

CHAPTER 1

DISTRICT AND CLIMATE

Chikmagalur is known as- A gateway to Western Ghats. The district is the very heart and soul of Malnad. The breath taking beautiful Sahyadri hill ranges; the land scape; the rivers; the flora and fauna; the lush green coffee estates and the rich heritage of the district all add to the importance and glamour of this place.

Chikmagalur district has got a geographical extent of about 7200 sq.kms, out of which about 40% of it is covered by forest area. The district presents a collage of different and diverse colours of nature. On the one hand eastern talukas of Tarikere and Kadur are dry falling in the maidan areas, on the other western parts of the district i.e. Chikmagalur, Narasimharajpura, koppa, Sringeri and Mudigere constitute western ghats and are extremely important from geological point of view.

Chikmagalur district is situated somewhat south west of the geographical center of the state. It covers a compact but hilly and densely forest area of 7201 sq.kms lying between $12^{\circ}55'$ and $13^{\circ}54'$ north latitudes and $75^{\circ}5'$ and $76^{\circ}22'$ east longitudes. Shimoga bound the district in the north. District shares its boundaries with Chitrdurga, Tumkur and Hassan towards south, it is bounded by Hassan district on the south west and the west, and the Western Ghats constitute a natural barrier which separates it from the Dakshina Kannada district.

Many parts of the district are situated in heavy rainfall zone. However 2 talukas Kadur and Tarikere are located towards the east comprising more or less level lands and partake the features of maidan areas.

The climate of the district is agreeable and cool through out the year. Though March, April and May are regarded as summer months, during this period the maximum day temperature stays around 30°c and the night temperature however around 19°c .

The average annual rainfall of the district is 1990mm. The eastern belts receive a rainfall of about 600mm/yr only, while the western belt receiving around 3000mm/yr. The total number of rainy days on a year in the district lies in the range of 42 days at Kadur to 122 days at Balehonnur with an average for the district as a whole as 92 days. However year 2001 and 2002 have been the years of less than the average rainfall with maidan areas suffering from drought conditions.

CHAPTER 2

DISASTERS

2.1 GENERAL

Disasters have been mankind's constant though inconvenient companion since time immemorial the fury of nature can be as disastrously beautiful as the gifts of nature received gratis. Natural disasters continue to strike unabated and without notice and are perceived to be on the increase in their magnitude, complexity, frequency and economic impact.

Since 1960, natural disasters have resulted in the loss of three million lives and affected many more. Their economic costs are on the rise in alarming proportions: compared to the 1960's, the economic loss due to disasters has increased by a factor of 8, discounting inflation.

Ninety-percent of the natural disasters and ninety five percent of the total disaster related deaths worldwide occur in developing countries.

Table 2.1: annual average number of people affected by disaster between 1987- 1996, Top 10 countries of the world

Country	Annual average population affected (million)	Total population (1996)* (million)	Percent population affected
China	99.07	1232.08	8.04
India	56.56	944.58	5.99
Bangladesh	18.57	120.07	15.47
Ethiopia	4.02	58.24	6.90
Philippines	3.69	69.28	5.33
Australia	2.28	18.05	12.63
Thailand	1.67	58.70	2.84
Sudan	1.48	27.29	5.42
Malawi	1.44	9.84	14.63
Pakistan	1.40	139.97	1.00

Indian context

India is one of the most disaster prone countries in the world. The location and geographical features render it vulnerable to a number of natural hazards such as cyclone drought, floods, earthquake, fire, landslides and avalanches.

TABLE 2.2: Human lives lost due to various natural disasters in India:

*Year	Floods	Cyclone/floods	Hailstorm	Earthquake	Total
1990-91	1320	979	-	-	2299
1991-92	1185	304	-	768	2257
1992-93	1193	497	-	-	1690
1993-94	1690	318	-	7938	9946
1994-95	2038	247	59	-	2344
1995-96	2072	361	31	-	2464
1996-97	2069	1719	40	-	3828
1997-98	1560	216	247	39	2062
1998-96	2567	1292	-	106	3965

* On financial year basis

DISASTER TERMINOLOGY

Disaster is defined as: “A serious disruption of the functioning of a society, causing widespread human, material, or environmental losses which exceed the ability of the affected society to cope using its own resources”.

RISK: Risk is a measure of the expected losses due to hazard event of a particular magnitude occurring in a given area over a specific time period. Risk is a function of the probability of particular occurrences and the losses each would cause.

HAZARDS: Hazards are defined as “Phenomena that pose a threat to people, structures or economic assets and which may cause a disaster. They could be either man made or naturally occurring in our environment”.

2.2 DROUGHT

Drought is a temporary reduction in water or moisture availability significantly below the normal or expected amount for a specific period. This condition occurs either due to inadequacy of rainfall, or lack of irrigation facilities. under-exploitation or deficient availability for meeting the normal crop requirements in the context of the agro-climatic conditions prevailing in any particular area. This has been scientifically computed as moisture index (MI). Drought, in this context, can be defined as adverse water balance which may be attributable not only to a prolonged dry spell due to lack or sufficient rainfall but also due to such others factors are excessive evapo-transpiration losses, high temperature, low soil holding capacity etc. the inadequacy is with reference to the prevailing agro-climatic conditions in any particular area. Therefore there is a drought in Jaisalmer (average rainfall 200mm) if rainfall is not sufficient to grow grass and partly coarse grains, where as in Bolangir or Koraput (Orissa rainfall above 1000mm) there is a drought if there is not enough rainfall for bringing the paddy crop to maturity.

TYPES OF DROUGHT

There are three types of drought:

- **Meteorological drought:** Meteorological drought describes a situation where there is a reduction in rainfall for a specific period (days, months, season or year) below a specific amount (long term average for a specific time).
- **Hydrological drought:** Hydrological drought involves a reduction in water resources (stream flow, lake level, under ground aquifers) below a specified level period of time.
- **Agricultural drought:** Agricultural drought is the impact of meteorological hydrological drought on crop yield.

2.3 FLOODS

The district receives an average annual precipitation of 1990mm. About 75% of the rainfall is received during 92 rainy days; as a result almost all the rivers carry heavy discharge during this period. The flood hazard is computed by the problems of sediment deposition, drainage congestion.

Types of floods:

Snow melt floods: Precipitation in the form of snow does not produce runoff or infiltrate into the soil, but waits until the snow melts, which means that several months of precipitation can accumulate above the soil surface. Rain on the snow pack or water from the melting snow can be held within the pack until the high liquid water content finally causes the pack to collapse realizing water catastrophically and causing a very large run-off very rapidly.

Storm surge: Floods in coastal areas and in river estuaries are usually due to storm surges, which result from sea being driven on to the land by meteorological forces. Here two physical forces act together. A storm with intense low pressure causes the level of sea to rise because of barometric effects and strong winds associated with this storm, if directed on shore, drive the sea on the land.

Flash floods: These are defined as the floods of short duration with a relatively high peak discharge. They arise from local precipitation of extremely high intensity, typical of thunderstorms. The high concentration of rainfall on a small area can have devastating effects as the river flow can raise to several hundred times the normal flow in space of few hours. Flash floods are common in arid and semiarid areas. Mountainous areas are prone to thunder storms and the steep terrain and thin soils in the mountains assure high run-off with a short delay time.

Of the above 3 types of floods the district experience only the flash floods up to some extent.

2.4 FOREST FIRE

Fire in forest areas have undoubtedly increased over the years and the rising cost of fire losses would seem to indicate that they are increasing at a greater rate than the measures devised to

control them. Increased human activity in forest has led to rise in temperature and decrease in rainfall leading to fire eruption resulting in colossal loss of property.

2.5 ROAD ACCIDENTS

Road accidents are major killer and take place without any warning. Accidents may involve all types of passenger vehicles, goods vehicles, vehicles carrying hazardous or toxic material. The damage therefore may involve injuries and deaths, chemical spills, fires or toxic gases. Road accidents in Chikmagalur district have annual deaths of around 85 annually.

2.6 ACCIDENTAL FIRES

Urban fires are man made disasters, and lives and properties worth millions of rupees are lost. The phases in the development of a city urban fire are outbreak, development, spread and extinction. Besides cataclysmic natural events, urban fires are caused by electric faults. (in an estimated 35 to 40% of cases). human carelessness or malevolence, the lack of supervision of a naked flame, or the uncontrolled product of a chemical or physical reaction. Once the flames ignited it would either go out by itself or spread in its initial surroundings at a variable speed. The spread of fire in urban areas depends on the structure and partition or spacing. Doors, windows, facades, ducts and holes may provide shafts that act as vectors for the spread of the fire. The risk to people, rather than property depends on their location and concentration, their perception of the hazard, and the potential for rapid evacuation via safe routes.

An incident of fire occurring in rural areas during summer season is high and it is compounded by wind. Most of the village fires occur in the summer season. Fire is caused by accident and negligence.

2.7 PESTS

The pests of crops are acting as silent disasters to economy and food security. There may not be a great problem because of the advancement in technology and agricultural research, yet certain diseases in horticultural crops are a perennial problem, e.g. Bunchy top disease in banana. Apple scab, Black headed caterpillar in Coconut etc.

2.8 EPIDEMICS

Disaster caused by living organisms, such as bacteria, virus, fungus, protozoan, etc. can be termed as biological disasters. This has led to epidemics, which occur in large scale affecting greater masses. An epidemic is commonly defined as the occurrence community or areas of cases of a disease that is clearly in excess of what is expected. It is important to recognize a potential epidemic, and then to develop the ideas about cause, methods of transmission and mode of control.

2.9 LANDSLIDES

Landslides are serious hazard common in the hilly regions. Land slides cause extensive damage to roads, bridges, human dwellings, agricultural lands, orchards, forests etc. resulting in loss of property as well as life. Economical degradation of hilly areas has also been on the increase due to greater frequency of occurrence of landslides.

2.10 MINE ACCIDENTS

Extraction of iron from the magnetite ore is done at Kudremukh. Here open cast mining is done 38% iron contained is obtained from the magnetite ore which is later upgraded to 68% and is then put into use. At Kudremukh the mining area is about 600 hectares out of which Excavation is done in 452 hectare. The mining project at Kudremukh was started in 1976 April 2 at the mining area the ground is loosened and the material is crushed and the crushed material comes to the plant where magnetite and non magnetite are separated the final product which contains 68% is then send to Mangalore port which is different forms is exported to other countries. For every 3 tone extracted 1 tone of final product is obtained and 2 tones will be waste. The waste obtained contains mainly silicates, which is safely disposed to the dam.

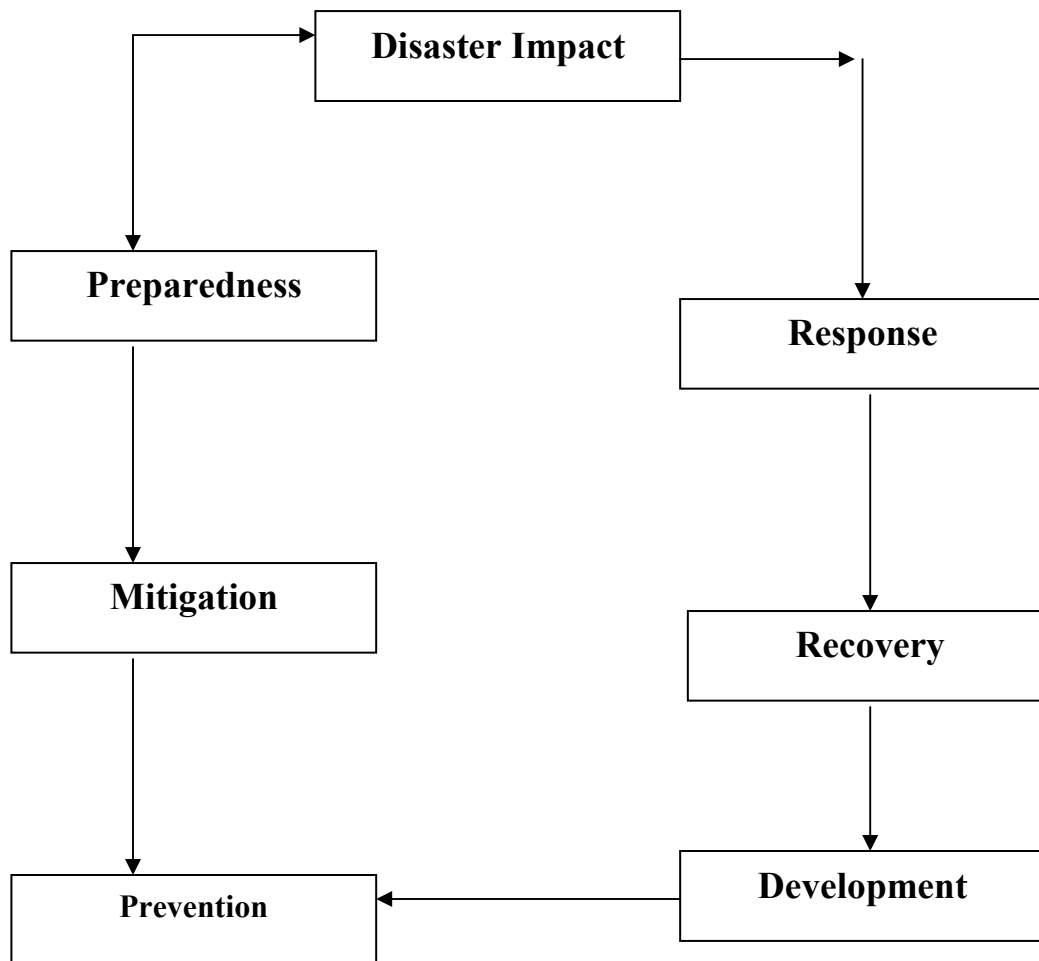
CHAPTER 3

DISASTER MANAGEMENT CYCLE AND OBJECTIVES

There are three key stages of activity within disaster management:

1. Before a disaster (pre disaster): To reduce the potential human, material, or environmental losses caused by hazards to ensure that these losses are minimized when the disaster actually strikes.
2. During a disaster: To ensure that the needs and provisions of victims are met to alleviate and minimize suffering.
3. After disaster (post disaster): To achieve rapid and durable recovery by adopting remedial measures, which do not reproduce the vulnerable conditions.

3.1 FLOW DIAGRAM OF DISASTER MANAGEMENT CYCLE



1. Disaster event: This refers to the real time event of a hazard occurring and affecting elements at risk. The duration of the event will depend on the type of threat; ground shaking may only occur for a matter of seconds during an earthquake, while flooding may take place over a longer sustained period.

2. Response and Relief: This refers to the first stage response to any calamity. which include setting up control rooms, putting the contingency planning action, issue warning, action for evacuation, taking people to safer places, rendering relief to the homeless, food, drinking water, clothing, etc. to the needy, restoration of communication, disbursement of assistance in cash or kind.

3. Recovery: Recovery is used to describe the activities that encompass the three overlapping phases of emergency relief, rehabilitation and reconstruction.

- Emergency relief: activity undertaken during and immediately following a disaster, which include immediately relief, reuse, damage and needs assessment and debris clearance.
- Rehabilitation: Rehabilitation includes the provision of temporary public utilities and housing as interim measures to assist longer-term recovery.
- Reconstruction: Reconstruction attempts to return communities to improved pre- disaster functioning. It includes the replacement of building, infrastructure and lifeline facilities so that long term- development prospects are enhanced rather than reproducing the same conditions, which made an area or population vulnerable in the first place.

4. Development: In an evolving economy, development process is an ongoing activity. Long term prevention disaster reduction measures like construction of embankments against flooding, irrigation facilities as. Drought proofing measures, increasing plant cover to reduce the occurrence of landslides, land use planning, construction of houses capable of withstanding the on slot of heavy rains/wind speed and shocks of earthquake are some of the activities that can be taken up as part of development plans.

5. Prevention and mitigation: Reducing the risk of disasters involves activities, which either reduce or modify the scale and intensity of the threat faced or by improving the conditions of element at risk. Although the prevention' is often used to embrace the wide diversity of measures to protect persons and property. Its use is not recommended since it is misleading in its implicit suggestions that natural disasters are preventable. The use of the term reduction to describe protective or preventive actions that lessen the scale of impact is therefore preferred. Mitigation embraces all measures taken to reduce both the effect of the hazard itself and the vulnerable conditions to it in order to reduce the scale of a future disaster.

6. Preparedness: This brings us to the all-important issue of disaster preparedness. The process embraces measures that enable government s communities and individuals respond rapidly to disaster situation to cope with them effectively. Preparedness' includes the formulation of viable emergency plans the maintenance of inventories and the training of personnel. It may also embrace search and rescue measures as well as evacuation plans for areas that may be at risk”

from a recurring disaster. All preparedness planning needs to be supported by appropriate rules and regulations with clear allocation of responsibilities and budgetary provisions.

3.2 OBJECTIVES AND PRIORITIES

- Inception of disaster planning.
- Risk assessment.
- Defining levels of acceptable risk.
- Preparedness and mitigation planning.

CHAPTER 4

DISTRICT CONTINGENCY PLAN

The District Commissioner along with the assistance of different department's heads prepares the disaster management action plan for the district. While setting up the district contingency plan it is divided in to 5 major sectors as follows:

- Law and order
- Civil departments.
- Health and Safety.
- Food and agriculture department
- Social services.

These 5 sectors work under the guidance of district commissioner. The flow sheet of the work carried out during disaster is as follows:

LAW AND ORDER: Superintendent of police heads this sector during an emergency the S.P will direct the under departments towards rescue measures.

The following are the disasters, which require the law and order situation

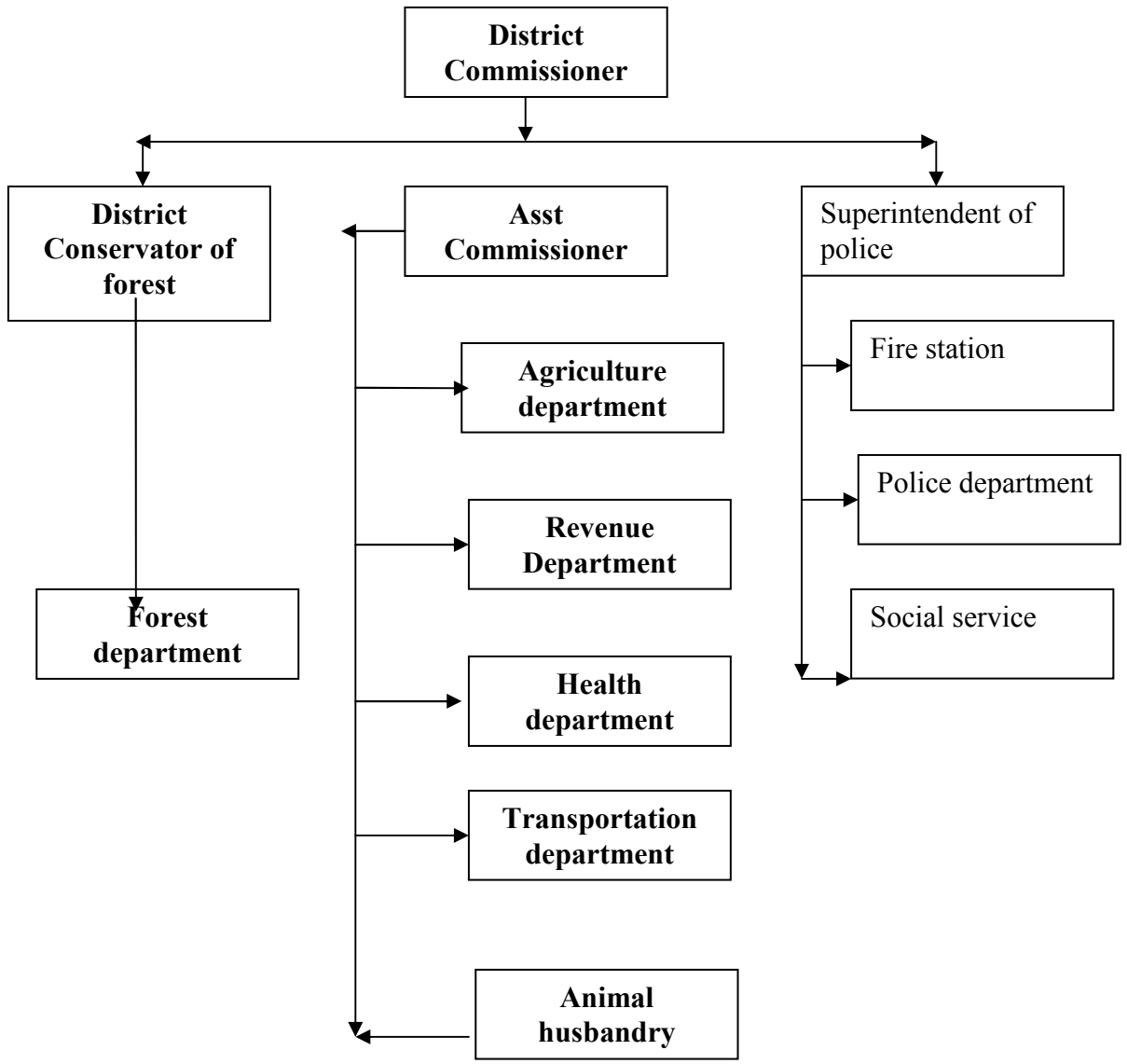
- Earthquake
- Fire accidents.
- Road accidents.
- Building collapse.
- Floods.
- Landslides.
- Bomb blasts.

CIVIL DEPARTMENT: The assistant commissioner of the district heads the category. Almost all disasters require the assistance of civil department in which the loss of life and property occurs.

HEALTH AND SAFETY: District health officer under the guidance of assistant commissioner heads this department. This department plays a significant role in minimizing loss of life and out break of disease.

FOOD AND AGRICULTURE DEPARTMENT: The assistance commissioner heads the department. The main disasters in which this department comes into action is the drought. The other disasters also require the assistance from the department during emergency.

SOCIAL SERVICES: Some Social services like N.C.C Scouts and Guides; N.S.S, Home Guards etc also take part in emergency. They help in cleaning up the disaster prone area and rescue lives.



CHAPTER 5

DROUGHT

5.1 IDENTIFICATION OF DROUGHT PRONE AREAS AND WARNING SYSTEM

The Hanumantha rao Technical committee on DPAP/DD [(April 1994) has formulated the criterion currently under usage. The committee has worked out a Moisture Index (MI) to assess the extent of aridity, which broadly speaking is the ratio between the precipitation received and the water requirement of the plants under the given agro-climatic conditions. The Moisture Index of this basis is readily available for various areas, as the Indian Meteorological Department (IMD) regularly computes monthly and annual figures of about 300 stations in and around India. The zoning on this besides worked out by the Hanumatha rao committee is as follows:

TABLE 5.1 Moisture Index in different climatic zones in India:

Moisture Index	Climatic Zone	Percent area
-66.7	Arid	36.68
-66.7 to -33.3	Semi-arid	22.41
-33.2 to 0	Dry sub-humid	16.13
0 to +20	Moist sub-humid	11.17
+20.10 to +99.9	Humid	7.09
100	Pre-humid	6.15

The arid, semi-arid and dry sub-humid areas for the country as a whole are indicated in the map as appendix.

The incorporation of a new dry sub-humid category is one of new innovations suggested by the committee. Arid taluks where area irrigated constituted more than 50%; semi-arid districts with 40% irrigation and dry sub-humid districts with 30% irrigation were totally excluded from the programme.

5.2 EPISODE DOCUMENTATION

5.2.1 HISTORY

Here in our project work an attempt is made to collect details of about past 5 years, which were analyzed tabulated, and conclusions were drawn.

Table 5.2: Year of drought declaration:

Year	2000-01	2001-02	2002-03	2003-04	2004-05
Taluks					
Chikmagalur	ND	ND	D	D	ND
Kadur	ND	D	ND	D	D
Mudigere	ND	ND	D	D	ND
N.R. pura	ND	ND	ND	D	ND
Tarikere	ND	ND	D	D	D
Shringeri	ND	ND	ND	D	ND
Koppa	ND	ND	ND	D	ND

•D- Declared

•ND- Not Declared

5.2.2 RAINFALL

The Chikmagalur experiences an average annual rainfall of around 1990mm the eastern belt receives a rainfall of about 600mm/yr only while western belt receiving around 3000mm/yr. The total number of rainy days on a year in the district lies in range of 42 days at Kadur to 122 days at Balehonnur with an average for the district as a whole as 92 days.

Table 5.3 Showing rainfall of all 7 taluks:

Taluks	Normal rainfall in mm	Actual rainfall in mm					
		2000	2001	2002	2003	2004	2005
Chikmagalur	917	1028.1	678.9	806	561.0	1002	896.3
Kadur	561	623.1	406.2	666	469.5	450	460.3
Mudigere	2283	2435.8	1874.1	1601.5	1615.8	1614.5	2586.1
N.R. pura	1687	1500.4	1055.1	1209.2	1024.3	1030	1054.3
Tarikere	897	874.6	640.5	644.1	824.5	830	815
Shringeri	3846	3538.8	3569.8	3200.3	3423.0	3846	3857
Koppa	3014	2835.0	2198.8	2083	1910.8	2677.1	3330

As the intensity of the flowing water decreases it affects the hydroelectric power generation. Which results in the frequent power cut off and make us many times live in dark.

5.2.3 DRINKING WATER PROBLEM

Drinking water problem is the most important during drought period. There are numbers of villages without adequate water supply within reasonable distance or where source have got dried up or gone derelict. Bringing up existing wells and search for new sites is a perpetual exercise. Hand pumps account for the bulk of the coverage and their repair and maintenance is a

major problem. The names of the villages that were severely affected by drinking water problem were given in the following table taluk wise.

Table: 5.4: Drinking supply through tankers to the drought affected villages:

Tarikere taluk:

Serial number	Year	Taluk	Village
1	2002-2003	Tarikere	Lingadahalli
2	2002-2003	Tarikere	Gulladamane
3	2002-2003	Tarikere	Sunnadahalli
4	2002-2003	Tarikere	Byrapura
5	2002-2003	Tarikere	Bettadahalli
6	2002-2003	Tarikere	Doranalalu
7	2002-2003	Tarikere	Bettadahalli
8	2002-2003	Tarikere	Samathala
9	2002-2003	Tarikere	Javooru Horahalli
10	2002-2003	Tarikere	Ettige
11	2002-2003	Tarikere	Yerehalli
12	2002-2003	Tarikere	Pundanahalli
13	2002-2003	Tarikere	Mundre
14	2002-2003	Tarikere	Hunsegatta
15	2002-2003	Tarikere	Jaldihalli
16	2002-2003	Tarikere	Hirekanavangala
17	2002-2003	Tarikere	Javoor
18	2002-2003	Tarikere	Shvni
19	2002-2003	Tarikere	Hosahalli thandya
20	2002-2003	Tarikere	Ajjampura
21	2002-2003	Tarikere	Kenchapura
22	2002-2003	Tarikere	Hirekathuru
23	2002-2003	Tarikere	K. Hosuru
24	2002-2003	Tarikere	Bukkambudhi
25	2003-2004	Tarikere	Lingadahalli
26	2003-2004	Tarikere	Yaradhokalu
27	2003-2004	Tarikere	Doranalalu
28	2003-2004	Tarikere	Byrapura
29	2003-2004	Tarikere	Sunnadahalli
30	2003-2004	Tarikere	Kenchapura
31	2003-2004	Tarikere	Gulladamane
32	2003-2004	Tarikere	Bukkambudhi
33	2003-2004	Tarikere	Makanahalli
34	2003-2004	Tarikere	Athighatta
35	2003-2004	Tarikere	Dhanayakupura
36	2003-2004	Tarikere	Chikkavanangala
37	2003-2004	Tarikere	Hirekavanangala

38	2003-2004	Tarikere	Siddapura
39	2003-2004	Tarikere	Jaldihalli
40	2003-2004	Tarikere	Javoor Hosahalli
41	2003-2004	Tarikere	Thimmapura
42	2003-2004	Tarikere	Hariyanahalli
43	2003-2004	Tarikere	Hosahalli Thandya
44	2003-2004	Tarikere	Siddarahalli(Duggapura
45	2003-2004	Tarikere	Halur (Malenahalli)
46	2003-2004	Tarikere	Pundanahalli
47	2003-2004	Tarikere	Mundre Thandya
48	2003-2004	Tarikere	Mundre
49	2003-2004	Tarikere	Chirnahalli
50	2003-2004	Tarikere	Jaguvalli
51	2004-2005	Tarikere	Lingadahalli
52	2004-2005	Tarikere	Yaradamkalu
53	2004-2005	Tarikere	Dhornalu
54	2004-2005	Tarikere	Byrapura
55	2004-2005	Tarikere	Sunnadahalli
56	2004-2005	Tarikere	Kenchapura
57	2004-2005	Tarikere	Gulladamane
58	2004-2005	Tarikere	Bukhambudhi
59	2004-2005	Tarikere	Makanahalli
60	2004-2005	Tarikere	Athighatta
61	2004-2005	Tarikere	Dhanayakapura
62	2004-2005	Tarikere	Chikkanavanangala
63	2004-2005	Tarikere	Hirekanavangala
64	2004-2005	Tarikere	Siddapura
65	2004-2005	Tarikere	Beldhalli
66	2004-2005	Tarikere	Javoor Hosahalli
67	2004-2005	Tarikere	Thimmapura
68	2004-2005	Tarikere	Hireyanahalli
69	2004-2005	Tarikere	Hosahalli Thandya
70	2004-2005	Tarikere	Siddarahalli(Duggapura)
71	2004-2005	Tarikere	Halur (Malenahalli)
72	2004-2005	Tarikere	Pundanahalli
73	2004-2005	Tarikere	Mundre Thandya
74	2004-2005	Tarikere	Mundre
75	2004-2005	Tarikere	Gekanahalli
76	2004-2005	Tarikere	Jaguvalli

Mudigere Taluk:

Serial number	Year	Taluk	Village
1	2002-2003	Mudigere	Bilagola
2	2002-2003	Mudigere	Hesgal

3	2002-2003	Mudigere	Muthigepura
4	2002-2003	Mudigere	Halemudigere
5	2002-2003	Mudigere	B. Hosahalli

Chikmagalur Taluk:

Serial number	Year	Taluk	Village
1	2003-2004	Chikmagalur	Mullare
2	2003-2004	Chikmagalur	Kesarike
3	2003-2004	Chikmagalur	Buchenahalli Kaval
4	2003-2004	Chikmagalur	Belekalhalli
5	2003-2004	Chikmagalur	Marlethemmamahalli
6	2003-2004	Chikmagalur	Gowdanahalli
7	2003-2004	Chikmagalur	Mylemone
8	2003-2004	Chikmagalur	Bombyle
9	2003-2004	Chikmagalur	Kallugudde
10	2003-2004	Chikmagalur	Vaddarahalli
11	2003-2004	Chikmagalur	Kalaspura
12	2003-2004	Chikmagalur	Heregauja
13	2003-2004	Chikmagalur	Madada thimmanahalli

Kadur Taluk:

Serial number	Year	Taluk	Village
1	2004-2005	Kadur	Thuruvanahalli
2	2004-2005	Kadur	Kadurhalli

5.3 SUCCESS STORIES

During drought period many healthy works were conducted in the district with the aid of state and central government. The functional areas were divided into six categories.

Namely

- Drinking Water
- Employment generation
- Public awareness program
- Public health
- Agriculture
- Cattle care

The financial aid was made from state and central government. The distribution of financial aid provided is as shown in the table 5.5,

Year	Purpose	Amount in lakhs
2002-2003	Drinking water	129.80
2003-2004	Drinking water	448.43
2004-2005	Drinking water	91.43
2002-2003	Employment generation	121.40
2003-2004	Employment generation	817.99
2004-2005	Employment generation	102.32
2002-2003	Agriculture	63.9
2004-2005	Agriculture	74.05

The taluk wise works carried out are discussed as below

a) Drinking water: Number of Villages was severely affected. The district head quarter took the necessary measures; they supplied the drinking water in tankers to those affected villages, which are represented in table. Many bore wells were dig.

TABLE 5.6: Showing financial assistance for drinking water purpose:

Taluk	Year	Works	Amount in lakhs
Kadur	2002-2003	53	23.21
	2003-2004	58	100.03
	2004-2005	17	23.12
Tarikere	2002-2003	16	13.84
	2003-2004	31	46.87
	2004-2005	4	21.45
Chikmagalur	2002-2003	41	34.80
	2003-2004	68	107.36
Koppa Taluk	2002-2003	60	44.79
	2003-2004	1	1.0
Sringeri	2002-2003	25	21.15
	2003-2004	2	2.69
Mudigere	2002-2003	53	23.21
	2003-2004	42	87.08
	2004-2005	4	4.6
N.R. Pura	2002-2003	42	27.56
	2003-2004	56	41.15
	2004-2005	21	17.30

b) Employment generation: In this section many works were taken to create employment for the people, who are affected by drought many schemes were undertaken like

- Feed for works (kuligagi Kalu)
- Employment generation scheme

In this sector the works were carried out in order to improve the ground water level. The following table gives the amount released and works carried out in employment generation.

TABLE: Showing financial assistance for employment generation:

Taluk	Year	Works	Amount in lakhs
Kadur Taluk	2002-2003	53	23.21
	2003-2004	58	100.03
	2004-2005	17	23.12
Tarikere Taluk	2002-2003	15	15.5
	2003-2004	125	127.62
	2004-2005	44	-
Chikmagalur Taluk	2002-2003	40	50.4
	2003-2004	146	107.36
Koppa Taluk	2002-2003	73	64.75
	2003-2004	8	8.5
Sringeri Taluk	2002-2003	72	63.52
Mudigere Taluk	2002-2003	88	44
	2003-2004	01	116.18
	2004-2005	-	2
N.R. Pura Taluk	2002-2003	42	-
	2003-2004	56	41.15
	2004-2005	21	20.57

5.4 CATTLE CARE

The emphasis of the government in providing relief to the animal population in the prevailing drought conditions would continue to be on the following lines:

1. Transportation of fodder from surplus pockets or from outside the state.
2. (a) Programme for growing fodder through the supply of minikits wherever assured irrigation is still available.
(b) Production of fodder in government farms.
3. (a) Buy back of green fodder from farmers who would be encouraged to grow green fodder on priority basis, for redistribution to needy animal owners and for government goshalas
(b) Purchase of dry fodder for use in fodder bank and goshalas.
4. Setting up of fodder banks and goshalas.
5. Provisions for medicines for animal healthcare in the drought situation.
6. Subsidized production of cattle feed.

5.4.1 STATISTICAL DATA

The live stock population depends on fodder in the district as per the census of 2003-2004 are given below in table:

Sl.no	Taluk	Local	Cross bread	Buffaloes	Total	Chickens	Sheep's	Goats	Pigs
1	Chikmagalur	63602	7165	17849	88616	120273	7950	6758	1841
2	Kadur	94060	10331	26811	131202	78447	45610	28246	410
3	Mudigere	35897	3152	12037	51086	80212	175	332	965
4	Tarikere	61222	6203	27681	95106	66578	8898	11321	588
5	N.R. Pura	28759	1471	8413	35043	40997	231	363	202
6	Koppa	33566	3110	12540	49216	41670	96	75	857
7	Sringere	16069	567	4346	20982	11928	9	1	230
	Total	333175	31999	106077	471251	440085	62968	47096	5093

5.4.2 AFFECTED POPULATION

During drought period in the district no death of cattle's were recorded. The drought was not severe on the part of cattle's and other animals the government was able to manage the drought situation.

5.4.3 RELIEF WORKS CARRIED OUT

In the year 2003 and 2004 4.976 lakhs funds was released to the district by the government authority for cattle care during drought situation. A total of 5600 minikits, which consists of African tall maize, were distributed in the district. And 5000kgs of fodder seeds was also distributed.

Table 5.9: Distribution of fodder seeds and mini kits throughout the district in the year 2003 and 2004

Taluk	Fodder seeds in Kgs	Mini Kits in numbers
Chikmagalur	2000	1400
Kadur	1500	1800
Mudigere	1500	1700
Tarikere	-	200
N.R. Pura	-	100
Koppa	-	100
Sringere	-	300
Total	5000	5600

In the year 2002-2003 an amount of Rs 1,45,160 were released and about 1,347 beneficiaries were found in the district.

Table: 5.10: Showing the distribution of seeds in different taluks during 2002-2003:

Taluk	Seeds in Kgs
Chikmagalur	1550
Kadur	2892
Tarikere	2700
Mudigere	150
N.R. Pura	850
Total	8142

During drought period in the year 2003 some special activities were under taken by the concerned authority in this regard they opened up goshala in shivagangagiri, yagati hobli in kadur taluk between 17/09/2003 to 05/10/2003 and about 250 to 300 animals were taken care daily.

During drought period importance were given to the health of the animals and some vaccination programs for diseases like,

- Foot and mouth disease
- Hysterisis
- B.Q disease

CHAPTER 6

FOREST FIRE

Forest faces many hazards but the most common hazards is forest fire. Forest fires are as old as the forest themselves. They pose a threat not only to the forest wealth but also to the entire regime of fauna and flora seriously disturbing the bio diversity and the ecology and environment of a region.

6.1 FORESTS IN CHIKMAGALUR DISTRICT

The west of the district is covered with some of the best forest in the country. Throughout the Jagra valley (Bhadra wild life sanctuary). Mudigere, Koppa, Sringeri, N.R. pura and parts of Chikmagalur taluks was earlier a continuous stretch of highly valuable forests, densely clothing the hillsides. During the years since this tree growth gives valuable shelter to coffee plantations, most of it has been converted into large and extensive coffee estates, so much so that Chikmagalur district has become the foremost among coffee growing districts in the country today. Tea and other plantation. Crops have also claimed large chunk of pristine forests.

The district is unique in having diverse kinds of forests, which are as follows:

- 1) **Scrub type forest:** Found in drier tracts in Kadur and Tarikere taluks these are degraded kind of forests where vegetation is thorny type and bushy. Main converted into plantations of eucalyptus, cassia siamea, Acacia auriculiformis etc, by the forest department.
- 2) **Thorny dry deciduas forest:** Found in those areas having lesser rainfall. Abounds in deciduous tree species, which shed their leaves during summer months.
- 3) **Moist deciduous forest:** These occur in those areas having better rainfall. Leaf shedding takes place during summer months. Teaks, Rosewood, Nandhi, and terminalias are the conspicuous species.
- 4) **Semi evergreen forests:** These are the forests occurring in areas receiving good rainfall. They have a mix of tree species form moist deciduous and evergreen forest. Rich bio diversity is found in them.
- 5) **Evergreen forests:** Found in the region of very high rainfall these are treasure houses of medicinal plants. The forests of Bhagavathi valley in Kudremukh National Park and Balur state forest in Mudigere range are the examples. They support huge tree with high and almost closed canopy. They are rich in canes.
- 6) **Shoals forests:** Sholas are one of the wonders of nature they occur as patches in the depressions and hollows of the high peaks like Baba Budans, Kudremukh rumbling along the slopes. A typical undisturbed shoal forest has got closed canopy, so that even sunrays may find it difficult to pass through. Soil is very rich in humus. These are rich in humus. These are the harbingers of natural water streams.

Invariably shoals occur as an oasis in grasslands. During summers grasslands are under intensive threat of fire. This fire also takes its toll on shoals leading to their continuous shrinking although they occur as small expanses of forest only in the

crevices or depressions but we have a huge shoal forest by name “shankar shoal” near Kemmanagundi. The area of shankar shoal is few hundred hectares.

- 7) **Grass lands:** A very important feature of the hills of Chikmagalur district is the existence of grassland. These appear like a velvety green spread covering the entire hillocks. It is so enchanting and soothing to see them during rainy season when the new grass is coming up. Although they may look like vast expanses of land having only dense growth of coarser grass interspersed with shrubby plants here and there, they are treasure houses of very important herbaceous medical plants. They also act as live sponges to soak the rainwater to recharge the water table.

These grasslands are the climatic climax and by carbon dating they are found to have existed for millions of years. They have been assigned a very important function by nature and they have to be allowed to remain there. They are very valuable grazing meadows for herbivores like Gaurs, In fact, in the past whenever it has been tried to convert them into some plantations by been so encouraging.

However since there are invaluable grazing grounds, large numbers of cattle so grazing on them. Because of this in order to have better and tender grass during rains, villages usually burn them during summers. This fire is also at times spreads to intervening shoals and is a cause of destruction of shoals too. Due to such burning the hillocks get charred and become sooty black during summers.

Table 6.1: Table Gives Details Of Forestlands In The District Excluding Private Forest

Division	Forest land in hectares
Chikamagalur	77154
Koppa	113810
Bhadra wild life	49246
Karkala wild life part	35411
Bhadravathi part	24990
Total	300611

6.2 FORESTRY ADMINISTRATION IN THE DISTRICT

For a district of such a vital importance from forestry point of view, a conservator of forests at Chikmagalur heads the forestry administration in the district.

The district is divided into following forest divisions each headed by a Deputy Conservator of forests, earlier designated as Divisional forest officer (DFO)

- 1) **Chikmagalur division:** Comprises of forestlands in revenue taluks of Kadur, partly Chikmagalur and Mudigere.

- 2) **Koppa division:** It has jurisdiction over the forestlands of Koppa, N.R. Pura, Sringeri and part of Mudigere taluk.
- 3) **Bhadravathi division:** Head quartered outside the district this division has jurisdiction over forestlands of Tarikere taluks of the district.
- 4) **Bhadra wild life division:** This is another exclusive wild life division managing the Bhadra wild life sanctuary.
- 5) **Wild life division Karkalla:** This is another wild life division head quartered; outside district at Karkala Kudremukh National Park comes under its jurisdiction.
- 6) **Social forestry division, Chikmagalur:** It is basically a developmental wing of the department, entrusted with the task of afforesting the non-traditional forest areas like community lands, roadsides, gomal lands, canal banks, schools and institutional lands etc. This division works under the direct administrative control of the zilla panchayat.
- 7) **Regional manager, Karnataka forest Development Corporation:** All the plantations raised by the corporation are under the management of the KFDC. It also undertakes harvesting of bamboo and other plantations of the department.
- 8) **Survey and demarcation division, Chikmagalur:** This division is entrusted with the responsibility of surveying and demarcating the forestlands and writing of the working plans.
- 9) A separate forestry wing comprising of an assistant conservator of forest and range forest officers work in watershed development office under the control of the zilla panchayat.

6.3 CAUSES OF FOREST FIRE

Forest fires are caused by:

- Natural causes
 - Man made causes
- 1) **Natural causes:** Many forest fires start from natural causes such as lightning which set trees on fire. Periodic lightning which set trees on fire periodic lightning induced fires have been recorded throughout history from India, Southeastern and central United States, Australia, Finland and eastern South Africa. However, rain extinguishes such fire without causing much damage. High atmosphere temperature and dryness (low humidity) offer favorable circumstances for a fire to start.
 - 2) **Man made causes:** Fires are caused when a source of fire like naked flame, cigarette or besides, electric spark or any other source of ignition comes into contact with inflammable material.

Special causes of fire in Chikmagalur forests:

- 1) In a number of cases fire has resulted due to burning of agricultural residue by farmers filling the land in valley portions.
- 2) In Mullayyanagiri and Baba Budan Giri ranges fire has come from the negligence of the coffee planters while making fire lines around their own coffee estates. Sometimes because of high velocity winds fire jumps over the fire lines engulfing large areas.
- 3) In some instances fire has also been intentionally put by the animal grazers, fire wood collectors and encroachers etc;
- 4) In Churchegudda for hunting purpose also fire incidents have increased.
- 5) Forest offence cases regarding sandal smuggling and other cases have been registered and aggrieved persons may also be responsible for handling fire in forest areas.

6.4 CLASSIFICATION OF FOREST FIRE

Forest fires can be broadly be classified into three categories;

- 6) Natural or controlled forest fires
- 7) Forest fires caused by heat generated in the litter and other biomes in summer through carelessness of people (human neglect) and
- 8) Forest fires purposely caused by local inhabitants

6.5: TYPES OF FOREST FIRE

There are two types of forest fire:

- 1) Surface fire and
 - 2) Crown fire
- 1) **Surface crown:** A forest fire may burn primarily as a surface fire, spreading along the ground as the surface litter (senescent leaves and twigs and dry grasses etc) on the forest floor are engulfed by the spreading flames.
 - 2) **Crown fire:** The other type of forest fire is a crown fire in which the crown of trees and shrubs burn, often sustained by a surface fire. A crown fire is particularly very dangerous in a coniferous forest because resinous material given off by burning logs burn furiously. On hill slopes, if the fire starts down hill, it spreads up fast as heated air adjacent to a slope tends to flow up the slope spreading flames along with it . If the fire starts uphill, there is less likelihood of it spreading downwards.

6.6 HISTORY DOCUMENTATION

Each fire may burn forests from a few hectares to several thousand hectares depending upon the season, vegetation, type forest intensity, and duration of the wind and topography of the area history shows that incident of fires in the forest started on a big scale since 1916 and hundreds of acres of forests were destroyed in the process. Table below 6.2 shows instance of fire in chikmagalur district in recent times.

Table 6.2: Date of fire occurrence and their location:

Date	Latitude	Longitude
16/01/05	13.04	75.743
2/03/04	2	5
4/3/04	23	26
5/03/04	10	11.5
5/03/04	52	55
6/03/04	110	115
7/03/04	82	84
8/03/04	140	150
9/03/04	40	42
10/03/04	60	62
11/03/04	50	55
12/03/04	25	30
13/03/04	112	120
14/03/04	44	48
15/03/04	2	5
16/03/04	11	14
17/03/04	10	12
19/03/04	7	9
23/03/04	1	2
27/03/04	6	8

one of the major fires, which occurred in recent time, was in Muthodi wild life sanctuary between 9th March of 2004 to 20th march 2004 in which property loss was found to be around 10 lakhs

Another important fire incident was occurred in Bhadra division fires which is tabulated in table 6.3

Table 6.3: Forest fire occurred in Bhadra division forest:

Year	Area	Total extent	Area affected	Nature of fire
2001/2002	Bhadra wild life	49230 hectares	10 hectares	Ground fire
2003/2004	Bhadra wild life	-	6561 hectares	Ground fire

After the occurrence of fire government took precautionary measures and some amount was released for the improvement of the forest, which is listed in table 6.4

Table 6.4: amount released for improvement of forest:

Year	Amount in rupees	Area
2003/2004	50,000	Bhadra wild life
2004/2005	1,02,000	Bhadra wild life

Table 6.5: The staff strength of various divisions in the district:

Division	DCF's	ACF's	RFO's	Field Staff	Minimum Staff
Chickmagalur	1	3	10	208	41
Koppa	1	2	9	192	38
Bhadra wild life1	1	2	4	59	8
Karlkala wild life	1	1	2	26	-
Bhadravathi part	1	1	5	90	8
Chickmagalur Social forest	1	2	6	17	10

6.8 FIRE CONTROL MEASURES

At present some of the measures, which are taken to control fire, are:

- 1) Removal of dry trees
- 2) Fire line creation
- 3) Re-clearing of fire lines
- 4) Engaging fire watchers

The some of the forest fire control and management works carried out are listed in the table 6.6

Table 6.6: showing the details of works taken upto control forest fire in 2004-2005:

Sl.NO	Division	Name of the range	Length in Km
1) New fire line creation width 3.2Km			
1	Koppa	N.R. Pura	25
		Chickmagalur	25
		Balehonnur	20
2	Chickmagalur	Mudigere	8
		Muthodi	8
		Kadur	8
		Chikmagalur	8
3	Bhadra wild life	Muthodi	17.5

		Hebbe wild life	17.5
		Lakkavalli wild life	17.5
		Thanigebyle wild life	17.5

CHAPTER 7

FLOODS

A large portion of the district i.e., about 86% falls under the Krishna Basin while the Cauvery basin covers 8.4%. The Thunga, Bhadra and Vedavathi Rivers come under the Krishna Basin while Hemavathi and Yagachi are under the Cauvery Basin and Netravathi among the west-flowing Rivers. There are several minor streams also but they are not of much importance. There are two big tanks namely Iyyanakere and Madagadakere in Sakrepatna police station limits.

The River rises at Gangamoola on the Vyasa parvatha at an elevation of about 1198 meters in Sringeri Taluk. Its source is very close to that of Bhadra. It first flows to the northeast, passes Sringeri then to Beggundi where it turns northwest and after crossing Hariharapura enters into Shimoga district. The length of Thunga in Chikmagalur district is about 55 kms.

The River Bhadra also rises in Gangamoola on the western boundary of Chikmagalur district at an elevation of 1198 meters. It first flows eastwards for some distance and passes Kalasa. Then it flows northeast with a widening course, passes Balehonnur and then to Hebbe where it joins Somavahini from Jagravally. It continues up to Lakkavally and then enters into Shimoga district. The length of Bhadra in Chikmagalur district is about 32 kms.

The River Hemavathi originates near Javali in Mudigere taluk. After running in a southwestern direction for about 25 kms it enters into Hassan district near Hiremigarra in Mudigere taluk.

The River Veda or Hagari springs from the eastern side of Bababudangiri hills and after emerging from the valley it flows eastwards through Iyyanakere near Sakrepatna, then towards Kadur where another stream called Avathi joins it and becomes Vedavathi. The River flows for about 55 kms in Chikmagalur district and then it enters Chitradurga district.

The River Yagachi also known as Bagari originates from B.B. Hills. After flowing about 20 kms it enters into Hassan district near Hiremagalur.

The average annual rainfall in this district is 1989.8 mm (78.34 inches). The rainfall is heavy in the southwestern portion of the district near the Western Ghats. It decreases rapidly towards the northeast. About 80% of the annual rainfall is received during the monsoon i.e., June to September and July is the busy month generally. The large variation in the rainfall in the district is evident from the fact that Sringeri gets as much as 695.1mm (154.45 inches) in a year.

During the period from 1900 to till, the highest rainfall in this district was in 1946 i.e., 1356% of the normal rainfall. During the remaining period there is no consecutive rise in the average rainfall. The taluks of Chikmagalur, Kadur and Tarikere have nearly experienced cyclonic fury whereas the remaining taluks i.e., Mudigere, N.R. Pura, Koppa and Sringeri are likely to be affected because of the heavy rainfall, parts of Koppa and Sringeri taluks suffered flood during October 1972, 1962 and 1963 also. There were road slides also due to flood on all these occasions. Compared to other flood-prone districts, this district has not experienced many calamities. However, precautionary measures need to be taken to avoid unexpected

situation. The heavy rainfall in this district can also adversely affect other. Districts like Shimoga and D.K. as the Rivers enter from this district.

The main objects of the scheme are as follows:-

1. To prevent unnecessary loss of life.
2. To prevent loss of property.
3. To provide for swift mobilization of a 'Disaster Force' capable of coping with the situation and co-ordinate with the word of various agencies.
4. To rescue the persons and to protect the properties from the flood-affected areas.

In Chikmagalur district 43 villages of 6 taluks have been identified as major flood prone areas.

The following particulars in respect of various taluks of Chikmagalur district are important from the point of view of flood control.

7.1 FLOOD PRONE AREAS

1. CHIKMAGALUR TALUK: During heavy rains water gets into Rameshwara tank and flows towards Basavannahally tank and then onwards joins Thavarekere tank. There were damages to the residential houses (unauthorized sheds) behind Basavabahally tank, Lendy talab, Tippu Nagar and Shankarapura low-level area. In addition to the road on tank bund i.e., Kadur- Mangalore road also suffered from damages. This road is temporarily repaired. An alternative approach road is also present. The area near K.S.R.T.C. depot on Mudigere road is also low lying and suffers damages.

As such during 1997 there were heavy rains on 25/10/1997 in Chikmagalur town due to which there was a flood in Doddalla (near A.B.C. trading co.), there by through traffic on Chikmagalur – Mudigere road was totally affected, the near by bridge was collapsed at once and near by houses and other places were damaged. Due to this flood, one Karaiyah at Kariyajja aged about 55 years who was sleeping in his house situated near the Doddalla Bridge, was taken away by the water and died. Later the body was found near Murumane Halli. Therefore total traffic on K.M. Road was affected.

2. MUDIGERE TALUK

A) Mudigere area:- The Hemavathi River, Bukkinalla and Itchihalla are flowing through the limits of Mudigere police station though there is no risk due to heavy rainfall, but the following villages may be affected.

1. Kithlegandi.
2. Cunibyly.
3. Muggaravally.
4. Halekote.

5. Kesavalalu.

6. Kadidalu.

There were no damages to the buildings, human life and animals till today. But there may be road blockage between Mudigere and Daradahally; an alternative road is via Gowadahally. In case of roadblock between Mudigere and Bettadamane, the alternative road is via Belur and Sakaleshpura.

All the above villages have got school buildings that can be used for sheltering the flood effected persons.

The Home guard and local police may be posted for the flood-affected places continuous watch is required in these areas.

b) Banakal area:- The River Hemavathi is flowing in Banakal police limits and the following villages may be affected in case of severe rainfall.

1. Balur.

2. Banakal.

3. Chakkamakki.

4. Kodahally.

5. Bankenahally.

6. Palguni.

7. Balkki grama.

8. Hyaragudde.

In case of the flood the people are to be evacuated and they could be accommodated in the primary school and high schools of the above villages. There may be roadblock in Kottigehara – Ujjire road near Annappaswamy temple by land sliding. The alternative road is via sakaleshpura form Mudigere.

C) Gonibeedu area:- The river Hemavathi and Japavathi are flowing form Banakal police limits are affected in case of heavy rainfall.

1. Bettadamane.

6. Uduse.

2. Nuggehally.

7. Angadi.

3. Chikkodige.

8. Heggaravally.

5. Seegadi mule near dardahally.

9. G-Hosally, only watch on block is

needed.

d) Kalasa area: - The rainfall is more during the month of July and August in the limits of kalasa police station limits. It flows eastwards for some distance towards kalasa. Apart form river bhadra the following streams flow through the limits of kalasa police station limits.

1. Horanadu Halla — Hebbalegandi

2. Karegudde Nale

3. Balehole - Kagganahally Horatti
4. Kalakodu Nale
5. Kotehole - Haluvally
6. Rudrapada Damadi.

The following villages may be affected by flood since they are situated very close to the channels.

- | | |
|------------------|------------------|
| 1. Saragodu | 8. Rudrapada |
| 2. Hosoor | 9. Kalagodu |
| 3. Akashalamakki | 10. Hobbale |
| 4. Magalu | 11. Aluvally |
| 5. Kademakki | 12. Ambinakodige |
| 6. Munnurapalu | 13. Balehole |
| 7. Kagganahalla | 14. Yadigodu |

There may be roadblock between Kalasa and Balehonnur near Haluvally and Kagganahalla. The alternative road is via Basarikatte. in case of road block between Kalasa and Horanadu near Habbalagandi. alternative road is via Haluvaloly, in case of roadblock between Kalasa and Kudremukh near Karagade there is no alternative road. The government schools may be accommodated for the sheltering the people. Continuous watch is required.

e) Kudremukji area: - The rainfall is generally heavy during the month of July and August in Kudremukh. Apart from Bhadra River and the following Nalas flows form Kudremukh limits.

1. Singasara hole, Kalo hole and Kunni halla
2. Lakya hole
3. Kudremukh hole
4. Sitta Bhoomi hole
5. Soma hole

The road between Kalasa and Kudremukh is likely to be blocked near jumble ad nallibeedu. The alternative is via bajagoli towards baithangadi towards kalasa there is no alternative road. Here also continuous watch is sufficient. Lakya dam was constructed at kudremukh and it is of 110 million cu secs of water capacity. During the month of January 1992, the above dam was again reconstructed to the height of 8 meters. Due to heavy rain in June and July 1992, the lakya dam collected heavy water and caused damages to the dam channels. In the above incident, 3 persons who were engaged in coolly have died due to landslides.

Recently the above dam was reconstructed and water level has decreased. However alternative water flow arrangement is made during heavy rain. Patrolling may be arranged at lakya dam and the low level areas.

4. N.R. PURA TALUK:

N.R. Pura area: - Low-lying areas on the banks of Bhadra River and likely to be affected during flood are furnished below: -

Table 7.1: Showing villages, which comes under the N.R. PURA TALUK area:

Sl.No	Name of the village	Population
1	Solur	100
2	Hebbe	100
3	Honnekodige	100
4	Seegoni	100
5	Bevoor	200

b) Balehonnur area: -There are 7 villages which comes under low-lying areas in Bhadra River banks and likely to be affected during the flood and rainy season. The following information is furnished as under: -

Table 7.2: Showing villages, which comes under the Balehonnur area area:

Sl.No	Name of the village	Population
1	Malgodu	150
2	Jakkanalli	30
3	Magundi	160
4	Theppedagundi	15
5	Byregodda	65
6	Bhandimatta	140
7	Seeke	24

These are 4 villages, which comes under low-lying areas under Thunga River Banks. In case of flood in the river these villages are affected.

Table 7.3: Showing villages, which are low-lying areas under Thunga River Banks.

Sl.No	Name of the village	Population
1	Menase	144
2	Nammar	186
3	Addagadde	343
4	Kavadi	234

5.KOPPA TALUK

a) HARIHARAPURA AREA

There are six villages, which come under low-lying areas under Thunga riverbank under this p.s limits. The information are furnished in table.

Table 7.4: Showing villages, which comes under the Hariharapura area:

Sl. No	Name of the village	Population
1	H.H Pura	2000
2	Karangi	100
3	Bandigadi	500
4	Halenaddu	100
5	Karandi batlu	70
6	Nagalapura	200

b) KOPPA AREA

There are five villages, which comes under low-lying areas under thunga riverbank. If floods increase due to heavy rain, normal life of the villages will be disturbed. In this connection necessary data will be informed to the head quarter to take precautionary measures during flood.

Table 7.5: Showing villages, which comes under the Koppa Areas:

Sl.no	Name of the village	Population
1	Belagula	400
2	Narasipura villages agrahara	400
3	R.D. Koppa	100
4	Kadanelli kalamakki	300
5	Forest nursery	100

7.2 FLOOD RESCUE OPERATION SYSTEM

7.2.1 WARNING AND EVACUATION CENTERS

The local police and Home guards will be deployed for the protection of human life and the property.

For the purpose of warning the people every police station should have a loud speaker. Revenue authorities shall attend to the work for giving shelter and to provide other arrangements. The district health officer should arrange for medical treatment and be prepared to treat epidemic diseases that are common during the rainy seasons. They should stock medicine in advance. The P.W.D authorities will arrange for the drinking water and the Revenue authorities should arrange for feeding.

The agencies will be requested to arrange feeding and shelter. The services of Home guards particularly trained are being requisitioned. The fire service agencies will be summoned for rendering services during flood.

The local police are instructed to take the villagers concerned to confidence and take their assistance during the flood rescue operation. The locals with telephone are listed in all the police stations.

Each evacuation relief center shall manage up to 2 to 3 exposed villages. Each evacuation center will work as a nodal center for providing shelter to people and cattle from submerged localities and distribution of relief materials. Informing in advance the residents of vulnerable areas about the evacuation center shall be evacuated in the event of floods can be done through panchayths.

In the Grama panchayath level, a flood relief committee consisting of an official and non-official member like Grama panchayath president and members have been constituted, to take immediate measures to prevent the flood damages.

7.2.2 FOOD AND DRINKING WATER SUPPLY SYSTEMS

Adequate safe drinking water will be available to evacuees in camps. Water tanks will be kept ready, for this purpose.

Local bodies will be instructed to provide etc., for cleaning the water available in villages and urban areas. NGO's will be encouraged to organize Ganjikendra at evacuation center. Food materials will be provided to them by them by the taluk or district administration.

7.2.3 HEALTH CARE SYSTEMS

The teams of doctors and paramedical staff will be kept ready at district and taluk level round the clock whose service can be utilized if any emergencies arise. All the medical centers have been requested to keep the adequate medicines and ensure availability of medicines.

Arrangements will be made to prevent outbreaks of epidemics during floods.

7.2.4 TRANSPORTATION

On receiving the flood warning, the people will be evacuated by road if floods have not hit yet the area. The list of government vehicles will be provided by the RTO (it is incorporated in CDRN in the chapter 16). All flood-affected areas of the district are situated within 50 to 55 kms. This distance will be reached within 60 to 80 mm from taluk head quarters.

7.2.5 RESCUE OPERATIONS

The rescue and evacuation operation gets top priority. Once the flood have hit, at village, evacuation center will get ready for action, depending upon the gravity of the situation. The following personnel's will be pressed for evacuation and rescue operations.

- Police
- Fire service
- Home guards
- Pre trained local men

7.3 POST FLOOD MEASURES

The medical team will continue to make regular visit to all the flood affected localities, cattle etc. a comprehensive survey will be conducted through village level officers and village committee about the loss. The actual award of compensation is done by taluk Tashildar.

Repair of roads, channels, canals, water supply systems, and electrical transmission lines will be done before monsoon. Care will be taken that the new construction does not block the natural drainage line and culverts.

The arrangements will be made for timely and speedy credit facility to the farmers for purchase of agricultural inputs and cattle. The supplies of food, and fodder are to be made where it is required.

7.4 PRE FLOOD ARRANGEMENTS

- 1) Flood warning system will be done with the co- ordination of irrigation department and meteorological department.
- 2) Establishing liaison with police, home guard, NCC, fire service.
- 3) Adequate publicity of preventive measures will be made.
- 4) All the tankers of various departments and private agencies shall be kept operational and mobilized for water transport at short notice.

CHAPTER 8

LANDSLIDES

Landslides are serious hazard common in the hilly regions. Land slides cause extensive damage to roads, bridges, human dwellings, agricultural lands, orchards, forests etc. resulting in loss of property as well as life. Economical degradation of hilly areas has also been on the increase due to greater frequency of occurrence of landslides.

8.1 CAUSES OF LANDSLIDES

Landslides can be caused by poor ground conditions, geomorphic phenomenon. and natural physical forces and quite often due to heavy spells of rainfall coupled with impeded drainage.

A checklist of causes of landslides.

1. Ground causes.

- Weak, sensitivity, weathered materials.
- Adverse ground structures (joints, fissures, etc.,).
- Physical properties variation (permeability, plasticity etc.,)

2. Morphological causes.

- Ground uplift (volcanic, Tectonic etc.,).
- Erosion (Wind or water).
- Scour.
- Deposition loading in the slope crust.
- Vegetation removal.

3. Physical causes.

- Prolonged precipitation.
- Rapid drawdown.
- Earthquake.
- Volcanic eruption.
- Thawing.
- Shrink and swell.

4. Man made causes.

- Excavation.
- Loading of slope crust
- Draw- down (reservoir)
- Deforestation.
- Irrigation.
- Mining.
- Artificial vibrations.

8.2 LANDSLIDES IN CHIKMAGALUR DISTRICT

In Chikmagalur district the landslides are noticed only in Malnad part of the district. The Ghat sections namely, charmudi ghat, Agumbe ghat roads are subjected to minor landslides, which will interfere in the transportation system. The district does not experience the landslides of greater extent, which will cause the loss to life and property. The heavy rain and topographical features of the district are the main cause for landslides in the district. The Mullayanagiri peak, Bababudangiri peak are also subjected to minor landslides frequently. The severity of the landslides in the place is not high since the stability of the soil is so strong since it contains Hematite ore

8.3 MITIGATION MEASURES

In general mitigatory measures to be adopted for such areas are

- Drainage correction.
- Proper land use measures.
- Reforestation of the areas occupied by degraded vegetation.
- Creation of awareness among local peoples.
- Re-grading of slope.
- Benching of slope.
- Provision of fill at the toe.

Relocating is changing the location of the facility to avoid landslide prone areas.

8.4 RISK DUE TO LANDSLIDE INCIDENCE

Geographical risk:

- Location of landslide.
- Magnitude.
- Spread and deposition of debris
- Blocking of streams.

Engineering risk:

- Buildings.
- Roads.
- Bridges.
- Communication lines.
- Supply lines (electricity, water etc.).

Medical risk:

- Death.
- Injury.
- Loss of supply and equipment.

- Loss of medical personnel.

Socio- economic consequences:

- Loss of homes.
- Loss of employment.
- Loss of revenues.
- Increased medical needs.
- Impact on insurance.
- Waiving of dues.

8.5 LANDSLIDE HAZARD ZONE MAPPING

Landslide prone areas to be delineated by integrating multiple database, example: topographical map, geological map, ground truth, remote sensing data, and the geo-technical investigations. Landslide hazard zone mapping is a relatively new tool being used for landslide forecasting and forewarning. While landslide hazard zone studies are being carried out in various parts of the country, study of vulnerability and risk analysis are yet to be taken up in detail in Chikmagalur.

CHAPTER 9

ROAD ACCIDENTS

Road accidents are a major killer and take place without any warning. Accidents may involve passenger vehicles, goods vehicles, vehicles carrying hazardous and toxic materials. The damage therefore may involve injuries and deaths, chemicals spills, fires or release of toxic gases.

9.1 GENERIC REASONS FOR ACCIDENTS

Data on road accidents reportedly indicate that 70% of road accidents arise from driver's failure. Apart from this the other reasons are:

- ✓ Poor road accidents
- ✓ Mixed traffic
- ✓ Poor vehicle maintenance
- ✓ Carelessness in driving
- ✓ Lack of safety belts and helmets
- ✓ Poor emergency services
- ✓ Absence of pedestrian amenities

Some of the most risk prone roads in the district are ghat roads.

9.2 ACCIDENTAL DEATHS IN THE DISTRICT

In the district 71% of the accident victims were males. In Chikmagalur district, Chikmagalur taluk records the highest accidental cases and Tarikere records the least. In death cases Sringeri is the least.

Table 9.1: showing the figure of accidents cases and deaths:

Sl. No	Taluk	No. of accidents (as on 31/03/04)	No. of persons wounded (as on 31/03/04)	No. of persons died (as on 31/03/04)
1	Chickmagalur	263	324	34
2	Kadur	20	14	24
3	Koppa	24	42	03
4	Mudigere	64	162	18
5	N.R. pura	63	150	7
6	Sringeri	31	47	1
7	Tarikere	15	36	24
	Total	480	775	111

Table: 9.2: showing road accidents death cases in Chikmagalur district between 1994 to 2003:

Taluks	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Chikmagalur	23	28	28	21	35	19	19	27	31	23
Mudigere	12	10	12	16	22	11	15	06	09	10
Sringeri	2	2	01	01	01	03	-	05	02	02
N.R. Pura	8	8	10	07	03	06	06	09	07	04
Koppa	1	6	01	-	04	01	02	09	04	02
Kadur	18	30	13	25	24	30	28	30	30	14
Tarikere	13	11	22	14	22	16	20	09	18	12

9.3 IMPACTS OF ROAD ACCIDENTS

- ❖ Loss of life
- ❖ Trauma
- ❖ Bums
- ❖ Injuries demanding surgical treatment
- ❖ Poison or exposure to toxic materials
- ❖ Property loss

9.4 MAJOR ACCIDENTAL SPOTS AND MITIGATION MEASURES

CHIKMAGALUR TALUK

Chikmagalur city is the head quarters of Chikmagalur district. The major state highway, which passes through, the district, is

Chikmagalur- Kadur road
 Chikmagalur- Mudigere road
 Chikmagalur- Hassan road
 Chikmagalur- Tarikere Road

The busy roads of this city are Mahatma Gandhi road, Indira Gandhi road, and Chikmagalur-Kadur road. The most common accident occurring spots in the taluk which are pointed out are:

1. RMC yard- Interior of the city
2. ABC- Chikmagalur, Mudigere road
3. Near Chithagara- Chikmagalur malandur road
4. Lakya cross- Chikmagalur Kadur road

CHIKMAGALUR. MUDIGERE ROAD

Main accident spots

- a) Near sippani saw mill

- b) Opposite to ABC
- c) Nellur gate

a) Near sippani saw mill

Causes of road accident: Road width is too small. The roadside trees are near to road, the road is too steep.

Remedial measures to be taken to control accidents:

- Road must be widened
- Trees must be removed where it is causing problem
- Road edges must be filled properly
- The steepness of the road must be reduced

b) Opposite to ABC

Causes of road accident: The bridge near the ABC is too narrow and single lane.

Remedial measures to be taken to control accidents:

- To widen the bridge

c) Nellur gate

Causes of road accident: Due to sudden rise of the road the opposite moving vehicles cannot see each other.

Remedial measures to be taken to control accidents:

- The road gradient must be decreased, in order to control accidents

CHIKMAGALUR- MALLANDUR ROAD

Causes of road accident: In this spot the accidents are mainly due to small bridge which is across the municipal drainage and in sufficient space for bi pass of two vehicles and the another cause is Dharga is attached to the road so road is too congested.

Remedial measures to be taken to control accidents:

- ❖ Road must be widened
- ❖ The bridge must be reconstructed into a two-lane bridge
- ❖ The streetlights must be installed
- ❖ The road edges must be filled properly

CHIKMAGALTJR- KADUR ROAD LAKYA CROSS

Causes of road accident: The road passes through the hills section so mainly it is a ghat section; there are many spots of spots of accidents due to non visibility of the coming vehicles. The road is very steep which gives rise to the major accident.

Remedial measures to be taken to control accidents:

- ✓ The roadside obstacle like must be cleared
- ✓ The gradient must be decreased

KAIMARA CROSS: -

Causes of road accident: The road passes to through a hilly region and mainly it is a ghat section. So many of the accidental zones are marked. Even though it is reconstructed, due to the speed driving of the vehicles many of the accidents occur in these spots.

Remedial measures to be taken to control accidents:

Speed limit should be enforced

KADUR TALUK

Major accident spots:

1. N H 206 road Baba estate gate -----20KM from town.
2. Anchchamahalli gate -----15 KM from town.
3. Turuvanahalli gate -----2 KM from town
4. Forest check post -----Inside town.
5. Malavanji circle -----Inside town.
6. Anjaneya circle----- Inside town.

1) N H 206 road, Baba estate gate

Causes of road accident: The road from the estate is in direct contact with the highway.

MEASURES: Providing speed breakers at the entry to the highway.

2) Anchennahalli gate and Koodahalli gate:

Remedial measure to be taken to control accidents: Providing speed breakers at the entry to the highway.

- 3) **Forest check post Causes of road accident:** The road from Chikmagalur is in curve shape when connecting to National highway.

Remedial measures to be taken to control accidents: Providing speed breakers at the entry to the highway. signal lights must be installed.

4) Malavanji cross

Causes of road accident: No speed breakers are present. Remedial measures to be taken to control accidents: Providing speed breakers at the entry to the highway.

5) Anjaneya circle Remedial measures to be taken to control accidents: A signal light is must at the circle since 4 roads are connecting to the highway at the circle.

TARIKERE TALUK

The NH 206 passes through the taluk head quarter. And the major accidental spots are:

- 1) Ajjampura cross- 5 Km form town
- 2) Belenahalli near girija form- 4 Km form town
- 3) Gante kanive- 5 Km form town
- 4) Lingadahalli cross B.H. road- 1 Km form town
- 5) Inside town (near veterinary hospital)
- 6) M.G. Circle buses stand Tarikere.

AJJAMPURA CROSS

Causes of road accident: In this cross the road coming from ajjampura joins the NH 206 due to obstacle in roadside and edges, the cross is one of the major accidental zones.

Remedial measures to be taken to control accidents

- ✓ Obstacle like trees and shrubs should be removed
- ✓ Signboard should be incorporated at the zones indicating as “ACCIDENTAL ZONE”.

BELENAHALLI NEAR GIRIJA FORM GANTE KANIVE

Causes of road accident: This road is NH 206 and the particular spots are in S shape so major accidents occur in these zones due to the obstacles in the road and as it is national highway the vehicles drive at over speed which leads to accident.

Remedial measures to be taken to control accidents

- Obstacle should be removed

LINGADAHALLI CROSS B.H. ROAD

Remedial measures to be taken to control accidents

- ✓ Provide speed breakers at the entry

M.G. CIRCLE BUSES STAND TARIKERE

Remedial measures to be taken to control accidents

- ✓ Speed breakers should be provided
- ✓ Signal light is must

KOPPA TALUK

- 1) Kunchurghat
- 2) Hirekere
- 3) Suryadevasthana

SRINGERJ TALUK

- 1) GulagungemaneNH 13
- 2) Ganapathi temple near SK border NH 1 3

MIJDIGERE TALUK

- 1) Hospital area
- 2) Bidre halli village zone

N.R PURA

- 1) NR Pura to shimoga road near shetty koppa
- 2) Near madbur (near bridge)
- 3) Near mensoor (near bridge)

CHAPTER 10

ACCIDENTAL FIRES

Accidental fires are man made disasters, and lives and properties worth millions of rupees are lost.

The phase in the development, spread and extinction. Besides cataclysmic natural events, urban fires are caused by electrical faults. Human carelessness or malevolence, the lack of supervision of a naked flame, or the uncontrolled product of a chemical or physical reaction. Once the flame is ignited it would either go out by it or spread in its initial surroundings at a variable speed. The spread of fire in urban areas depends on the structure and materials of buildings their volumes and partitions or spacing. Doors, windows, facades, ducts and holes may provide shaft that act as vectors for the spread of the fire. The risk to people, rather than property, depends on their location and concentration, their perception of the hazard, and the potential for rapid evacuation via safe routes.

Incidents of fire occurring in rural areas during summer season are high and it is compounded by wind. Most of the village fires occur in the summer season. Fire is caused by accident and negligence. The risk can be reduced greatly by structural and non- structural measures. Extinguishers, sprinklers, hoses, hydrants, evacuation routes and fire sensors are all well known structural approaches. Evacuation drills designed for cases of fire hazard can be combined with those created for natural hazards such as earthquakes. Fire hazards can be investigated in terms of all phases, producing information on where and when fires are likely to break out, how they are likely to develop and spread and with what degree of rapidity this is likely to occur. Fire fighting plans must be based on this sort of knowledge and prediction.

10.1 CAUSES FOR FIRE IN URBAN AREAS

10.1.1 MAJOR FIRE STARTERS

1. Malicious ignition by intruders or employees
2. Misuse of electrical equipments
3. Mechanical heat and sparks
4. Heating plant
5. Children play with matchboxes and crackers

10.1.2 FIRE PRONE MATERIALS

1. Waste and rubbish
2. Combustible elements in the structure and fittings
3. Electrical insulations
4. Textiles and plastics
5. Flammable liquids
6. Packaging and wrapping materials

10.13 REASONS FOR SPREADING

1. Presence of large quantities of combustible materials
2. Lack of fire spreading walls between production and storage areas
3. Opening in floors and walls between departments
4. Rapid burning of dust and fly deposits
5. Oils and fats flowing when burning
6. Combustible construction on buildings
7. Combustible linings of roofs, ceilings and walls

10.1.4 FIRE LEADS TO

1. High intensity of heat
2. High concentration of smoke
3. Generation of toxic and noxious fumes
4. Explosion
5. Building collapse/structural damage
6. Disruption of essential service

- Water/ food/ medicine
- Communication
- Transport
- Power supply

10.2 CAUSES OF FIRE IN RURAL AREAS

1. Kitchen tire or drying of firewood
2. Naked flame from oil lamps and wicks
3. Careless smoking careless disposal of ash/amber
4. Careless burning of disposal/ rubbish
5. Spontaneous combustion
6. Dry grass fire works
7. Malicious ignition

Villages are fire prone due to the spread of bio- wastes (straw) / dry thatching materials etc. due to dense and close living lifestyle burning woods, open cooking, spreading of agricultural waste materials etc, are the major causes.

The habit of taking fire from one house to another carelessly is also one of the causes. Neglecting to put off the tire in hearth during day and night.

10.3 HISTORY DOCUMENTATION

The detailed report on number of fire accidents occurred; place, date, amount of property lost, property saved, lives lost and lives saved are tabulated in the table 10.1 below.

Table 10.1: Showing property and life lost, saved during accidental fire:

Year 1999					
Month	Total calls	Lives saved	Lost properties in Rs	Property saved in Rs	Places
January	7	1 (animal)	89800	150500	Kadur, Chickmagalur
February	12	-	84300	205700	Chickmagalur Kadur, Mudigere, Tarikere
March	13	-	120550	200950	Chickmagalur Mudigere,
April	8	-	81300	165700	Chickmagalur Kadur
May	3	-	11000	20000	Chickmagalur Kadur
June	8	-	68600	128400	Chickmagalur
July	3	-	38000	224500	Chickmagalur
August	2	-	15000	119900	Chickmagalur
September	2	-	5100	119900	Chickmagalur
October	4	-	18000	25000	Chickmagalur
November	1	-	100	7900	Chickmagalur
December	9	-	222400	153800	Chickmagalur
Total					
Year 2000					
Month	Total calls	Lives saved	Lost properties in Rs	Property saved in Rs	Places
January	17	-	211400	778900	Chickmagalur Kadur,
February	26	-	294200	217200	Chickmagalur Kadur, Mudigere
March	27	-	141750	850750	Chickmagalur Kadur,
April	15	-	191900	316800	Chickmagalur

May	2	-	5500	625800	Chikckmagalur
June	2	-	2500	4000	Chikckmagalur
July	3	-	60000	-	-
August	1	-	20000	409200	Chikckmagalur
September	4	-	-	751000	Chikckmagalur
October	2	-	5000	1500	Chikckmagalur
November	1	-	65000	5000	Chikckmagalur
December	2	-	86000	142000	Chikckmagalur
Total					

Year 2002

Month	Total calls	Lives saved	Lost properties in Rs	Property saved in Rs	Places
January	13	-	225800	-	Chikckmagalur
February	22	-	120000	1054000	Chikckmagalur Kadur
March	32	-	433000	7997000	Chikckmagalur Mudigere
April	11	-	77500	419000	Chikckmagalur N.R. Pura
May	9	-	14500	22500	Chikckmagalur
June	1	--	10000	14000	Chikckmagalur
July	2	-	7000	63000	Chikckmagalur
August	2	--	45000	395000	Chikckmagalur
September	1	-	10000	990000	Chikckmagalur
October	-	-	-	-	-
November	1	-	2000	698000	Chikckmagalur
December	4	-	5500	554500	Chikckmagalur
Total					

Year 2003

Month	Total calls	Lives saved	Lost properties in Rs	Property saved in Rs	Places
January	15	-	918500	1704500	Chikmagalur
February	21	-	253800	240700	Chikmagalur Mudigere

March	36	-	449000	5230500	Chikmagalur Mudigere
April	9	-	160500	735500	Chikmagalur
May	6	1 (animal died) (animal saved)	122100	224400	Chikmagalur
June	3	-	46000	504000	Chikmagalur Mudigere
July	1	-	500	9500	Chikmagalur
August	-	-	-	-	
September	4	-	19000	632000	Chikmagalur
October	2	-	5500	105000	Chikmagalur
November	1	2 (man died)	4000	6000	Chikmagalur
December	7	-	276500	1039500	Chikmagalur
Total					

Year 2004

Month	Total calls	Lives saved	Lost properties in Rs	Property saved in Rs	Places
January	16	-	226000	778900	Chikckmagalur Kadur
February	22	-	324038	145700	Chikckmagalur Kadur, Mudigere
March	38	-	456000	165700	Chikckmagalur Kadur, Mudigere
April	9	-	18000	694900	Chikckmagalur
May	6	-	53200	50000	Chikckmagalur
June	3	-	65400	25000	Chikckmagalur
July	4	-	25897	60000	Chikckmagalur Kadur
August	2	-	12399	10000	Chikckmagalur
September	5	-	2258	100000	Chikckmagalur
October	6	-	1236	120000	Chikckmagalur

November	1	-	1020	158971	Chikckmagalur
December	7	-	32580	354987	Chikckmagalur
Total					

10.4 EQUIPMENTS USED

Personnel equipments:

- Helmet
- Water bottle with sling
- Torch
- First aid pouch

Fighting equipments:

- Extinguisher
- Hoses
- Hydrants
- Ladders

First aid equipments:

- Stretchers
- Blankets
- Roller bandages
- Cotton wool
- Sterile dressing pads
- Scissors
- Safety pins
- Safety razor blades
- Ambulance

CHAPTER 11

PEST DISASTERS

A pest may be defined as any living organism or plant causing harm or damage to people, their animals, crops and possessions. The important pests are those, which lead to loss in crop yield or quality, resulting in loss of profits to the farmers and reduced stock for subsistence export.

11.1 CAUSES OF PEST INFESTATION

- Temperature: often the most important factor that governs insect development is temperature.
- • Monoculture of crops: Generally crops monocultures are more vulnerable to pest because there is less resistance and fewer natural enemies of the specific pests attacking the crop.
- Introduction of plants to new locations: some pest problems occur when crops are introduced into new biological communities.
- Weather pattern: for flying insects such as locusts, the prevailing winds are important in determining where they will fly and weather they will survive.
- Migration: movement of different area with more favorable conditions allows pest's species control increase in numbers.

11.2 CHARACTERISTICS OF PEST INFESTATION

- Reduce the amount of leaf and photosynthetic area, hindering the plant growth.
- Tunnel in the stem and intercept sap flow.
- Destroy buds or growing points and cause subsequent distortion.
- Cause premature fruit fall.
- Attack flowers and reduce seed production.
- Injure or destroy completely or reduce germination.
- Attacks roots and cause loss of water and nutrient absorbing tissue
- Remove stored water in tube.

Table 11.1 Showing various crops and diseases:

Serial number	Crops	Diseases
1	Paddy	Leaf hopper Rice Stem bore Rice leaf folder Sheath blight
2	Wheat	Yellow rust Powdery mildew Loose smut
3	Maize	Maize jassid Maize borer
4	Sugarcane	Sugarcane black bag

		Stalk borer Early shoot borer
5	Cotton	Cotton hassid Cotton Whitefly Cotton alpid
6	Ground nut	Pink bollworm Collar rot Tikka
7	Coconut	Erryphyid mite
8	Coffee	Borer disease

11.3 PEST MANAGEMENT FOR COFFEE

- ✓ Multiplication of stem bore parasitoid apenesia species was continued and 1750 parasitoids were distributed among the growers for field release and on farm multiplication.
- ✓ White stem borer pherom traps were set up in coffee plantations and trap catches are being monitored.
- ✓ A total of 11.5 lakh cephalonomia stephonodenis parsitoids of coffee berry borer were reared and 9.8 lakh were released in the field.
- ✓ A total of 1 .28 lakh Leptomastics dactylopii. The parasitoid of mealy bug was reared and 93000 were released.
- ✓ Botanical pesticides are being tested against coffee mealy bugs.
- ✓ A total of 54000 berry borer traps were supplied to the growers to set up in the coffee berry borer infested fields.

CHAPTER 12

EPIDEMICS

An epidemic is commonly defined as the occurrence in community or area of cases of a disease that is clearly in excess of what is expected.

It is important to recognize a potential epidemic, and then to determine the existence and size of the outbreak and to develop ideas about the cause, method of transmission and best form of control.

A judgment as to whether an epidemic exists or not can be a highly political issue and it would be wise for district staff to consult with their district and department of health before making public announcement.

12.1 USES OF STUDYING EPIDEMICS DISASTER

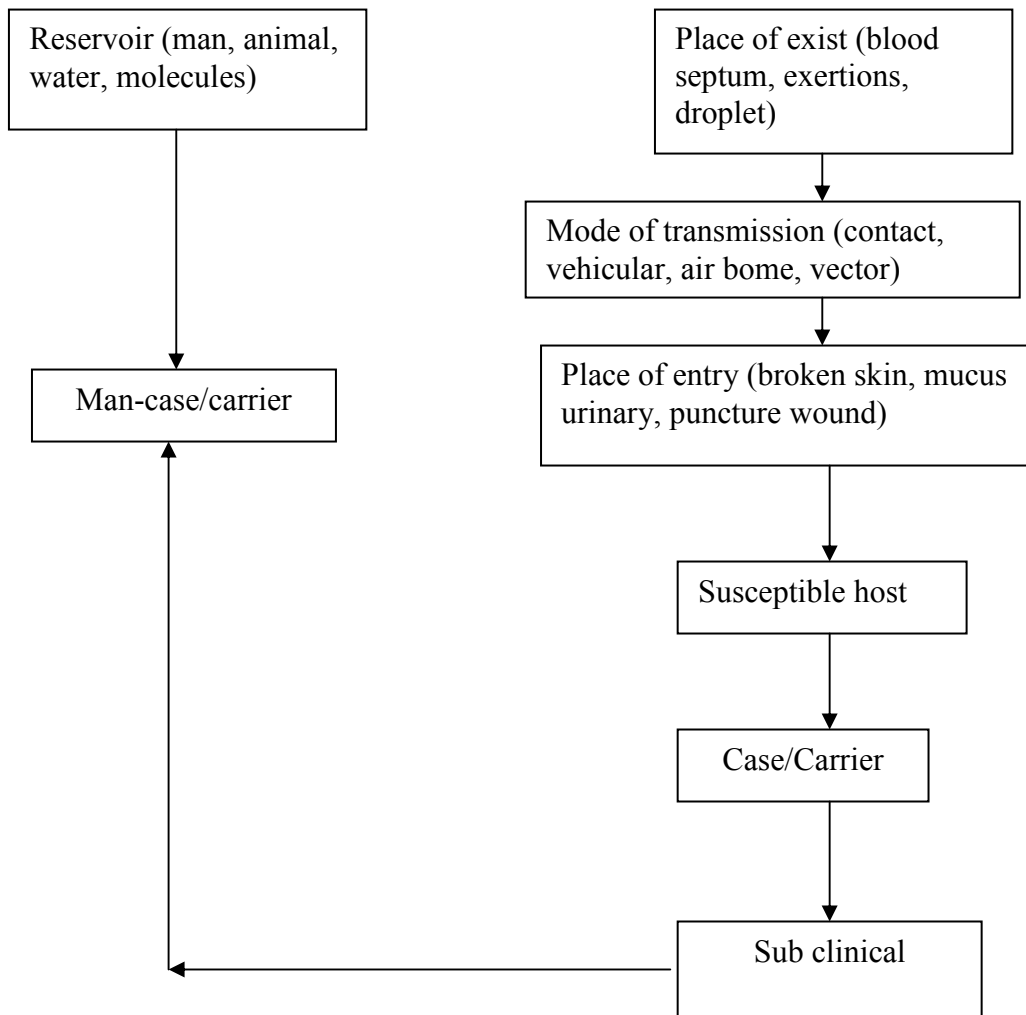
- To study the history of the health of the population, rise and fall and change in character of the disease.
- To study the working of the health service.
- To estimate individuals risk and chances.
- To complete the clinical picture of chronic diseases and to describe its natural history.
- To identify syndromes (more than one system in the body).

12.3 TYPES OF DISEASE

Types of disease include

- ❖ Hepatitis
- ❖ Typhoid
- ❖ Diphtheria
- ❖ Malaria
- ❖ Cholera
- ❖ Influenza
- ❖ Diarrhea
- ❖ Skin disease
- ❖ Food poisoning

12.2 DISEASE TRANSMISSION CYCLE



12.4 CAUSES FOR EPIDEMICS

- ❖ •Unsanitary conditions, crowding, poverty.
- ❖ Ecological changes that favor breeding of vector.
- ❖ Non- immune persons migrate to endemic disease area.
- ❖ Decline in nutritional status.
- ❖ Contaminations of water or food supply.
- ❖ Food-borne outbreak, e.g.: enteritis due to infection, Salmonellosis etc.
- ❖ Communicable diseases with short incubation influenza, malaria, measles plague, yellow fever.
- ❖ Toxic substances, e.g.: contaminated foods, chemical.
- ❖ In adequate medical and health facilities.

12.5 HISTORY DOCUMENTATION

In Malnad areas of the district water borne disease are found to be predominant.

Table 12.1: Diseases found in all the taluk of the district form 2002

Sl.No	Diseases	2002	2003	2004	2005
1) Mudigere					
A	Typhoid	186	109	207	29
B	Cholera	-	-	-	-
C	Malaria	61	34	79	33
2) Koppa					
A	Typhoid	106	88	26	26
B	Cholera	-	2	-	-
C	Malaria	30	36	24	-
3) Sringeri					
A	Typhoid	NA	6	7	3
B	Cholera	NA	22	58	17
C	Malaria	NA	26	09	15
4) Chikmagalur					
A	Typhoid	96	80	200	27
B	Cholera	20	26	18	-
C	Malaria	30	24	36	28
5) Kadur					
A	Typhoid	80	70	64	25
B	Cholera	18	20	17	6
C	Malaria	20	28	30	6
6) Tarikere					
A	Typhoid	100	89	72	4
B	Cholera	22	56	16	-
C	Malaria	8	20	-	-
7) N.R. pura					
A	Typhoid	68	105	17	-
B	Cholera	1	-	-	-
C	Malaria	12	19	26	4
D	Kasiono forest disease	94	109	52	39

12.6 INVENTORY OF RESOURCE REQUIRED AND AVAILABLE FOR MEDICAL CARE

The following are the resources required for medical care during epidemics;

- Hospitals and other infrastructure
- Area of operation of hospitals
- Number of beds in infectious disease wards
- Type of isolation available for patients
- Possibilities for extension of isolation facilities
- Facilities for intensive care
- Number of ambulance or any suitable vehicle for transportation
- Requirements for additional personnel
- Location of referral hospital
- Executive staff to contact in case of emergency
- Possible additional facilities available, such as community hall, hotels etc;

Table: 12.2 showing list of hospitals, health center, and bed strength etc:

Sl. No.	Taluks	General hospitals	Bed strength	Community health centers	Bed Strength	Primary health centers	Bed strength	Primary health units	Bed strength
1	Chikmagalur	Chikmagalur district hospital	400	-	-	1) Mallandur 2) Kalasapura 3) Sirvase 4) K.R. pete 5) Kaimara 6) Aldur 7) Belavadi 8) Machagondana halli 9) Hiremagalur	6 6 6 6 6 6 6 6 6 6	1) Annor 2) vasthare 3) Athigun-di 4) Mallenahalli 5) Hospete 6)Jengadde	- - - - - - - - - -
2	Kadur	Kadur Government Hospital Benrur Government hospital	100 50	1) Kadur 2) Birur 3) Panchanhalli 4) Yagati	30 30 30 30	1) Nidagatta 2) Hirenallur 3) Yagati 4) Sakkarayapattana 5) Singatagere 6) Choulhiriyur 7) Panchanahalli 8) Mathigatta 9) Aasandhi 10) Kunkanadu 11) Hochihalli 12) Gajre 13) Chikballekere	6 6 - 10 6 6 6 - 6 16 6 6 6 6 6	1) Banoor 2) Thagali 3) Hogrehalli 4) S.bidre 5) Bislehalli 6) Devannur 7) Giganchalli 8) Yllumbalse 9) Basur 10) Oligere 11) Ganganahalli	- - - - - - - - - - - - - -
3	Tarikere	Tarikere government hospital	50	Tarikere	30	1) M.c. halli 2) Tarikere 3) Ajjampura 4) Lakkavalli 5) Hunsagatta 6) Lingadahalli 7)	- - 6 16 16 6	1) Santhveri 2) Bettadahalli 3) Kemmanundi	- - - -

						Bukkambudhi 8) Sollapura 9) Cheemahalli 10) Mudugodu 11) Shivani 12) Kurkuchi	6 6 6 6 6 6	4) Kudulur 5) Nelekere 6) Gakihalli	6 - -
4	N.R. Pura	-	-	N.R.Pura	30	1) Balehonnur 2) Muthinakoppa 3)N.R. Pura	16 6 -	1) Kattinamane 2) Magundi	-
5	Sringeri	Taluk level health center sringeri	30	-	-	1) Sringeri 2) Bagur	- -	1) Nemmaru	-
6	Koppa	Koppa Government hospital	50	Koppa	-	1) Jayapura 2) Hariharapura 3) Kammardi 4) Koppa	8 16 6 -	1) Bandigadi 2) Hirekodgie 3) Shanthigrame 4) Uthmeshwara 5) Basrikatte	- 10 - 10 -
7	Mudigere	Mudigere Government hospital	100	1) Mudigere 2) Kalasa	30 30	1) Balehole 2) Banakal 3) Kalasa 4) Gonibedu 5) Dardhalli 6) Nandipura 7) Javali 8) Bettagere	6 6 - 16 10 6 16 6	1) Niduvale 2) Kundur 3) Bathibyle 4) Gutti 5) Hiregyle 6) Sunkasale 7) Hanthur 8) Oorubage	-

CHAPTER 13

MINE ACCIDENTS

13.1 PLACES OF MINING IN CHIKMAGALUR DISTRICT

Extraction of iron from the magnetite ore is done at Kudremukh. Here open cast mining is done 38% iron contained is obtained from the magnetite ore which is later upgraded to 68% and is then put into use. At Kudremukh the mining area is about 600 hectares out of which Excavation is done in 452 hectare. The mining project at Kudremukh was started in 1976 April 2 at the mining area the ground is loosened and the material is crushed and the crushed material comes to the plant where magnetite and non magnetite are separated the final product which contains 68% is then send to Mangalore port which is different forms is exported to other countries. For every 3 tone extracted 1 tone of final product is obtained and 2 tones will be waste. The waste obtained contains mainly silicates, which is safely disposed to the dam.

13.2 MINING AND DISASTERS

The disasters associated with water in mines are as follows:

- Inflow along crack, fracture and geological discontinuity.
- Weakening of ground surface during excessive rainfall.
- Reducing the slope of land along pit.
- Caving in blast holes.
- Seepage along weathered strata. Old water logged area.
- Leakage along weak and in sufficient thickness of barrier surface pond. River intermittent streambed.

The losses suffered due to mine flooding are enormous as compared to the investment put for understanding their causes as well as preventive measures.

13.3 TYPES OF MINING AT KUDREMUKH

There are two types of mining namely

- ❖ Open cast mining and
- ❖ Under ground mining

Here in Kudremukh the open cast mining is practiced.

13.4 PROBLEMS OF MINING

- Poor communication system and delay in summoning concerned staff
- Delay in mobilizing rescue team to the site.
- Delay in deciding in action plan.

- Lack of proper training for key person. Resulting in confusion and inefficiency.
- Shortage of medicines and medical equipments.
- Disturbances in law and order situation.
- Sense of panic created by employees.

13.5 EPISODE DOCUMENTATION

As per the management says there is no such major disaster occurred due to mining activity.

- ✓ Only two- life loss has occurred.
- ✓ In 1992 while increasing the height of the dam landslide took place. This created some disturbances, due to which the whole town was evacuated.
- ✓ All safety measures are provided to the workers those who are working at the mining area and processing section.
- ✓ The waste slurry is safely let into LAKYA DAM. This mainly contains silicates.
- ✓ The water used in the processing is recycled and reused.
- ✓ Proper medical care is taken for the persons who are working and to the families.
- ✓ If in case any death or injury occurs then compensation is given.

13.6 RELIEF MEASURES TAKEN

Prepare a statement showing names of persons, who are issued lamp with cap lamp and send a copy to regional control room.

- Arrange for procuring additional material from central store to regional control room.
- Depute medical doctors with necessary instrument and drug.
- Welfare officer should supervise accommodation to rescue team, Victim person etc.
- Colliery head clerk should co-operate with police and public for list of volunteer workers.
- Canteen manager should supply food to affected persons through additional canteen staff
- Security officer should make provision to keep road clear for movement of vehicles and ambulance.
- The family members of the victims should be counseled by social worker.
- Psychologist should be there for immediate social cum mental welfare.
- The family members of victim person should be kept at community center.
- Vacated school in order to provide adequate care.

13.7 WARNING SYSTEM

When mining flooding occurs in an area prone to disaster a warning is provided for the local people. The main parameters are as follows: -

- River guard has duty to keep continuous watch on the water level is below 1 meter of high flood level. He should instantly inform to higher authority.
- Escape route, emergency gate may be used as and when required with its exact knowledge to workers.
- First aid, medicinal facility should be provided at the site.

- For emergency should inform the district administration for help and assistance.
- •Mine manager has duty hearing sign of mine flooding to resolve possible measures in efficient way with maintenance of electric supply a information to DGMS for the needful.

13.8 FUNCTIONS AND RESPONSIBILITIES

1) MAIN CONTROLLER OF SITE

- ❖ Director shall be the main controller at the project site the main functions and responsibilities are:
- ❖ Form team for incident control, communication, evacuation and transportation and announce the same clearly for all to know.
- ❖ Also ensure that emergency services such as rescue team of CSIE personnel, first and team, medical services etc are called and direct to site as necessary.
- ❖ Direct the key personnel to exercise control on those part of the industry. This is out side the scene of incident.
- ❖ Direct evacuation of personnel if necessary.
- ❖ Communicate with media through designated personnel.

2) INCIDENT CONTROLLER AND HIS TEAM

I/C PCD shall be incident controller are head of the incident control team. His main responsibilities are to:

- Control and contain the incident.
- Communicate the emergency services needs to the main control offsite.
- Safe guard the people and property.
- Incident control team shall arrest leakage by dumping and compact the earth at the area of breached portion.
- Incident control team shall asset I/C PCD to control the pollution river by constructing adequate bunds to contain the washouts, team will also take necessary measures to prevent flow of water li were it is breached.

13.9 IMMEDIATE ACTIONS REQUIRED TO BE TAKEN

- ❖ Immediate stopping of pumping of slurry.
- ❖ Exposed pipeline should check for the extent of damage.
- ❖ If it is buried in the ground, excavate the trench to expose the leaking portion of the pipeline for facilitating repair.
- ❖ Carry out repair/replacement work of leaking pipe.
- ❖ Resume pumping of water and confirm that no leakage again.
- ❖ Fill back the trench.

CHAPTER 14

RESULTS & DISCUSSIONS

- i. Drought is the most predominantly and frequently occurring disaster in the district. About 80% of crops are lost annually due to occurrence of drought.
2. The severely and frequently effected areas are the maiden areas namely Kadur, Tarikere and part of Chickmagalur taluk. From the table 5.3(Pg no: 15) and fig no 34 the worst affected area is the Kadur taluk having a minimum rainfall of 406mm and it was in the year 2001-2002. In the subsequent years the rainfall is far below then the normal expectancy level.
3. The other taluks severely affected are Tarikere and some parts of Chickmagalur taluk. During the study it was observed that Tarikere taluk, Mudigere taluk and Chickmagalur taluk faced severe drinking problem Ref table 5.4(Pg. No: 16).
4. Forest fires are the second major disaster occurring in the district. Muthodi reserve forest which is a part of Chickmagalur and N.R.Pura taluk is subjected to frequent forest fires resulting in colossal property loss and wild life. Frequency of forest fire occurrence of Muthodi was more during the year 2004, affecting 6561 hectares of forest area resulting in property loss of worth 10 lakhs Ref Table 6.3, Pg No: 31)
5. Low lying areas of Malnad in the district are more prone to flood disasters. From the study it was observed that the severely affected areas in the district are Mudigere Taluk. N.R.Pura and Koppa Taluk. Referring to table no 7.1 to 7.5.It is observed that Mudigere taluk is the worst hit taluk due to floods covering the area of 48 village's .A part from it about 16 villages in the N.R.Pura taluk are also severely affected due to floods.
6. During heavy rainfalls land slides are noticed only in Malnad part of the district. The ghat sections namely Charmudi ghats and Agumbe ghats are subjected to minor landslides.
7. Accidental death rate is greater in the Chickmagalur taluk resulting in 35 deaths in the year I 998. The death rate due to accidents is also in rise in other taluks of Chickmagalur as can be seen from the table 9.1 to 9.2 and Fig No: 33
8. Accidental fires have occurred frequently in Chickmagalur taluk when compared to other taluks of the district.
9. Pest affected areas are mainly Kadur and Tarikere .The coconut and arecanut farms are affected by Errphyid mite disease during 2002-2004. In some pans of Chickmagalur the commercial crop coffee is severely affected by Borer.
10. The three diseases Malaria, Cholera, Typhoid, Kasino forest discharge are the major epidemics occurring in the district. From the Table 12.1 Pg no 70 it is observed that

occurrence of Typhoid is more in Mudigere taluk .Cholera in Koppa taluk. Malaria in Chickmagalur taluk and Kasino forest diseases in N.R.Pura taluk.

11. From the study it is observed that there are no disasters occurring in the district due to bomb blast and major building collapse.

CHAPTER 15

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

1. Drought management:

- a. Based on the drought disaster study it was observed that adequate measures taken to supply water to the effected areas were not adequate and the warning system adopted forecast the flood is not executed properly.
- b. The fund allocation to the affected areas is to monitored and regulated at different levels so that it reaches the gram panchayats of the taluk for effective implementation of the welfare scheme.
- c. The distribution of the food grains for the cattle care should be based more on a scientific manner.

2. Fire management: The fire which was a frequent occurrence in the Bhadra reserve forest is due to ground tire.

3. Road Accidental: Road accidents are more severe in the Chickmagalur taluk and the no of fire services and equipments available is inadequate. Special training has to be compared to the personals during any eventuality. Accidents are mainly due to narrow lanes and movement of heavy traffic.

4. Epidemics: Malaria, Cholera, Typhoid are frequent in this district. This may mainly due to the supply of drinking water in all the taluks of the district except Chickmagalur taluk.

5. Pests: Coconut and arecanut are the major commercial crops hit in different taluks of the district due to pest. Remedial measures undertaken to control the pest is inadequate.

6. Other disasters due to bomb blast, building collapse and landslides etc are not observed frequently in the district.

RECOMMENDATIONS

Drought management

- Prepare plans in advance for involving NGOs and aid agencies.
- Fodder: Location, inventory requirement, movement — plan in advance.
- Preparation of drinking water contingency plan, tanker availability, construction or install temporary water storage structures on the village sides.
- Afforestation programs especially on maidan areas must be carried out.

- Health related facilities: Preventive steps- store medicine, prevent water contamination and control diseases.
- Relief works: With special emphasis on soil conservation and water conservation.
- Frequent monitoring of cattle, heat and market is necessary.
- In agricultural sector power supply and diesel supply for irrigation purpose must be well budgeted.
- Education and issuing of drought resistant crop seeds must be necessary.
- Ensure optimum use of ground water during drought.

Forest fire management

1. For a sustainable forest fire fighting, local community should be made as a stakeholder through the system of in built incentives such as they may be made beneficial of certain percentage of the forest product so that they feel involved in the preservation of forest.
2. Fire watchtowers to be erected in recurring places.
3. Making people aware is the most important factor in controlling fire.
4. The forest department is to be made nodal department, and the local villagers including women to be associated.
5. Fire lines to be maintained and cleaned before the summer and periodically monitored.

Road accidents

1. The provisions of Motor Vehicles Act and other related legislations and regulations are strictly enforced.
- 2) Adequate Highway and traffic aid post will be created.
- 3) Trauma care centers shall be established at every 100 kms. On the National and state Highway.
- 4) Speed monitoring equipments and computerization of movement of vehicles with
- 5) adequate checkpoints on the National Highway with regard to transportation of
- 6) hazardous chemicals and other materials.
- 7) Fixation of timings to the passenger vehicles to avoid traffic jams identify and
- 8) design routes and fixing the time for transportation of hazardous chemicals and
- 9) other materials.
- 10) Prohibit the parking of vehicles on National Highway and State Highway.
- 11) Excavation on roads will be protected particularly in the night with barricades
- 12) fluorescent signs and red lights.
- 13) PWD and National Highway department should concentrate on removal of bottlenecks on National and State Highway.
- 14) Efforts will be made to provide road dividers on National and State Highway on priority basis.
- 15) Arrangements will be made adequate embankments/ reflector/ proper signs on curves.
 1. Arrangements will be made information signs boards giving the local information of the nearest village, Police station. Hospital, Ghat. Traffic position, Petrol pump

- 16) etc. at every traffic aid post.
- 17) All 2 wheeler drivers including pillion riders must always wear the right kind of helmet.
- 18) Overtaking in vehicles is regulated.
- 19) Frequently accidents occurring spots will be identified and precautionary measures will be taken.
- 20) Lanes will be marked for pedestrians/cyclists.

Accidental fire management

- ❖ Training: For immaters in handling first aid fire fighting teams and equipments.
- ❖ Fire drill: Evacuation drill to be practiced for infusing confidence amongst the occupants.
- ❖ Fire resisting construction should be suggested.
- ❖ Formulation of detailed comprehensive standards and codes of building must be drawn up covering their enforcement.
- ❖ Enforcement to be effective, regulation must be supported by inspections by
 - a) Fire service.
 - b) Local authority.

Flood management

1. Construction of embankments.
2. Channel improvement.
3. Emergency flood way and river diversions.
4. Inter basin transfers.
5. Bank protection, river training, anti erosion works.
6. Village rising and construction of community cum shelter building above high flood level (HFL).

Landslide management

1. Shallow erosion slides.
2. Surface drainage.
3. Sub- surface drainage.
4. Re-grading of slope.
5. District Administration should study the vulnerable areas and take appropriate preventive measures.

Pest management

- Identify the pest in the system
- Develop suitable monitoring or forecasting system.
- Establish economic thresholds.
- Develop a pest management strategy.
- Cultural control: these include decision made by farmers on varying depth on tillage according to pest species, planting resistant crop varieties, and

- diversities in cropping system.
- Physical methods. These include hand picking from plants. Driving insects into a trench, placing bags around fruits, netting etc.,
- Chemical methods: this method is very quick in action and comes in different forms.
- Biological methods: this involves the control by living organisms: predators include birds, frog, spiders, insects etc.

ANNEXURE 1

DISTRICT DISASTER RESOURCE NETWORK

Item Type and Description	Department/Agency Details	Item/HR Details
<p style="text-align: center;">Item No- 101 Name- Gas Cutters Type-Specific Equipment Description-Gas Cutters (Small Size)</p>	<p>Dept Name-KSRTC Chikmagalur Addr-Divisional Controller, KSRTC, CKM Div, Chikmagalore Addr- Divisional Controller, KSRTC, CKM Div, Chikmagalore. Tel.No-08262-229869, 08262- 229874 Fax-08262239177 Email-</p>	<p>Nos/Quantity Available-5 Item location – department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005</p>
<p>Item N. 103 Name- Bolt Cutters Type- Specific Equipment Description- Bolt cuttersu</p>	<p>Dept Name-KARNATAKA STATE FIRE SERVICES Addr-District fire officer, Fire Station, CKM Contact-District fire officer Addr-District fire officer, Fire Station, CKM Tel.No-08262-220199, 08262101. Fax- Email-</p>	<p>Nos/Quantity Available-1 Item location – department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005</p>
<p>Item No-103 Description-Bolt Cutters Type-Specific -Equipment Description-Bolt Cutters (Shears)</p>	<p>Dept Name- MESCO Addr-MESCO, CHICKMAGALORE Addr- MESCO, CHICKMAGALORE Tel.No-08262-222393, 08262- 22237 Fax-0826222393 Email- execkm.kptel@rediffmail.com</p>	<p>Item location /Quantity Available-2 department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005</p>
<p>Item No-104 Name- Electric Cutters Type-Specific Equipment Description-Electric Cutters (Portable hand</p>	<p>Addr-Divisional Controller, KSRTC, CKM Div, Chikmagalore Contact-Divisional Controller Addr- Divisional Controller,</p>	<p>Item location /Quantity Available-1-2 department Available time –January to December</p>

operated)	KSRTC, CKM Div, Chikmagalore Tel.No- 08262-229869, 08262-229874 Fax-08262239177 Email-	Source-Govt Operator Available-yes Transport-Road Prior expr in emergency-NA Entry Date
Item No-106 Name- Chipping Hammer Type-Specific –equipment Description-Chipping hammer (10 pounds)	Addr- Divisional Controller, KSRTC, CKM Div, Chikmagalore Addr- Divisional Controller, KSRTC, CKM Div, Chikmagalore Tel.No-08262-229869, 08262-229874 Fax-08262239177 Email-	Nos/Quantity Available-1 Item location – department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency-NA Entry Date-4/06/2005
Item No-115 Name- Jack with five ton lift Type-Specific equipment Description-Jack with five ton lift	Dept Name- KARNATAKA STATE FIRE SERVICES Addr-District fire officer, Fire Station, CKM Contact-District fire Officer, Addr-District fire Officer, CKM Tel.No-08262-229869, 08262-229874 Fax-08262239177 Email-	Item location /Quantity Available-12, department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency-NA Entry Date-4/06/2005
Item No-117 Name- Sledge Hemmer Type-Specific equipment Description-Sledge hammer	Dept Name- KARNATAKA STATE FIRE SERVICES Addr-District fire officer, Fire Station, CKM Contact-District fire Officer, Addr-District fire Officer, CKM Tele.No.- 08262-220199, 08262101 Fax- Email-	Nos/Quantity Available-1 Item location – department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency-NA Entry Date-
Item No-117 Description- Sledge Hemmer Type-Specific - Specific equipment Name- Sledge Hemmer	Addr- Divisional Controller, KSRTC, CKM Div, Chikmagalore Addr- Divisional Controller, KSRTC, CKM Div, Chikmagalore Tel.No-08262-229869, 08262-	Item location /Quantity Available-5 department Available time –January to December Source-Govt Operator Available-yes

	229874 Fax-08262239177 Email-	Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No-117 Description- Sledge Hemmer Type-Specific - Specific equipment Name- Sledge Hemmer	Dept Name- MESCO Addr-MESCO, CHICKMAGALORE Addr- MESCO, CHICKMAGALORE Tel.No-08262-222393, 08262- 22237 Fax-0826222393 Email- execkm.kptel@rediffmail.com	Item location /Quantity Available-13 department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No-118 Name-Heavy axe Type-Specific equipment Description-Heavy axe	Dept Name-KARNATAKA STATE FIRE SERVICES Addr-District fire officer, Fire Station, CKM Contact-District fire Officer, Addr-District fire Officer, CKM Tele.No.- 08262-220199, 08262101 Fax: Email:	Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No-112 Name- Smoke Blower and Exhauster Type-Specific equipment Description-Smoke Blower and Exhauster	Dept Name- MESCO Addr-MESCO, CHICKMAGALORE Addr- MESCO, CHICKMAGALORE Tel.No-08262-222393, 08262- 22237 Fax-0826222393 Email- execkm.kptel@rediffmail.com	Item location /Quantity Available-1 Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No-124 Name- Gloves-Rubber, Tested up to 25000 volts Type- Description-Gloves- Rubber, Tested up to 25000 volts	Dept Name- MESCO Addr-MESCO, CHICKMAGALORE Addr- MESCO, CHICKMAGALORE Tel.No-08262-222393, 08262- 22237 Fax-0826222393 Email- execkm.kptel@rediffmail.com	Item location /Quantity Available-257 Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005

Item No-131 Name- Slotted Screw Driver Type- Description-slotted Screw Driver	Dept Name- MESCOM Addr-MESCOM, CHICKMAGALORE Addr- MESCOM, CHICKMAGALORE Tel.No-08262-222393, 08262-22237 Fax-0826222393 Email- execkm.kptcl@rediffmail.com	Item location /Quantity Available-28 Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency-NA Entry Date-4/06/2005
Item No-131 Name- Slotted Screw Driver Type- Description-slotted Screw Driver	Addr- Divisional Controller, KSRTC, CKM Div, Chikmagalore Addr- Divisional Controller, KSRTC, CKM Div, Chikmagalore Tel.No-08262-229869, 08262-229874 Fax-08262239177 Email-	Item location /Quantity Available-25 department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency-NA Entry Date-4/06/2005
Item No-133 Name- Blankers Type-Specific equipment Description	Dept Name- POLICE DEPARTMENT Addr-DISTRICT POLICE OFFIER Contact-Superintendent of police Addr-District Police Officer Tel.No-08262-230403, 08262-230405, 08262-235608 Fax-08262235608 Email-	Item location /Quantity Available-25 department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency-NA Entry Date-4/06/2005
Item No-140 Description-Search light Type-Specific equipment Description -Small	Dept Name-KARNATAKA STATE FIRE SERVICES Addr-District fire officer, Fire Station, CKM Contact-District fire Officer, Addr-District fire Officer, CKM Tele.No.- 08262-220199, 08262101 Fax: Email:	Item location /Quantity Available-8 department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency-NA Entry Date-4/06/2005
Item No-141 Name- Electric Generator Type-Specific equipment	Dept Name- POLICE DEPARTMENT Addr-DISTRICT POLICE	Item location /Quantity Available-4 department

Description-625 KVA, 3 no's	OFFIER Contact-Superintendent of police Addr-District Police Officer Tel.No-08262-230403, 08262-230405, 08262-235608 Fax-08262235608 Email-	Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency-NA Entry Date-4/06/2005
Item No-141 Name- Electric Generator Type-Specific equipment Description-625 KVA, 3 no's	Dept Name- POLICE DEPARTMENT Addr-DISTRICT POLICE OFFIER Contact-Superintendent of police Addr-District Police Officer Tel.No-08262-230403, 08262-230405, 08262-235608 Fax-08262235608 Email-	Item location /Quantity Available-3 department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency-NA Entry Date-4/06/2005
Item No-142 Name- Trucks Type-Specific equipment Description-Aerial Lift Name-	Dept Name- PWD Chikmagalur Addr-PWD Office Contact-Executive engineer, Chikmagalur Addr- PWD Office, Tel.No- Fax- Email-	Item location /Quantity Available-1 department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency-NA Entry Date-4/06/2005
Item No-147 Name-Tipper Type-Specific equipment Description-Heavy Duty	Dept Name- Minor irrigation Chikmagalur Addr-head office Chikmagalur Contact- executive engg Addr-head office Chikmagalur Tel.No- Fax- Email-	Item location /Quantity Available-1 department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency-NA Entry Date-4/06/2005
Item No-156 Name-life jackets Type- Specific equipments Description-life jackets	Dept Name-KARNATAKA STATE FIRE SERVICES Addr-District fire officer, Fire Station, CKM Contact-District fire Officer,	Item location /Quantity Available-2 department Available time –January to December

	Addr-District fire Officer, CKM Tele.No.- 08262-220199, 08262101 Fax: Email:	Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No-156 Name-life jackets Type- Specific equipments Description-life jackets	Dept Name- POLICE DEPARTMENT Addr-DISTRICT POLICE OFFIER Contact-Superintendent of police Addr-District Police Officer Tel.No-08262-230403, 08262- 230405, 08262-235608 Fax-08262235608 Email-	Item location /Quantity Available-2 department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No-171 Name-breathing apparatus-self contained Type- Specific equipments Description- breathing apparatus-self contained	Dept Name-KARNATAKA STATE FIRE SERVICES Addr-District fire officer, Fire Station, CKM Contact-District fire officer, fire station, CKM Tel No. 08262-220199, 08262101. Fax- Email-	Item location /Quantity Available-2 department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No-175 Name-extension ladder Type- Specific equipments Description- extension ladder	Dept Name-KARNATAKA STATE FIRE SERVICES Addr-District fire officer, Fire Station, CKM Contact-District fire officer, fire station, CKM Tel No. 08262-220199, 08262101. Fax- Email-	Item location /Quantity Available-2d 2, department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No-177 Name-Co2 Type- fire extinguisher Description- Co2	Dept Name-KARNATAKA STATE FIRE SERVICES Addr-District fire officer, Fire Station, CKM Contact-District fire officer, fire station, CKM Tel No. 08262-220199,	Item location /Quantity Available-6, department Available time –January to December Source-Govt Operator Available-yes

	08262101. Fax- Email-	Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No-178 Name-foam type Type- fire extinguisher Description- foam type	Dept Name-KARNATAKA STATE FIRE SERVICES Addr-District fire officer, Fire Station, CKM Contact-District fire officer, fire station, CKM Tel No. 08262-220199, 08262101. Fax- Email-	Item location /Quantity Available-9, department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No-179 Name-DCP type Type- fire extinguisher Description- DCP type 10Kg type	Dept Name-KARNATAKA STATE FIRE SERVICES Addr-District fire officer, Fire Station, CKM Contact-District fire officer, fire station, CKM Tel No. 08262-220199, 08262101. Fax- Email-	Item location /Quantity Available-6, department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No-181 Name-Fire tender Type- fire extinguisher Description- 4500 Ltr, water lorry,	Dept Name-KARNATAKA STATE FIRE SERVICES Addr-District fire officer, Fire Station, CKM Contact-District fire officer, fire station, CKM Tel No. 08262-220199, 08262101. Fax- Email-	Item location /Quantity Available-2, department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No-201 Name-Stretcher normal Type- specific type Description- normal	Dept Name-MALLEGOWDA GENERAL HOSPITAL Addr-Chikmagalur Contact-District surgeon Addr- Hospital Chikmagalur Tel No. 08262-249249 Fax- Email-	Item location /Quantity Available- department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency-

		NA Entry Date-4/06/2005
Item No-205 Name-Fire aid kit Type- specific type Description- small	Dept Name-KARNATAKA STATE FIRE SERVICES Addr-District fire officer, Fire Station, CKM Contact-District fire officer, fire station, CKM Tel No. 08262-220199, 08262101. Fax- Email-	Item location /Quantity Available- department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No-205 Name-Fire aid kit Type- specific type Description- small	Addr- Divisional Controller, KSRTC, CKM Div, Chikmagalore Addr- Divisional Controller, KSRTC, CKM Div, Chikmagalore Tel.No-08262-229869, 08262- 229874 Fax-08262239177 Email-	Item location /Quantity Available-10 department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No-208 Name-Fire aid kit Type- specific type Description- small	Dept Name- MESCOM Addr-MESCOM, CHICKMAGALORE Addr- MESCOM, CHICKMAGALORE Tel.No-08262-222393, 08262- 22237 Fax-0826222393 Email- exECKM.kptcl@rediffmail.com	Item location /Quantity Available-3 Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No-209 Name-portable ventilators Type- Portable Description- Portable ventilators	Dept Name-MALLEGOWDA GENERAL HOSPITAL Addr-Chikmagalur Contact-District surgeon Addr- Hospital Chikmagalur Tel No. 08262-249249 Fax- Email-	Item location /Quantity Available-2, department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No – 210	Dept Name-MALLEGOWDA	Item location /Quantity

Name – Portable x-rays Type-Portable Description- Portable X-rays	GENERAL HOSPITAL Addr-Chikmagalur Contact-District surgeon Addr- Hospital Chikmagalur Tel No. 08262-249249 Fax- Email-	Available-1, department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No – 211 Name – Ultra Sound Type-Portable Description- Portable E.C.G	Dept Name-MALLEGOWDA GENERAL HOSPITAL Addr-Chikmagalur Contact-District surgeon Addr- Hospital Chikmagalur Tel No. 08262-249249 Fax- Email-	Item location /Quantity Available-1, department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No – 212 Name – Portable E.C.G Type-Portable Description- Portable E.C.G	Dept Name-MALLEGOWDA GENERAL HOSPITAL Addr-Chikmagalur Contact-District surgeon Addr- Hospital Chikmagalur Tel No. 08262-249249 Fax- Email-	Item location /Quantity Available-1, department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No – 213 Name – Portable Suction unit Type-Portable Description- Portable Suction unit	Dept Name-MALLEGOWDA GENERAL HOSPITAL Addr-Chikmagalur Contact-District surgeon Addr- Hospital Chikmagalur Tel No. 08262-249249 Fax- Email-	Item location /Quantity Available-7, department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No – 215 Name – Defibrillator Type-Specific equipment	Dept Name-MALLEGOWDA GENERAL HOSPITAL Addr-Chikmagalur	Item location /Quantity Available-1, department

Description- Defibrillator	Contact-District surgeon Addr- Hospital Chikmagalur Tel No. 08262-249249 Fax- Email-	Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No – 216 Name – Mobile o.T units Type-Specific equipment Description- Ophthalmology eye dept	Dept Name-MALLEGOWDA GENERAL HOSPITAL Addr-Chikmagalur Contact-District surgeon Addr- Hospital Chikmagalur Tel No. 08262-249249 Fax- Email-	Item location /Quantity Available-1, department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No – 217 Name – Mobile blood bank Type-Mobile Description- Mobile blood bank	Dept Name-MALLEGOWDA GENERAL HOSPITAL Addr-Chikmagalur Contact-District surgeon Addr- Hospital Chikmagalur Tel No. 08262-249249 Fax- Email-	Item location /Quantity Available-1, department Available time –January to December Source-Govt Operator Available-yes Transport-Road Prior expr in emergency- NA Entry Date-4/06/2005
Item No – 221 Name – Water filter Type-Specific equipmentMobile Description- Mobile blood bank		

FIRE FIGHTING TEAMS AND EQUIPMENTS

The district has 5 fire stations. The telephone number and available staff strength are given below:

Fire station: Chikmagalur
Telephone number: 08262-220 199
Number of staffs: 37

Number of vehicles: 4
Wireless sets: 9
Water source: At station

Fire station: Kadur
Telephone number: 221800
Number of staffs: 20
Number of vehicles: 2
Water source: At station

Fire station: Tarikere
Telephone number: 423700
Number of staffs: 20
Number of vehicles: 2
Water source: At station

Fire station: Kudremukh fire station
Telephone number: 554130
Number of staffs: 20
Number of vehicles-2
Water source: At station

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1. Manual on natural disasters management in India.
2. Source book on district disaster management.
3. An information guide to the land, flora and fauna of the Chickmagalur district.
4. A national disaster management plan for India, 1999-2000 edition.
5. A national disaster management plan for India, 2000-2001 edition.
6. Agricultural, doctors diary 2005.
7. National disaster response plan -a document prepared by high powered committee on disaster management.
8. High powered committee on disaster management - report.
9. Memorandum - presented to government of India seeking central assistance ton drought relief measures in Karnataka.
10. idrn.gov.in India disaster resource network.