CHAPTER II

PHYSIOGRAPHY AND GENERAL PROFILE OF TULASHI DAM

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CHAPTER II

2.1INTRODUCTION

In this chapter the due review of physiographic expression of the study region has been taken briefly. Many other geographical aspects of the region have also been taken in to consideration as drainage, climate, soil, vegetation etc. the general profile of the Tulashi dam project has also looked into.

2.2 PHYSIOGRAPHY

Area of research Tulasi river basin is the significant part of the Kolhapur district; it is therefore, it is necessary to look into the physiographic expression of the district. Topography of Kolhapur is rugged, undulating configured with high hills, lofty mountains and deep gorges and valleys. By virtue of locating amidst 'Western Ghats', flat topped plateaus, hills and mountain ranges rising up to the height of 910 m above mean sea level are common particularly towards the western direction of the district.

The Kolhapur district enjoys well developed drainage network of Panchaganga the principal river. It is therefore there is grate impact of river systems on the present expression physiography of the district. Since majority part of the Tulashi river falls in the high hill of Durgmanwad and Radhnagari forests it is highly undulating particularly towards the south-western part of the river basin. Tulashi River itself located on an average height of 620 to 630 meters above mean sea level. The basin is thus an expression of undulating with steep slope to the east direction in source region of the river. However, it is slightly tapering to the east as away from the source region with a height of 500 to 540 meters (fig. 2.1). The basin is divided Dhamani river valley by the range of Pal Khurda-Upavade-Sateri-Dhondewadi-Bahirshwar range of moderate hills with an altitude of 954 to 600 meters sloping towards the Bahireshwar (east) to the north-western side of the river. High disintegration of topography expresses the raised hills of Teraswadi-Donwadi and Shiroli-Dumala flat toped hills located between the main water divide of the river. Pungaon-Rashiwade hills forming water divide between Bhogavati and Tulshi to the south direction. The general sky lie of the region is moderately



Figure: 2.1 Tulashi Basin Contour Map.

undulating with weathered convex slope. The distinguished structural range of vertical dykes seems to be spread from village Chande- Ghungurwadi to village Mhalsavade. The river traverses its north direction to the north-east.

2.3 DRAINAGE

Panchaganga river is the major drainage basin of the Kolhapur district that feed by the fine network of Kasari, Kumbhi, Dhamani, Tulasi and Bhogavati rivers that are all perennial (fig.2.2). All these major tributaries of Panchaganga river sourced in the western high hill of the Sahyadri mountain. Tulasi river emerges at the height of 990 m amidst the hills of Durgamanwad situated in the secondary ridge of the eastern off-shots of the western ghats high hills of Radhanagari plateau. Tulashi river, an important tributary of Bhogavti river confluences Bhogavati near the Beed village at the height of 540 meters. Tulashi flows to the north-east direction parallel to the Bhogawati river. It has total course of 35.4 km. Tulshi basin occupying part of Radhanagari and Karveer Talukas of Kolhapur district. It extends from 16° 27' to 16° 39' North Latitude and 73° 57' to 74° 08' East Longitude and is one of the water drenched parts of South Maharashtra.

2.4 SOIL

Being part and parcel of Deccan Trap the soils of Tulashi basin is laden with the minerals like iron, silica, aluminum, manganese etc. gives deep black to the reddish brown colour. The spatial distribution of the soil in the basin is however varied according to the location and existence of forests and other associated factors. It is deep black with some considerable depth in source region of valley. The reddish brown soil with shallow depth lied on the high hills of source region. In the mountainous area it is lateritic origin red to reddish brown in colour. Generally occur in the western region. The layer of this soil with few centimeters deep is very shallow and almost absence on to the flat tops of plateaus and slopes of the hills.



Figure:2.2 Relief and Drainage Map of Kolhapur District. Source: Based on Survey of India.

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2.5 CLIMATE

The overall climate of Tulashi basin represents the climate of Kolhapur district that is dry temperate however, pleasant climate with comparatively cold weather. Climate is highly influenced by the high hills of Western Ghats duration of cool climate is more than the periods of hot weather from March to mid of May. Last week of May experiences cool climate with pre-monsoon showers. However there is rainy season from June to October and cold weather period thereafter from November to February. Generally the months of March, April and May are slightly hotter than that of other months of the year. However, in the month of April maximum temperature reaches 32°C, however, in the month of June abrupt fall of temperature with 18°C with drafting monsoon rainfall. The average rainfall in the basin is 3500mm, however, it is higher than that of the average in source region of the basin and slightly minimizing to the lower grounds of the basin to the eastern part of the basin.



Figure: 2.3 Status of temperature and rainfall.

Source: Based on climatic data.



Figure: 2.4 Rainfall Distribution.

2.6 VEGETATION

In spite of the close vicinity of the Western Ghats towards the west of the basin there are scanty patches of forests of varieties of some endemic plant species that are located in the source region of the basin. Generally dry deciduous types of forests are observed in region. Plants like Mango, Jackfruit, jambul, anjani are commonly observed. The hill slopes are replanted with eucalyptus plants by the forest department are occur every now and then in the region. Grass land patches are also abundantly occurring on the rugged topography in the basin area.

2.7 GENERAL PROFILE OF TULASHI DAM

As it is already mention that the river Tulashi is tributary of Panchganga River originates on the ridge of the eastern slope of the western ghats of Sahyadri near Village Dhangarwadi in the Radhanagari Taulka District, at an attitude of 990 m above mean sea level. According to the hydrological studies the lower part of the river is quite suitable for storage of water constructing artificial ridges and bunds. The water storage thus can provide adequate volume of water to sustain the cultivation of sugarcane in the basin particularly during the hot weather. In respect of the good future of agriculture in the Tulashi valley the survey was taken by the irrigation department in November, 1953. In the said through survey of the region was conducted by the expert chief engineers and other officials of the irrigation department of Maharashtra. To determine the actual site of dam wall several locations were investigated like, Burumbali site of Dhamod village, site of Kuranewadi Between Ladwadi and Dhamod, Ladwadi and Kote confluence of Londa Nala, Chande village and near Ghungurwadi. It is thus considering some merits of the landform configuration, suitable hydrological characteristics and less effect of submergence area the site of Burumbaliu near Dhamod was finely selected to raise the main wall of dam.

Salient Features of the Project

The project incorporates the 1512 m long earthen wall with total 198 m construction wall with 9 weirs bellow on the river. Total command area under the project in 1998 was 4920 ha, whereas it is 6252 ha in 2011 (fig.2.5). The tahsil wise total irrigable area in Tulashi Valley is Radhanagari 1950 ha and Karveer 2770 ha with total of 4720 hectares in 1998 however, according to the official reports prepared in 2011 it has extended to 5710 ha with Radhanagari 1145 ha and Karveer 4565 ha. The total storage of water through the project is 3.248 TMC with 3.14 TMC by dam itself and 0.108 TMC with the help of K.T. Weirs. However, the annual utilization of dam water is as irrigation 3.149 TMC, drinking 0.009 TMC and water losses by evaporation estimated is 0.090 TMC it is therefore total utilization of water is 3.472 TMC. There no water utilized for the industrial purpose.

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Figure:2.5 Command Area

| S.N. | Item | Details |
|------|-----------------------------------|---|
| 1 | Scope of the Scheme | A lift Irrigation Project with storage on |
| | • | Tulashi river near Burumbali. Irrigating |
| | | land in Tulashi valley only. |
| 2 | A) Source | Tulashi river a tributary of Panchaganga |
| | B) Location | in Krishna basin |
| | i) State | Maharashtra |
| | ii) Region | Western Maharashtra |
| | iii) District | Kolhapur |
| | iv) Taluka | Radhanagari |
| | v) Topo-sheet | Radhanagari |
| | vi) Latitude | 45 L/2 |
| | vii) Longitude | 74°1' |
| 3 | Unstream utilization | About 0.50 M cum |
| 4 | Vield and utilization on the | |
| | project | |
| | i) Catchment area above dam | 34 92 Sa Km |
| | ii) Gross annual utilization | 3 248 TMC |
| 5 | Dam and Reservoir | |
| 2 | i) Gross capacity of reservoir at | 98 29 M Cum / 3 47 TMC |
| | FRL 616.91 | 50.25 M.Cam. 5.17 M.C. |
| | ii) Capacity of dead storage at | 6 37 M Cum /0 22 TMC |
| | MDDL at R L 591 31 | |
| | iii) Capacity of live storage | 91 92 M Cum /3 25 TMC |
| | vi) Area under submergence at | 664 Hectares |
| | F.R.L. 616.91 | |
| | vii) Type of Dam | Farthen Dam with Ogee shape masonry |
| | | spillway on Left Bank Saddle |
| | viii) Maximum height of Dam | 48 68 M |
| | ix) Total quantity | 2.208 M.Cum. |
| | a) Earth work | 0.009 M.Cum. |
| | b) Concrete | 0.099 M.Cum. |
| | c) Masonry | 1512 M. |
| | x) a) Length of dam | 198 M. |
| | b) Length of Spillway | 2.49 M. |
| | xi) free board | |
| | xii) waste weir / spillway | Ogee shape gated. |
| | a) Type | 640 Cum./Sec. |
| | b) Design flood as per Inglis | |
| | Formula | 198 M. |
| | c) Length | Radial gates, 3 Nos 12 x 5 m. |
| | d) Type of Gates, Numbers & | 3 |
| | size | |
| | xiii) Outlet | 589,79 M |
| | a) Sill R.L. | R.C.C. conduit |
| | b) Type | 2.70 Cum./Sec. |
| | c) Discharge | |
| 6 | Command area | |
| | a) Gross command area | 4920 ha. (1998) 6252 ha (2011) |
| | b) Irrigable area. | 4720 ha. (1998) 5710 ha (2011) |

Table: 2.1 Salient Features of the Project

Source: Kolhapur Irrigation Department & Krishna Valley Development Corp. Maharashtra.

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