generated is given below in the figure 59.

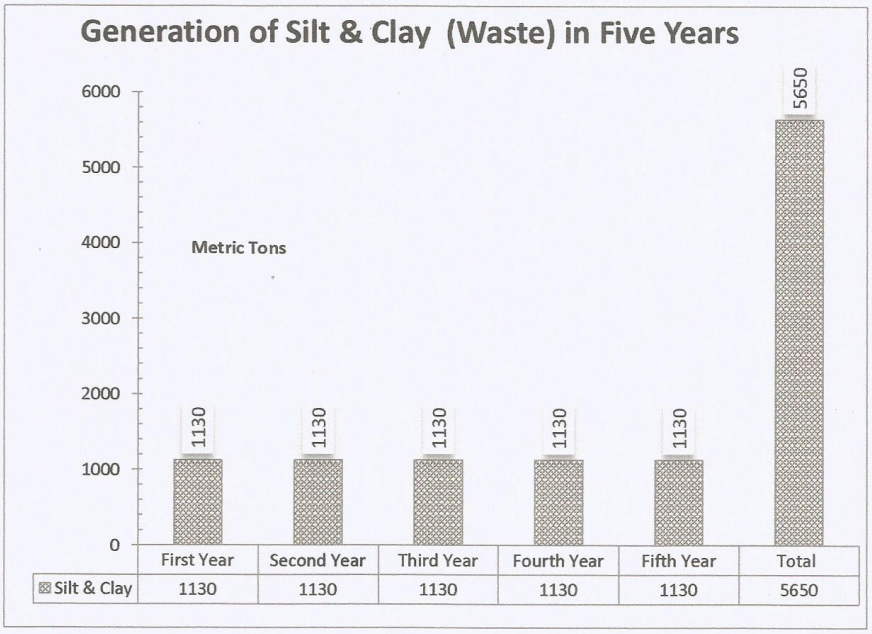

Figure 51:-Showing the year wise production of waste.

The waste will be left on the river bed for back filling.

8.13 BANK PROTECTION

In view of the fact that the banks of Salandri Nal are formed of rocks of Chamba formation and are quite narrow at this place, removal

of load would reduce the chances of erosion of banks, therefore, no further measure for protection of banks would be required. However, pre-cautions shall be taken so as not to cause any damage to the banks.(Map 3).

8.14 PLANTATION

The proposed plantation, shall be undertaken outside the river bed area and the mining lease area.

8.15 TENTATIVE COST OF THE REHABILITATION

As the mining area is well confined within the banks and require no bank protection measures therefore, no rehabilitation measures for the mining lease area are required to be taken.

Subhash Sharma
Flat No. 207, Basant Vihar, Kasumpti, Shimla-171009.

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Telephone No. 0177-2621548

Declaration

This is to declare that the Mining Plan of part of Salandri Khad, Minor Mineral Lease for Sand, Stone and Bajri, situated in Khasra No 673/484/1 measuring, 13-00 Bighas (1.0520 Hectares) falling in Mauza Janna, Sub Tahsil Bhallai, District Chamba, has been prepared with my consent and approval and that I shall abide by all commitments there under.

- ✓ The 'Mining Plan and Progressive Mine Closure Plan' complies all statutory rules, regulation, orders made by competent authorities of State or Central Government or orders passed by courts have been taken into consideration and wherever specific permissions are required, shall be obtained.
- ✓ We undertake to implement all measures proposed in the 'Mining Plan and Progressive Mine Closure Plan' in time bound manner.
- ✓ We have deposited a sum of Rs..... with the competent authority of the State Government in form of fixed deposit Receipt as financial assurance of the same.
- ✓ In case of default on our part, the approval of Mining Plan may be withdrawn and aforesaid sum assured may be forfeited

Date
Place

Amar Chand Sharma,
Village Lachhori
Post office Thakurmatti,
Tahsil Bhalai,
District Chamba

Geological Wing, Industries Deptt. Govt.

Certificate

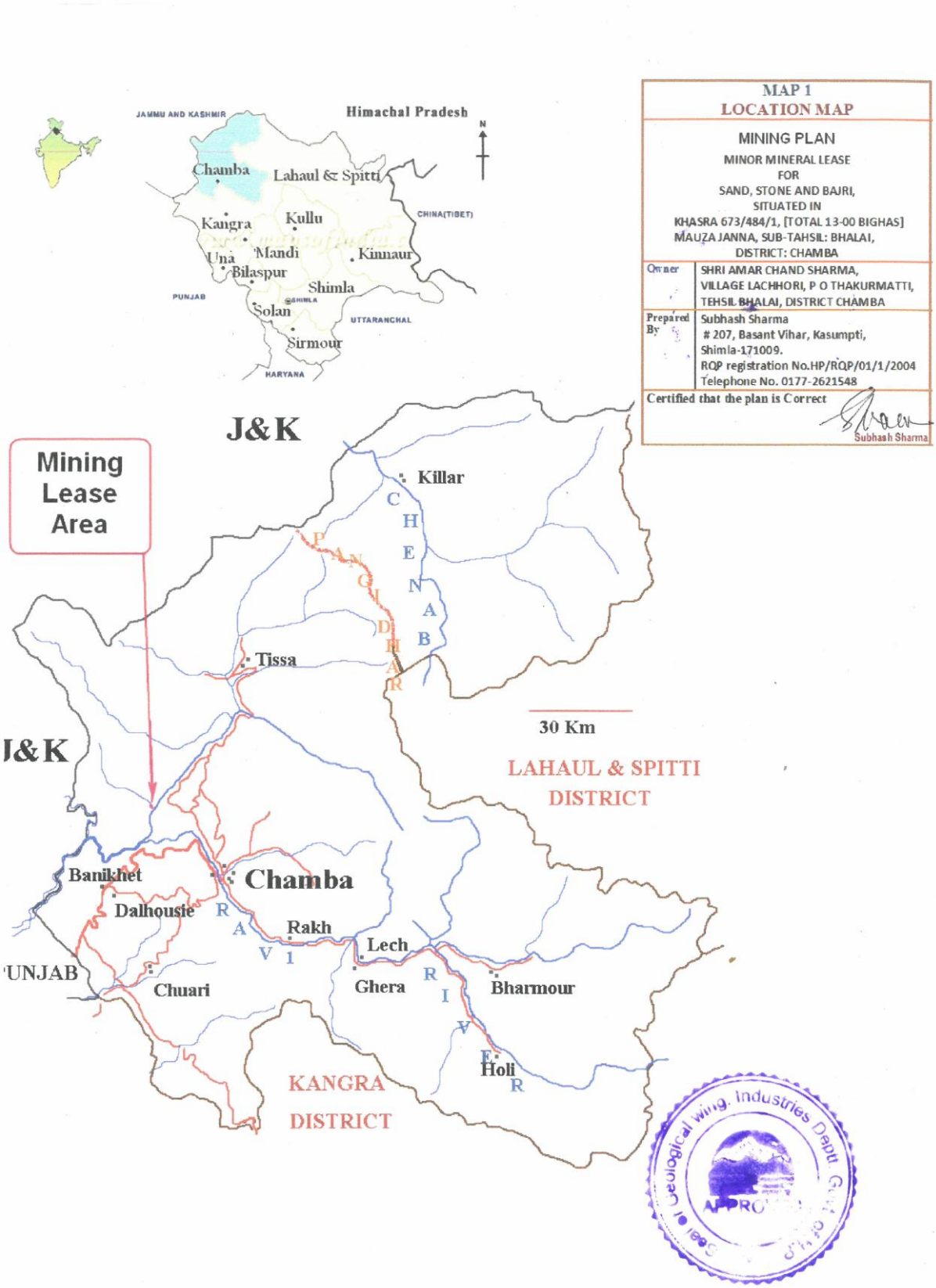
Certified that the provisions of the Himachal Pradesh Minor Minerals (Concession) and Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules 2015, Metalliferous Mines Regulation 1961 and other guidelines issued in this regard, from time to time, have been complied for, in the preparation of Mining Plan , for mining of Sand, Stone and Bajri, falling in Khasra number 673/484/1, 13-00 Bighas (1.0520 Hectares), Mauza Janna, Sub-Tahsil Bhalai and District Chamba, of Shri Amar Chand Sharma, Village Lachhori, Post Office Thakurmatti, Tahsil Bhalai of District Chamba, Himachal Pradesh.

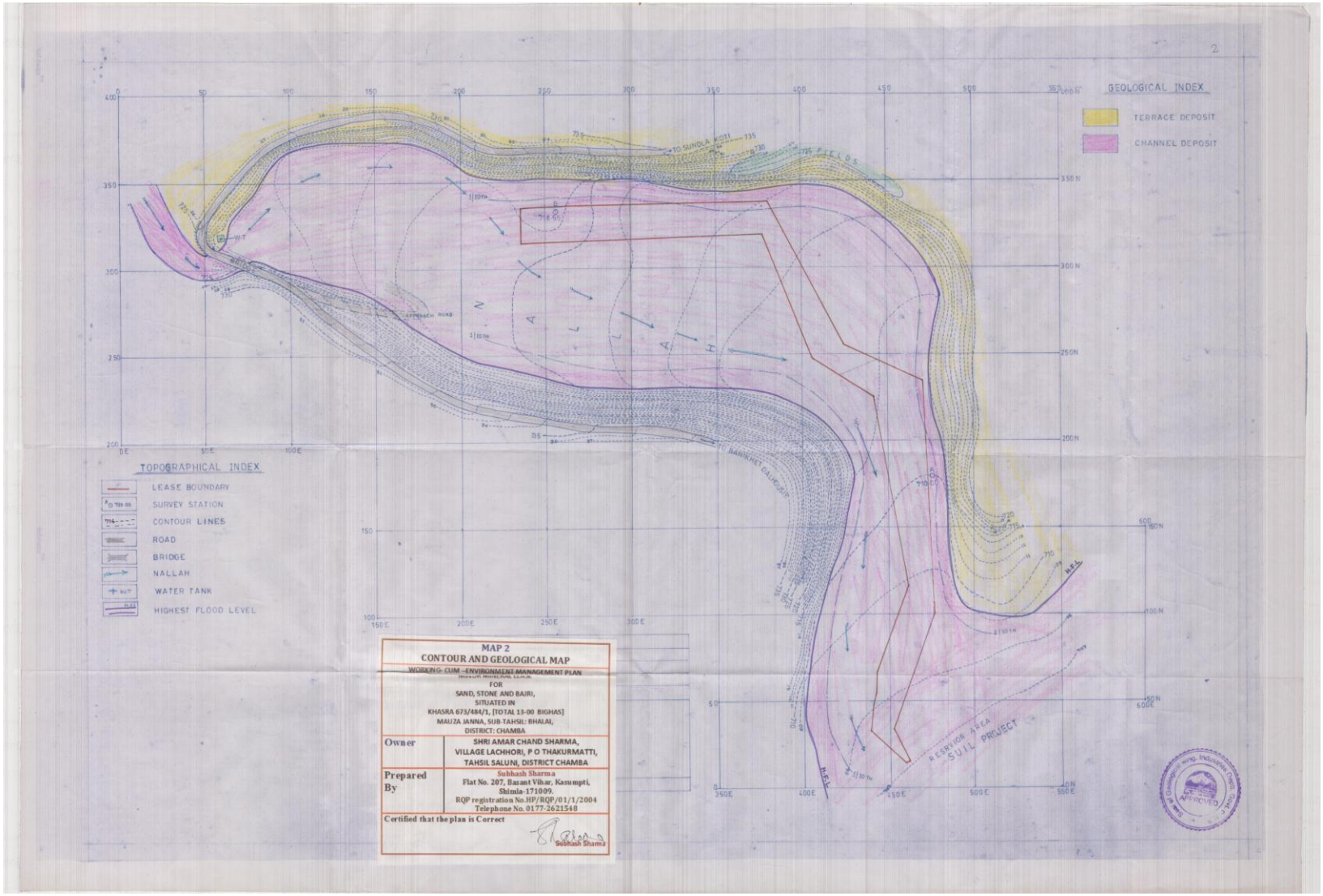
- While preparing the 'Mining Pan' including progressive mine closure plan all statutory Rules, Regulations, Orders made by competent authorities of State or Central Government or orders passed by Courts have been taken in consideration.

- The information provided and data furnished in this 'Mining Plan' is correct to the best of my knowledge.

Date
Place: Shimla

Subhash Sharma
Flat No. 207, Basant Vihar, Kasumpti,
Shimla-171009.
Telephone No. 0177-2621548.
RQP registration No.HP/RQP/01/1/2004,


MAP 1
LOCATION MAP
MINING PLAN
MINOR MINERAL LEASE
FOR
SAND, STONE AND BAJRI,
SITUATED IN
KHASRA 673/484/1, [TOTAL 13-00 BIGHAS]
MAUZA JANNA, SUB-TAHSIL: BHALAI,
DISTRICT: CHAMBA
Owner
SHRI AMAR CHAND SHARMA,
VILLAGE LACHHORI, P O THAKURMATTI,
TEHSIL BHALAI, DISTRICT CHAMBA
Prepared By
Subhash Sharma
207, Basant Vihar, Kasumpti,
Shimla-171009.
RQP registration No.HP/RQP/01/1/2004
Telephone No. 0177-2621548
Certified that the plan is Correct
Subhash Sharma
JAMMU AND KASHMIR
Himachal Pradesh
Chamba
Lahaul & Spitti
Kangra
Kullu
Una
Mandi
Kinnaur
Bilaspur
Shimla
Solan
Sirmour
PUNJAB
HARYANA
UTTARANCHAL
CHINA(TIBET)
N
J&K
Mining Lease Area
Killar
CHENAB
PANGI DHAR
Tissa
30 Km
LAHAUL & SPITTI DISTRICT
J&K
Banikhet
Dalhousie
Chamba
RAVI
Rakh
Lech
UNJAB
Chuari
Ghera
RIVER
Bharmour
Holi
KANGRA DISTRICT
Geological wing, Industries Deptt. Govt. of H.P.
APPROVED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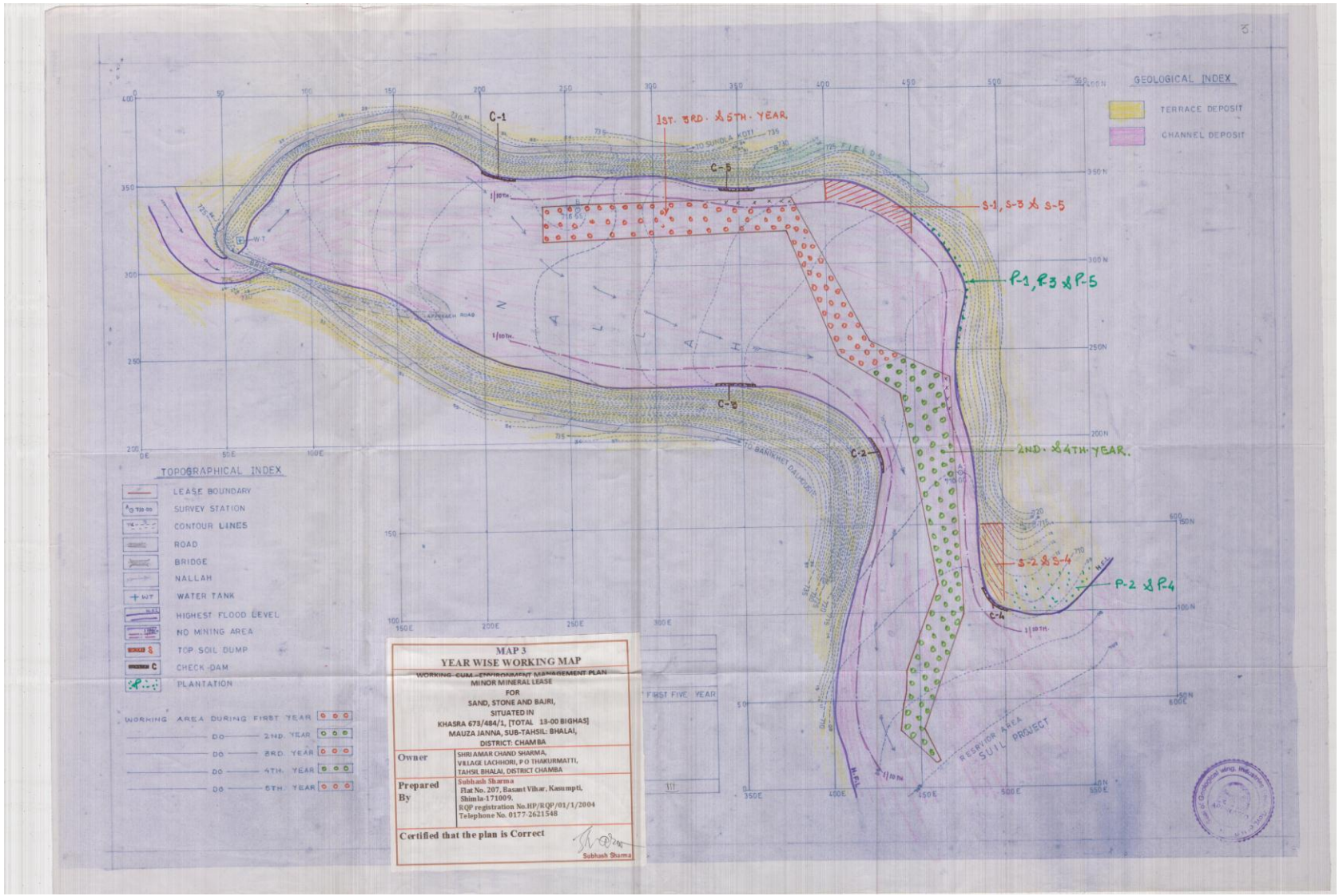
FOR
SAND, STONE AND BAJRI,
SITUATED IN
KHASRA 673/484/1, [TOTAL 13-00 BIGHAS]
MAUZA JANNA, SUB-TAHSIL: BHALAI,
DISTRICT: CHAMBA
Owner
SHRI AMAR CHAND SHARMA,
VILLAGE LACHHORI, P O THAKURMATTI,
TAHSIL SALUNI, DISTRICT CHAMBA
Prepared By
Subhash Sharma
Flat No. 207, Basant Vihar, Kasumpti,
Shimla-171009.
RQP registration No.HP/RQP/01/1/2004
Telephone No. 0177-2621548
Certified that the plan is Correct
Subhash Sharma
RESERVOIR AREA
SUIL PROJECT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FOR
SAND, STONE AND BAJRI,
SITUATED IN
KHASRA 673/484/1, [TOTAL 13-00 BIGHAS]
MAUZA JANNA, SUB-TAHSIL: BHALAI,
DISTRICT: CHAMBA
Owner
SHRI AMAR CHAND SHARMA,
VILLAGE LACHHORI, P O THAKURMATTI,
TAHSIL BHALAI, DISTRICT CHAMBA
Prepared By
Subhash Sharma
Flat No. 207, Basant Vihar, Kasumpti,
Shimla-171009.
RQP registration No.HP/RQP/01/1/2004
Telephone No. 0177-2621548
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Subhash Sharma
FIRST FIVE YEAR
RESERVOIR AREA
SUIL PROJECT