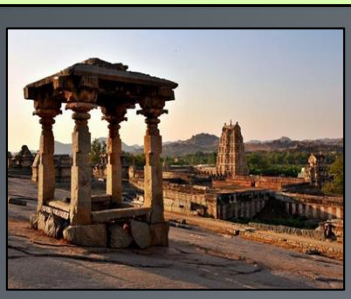
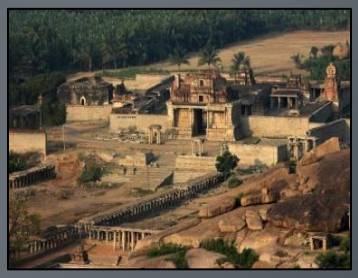
KARNATAKA NEERAVARI NIGAM LIMITED

(A Government of Karnataka undertaking)





MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT

DETAILED PROJECT REPORT

VOLUME – I

REPORT AND ANNEXURES

ESTIMATED COST – Rs. 464.43 Crores (At 2016 - 17 Price level)

JUNE - 2017

CHIEF ENGINEER
KNNL, IRRIGATION CENTRAL ZONE
MUNIRABAD

Document Control

Title:	MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT
Subject:	DETAILED PROJECT REPORT
Type:	Report
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Digital filename:	EIT-1027X-WRE-XX-DPR-A001-R16
Document No.:	EIT-1027X-WRE-XX-DPR-A001-R16
References to related documents	

Rev.	Description	Issue Date	Author		Checked		Approved	
			Initials	Sign.	Initials	Sign.	Initials	Sign.
00	Document created	09/06/2017	US/PR		SN		NR	

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Abbreviation

B.C.R	Benefit Cost Ratio
CA	Catchment Area
CADA	Command Area Development Authority
CBL	Channel Bed Level
CC	Cement Concrete
CD	Cross Drainage
CNS	Cohesive Non Swelling
CTC	Cart Track Crossing
CWC	Central Water Commission
CWR	Crop Water Requirement
DPR	Detailed Project Report
DT	Double tertiary
DTP	Draft Tender Paper
EOT	Electric Overhead Travelling
ET_C	Crop Evapo-transpiration
FIC	Field Irrigation Channel
FTL	Full Tank Level
GEMS	Groundwater Estimation and Management system
GIR	Gross Irrigation Requirement
GTS	Great Trigonometric Survey
Ha	Hectares
IP	Inspection Path
KNNL	Karnataka Neeravari Nigam Limited
MCM	Million cubic meter
NIR	Net Irrigation Requirement
SOR	Schedule of Rates
SR	Service Road
TMC	Thousand Million cubic feet
WUA	Waters Users Association
USDA	United States Department of Agriculture

MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT

SECTION 1

CHECKLIST

Checklist

No.	Particulars	Remarks
1	Was the original project given investment clearance by Planning Commission?	Does not arise.
2	Has the performance evaluation of the existing project been carried out?	Yes
3	Have the salient features of the project as envisaged at the time of execution of project and as present, been indicated?	Salient features as of now.
4	Have the irrigation potential of the existing project as originally envisaged, potential created and utilized and reasons for variations been indicated?	Yes
5	Has the Culturable command area been actually assessed and compared with that at the time of planning of the project and shortfalls/excesses, if any, discussed?	Yes
6	Has the Hydraulic survey of channel/distribution system been carried out?	Yes
7	Have the deficiencies in the existing irrigation system been identified?	Yes
8	Has the need for modernization been justified?	Yes
9	Have the hydrological studies been reviewed ,compared with those made at the time of preparation of the original project if available and reasons for variations recorded in respect of: (i) Rainfall (ii) Runoff (iii) Flood (iv) Sediment (v) Ground water (vi) Evaporation	These are run of the river schemes downstream of Tungabhadra dam (TB dam)
10	(a) Have changes in the upstream withdrawals/diversions for industrial use, power generation, drinking requirement and other developments in the upper catchments to the extent which can be collected with reasonable efforts be described? (b) Have the changes in the power generation / consumption in power for the lift irrigation schemes being described?	NA NA

No.	Particulars	Remarks
11	Have the semi-detailed soil surveys been carried out for the entire command (if not entire command then extent cornered) and soil and land irritability classification brought out in the report? (Project to be acceptable, semi detailed soil survey in at least 50% of command should have been carried.)	NA
12	Is the crop water requirement determined by the modified Penman method?	Yes
13	Have water requirements for other uses been worked out?	NA
14	Has justification for the proposed cropping pattern been furnished?	Yes
15	Have the cropping pattern & proper cropping calendar been devised with a view to maximize the production and channel closure for maintenance etc. ensured? Have these been concurred by the agriculture department?	Yes
16	Are the areas and percentage of CCA that will be irrigated during kharif, rabi, two seasonal, hot weather and perennial been indicated and compared with cropping pattern as existing prior to taking up the project, originally envisaged and actually developed after completion of the project?	Yes
17	Is the justification furnished for continuing with/or taking up perennial and hot weather crops from the reservoir?	Existing crops have been retained
18	Have the most suitable depths and frequencies of irrigation to be adopted, based on the characteristics of the soil and crops been worked out?	Yes
19	Have the values of conveyance efficiency, field application efficiency and overall water use efficiency been indicated with basis therefore?	Yes
20	Has the pattern of releases (10 daily/monthly) from the diversion/storage headworks been worked out & compared with those envisaged originally?	Yes
21	Has the channel been redesigned to cater for peak requirement + 10 percent (20% for small reservoirs) for rush irrigation. If, not have the alternative proposals for carrying the required discharge been discussed?	Yes
22	Whether supplementation from ground water has been considered?	NA

No.	Particulars	Remarks
23	Are the supplies available sufficient to meet the requirements for ensuring 75 per cent dependability? If not, have the possibilities of augmentation of the supplies been discussed either by increasing the storage or by supplementing by ground water etc.? Have the revised reservoir operation tables been furnished?	Yes
24	Has the study of ground water potential of the command area, the present level of the ground water use and the scope of the future ground water utilization been carried out and included in the project report?	Yes
25	Have the economics of the ground water development been studied?	NA
26	Has the possible impact on ground water recharge on account of lining of the system been kept in view in the scheme of ground water utilization?	NA
27	Has the possibility of ground water and irrigation area not commanded by the channel system been considered?	NA
28	Has the quality of surface water and also ground water, drainage water, if intended for irrigation use, been tested?	Yes
29	Have the requirements of the drainage in the command area been studied and a suitable intended for irrigation use been tested?	NA
30	Have the arrangements for the following been considered and provided for? Execution of OFD works (a) Training programmers for field staff and farmers – existing position and proposals for strengthening. (b) Participatory Irrigation Management (PIM), Water Users Association (WUA) and turnover of the system to WUAs. (c) Provision of extension services. (d) Providing important inputs like seeds, fertilizers etc.	These activities are implemented by CADA
31	Have adequacy of road communication facilities and if not, the necessity of improvements been discussed and provided for?	NA
32	Have matters about the improvement in reliability/dependability of the annual irrigation of the existing proposed command area been discussed in the light of modernization?	Yes
33	Have the net benefits due to the project been estimated and concurred by	Yes

No.	Particulars	Remarks
	the agricultural Dept.?	
34	Has the concurrence of the State Finance Department been obtained for taking up the project at the estimated cost?	Yes
35	Whether the scheme has already been started? If so, is the stage construction indicated?	-
36	Is the scheme included in the plan? If not, what is the present position regarding it's inclusion in the plan?	-
37	Have the year wise requirement of funds been indicated?	-
38	Is the scheme covered under State Sector or Central Sector?	State Sector
39	Is the scheme covered or proposed to be covered under any foreign assistance/aid agreement?	No
40	Are the detailed cost estimates included in the report?	Yes
41	Has the benefit-cost ratio been worked out? Whether proportionate cost of completed works included in the calculations?	Yes
42	Whether Internal Rate of Return (IRR) worked out?	NA
43	Are the financial results attached?	No
44	Are there any special reasons to undertake the project if it is unproductive and whether these have been recorded in the Report?	Yes. To use water more efficiently thereby save water, modernization is proposed.
45	Are the rates of betterment levy proposed, the period of recovery and the estimated total recovery indicated?	-
46	Are there any charges levied for irrigation facilities as distinct from water charges?	-
47	Are the scales of water rate indicated?	-
48	Have the rates of betterment levy, water charges, etc. been compared with those obtained in other regions of the state?	NA
49	Has the concurrence of the State Revenue Department been obtained for these rates?	Yes
50	Have the O&M aspects (both financial as well as management) been discussed? How are the O&M cost proposed to be met?	Yes.

No.	Particulars	Remarks
51	Have the programmer of construction and the expenditure involved been furnished?	Yes
52	Has the requirement of staff been estimated and furnished with justification?	Yes
53	Has the adequacy of the existing irrigation laws and revisions, if any, considered necessary been discussed?	Yes
54	Have the impact of the scheme on the overall development of water resources in the basin/state been discussed?	Yes
55	Whether views of water users about proposed works in modernization projects been obtained and described in the Report?	Yes
56	Have environmental / ecological aspects been discussed in the Report?	NA
57	Does the project involve acquisition of forest land? Has the MOE&F been approached for clearance under Forest Conservation Act 1980?	No. NA
58	Dose the project involve any re-settlement? Whether rehabilitation of PAFs provided for?	No. NA
59	Does the project involve rehabilitation of SC/ST population? Has the rehabilitation package for them been cleared by Ministry of Social Justice & Empowerment?	No
60	Have the socio economic studies (bench mark surveys) been carried out?	No
61	Have the interstate aspects been examined & discussed?	Yes
62	Have the list of ongoing programs of Agriculture Department in command Area been given?	Yes

MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT

SECTION 2

SALIENT FEATURES

Salient features

1.0	**Name of the Project**	**Modernisation of Vijayanagara Channels in Tungabhadra Project**	
2.0	**General Data**		
2.1	District(s)	Bellary, Koppal, Raichur	
2.2	Tehsil(s)/Taluk(s)	Hospet, Gangavathi, Sirguppa and Raichur	
2.3	River/Tributary	Tungabhadra River	
2.4	Location of Dam/Diversion Structures		
2.5	Name of River/Basin	Tungabhadra River/ Krishna	
2.6	Longitude and Latitude		
	a) Longitude	75° 40' to 77° 35' E	
	b) Latitude	14° 30' to 16° 34' N	
3.0	Socio-economic aspects	**Original**	**Revised**
3.1	District(s) Benefited	Bellary, Koppal, Raichur	Bellary, Koppal, Raichur
3.2	Income		
3.3	Land holdings		
3.4	Population benefited		
	a) Total		
	b) Schedule cast		
	c) Schedule Tribe		
	d) Other Backward casts		
4.0	Hydrological Data		
4.1	Catchment area at dam site (Ha)	28,179.20 Sq. Km at Tungabhadra dam site	
4.2	Rainfall (mm)	**Original**	**Revised**
	a) Maximum annual rainfall	1540	1540
	b) Minimum annual rainfall	244	244
	c) Mean annual rainfall (As per Thessien average)	629.20	629.20
4.3	Annual runoff (M cum)	**Original**	**Proposed**
	a) Average	-NA-	
	b) Maximum		
	c) Minimum		
	d) 75% dependability		
4.4	Design Flood	-NA-	
5.0	Water Utilization (TMC)	**Present**	**Proposed**
	a) Reservation for upstream use		
	b) Reservation for downstream use		
	c) Utilisation through the project		
	i) Irrigation	**12.05**	**5.80**
	ii) Power Generation	-NA-	
	iii) Drinking water	-NA-	

	iv) Industrial Use	-NA-	
	v) Others (Evaporation)	-NA-	
	d) Water saved through Modernization	**6.25 TMC**	
6.0	Groundwater (TMC)		
	a) Potential	12.88 TMC	
	b) Present use	No groundwater is utilized for Irrigation at present	
	c) Proposed use after Modernisation	-NA-	
	d) Balance for future utilization after Modernisation	-NA-	
7.0	Reservoir data (Tungabhadra Dam)		
	a) Storage (TMC)	**Existing**	**Proposed**
	i) Gross storage	132.00	132.00
	ii) Dead storage	2.300	2.300
	iii) Live storage	116.84	116.84
	iv) Annual carry over		
	b) Elevation (El-m)	**Original**	**Proposed**
	i) Maximum water level (MWL)	497.74	497.74
	ii) Full reservoir level (FRL)	497.74	497.74
	c) Water spread area (sq.km) at		
	• Full reservoir level	378.14	378.14
	d) Water Quality	Reservoir/Canal/River (Downstream)	
	i) Physical	Good	
	ii) Chemical	Good	
	iii) Bacteriological	Good	

8.0	Canal system (Irrigation) Information to be furnished for each Main/Branch canal separately		**Existing**	**Proposed**
	a) Length of canal(Km)		**Refer Annexure 13.1**	
	b) Full supply level at canal head (m)			
	c) Full supply discharge at canal head (m3/sec)			
	d) Length of complete distribution system up to minors			
	e) Number of villages surveyed			
	f) Area (Ha)			
	i) Gross command area (GCA)			
	ii) Culturable command area (CCA			
	iii) Annual Irrigation (AI)			
	iv) Intensity of Irrigation (% of CCA)			
	g) Automation and SCADA		**Existing**	**Proposed**
	i)	Flow measurement and data acquisition at all control points	No	No
	ii)	Automatic control of gates	No	No
	iii)	Control philosophy	NA	NA
	iv)	Communication	NA	NA
9.0	Power		-NA-	
10	Cropping pattern (crop wise)-Season wise			
Name of crop season wise		Pre-Modernisation (Ha) % of CCA	Post Modernisation (Ha) % of CCA	
Intensity of Irrigation		**100%**	**100%**	
Khariff				
1. Paddy		4056 (30.9 %)	2304 (14.18%)	
2. Jowar		735 (5.6 %)	6326 (38.95%)	
Rabi				
1. Paddy		1825 (13.9 %)	1655 (10.19%)	
2. Groundnut		1903 (14.50 %)	3755 (23.12%)	
Perennial				
1. Sugarcane		3176 (24.20 %)	1229 (7.57%)	
2. Garden		1431 (10.90 %)	974 (6.0%)	
Total		**13,125**	**16,243**	
11.	Benefits (Additional, annual)		Amount (Rs.)	
	a) Food grains		3812.67	
	b) Commercial crops		3216.59	
	c) Others		-	
12.0	Revenue (Rs)		Existing	Proposed
12.1	Revenue from water rates			
	a) Irrigation		-	-
	b) Domestic water supply		-	-
	c) Industrial water supply		-	-

	d) Power	-	-
	e) Others	-	-
12.2	Revenue from Irrigation cess other than water rates		
12.3	Recovery of Betterment levy	-	
12.4	Other sources of revenue, if any,	-	
13.0	Cost		
13.1	Estimated cost of Modernization works		
	a) Irrigation	**46443.00 Lakhs**	
	b) Domestic water supply	-	
	c) Industrial water supply	-	
	d) Power	-	
	e) Others	-	
13.2	Cost of completed works (Rs. Lakhs)	**-**	
13.3	Annual cost	**5377.36 Lakhs**	
14.0	Benefit Cost Ratio	**1.51**	

MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT

SECTION 3

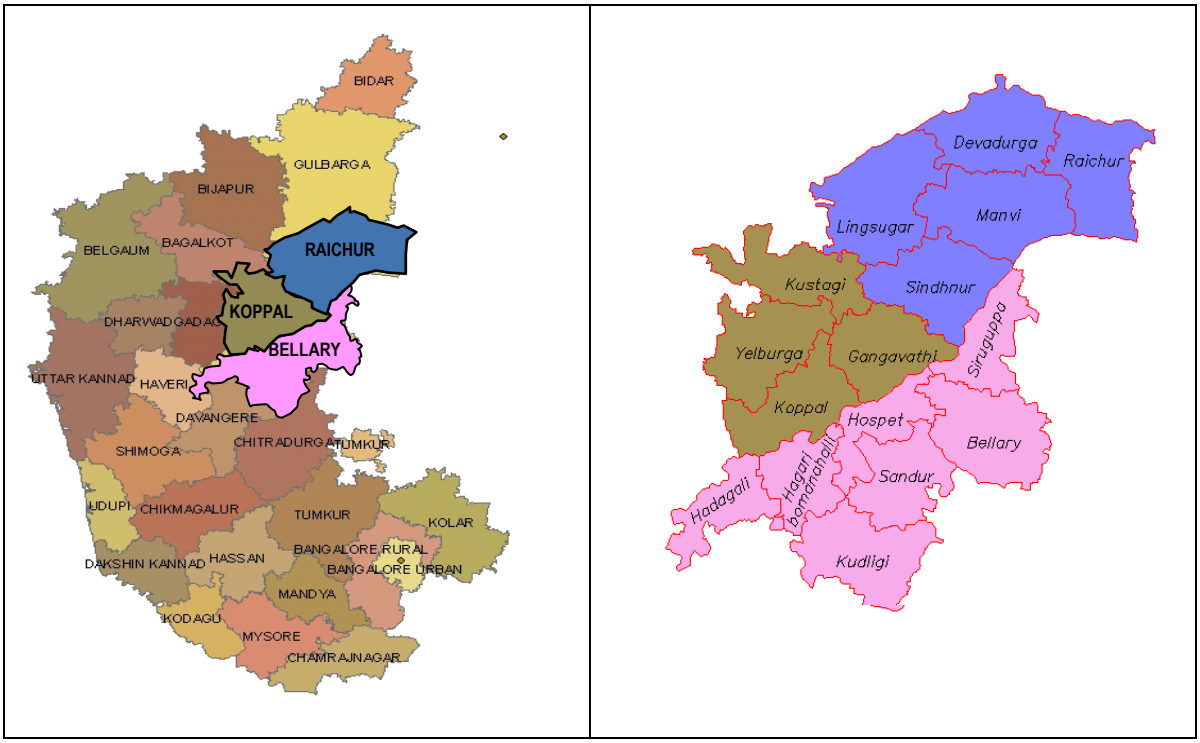
REPORT

Chapter 1. Introduction

1.1. Vijayanagara channels

The river Tungabhadra is a major tributary to Krishna River and is so called after the confluence of two rivers Tunga and Bhadra, which rise in the Western Ghats at an altitude of about 1198 M above mean sea level (MSL). The Tungabhadra river flows for about 531 Kms in the north-east direction in Karnataka and Andhra Pradesh before joining Krishna river near Kurnool at an altitude of 294.10 M. The vast drainage area of Tungabhadra river comprises of the following main tributaries (a) Kumadvathi river (b) Dharma river (c) Varada river (d) Dodda halla (e) Murdha halla and (f) Haridhra river.

The Vijayanagara Channel system is spread over 3 districts namely Bellary, Raichur and Koppal. The Geographical area lies between latitude 14° 30' to 16° 34' N and Longitude 75° 40' to 77° 35' E.



Originally, Vijayanagara Channels are the run-of-the river irrigation channels and are historically important serving the irrigation needs of the local population. They have been built during Vijayanagara dynasty about 400 years back. In all, there are 19 Channels taking off from Tungabhadra river of which 18 are in Karnataka and one is in Andhra Pradesh.

During Vijayanagara dynasty, 18 Channel networks were constructed in Tungabhadra basin in the reach from Tungabhadra reservoir to Siraguppa. The list of the Channels is indicated in **Table 1.1**

Table 1.1 – List of Channels

A. On Right Bank of TB River	B. On Left Bank of TB River
1. Raya	11. Koregal
2. Basavana	12. Hulugi
3. Bella	13. Shivapura
4. Kalaghatta	14. Anegundi
5. Turtha	15. Gangavathi Upper
6. Ramasagar	16. Gangavathi Lower
7. Kampli	17. Bichal
8. Belagodhala	18. Bennur
9. Deshnur	
10. Siraguppa	

Of these 18 Channels, Bennur channel is in ruins and Koregal channel command is supplied water from Tungabhadra Left Bank Channel. In view of this, presently, Vijayanagara Channel system comprises of 16 Channels. This modernization report deals with the 16 Channels.

The Raya and Basavanna canals were on the right bank of river Tungabhadra and were being fed through the respective weirs located on the upstream of the present Tungabhadra dam. The Basavanna channel was crossing the present dam alignment at Km 18 below its weir whereas Raya Channel was crossing at about 3.5 Kms below the weir. In order to protect the irrigation in these two channels, an irrigation sluice has been provided in the right side of Tungabhadra dam.

Two channels; Raya and Basavanna take off from TB dam. All other channels except Kalghatta and Belgodhal take off from anicuts constructed across Tungabhadra River at various locations on downstream of TB dam and are being partially fed by Raya and Basavanna channels.

The Raya Channel runs for about 27.74 Km and joins at 4th Km of Turtha channel. In addition, it has a separate sluice which was constructed at 2.5 Km to fulfill the shortage of water to Bella channel. Bella Channel runs for about 5.55 Km and joins at Ch 0.2 Km of Kalghatta channel. The Kalghatta Channel runs for about 7.02 Km and joins Turtha Channel at Ch 0.7 Km. Turtha channel runs for about 18.69 Km and joins Ramsagar channel at Ch 1.40 Km. Ramsagar channel runs for about 15.50 Km. It has two drainage channels joining Kampli channel. The Kampli channel runs for about 23.55 Km. It has Belgodhal channel taking off at Ch 3.20 Km and runs for a length of 11.22 Kms.

The discharges of each channel are considered while arriving at the channel section for the channels Raya, Bella, Kalaghatta, Turtha, Ramsagar, Kampli and Belgodhal. The 4 Channels; Bella, Turtha, Ramsagar and Kampli get a share from river assistance.

The Channels; Sirguppa and Deshnur on the right side and other 6 channels on the left side of Tungabhadra River get water exclusively from river assistance, released from Tungabhadra dam.

The **Index Map** showing the Command area of the Scheme (16 channels) is appended in **Volume V.**

1.2. Weir/Anicuts

There are 12 no's of Anicuts and the details are enclosed separately. Vijayanagara channels are being fed from the anicuts constructed in the earlier days for providing irrigation. These anicuts were constructed during the regime of Vijayanagar empires. They have been constructed using huge boulders and set in Zig-Zag manner without any kind of mortar for bond. Due to this, the anicuts are subject to leakage of water exacerbated by the displacement of boulders during high floods. Over a period of time, the system has deteriorated and needs urgent attention and improvements. The farmers of Vijayanagara channels are demanding improvements to anicuts.

The improvements proposed to anicuts are:

1. Providing 200 mm thick skin wall encasement to the anicut and grouting.
2. Providing anchor rods at every 1m interval on upstream and downstream of anicut for a width of 5 m all along the length.
3. Providing concrete toe walls on both ends
4. Formation of approach roads to the anicuts wherever required from the nearest road.

The details of the channels system are tabulated below:

The Irrigation schemes comprising 17 Nos of anicuts across Tungabhadra River together known as Vijayanagara Channels were implemented during Vijayanagara dynasty to provide irrigation facilities. Out of these, Vallabhapur and Hoskote anicuts were submerged in the backwaters of Tungabhadra reservoir. In order to cater to the command of Vallabhapur and Hoskote anicuts, one vent of size 1.8 m X 3.6 m is constructed in the reservoir as a permanent sluice and these commands are fed through Raya and Basavanna channels. A total of 12.05 TMC has been allocated by the tribunal to Vijayanagara channels with a break up of 5.71 TMC as protected utilisation and 6.35 TMC as worth consideration.

As per clause IX - E of KWDT award, 7 TMC of water from Tungabhadra reservoir is earmarked for Raya and Basavanna channels. An allocation of 2 TMC was made by way of assistance through other regulated discharges other than Raya and Basavanna channels from Tungabhadra reservoir.

In the 1993 master plan, an allocation of 12.05 TMC is made for the Vijayanagara channels without channel wise breakup and river assistance.

The revised Master plan of 2003 has an allocation of 5.80 TMC for all the 16 Vijayanagara channels.

The Government of Karnataka is proposing the modernization of these Channels to improve the channel efficiency thereby saving 6.25 TMC of water.

1.3. Location

Vijayanagara is located in Bellary District, northern Karnataka. The geographical location is at Latitude 15°19'N and Longitude 76°28'E. It is also known as ruined capital city. The nearest town and railway station is Hospet and the nearest canal is 13 km away by road. Hospet also lies within the original extents of the old city.

1.4. Details of Canal System

The details of canal system considered for modernization are indicated in **Table 1.2**

Table 1.2 – Table showing Location details of Canal system

No	Name of the channel	Name of weir & length in Km	Name of stream	Distance d/s of TB Dam in Km	Remarks
Bellary District (on right side of river)					
1.	Basavanna	Vallabhapur		Submerged in Tungabhadra reservoir	Channel takes off directly from Tungabhadra dam on right side
2.	Raya	Hosakote		--do--	--do-
3.	Bella	Hosur-0.602	Tungabhadra	2.4	Channel utilizes seepage from higher level channels
4.	Kalaghatta	Drainage channel	Halla	8	
5.	Turtha	Turtha 3.048	Tungabhadra	16	
6.	Ramsagar	Ramsagar 2.042	--do--	28.8	
7.	Kampli	Kampli anicut 0.94	--do-	30.4	

No	Name of the channel	Name of weir & length in Km	Name of stream	Distance d/s of TB Dam in Km	Remarks
8.	Belagodahal	Drainage channel	Halla	35.2	Channel utilizes seepage from higher level channels
9.	Siruguppa	Siruguppa 1.95	Tungabhadra	80	Consists of 7 bits.
10.	Deshnur	Deshnur 0.96	~do--	80	
Koppal District (on left side of river)					
11.	Koregal	Koregal	Submerged in Tungabhadra reservoir		Channel takes off directly from Tungabhadra Left Bank Channel
12.	Hulugi	Hulugi - 0.518	Tungabhadra	2.4	
13.	Shivapura	Shivapura - 0.17	do	8	
14.	Anegundi	Sanapur - 0.518	do	16	
15.	Upper Gangavathi	Upper Gangavathi0.78	do	27.2	
16.	Lower Gangavathi	Lower Gangavathi 0.45	do	30.4	
Raichur district					
17.	Bichal	Bichal - 1.192	do	137.6	

Table 1.3 – Table showing Hydraulic details of Canal system

(20 years average cropped area is considered)

No.	Name of the Channel	Length of Channel in Kms	Cropped area in Ha	Offtake
On right bank of TB River				
1	Raya Channel	27.74	2855	Tungabhadra Dam
2	Basavanna Channel	16.50	1447	Tungabhadra Dam
3	Bella Channel	5.50	741	Hosur Anicut
4	Kalaghatta Channel	7.020	349	Drainage channel
5	Turtha Channel	18.69	1171	Turtha anicut
6	Ramasagar Channel	15.50	1024	Ramasagar Anicut
7	Kampli Channel	23.550	894	Kampli Anicut
8	Belagodahala	11.220	328	Drainage channel
9	Deshnur Channel	9.03	815	Deshnur Anicut
10	Siruguppa Channel	10.85	1344	Sirguppa Anicut
On left bank of TB River				
11	Hulugi Channel	10.69	419	Hulugi anicut
12	Shivapura Channel	6.54	717	Shivapura anicut

No.	Name of the Channel	Length of Channel in Kms	Cropped area in Ha	Offtake
13	Anegundi Channel	19.44	1359	Sanapur anicut
14	Gangavathi upper Channel	9.00	1363	Upper Gangavathi anicut
15	Gangavathi lower Channel	9.54	1141	Lower Gangavathi anicut
16	Bichal Channel	14.50	276	Bichal Anicut
		Total	**16241**	

The **Schematic diagram** of Vijayanagar channels is appended as **KNNL-VNC-SD-002 vide Volume V - Drawings**

1.5. Accessibility

The project channels located at downstream of TB dam are best approached from Hospet, Munirabad and Kamalapur on the upper reach and from Gangavathi on the lower reach.

1.6. Toposheet Mosaic of the project

The details of toposheets showing the channel network and their command area are given as below in **Table 1.4**.

Table 1.4 – Details of toposheet which cover the project area

No	Topo Sheet No.	Scale
1.	57 A/7	1:50,000
2	57 A/8	1:50,000
3	57 A/10	1:50,000
4	57 A/11	1:50,000
5	57 A/12	1:50,000
6	57 A/13	1:50,000
7	57 A/14	1:50,000
8	57 A/15	1:50,000
9	57 E/2	1:50,000

The mosaic of toposheets relevant to the project area is indicated in **Fig 1.1**

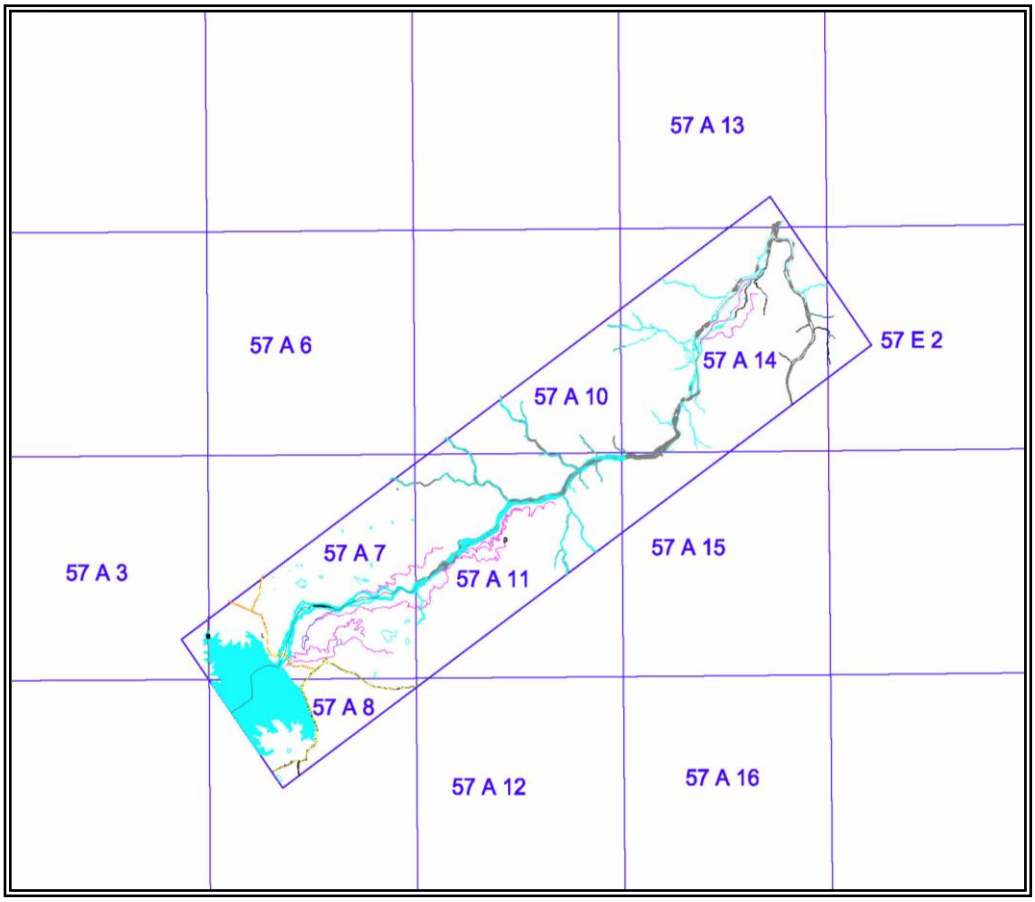


Fig 1.1– Top sheet mosaic of the project area

1.7. Present condition

Presently, the Vijayanagara channel systems comprising of the above 16 Channels are not in good condition. The system has been in operation over the last 400 years. The reconnaissance survey has revealed that the channels are lined with size stone masonry partly and have since lost their shape over the years. The bed of the channels has scoured in some reaches and is silted up heavily in some reaches. Heavy weed growth (water hyacinth) is noticed in and around the channels. Some of the structures are in dilapidated condition which requires to be rehabilitated to make them functional.

1.8. Deficiencies in the existing system

The Vijayanagara channels were constructed during Vijayanagar dynasty i.e. about 400 years back. The duty- delta considered for calculation of crop water requirement is not available. The duty-delta method of calculating crop water requirements started in the 18th century. Thus, the farmers were used to the liberal use of water for hundreds of years. With plenty of water, the crops grown were mostly rice, sugarcane etc.

Presently main channels are in bad condition and the pipe outlets are not having flow control. The Tungabhadra project commissioned in the 50s considers the duty- delta for calculation of crop water requirements and the channel design. However, the existing atchkat under Vijayanagar channels were considered as part of the command under the Tungabhadra project.

Other problems encountered in the Vijayanagara channels in terms of operation and maintenance are;

a) Existing Channels have lost their section, thereby having difficulty in ensuring adequacy of flow.
b) Absence of measuring devices.
c) Inlets and outlets requiring redesign.
d) Unlined channels causing undesirable seepage, weed growth (water hyacinth)
e) Leakages in the main channels and cross drainage structures resulting in wastage of water.

1.9. Need for Modernization

The report Vol III of expert committee for preparation of master plan for river basin of Karnataka (constituted vide G.O.No.PWD 70 NPC 85 dt.29/7/85) vide page no. 106 Para 2 mentions;

" If this Channel system is lined and water measuring devices are provided and Warabandi system is introduced it would be possible to manage about half the present discharge, thereby affecting the substantial savings of about 7 TMC of scarce water resources which could be utilized for providing protective irrigation to drought prone area in the State."

The committee after deliberations, recommended for modernization of entire channel network of Vijayanagar Channel system, as early as possible.

Hence, modernization of Vijayanagara Channels is proposed to save water as it was noticed that excess water is being utilized in these channels. The Master Plan of 2003 revised the plan and made a suggestion to modernize the existing Channel system by improvements in infrastructure to save water to an extent of 6.25 TMC which could be allocated to the Upper Bhadra project. In order to establish savings in water, following measures are contemplated.

As the Channel systems are designed as unlined channels which are not efficient, it is proposed to redesign the channels as lined channels to improve conveyance efficiency. The designed discharge is worked out considering average cropped area of the last 20 years. This will facilitate reducing seepage losses thereby improving the system efficiency and convey required discharge in the distributaries, minors and laterals which will ensure water to the tail end of the channels thereby achieving reliability and equity in the command area.

i. It is proposed to reconstruct the structures which are in bad condition. In addition, new structures are proposed as per requirement of the farmers.
ii. Provision is made to install measuring devices in main channels, branch channels and minors for improving operation.

Further, with the proposed improvements in channel infrastructure and operation, it is expected that there will not be violation of cropping pattern by the farmers.

Chapter 2. Hydrology

Extract from the further report of the Krishna Water Disputes Tribunal (KWDT)-I, the concerned paras related to allocation of water for Raya and Basavanna Channels and Vijayanagar channels are reproduced below

-"*Raya channel and Basavanna Channel both of which take water directly from the Tungabhadra Dam on the right side. 12.06 TMC of water (out of which 5.71 TMC is protected and 6.35 TMC is held as worth consideration by the Tribunal) has been allocated in respect of all the Vijayanagar Channels of the state of Karnataka including Raya and Basavanna Channels."*

"Further as per the final orders of Tribunal (KWDT-1), under the Clause IX (E), 7 TMC of water from Tungabhadra reservoir is earmarked for Raya and Basavanna channels and an allocation of 2 TMC was made by way of assistance through other regulated releases / discharges for Vijayanagar Channels other than Raya and Basavanna channels in a water Year."

As regard the provision made in KWDT-II is concerned, the order of the tribunal (KWDT-II) contained in volume–IV of the Report (Page 800 to 811) did not mention anything on the above decision of KWDT-I.

As for as the suggestion to carry out water available studies at the off take points of these channels, it is to report as under

The Tungabhadra Board, maintains the water account in details by bringing out Annual Report furnishing there with the Performance of Tungabhadra Reservoir for each water year in a form of statement showing the 10 daily inflows to Reservoir and corresponding outflows (drawals) by Karnataka state and Andhra Pradesh and publishing it as working table for operation of Tungabhadra reservoir for the each water year.

The performance of Tungabhadra reservoir for each water year (from June to May) contains the 10 daily inflow to the reservoir and drawals by Karnataka state and Andhra Pradesh for the different canal systems of Tungabhadra Project.

From the above, extract of Abstract from performance of Tungabhadra reservoir is enclosed as "Statement showing the year wise details of inflows, outflows (Utilisation) under different canal system of Tungabhadra project (Karnataka portion) for the period (water year) from 1990-91 to 2009-2010 separately vide **Annexure 2.1**

From the above **Annexure 2.1**, the RR (River Releases) under column 7 has been further bifurcated for VNC (Vijayanagar Channels) and RDS (Rajolibanda Diversion Scheme) in the **Annexure 2.2** enclosed

here with. Thus the actual drawals (Utilisation) from Tungabhadra reservoir for Raya, Basavanna canals and Vijayanagar Channels have been worked out and indicated under column 7 of **Annexure 2.2**. It may be seen from the column 7 that an average of 6.80 TMC being utilized in a water year for Vijayanagar Channels system (including Raya, Basavanna canal).

From the above para's it may be concluded that the water available for these Vijayanagar channels at the off take points (Releases from Tungabhadra Dam) is much more than the proposed/estimated crop water requirement of 5.80 TMC on Modernisation of Vijayanagar channels in Tungabhadra project .

2.1. Water availability

The Vijayanagar channels system consists of 16 channels with the physical area (average) of 11154 ha. The Krishna Water Disputes Tribunal (KWDT) - 1, in its award has allocated 12.05 TMC annually as committed utilization.

Out of the above 16 channels, two channels namely Raya and Basavanna channels gets the water through gated sluices provided in the right side of the T B Dam.

For the remaining 14 channels, the release of water is through weirs/anicuts/runoff across them.

Government of Karnataka has carried out two performance appraisal of Tungabhadra reservoir for the years 1976 – 77 to 2005-06. The result of appraisal shows that Vijayanagara channels get their due share of allocated water.

Further, the return flow from main channels of Tungabhadra project and Vijayanagara channels contributes sufficiently to the downstream section of Tungabhadra River.

Thus with the proposed utilization in Vijayanagara channels, there will be sufficient water in the river to feed these channels.

Chapter 3. Reservoir

As the report pertains to Modernisation of Vijayanagar Channels and does not involve reservoir, the above chapter is not discussed.

Chapter 4. Weir/Anicut

There are 11 no's of Anicuts and the details are enclosed separately. Vijayanagar channels are being fed from the anicuts constructed in the earlier days for providing irrigation. These anicuts were constructed during the regime of Vijayanagar empires. They have been constructed using huge boulders and set in Zig-Zag manner without any kind of mortar for bond. Due to this, the anicuts are subject to leakage of water exacerbated by the displacement of boulders during high floods. Over a period of time, the system has deteriorated and needs urgent attention and improvements. The farmers of Vijayanagar channels are demanding improvements to anicuts.

The improvements proposed to anicuts are:

5. Providing 200 mm thick skin wall encasement to the anicut and grouting.
6. Providing anchor rods at every 1m interval on upstream and downstream of anicut for a width of 5 m all along the length.
7. Providing concrete toe walls on both ends.
8. Formation of approach roads to the anicuts wherever required from the nearest road.

The details of the channels system are tabulated below:

4.1. Vijayanagara Channels

The Irrigation schemes comprising 17 Nos of anicuts across Tungabhadra River together known as Vijayanagara Channels were implemented during Vijayanagara dynasty to provide irrigation facilities. Out of these, Vallabhapur and Hoskote anicuts were submerged in the backwaters of Tungabhadra reservoir. In order to cater to the command of Vallabhapur and Hoskote anicuts, one vent of size 1.8 m X 3.6 m is constructed in the reservoir as a permanent sluice and these commands are fed through Raya and Basavanna channels. A total of 12.06 TMC has been allocated by the tribunal to Vijayanagara channels with a break up of 5.71 TMC as protected utilisation and 6.35 TMC as worth consideration.

As per clause IX - E of KWDT award, 7 TMC of water from Tungabhadra reservoir is earmarked for Raya and Basavanna channels. An allocation of 2 TMC was made by way of assistance through other regulated discharges other than Raya and Basavanna channels from Tungabhadra reservoir.

In the 1993 master plan, an allocation of 12.05 TMC is made for the Vijayanagara channels without channel wise breakup and river assistance.

The revised Master plan of 2003 has an allocation of 5.80 TMC for all the 16 Vijayanagara channels.

The Government of Karnataka is proposing the modernization of these Channels to improve the channel efficiency thereby saving 6.25 TMC of water.

4.2. Details of Channel Systems

Table 4.1 – Table showing Location details of Channel system

No	Name of the channel	Name of weir & length in Km	Name of stream	Distance d/s of TB Dam in Km	Remarks
Bellary District (on right side of river)					
1.	Basavanna	Vallabhapur		Submerged in Tungabhadra reservoir	Channel takes off directly from Tungabhadra dam on right side
2.	Raya	Hosakote		--do--	--do-
3.	Bella	Hosur-0.602	Tungabhadra	2.4	Channel utilizes seepage from higher level channels
4.	Kalaghatta	Drainage channel	Halla	8	
5.	Turtha	Turtha 3.048	Tungabhadra	16	
6.	Ramsagar	Ramsagar 2.042	--do--	28.8	
7.	Kampli	Kampli anicut 0.94	--do~	30.4	
8.	Belagodahal	Drainage channel	Halla	35.2	Channel utilizes seepage from higher level channels
9.	Siruguppa	Siruguppa 1.95	Tungabhadra	80	Consists of 7 bits.
10.	Deshnur	Deshnur 0.96	~do--	80	

No	Name of the channel	Name of weir & length in Km	Name of stream	Distance d/s of TB Dam in Km	Remarks
Koppal District (on left side of river)					
11.	Koregal	Koregal	Submerged in Tungabhadra reservoir		Channel takes off directly from Tungabhadra Left Bank Channel
12.	Hulugi	Hulugi - 0.518	Tungabhadra	2.4	
18.	Shivapura	Shivapura - 0.17	do	8	
19.	Anegundi	Sanapur - 0.518	do	16	
20.	Upper Gangavathi	Upper Gangavathi0.78	do	27.2	
21.	Lower Gangavathi	Lower Gangavathi 0.45	do	30.4	
Raichur district					
22.	Bichal	Bichal - 1.192	do	137.6	

Table 4.2 – Table showing Hydraulic details of Channel system

No.	Name of the Channel	Length of Channel in Kms	Cropped area in Ha	Offtake
On right bank of TB River				
1	Raya Channel	27.74	2855	Tungabhadra Dam
2	Basavanna Channel	16.50	1447	Tungabhadra Dam
3	Bella Channel	5.50	741	Hosur Anicut
4	Kalaghatta Channel	7.020	349	Drainage channel
5	Turtha Channel	18.69	1171	Turtha anicut
6	Ramasagar Channel	15.50	1024	Ramasagar Anicut
7	Kampli Channel	23.550	894	Kampli Anicut
8	Belagodahala	11.220	328	Drainage channel
9	Deshnur Channel	9.03	815	Deshnur Anicut
10	Siruguppa Channel	10.85	1344	Sirguppa Anicut
On left bank of TB River				
11	Hulugi Channel	10.69	419	Hulugi anicut
12	Shivapura Channel	6.54	717	Shivapura anicut
13	Anegundi Channel	19.44	1359	Sanapur anicut
14	Gangavathi upper Channel	9.00	1363	Upper Gangavathi anicut
15	Gangavathi lower Channel	9.54	1141	Lower Gangavathi anicut
16	Bichal Channel	14.50	276	Bichal Anicut
			16243 Ha	

Chapter 5.
Land Potential

5.1. Culturable Command area

a) Originally adopted with basis

The Vijayanagar channels are the oldest, dating back to 17th century. It is observed that the CCA and net irrigable area are not arrived at scientifically. As such, the existing CCA is considered.

b) Basis for fixing CCA

i. The general topographical maps of Survey of India (scale 1:50,000)

ii. Survey conducted the area plotted on a scale 1:15,000 conforming availability of land

iii. Based on village maps

iv. Actual atchkat attained at present under the outlets

Over the last few centuries of cultivation and irrigation, the farmers have been growing different crops. However, for the present proposal, the irrigated area has been arrived at taking 20 years average of actual cultivation which works out to the physical area as 11154.00 Ha and cropped area as 16243.00 Ha

Chapter 6.
Cropping pattern and Crop Water Requirement

6.1. Details of Pre –Project / Original cropping pattern

The existing cropping pattern of Vijayanagar channels are as detailed below

Table 6.1 –Existing (Pre modernization) Cropping Pattern

The physical area (CCA) of each channel of Vijayanagar channel system is as per the register maintained by the Tungabhadra Project Authorities. The cropped area under each channel for a period of 20 years (1990-91 to 2009-10) as per records available in the Tungabhadra project has been considered for the studies. The minimum cropped area of each channel during the last 20 years has been considered as cropping pattern for pre-modernization period.

Unit : Area in ha

No	Name of canal	Phy. Area (CCA)	Khariff		Rabi		Bi seasonal		Total
			Paddy	Jowar	Paddy	Groundnut	Sugar cane	Garden	
1	Basavanna	1240	311	135	66	310	281	9	1113
2	Raya	2226	501	163	446	243	1349	78	2780
3	Bella	600	67	64	10	130	381	58	710
4	Kalaghatta	237	69	68	7	98	43	6	291
5	Turtha	931	175	42	109	110	119	545	1100
6	Ramasagar	673	202	91	248	215	2	96	854
7	Kampli	620	241	38	67	0	218	109	673
8	Belagodahala	210	89	12	74	44	12	65	296
9	Sirguppa	764	316	97	201	161	180	54	1008
10	Deshnur	478	141	6	104	30	312	26	619
	Total	**7979**	**2112**	**717**	**1332**	**1340**	**2897**	**1046**	**9443**
11	Hulugi	265	170	12	0	10	0	48	241
12	Shivapura	403	120	2	116	13	0	29	280
13	Anegundi	789	389	5	182	316	10	177	1078
14	Upper Gangavathi	775	666	0	134	53	43	45	941
15	Lower Gangavathi	667	590	0	49	165	51	12	867
16	Bichal	276	13	0	13	0	170	79	275
	Total	**3175**	**1949**	**19**	**493**	**557**	**274**	**390**	**3682**
Total Area		**11154**	**4061**	**735**	**1825**	**1896**	**3171**	**1436**	**13125**

It may be seen from the table that against a physical area of (CCA) 11,154 ha, the minimum cropped area of the Vijayanagar channel system works out to 13,125 ha. Thus the crop intensity of 117.67% could be achieved in pre- modernization period.

The overall cropping pattern of Vijayanagar channel system during pre-modernization period is as below:

Season/Crop	Cropped area in ha	% of cropped area
Khariff		
1. Paddy	4056	30.9
2. Jowar	735	5.6
Rabi		
1. Paddy	1824	13.9
2. Groundnut	1903	14.5
Perennial (Bi-seasonal)		
1. Sugarcane	3176	24.2
2. Garden (Banana)	1431	10.9
Total	**13,125**	**100.00**

6.2. Details of Post –Modernisation/ proposed cropping pattern

Table 6.2 – Proposed (Post modernization) cropping pattern

The physical area (CCA) of each channel of Vijayanagar channel system is as per the register maintained by the Tungabhadra Project Authorities. The cropped area under each channel for a period of 20 years (1990-91 to 2009-10) with slight modification has been considered for the studies. The average cropped area of each channel during the last 20 years has been considered as cropping pattern for post-modernization period.

No	Name of canal	Phy. Area (CCA)	Khariff		Rabi		Bi seasonal		Total
			Paddy	Jowar	Paddy	Groundnut	Sugarcane	Garden	
1	Raya	2226	441	1285	250	429	400	50	2855
2	Basavanna	1240	100	740	20	388	170	29	1447
3	Bella	600	70	396	14	127	80	54	741
4	Kalaghatta	237	30	172	10	102	15	20	349
5	Turtha	931	110	461	75	165	100	260	1171
6	Ramasagar	673	98	440	75	276	50	85	1024
7	Kampli	620	152	301	152	125	60	104	894
8	Belagodahala	210	41	112	35	83	17	40	328
9	Sirguppa	764	165	476	202	381	90	30	1344
10	Deshnur	478	188	224	121	217	55	10	815
Total			**1395**	**4607**	**954**	**2293**	**1037**	**682**	**10968**
11	Hulugi	265	91	129	82	77	20	20	419
12	Shivapura	403	190	176	117	202	2	30	717

No	Name of canal	Phy. Area (CCA)	Khariff		Rabi		Bi seasonal		Total
			Paddy	Jowar	Paddy	Groundnut	Sugarcane	Garden	
13	Anegundi	789	234	417	128	450	6	124	1359
14	Upper Gangavathi	775	217	453	195	412	56	30	1363
15	Lower Gangavathi	667	164	404	170	317	48	38	1141
16	Bichal	276	13	140	9	4	60	50	276
Total			**909**	**1719**	**701**	**1462**	**192**	**292**	**5275**
Total Area		**11154**	**2304**	**6326**	**1655**	**3755**	**1229**	**974**	**16243**

It may be seen from the above table that against a physical area of (CCA) 11,154 ha, the average cropped area of the Vijayanagar channel system works out to 16,243 ha. Thus the crop intensity of **145.6%** could be achieved in post- modernization period.

The overall cropping pattern of Vijayanagar channel system during post-modernization period is as below:

Season/Crop	Cropped area in ha	% of cropped area
Khariff		
3. Paddy	2304	14.18
4. Jowar	6326	38.95
Rabi		
3. Paddy	1655	10.19
4. Groundnut	3755	23.12
Perennial (Bi-seasonal)		
3. Sugarcane	1229	7.57
4. Garden (Banana)	974	6.00
Total	**16,243**	**100.00**

6.2.1. Field application efficiency

The Channel network of Vijayanagara Channel system is partially lined leaving a major portion unlined.

Now, to optimize utilization of water, it is proposed to line the entire Channel system (from main Channel to field irrigation channels). The crop water requirements are calculated using “Modified Penman Method” considering the field application efficiency as 85 % of ponded crops and 65 % for non-ponded crops and conveyance efficiency as 75%.

Table 6.3–Table showing the breakup of Irrigation efficiency

No	Type of Efficiency	Ponded	Non-ponded
	Conveyance efficiency of Channel system upto out let	75%	75%
	Field application efficiency	85%	65%
	Overall Irrigation efficiency	0.75 x 0.85 =0.6375	0.75 x 0.65 =0.4875
		Say 64 %.	**Say 49 %.**

Water requirement for crops under the scheme is calculated as per Modified Penman's method for the present notified area by considering the overall irrigation efficiency of 64% for ponded crops and 49% for non-ponded crops.

6.3. Assessment of Crop Water Requirement

The crop water requirement is computed based on Modified Penman's method. The method consists of computing evapotranspiration of crop (ETc) using the formula;

$ET_c = K_c \times ET_0$

Where Kc - Crop coefficient

ET_0 - Potential evapotranspiration

The ET_0 values of Bellary station are considered for calculation as notified by Indian Meteorological Department, PPSR - 136 and is tabulated below.

No	Month	ET_0
1.	Jan	115.1
2.	Feb	128.5
3.	Mar	170.9
4.	Apr	180.9
5.	Jul	155.7
6.	May	194.8
7.	Jun	167.0
8.	Aug	152.8
9.	Sep	138.4
10.	Oct	123.4
11.	Nov	106.0
12.	Dec	104.0

6.4. Crop Water Requirement

The main objective of Modernisation of Vijayanagar channels is to improve efficiency of the channel system. Minimize water losses and to establish savings of water. The crop water requirement are

calculated based on modified Penman's method considering Hydrometerological data of Bellary and weighted average rainfall of the atchkat. The Vijayanagar channel was allocated 12.05 TMC of water as per the actual utilisation. Now the proposed utilisation is 5.80 TMC resulting in a savings of 6.25 TMC. For Details regarding calculation of water requirements of crops refer **Annexure 6.1 to 6.4.**

Table 6.4 –Demand Table

No	Name of canal	Phy. Area (CCA)	Khariff		Rabi		Bi seasonal		Total	Peak discharge m^3/sec	WR in TMC
			Paddy	Jowar	Paddy	Groundnut	Sugarcane	Garden			
1	Raya	2226	441	1285	250	429	400	50	2855	1.75	1.03
2	Basavanna	1240	100	740	20	388	170	29	1447	0.81	0.45
3	Bella	600	70	396	14	127	80	54	741	0.37	0.24
4	Kalaghatta	237	30	172	10	102	15	20	349	0.19	0.1
5	Turtha	931	110	461	75	165	100	260	1171	0.82	0.47
6	Ramasagar	673	98	440	75	276	50	85	1024	0.66	0.34
7	Kampli	620	152	301	152	125	60	104	894	0.75	0.36
8	Belagodahala	210	41	112	35	83	17	40	328	0.24	0.12
9	Sirguppa	764	165	476	202	381	90	30	1344	1.09	0.48
10	Deshnur	478	188	224	121	217	55	10	815	0.64	0.31
	Total		**1395**	**4607**	**954**	**2293**	**1037**	**682**	**10968**		**3.90**
11	Hulugi	265	91	129	82	77	20	20	419	0.36	0.16
12	Shivapura	403	190	176	117	202	2	30	717	0.57	0.27
13	Anegundi	789	234	417	128	450	6	124	1359	0.96	0.48
14	Upper Gangavathi	775	217	453	195	412	56	30	1363	1.05	0.48
15	Lower Gangavathi	667	164	404	170	317	48	38	1141	0.89	0.4
16	Bichal	276	13	140	9	4	60	50	276	0.18	0.11
	Total		**909**	**1719**	**701**	**1462**	**192**	**292**	**5275**		**1.90**
Total Area		**11154**	**2304**	**6326**	**1655**	**3755**	**1229**	**974**	**16243**		**5.80**

6.5. Results

It is seen that channel wise allocation of water was not made. An overall allocation of 12.05 TMC of water was made in the Master plan considering the present water utilization.

Table 6.5 –Savings Achieved

Sl No	Unit	Existing Allocation (During 1993)	Utilisation as per Penman's Method (With lining) after modernization	Savings achieved
1	In MCM	341.36	164.44	177.00
2	In TMC	**12.05**	**5.80**	**6.25**

As seen from the above table, the savings achieved after Modernisation of the Vijayanagara Channels is **6.25 TMC.** ***(Refer Annexure 6.4 for Crop water requirement tables)***

6.6. Conclusions

6.6.1. Achieving required savings

It is seen from the above table, the savings achieved after Modernisation of the Vijayanagara Channels is **6.25 TMC.**

Chapter 7. Pissiculture

Pissiculture is being carried out in Basavanna Channel by Tungabhadra Board (Govt. of India). Pissiculture is not being carried out in other channels.

Chapter 8. Horticulture

The garden crop viz Banana is only grown in the command area.

Chapter 9. Domestic and Industrial water supply etc.

Domestic water supply scheme to the tune of 25 MLD is in operation supplying water to Hospet town from Basavanna Channel. A small quantity of 3.7 MLD is being supplied to Mariyammanahalli Village.

No water from the channel systems is being used for industrial purposes.

Chapter 10.
Demand Table

No	Name of canal	Phy. Area (CCA)	Khariff		Rabi		Bi seasonal		Total	Peak discharge m3/sec	WR in TMC
			Paddy	Jowar	Paddy	Groundnut	Sugarcane	Garden			
1	Raya	2226	441	1285	250	429	400	50	2855	1.75	1.03
2	Basavanna	1240	100	740	20	388	170	29	1447	0.81	0.45
3	Bella	600	70	396	14	127	80	54	741	0.37	0.24
4	Kalaghatta	237	30	172	10	102	15	20	349	0.19	0.1
5	Turtha	931	110	461	75	165	100	260	1171	0.82	0.47
6	Ramasagar	673	98	440	75	276	50	85	1024	0.66	0.34
7	Kampli	620	152	301	152	125	60	104	894	0.75	0.36
8	Belagodahala	210	41	112	35	83	17	40	328	0.24	0.12
9	Sirguppa	764	165	476	202	381	90	30	1344	1.09	0.48
10	Deshnur	478	188	224	121	217	55	10	815	0.64	0.31
	Total		**1395**	**4607**	**954**	**2293**	**1037**	**682**	**10968**		**3.90**
11	Hulugi	265	91	129	82	77	20	20	419	0.36	0.16
12	Shivapura	403	190	176	117	202	2	30	717	0.57	0.27
13	Anegundi	789	234	417	128	450	6	124	1359	0.96	0.48
14	Upper Gangavathi	775	217	453	195	412	56	30	1363	1.05	0.48
15	Lower Gangavathi	667	164	404	170	317	48	38	1141	0.89	0.4
16	Bichal	276	13	140	9	4	60	50	276	0.18	0.11
	Total		**909**	**1719**	**701**	**1462**	**192**	**292**	**5275**		**1.90**
Total Area		**11154**	**2304**	**6326**	**1655**	**3755**	**1229**	**974**	**16243**		**5.80**

Chapter 11.
Impact of Modernisation

11.1. Upstream and Downstream Projects

As the Modernisation is proposed for channel system resulting in savings of water, there will be no negative impact on the upstream and downstream projects. In fact, the modernization has positive impact enabling to take up Upper Bhadra Project (UBP) out of the savings in the Channels and meeting requirement of UBP to an extent of 6.25 TMC.

Chapter 12.
Interstate aspects

KWDT-1 has made enblock allocation. Scheme-wise allocation is made in 1993 Master plan and revised Master plan of 2002.

As per the revised Master Plan of 2002, an allocation of 12.05 TMC is made for all the Vijayanagara channels without any break-up of channel wise allocation and river assistance vide **Annexure 12.1**

The revised Master plan of 2003 has allocated 5.80 TMC for all the 16 Vijayanagara channels.

The Government of Karnataka is now proposing to modernize these Channels to improve the efficiency and effectiveness of them thereby saving 6.25 TMC of water. Supply of 5.80 TMC to these channels as per crop water requirement will be ensured.

Chapter 13.
Channel system

13.1. Preamble

The Vijayanagar channels are one of the oldest canal system built in India by the Vijayanagar Dynasty which ruled the Deccan Plateau for nearly 100 – 150 years. This dynasty ruled between 15th and 16th century AD. The said canals supposed to have been built around 15th Century (about 450-500 years back). As such, no records on designs and other technical data of channels are available. This has necessitated that detailed surveys had to be conducted in order to arrive at Modernization activities to be undertaken.

13.2. Survey of channel system

All Levels are based on GTS Bench Mark, located at the top of step of Vaikuntam IB having value 500.416 m above MSL.

Fig 13.1 – Survey work in progress

Double tertiary fly leveling has been carried out from GTS bench mark using Automatic level and Temporary benchmarks have been established enroute.

TBMs are established at every 1 Km on the existing permanent structures like buildings, Km stones, Sheet rocks, Survey boundary stones adjacent to the channels.

A detailed strip survey along the existing channel has been carried out by taking L-sections and Cross sections at every 30 m intervals.

Cross section levels are taken at closer intervals to get the true shape of channel section in the water prism which is required to design the channels. The levels are extended up to 15 m beyond the edge of service road. All the planimetric features are collected for a corridor width of 30 m along the alignment and in addition, cross sections are taken at structures.

13.3. Site Inventory and survey of channels and structures

Field reconnaissance survey along the existing channel network is carried out in order to identify the take off point, alignment, various constraints along the existing channels, accessibility, topography, terrain, soil formation including crops that are being cultivated.

The bigger channels are the Raya and the Basavanna channels. These channels take off from the Tungabhadra dam and other channels take off from pick up weirs (PUWs) i.e Anicuts on Tungabhadra river.

Anicuts have been constructed with huge boulders / cut stones dumped or set in zigzag manner. The existing rip-rap boulders are having lot of voids which cause leakage of water and displacement of boulders during high floods. Most of the channels take off from such PUWs across Tungabhadra river and no head regulators or control structures exist. Actually, the Vijayanagara channels is a run-of- the river scheme. Therefore, it is necessary to construct head regulators and measuring structures on the channels which are absent. It is observed that the PUWs need major repairs.

Improvements to anicuts are a long felt desire of ayacutdars of Vijayanagara channels. In order to make use of the run off from the river effectively, it is proposed to take up repairs of existing anicuts.

Irrigation under Vijayanagara channels has a long history. The anicuts and channel systems were constructed during the regime of Vijayanagara Empire and are still in operation. With passage of time, the system has deteriorated needing improvements which are critically needed.

A brief description of all the points observed during site visits is as follows;

- The alignment of both Raya and Basavanna channels generally run through Municipal area of the Hospet town where the urban development has taken place right up to the channel boundary and in certain places, the channel land has also been encroached. The used water, filth including the drainage is let into the channels at several locations and the water appears to be contaminated.
- Photographs of select locations along channels showing the above observations are furnished as below.

1. The channel water being extensively used by the people residing adjacent to the channel for the purpose of bathing, washing, cattle feeding etc. It has also been reported that some of the people drink the water on account of which several water-bourne diseases have been reported.


Fig 13.2 – Figure showing untidy channels

2. Several inlets in the form of well-constructed pipelines, open channels etc., has been directly linked to the channel and as such at several locations, the channel functions as either a seepage disposal point or drainage line.


Fig 13.3 – Channel used as disposal point

3. In most of the locations, the channel has been aligned in restricted right of way due to presence of huge rocks and boulders.

4. Some of the sections of the channel have been laid using size stone masonry and concrete, but these are all limited to the town limit.

Fig 13.4 – Channel reaches with size stone masonry lining

5. Substantial seepage has been noticed from the channel at several locations due to poor maintenance.

Fig 13.5 – Damage due to seepage and poor maintenance

6. While reptiles such as snakes and crocodiles have been noticed in the channel water and on the banks.

Fig 13.6 – Crocodile in the reaches of Raya channel

Fig 13.7 – Snake found in the initial reache of Belagodahala channel

7. Thick vegetation growth has been noticed at several locations along the channel within the water spread area.

Fig 13.8 – Thick vegetation around the Channel

8. Most of the structures are deteriorated.

9. The entire channel network lacks proper crossing and connection. The service roads are heavily damaged and it is difficult to carry out the inspection of the channel.

Fig 13.9 – Damaged Service road

Fig 13.10 – Poor crossing structure

10. Channel water happens to be the lifeline for most of the villages en-route since there is no dedicated water supply for meeting their day to day domestic water requirement.

Fig 13.11 – Channel flowing full

Fig 13.12 – Service road

11. The surface soil is generally black cotton. However, murrum, gravel and hard rock are also encountered at select locations

Fig 13.13 –Banana plantation

Fig 13.14 –Sugarcane plantation

12. Banana, sugarcane and paddy are the major crops in the command area.

13. Certain channels run in deep cut.

14. There are no proper sign boards or indicative marks, km stones, hectometer stones, chainage stones etc. along the channel.

13.4. Review of capacity of existing channel and distribution system.

13.4.1. Original design

The Channels have been constructed during the period of Vijayanagara kingdom about 400 years ago. As such, the channels designed and constructed are outdated in terms of water delivery service (reliability, flexibility and equity) due to inadequate maintenance and low efficiency.

13.4.2. Present capacity

The Channel systems being unlined are utilizing 12.05 TMC for irrigating 16,241.00 Ha (both Khariff and Rabi) of cropped area. The command area is 11,154.00 Ha.

13.4.3. Design of revised section (lined)

The Channels Raya and Basavanna take off from Tungabhadra Dam and all other channels except Kalghatta and Belgodhal take off from anicuts. The Raya channel runs for about 27.7 Kms and joins Turtha channel at Km 4.0. There is a separate sluice at Km 2.5 of Raya Channel to fulfill the shortage of water to Bella channel. The Bella Channel runs for about 5.55 Kms and joins Kalghatta channel at 0.2

Km. The Kalghatta channel runs for about 7.02 Km and joins Turtha channel at K m 0.7. The Turtha channel runs for about 18.69 Km and joins Ramasagar channel at Km 1.4. The Ramsagar channel runs for about 15.5 km and joins Kampli channel. The Kampli channel runs for about 23.55 Kms and joins Belgodhal channel.

The Raya channel is designed by considering its peak discharge as per Modified Penman Method plus 10% extra for rush irrigation including discharges of downstream channels like Bella, Turtha, Ramsagar and Kampli. Likewise, the downstream channels Bella, Kalghatta, Turtha, Ramsagar and Kampli are designed for peak discharge plus 10% for rush irrigation.

Belgodhal and Basavanna channels are also designed considering Modified Penman method plus 10% extra for rush irrigation.

The Channels on left side of Tungabhadra river runs parallel to the Left Bank Main Channel (LBMC) namely Hulugi, Shivpura, Anegundi, Gangavathi Upper, Gangavathi Lower, and Bichal. There are number of direct Inlets to these Channels. The Channels are designed for peak discharge obtained from Modified Penman Method plus 10% rush irrigation requirement.

Based on this, channel sections are designed reach wise considering the existing bed gradient with Rugosity coefficient (n) of 0.018 for concrete lined channels. Inlets are proposed based on the site conditions and surplussing weirs are proposed at defined nalas. Refer **Annexure 13.1** for particulars of channel system

13.5. Identification of the reaches needing improvements

A reconnaissance survey was carried out along with the officials of the department to assess the condition of channels and structures. Looking at the poor state of the channel infrastructure, modernization estimate is prepared incorporating dismantling and reconstruction of dilapidated structures and providing concrete lining throughout the length of the channel to enable conveyance of water to tail ends of the channel and to prevent seepage losses, thereby save water.

13.5.1. Lining

The channels are under operation for more than 400 years providing irrigation for two seasons. Due to the operation of channels for two seasons in a year, it has lost its shape in several stretches due to scouring effect and also accumulation of silt over a period. This has resulted in reduction in the velocity of water. On account of this, it is difficult to convey water to the tail end areas during irrigation season. As a result,

standing crops at the tail end are not getting enough water. In order to mitigate this problem, water is being allowed into the channels for saving standing crops during both seasons. Hence, it is necessary to redesign the channel section with concrete lining. This will also help in improving the efficiency in the channel system and achieve the desired savings in water. To have uniform quality of concrete lining and for better compaction, mechanical paver lining is proposed where the bed width is more than 1.20 M from practical considerations of availability of mechanical pavers. For other reaches where bed width is less than 1.2 M, manual concrete lining is proposed. The lining has been proposed for entire length upto free board level with concrete coping on either side for a width of 0.30 M. Since the channels are running in black cotton soils area which is having swelling nature, CNS layer is proposed below concrete lining as per BIS.

13.5.2. Strengthening and stabilization of banks

The works of strengthening and stabilization of banks are proposed wherever required as per site conditions.

13.6. Preparation of capacity statement

No assessment has been made regarding the discharges in the channels as channel system is very old and infrastructure is not in good condition.

13.7. Need for remodeling / distribution system

The distribution systems of all the channels are not in good condition. Hence, remodeling of distribution system with concrete lining is proposed.

Chapter 14. Power

14.1. Power status

No proposal for generation of electrical power is envisaged in the modernization project.

14.2. Modernization / upgrading proposal

No power generation is proposed in the 16 channels of Vijayanagara Channels and as such there will be no impact on the existing Power generation of Tungabhadra Reservoir.

Chapter 15. Navigation

The proposal is to modernize the existing channel system and as the channels are small ones in terms of carrying capacity, navigation is not considered in this project.

Chapter 16. Groundwater

Dynamic groundwater resources of Karnataka – March 2009 is published by joint efforts put by Department of Mines and Geology, Govt of Karnataka and Central Groundwater Board, South Western Region, Bangalore during Dec 2010. The report mainly provides groundwater resources available in Karnataka.

The details of Groundwater resources pertaining to Vijaynagar Channels is as follows:

16.1. Depth of Groundwater level

As per assessment, the depth of Groundwater for Pre monsoon and Post monsoon is as follows:

Table 16.1 – Table showing depth of Groundwater for Pre monsoon and Post monsoon

No	Assessment Unit	Command/Non command	Rainfall in mm	Average Pre monsoon water level (mbgl)	Average Post monsoon water level (mbgl)	Average fluctuation (m)
1.	4D3A3	Command	666.7	-	-	-
		Non Command	666.7	-	-	-
2.	4D3A8	Command	612.6	-	-	-
		Non Command	612.6	5.94	3.21	2.73
3.	4D3C2	Command	682.6	-	-	-
		Non Command	682.6	-	-	-
4.	4D3F2	Command	721.8	-	-	-
		Non Command	721.8	-	-	-

Note:

Delineation and codification of watersheds

The delineation of watersheds has been done in 5 stages. For ex: **4D3A3** indicates 4 as water resource region, D indicated basin code, 3 indicate catchment code, A indicates sub catchment code and 3 indicate watershed code.

16.2. Assessment of Groundwater potential in the command area

As per assessment the groundwater potential is as follows:

Table 16.2 – Table showing Administrative wise assessment of Dynamic Groundwater resources

Administrative wise assessment of Dynamic Groundwater resources in ha-m										
No	Name of District	Name of Taluk	Command/Non command	Recharge from rainfall during monsoon season	Recharge from other sources during monsoon season	Recharge from rainfall during Non- monsoon season	Recharge from other sources during Non-monsoon season	Total Annual GW recharge	Provision for natural discharge	Net annual GW availability
1.	Raichur	Raichur	Command	712	467	302	645	2126	213	1913
			Non Command	3502	399	1501	759	6160	609	5552
			Total	**4214**	**866**	**1802**	**1405**	**8287**	**821**	**7465**
2.	Koppal	Gangavathi	Command	1453	15607	790	14336	32186	3219	28968
			Non Command	1765	503	836	614	3718	244	3474
			Total	**3218**	**16110**	**1626**	**14951**	**35904**	**3463**	**32442**
3.	Bellary	Sirguppa	Command	2231	7729	1309	4827	16097	1610	14487
			Non Command	323	791	164	695	1974	197	1776
			Total	**2553**	**8521**	**1473**	**5523**	**18070**	**1807**	**16263**
4.	Bellary	Hospet	Command	1520	4176	826	2412	8935	894	8042
			Non Command	1408	173	787	260	2629	263	2366
			Total	**2929**	**4349**	**1614**	**2673**	**11564**	**1156**	**1048**

As per administrative assessment of unit wise categorization is as follows:

Table 16.3 – Table showing administrative assessment of unit wise categorization

No	Name of District	Name of Taluk	Command/Non command	Stage of GW development (%)	Pre Monsoon		Post Monsoon		Category
					Water level trend	Is there a significant decline	Water level trend	Is there a significant decline	
1.	Raichur	Raichur	Command	50	No decline	No	No decline	No	Safe
			Non Command	73	No decline	No	No decline	No	Safe
2.	Koppal	Gangavathi	Command	11	No decline	No	No decline	No	Safe
			Non Command	120	Declining	Yes	Declining	Yes	OE
3.	Bellary	Sirguppa	Command	70	No decline	No	No decline	No	Safe
4.	Bellary	Hospet	Command	19	No decline	No	No decline	No	Safe
			Non Command	57	No decline	No	No decline	No	Safe

*OE – Over Exploited

16.3. Quality of Groundwater

The information on ground water quality with respect to Vijayanagara channels are briefed below:

As per hydro chemical data of N.H.S of May 2003 in the district E.C.values range from 730-2870 micro mhos /cm at 25°c is recorded. Chloride is in the range of 43 to639 mg/l and floride in the range of 0.6 to 2.7 mg/l as based on the Bureau of Indian standards recommendations for drinking water the water E.C having less than 750 micro mhos/cm at 25°C is desirable and unsuitable more than3000 micro mhos/cm at 25°C.The concentration of fluoride is distributed in the district in the range of 1.0 to1.5 mg/l up to maximum of 2.7 mg/l. The desirable limits for drinking purposes are less than 1 ppm. The concentration beyond 1 ppm is unsuitable, noticed as pockets in Gangavathi and Kushtagi taluks.

16.4. Assessment of possible impact on Groundwater

Due to Modernisation of the existing canal system under Vijayanagara Channels, the possible impact on Groundwater is negligible.

16.5. Conjunctive use of surface and groundwater

By adopting Conjunctive use of surface and Groundwater, the entire command of all the canals can be irrigated with use of optimal quantity of water thereby helping to save water.

With this, the farmers can arrest further water logging menace in the command of the canals.

The conjunctive use of the ground water particularly in tail end area will also help in supplementing the canal irrigation by which entire command area could be served with 5.80 TMC thus saving about 6.25 TMC of water.

Chapter 17.
Drainage and land reclamation

17.1. Review of drainage

The drainage system is sufficient to drain the water and no water logging, soil salinity and alkalinity has been noticed. Anyway, it is recommended to propose surface drainage, water logging and such measures.

In the command area of 11154 ha under Vijayanagara channel system, an area of 340 ha is affected by water logging, salinity and alkalinity. The Command Area Development Authority (CADA) of Tungabhadra project has taken up the reclamation of these water logged area. This area has been reclaimed which can be brought under cultivation with the proposed crop intensity of 145.6%.

17.2. Type of reclamation

17.2.1. Field drains

As curative and preventive measures to water logging and salinity problems, field drains treatment is given which drains of excess water and lowers the salt concentration in the root zone and thus helps to improve the crop yields. The field drains has been taken up in various programs.

Chapter 18.
Land acquisition, Rehabilitation and Resettlement

18.1. Land acquisition, Rehabilitation / Resettlement

Since the proposal is Modernization of the existing canal system (already in practice for more than 400 years), no acquisition of lands is envisaged.

The Vijayanagar channels do not have any reservoir which leads to submersion. Hence, question of Rehabilitation and Resettlement (R&R) does not arise.

Chapter 19.
Water management and maintenance

The majority of the cultivated area belongs to small land holders. This is due to the increase in number of families over the years depending on the same piece of land which is shared among the families. The farmers generally own bullocks to plough the farm land. But the use of tractors, power tillers and tractor-trailers are gradually increasing in the farm work in recent years.

The responsibility of the water management has been handed over to the Water User's Cooperative Societies (WUCS) formed in the villages of the command area by the Tungabhadra CADA, Munirabad.. However, water Resources Department i.e. with CADA of Tungabhadra project, will be responsible for water distribution and maintenance of the channel system.

Chapter 20.
On farm development works

20.1. Command Area Development Authority

The Command area of Vijayanagar channels comes under the jurisdiction of Tungabhadra Command Area Development authority. The functions of CADA are;

- Preparation of plans and programs for the development of command area.
- Distribution of agricultural implements and inputs such as ploughs, seeds, pesticides etc
- Conducting farm trials and demonstration of new technologies in the agricultural field
- Conserving and developing soil fertility
- Equitable distribution of water to the entire command
- Effective utilisation of surface water
- Providing financial assistance through cooperative societies, banks etc.

20.1. Organization setup of On Farm Development

On farm development works are taken up by CADA, Tungabhadra Project with the assistance of officers of concerned departments' viz., Water Resources Department, Agriculture Department and Co-operative Department.

20.1.1. Land leveling

The land leveling works were initially carried out by concerned farmers with subsidy grant and technical assistance from CADA. Now, no subsidy grant is being provided, however, technical guidance is continued to be provided.

20.1.2. Field Irrigation Channels (FICs)

In many parts of paddy growing area, use of field-to-field irrigation or katcha field channels is in practice. In order to ensure timely and equitable distribution of water to each field and feed the water to the tail-end farmers in the command area, construction of pakka Field Irrigation Channels (FICs) in vulnerable stretches have been constructed by CADA Tungabhadra Project.

20.1.3. Construction of field drains

The field drains are also being executed in the command area with the Central Assistance. The field drains to serve as drainage area is 25% of the total command area i.e. 4,060 ha. Necessary provision is made in the estimate for construction of field drains.

20.1.4. Warabandi

To ensure equitable distribution of water to all the lands under each outlet of the command area, Warabandi system is to be brought into practice. In this system, each farmer gets water turn by turn for a fixed time-interval proportionate to the extent of his land. For efficient and satisfactory water management, Wireless Communication System has been established by CADA Tungabhadra project.

20.1.5. Ayacut roads

The ayacut roads in the command area of Vijayanagara channels are very old. The new ayacut roads wherever essential as demanded by farmers is constructed by CADA Tungabhadra project.

Chapter 21.
Construction programme

The construction program is planned in a phased manner to be executed without affecting the irrigation.as shown in table below;

Table 21.1 – Implementation program of Modernization of Vijayanagara channels

Name of the Channel	Phases	Remarks
1. Raya	Phase – I during Nov-Dec closure period	--
2. Basavanna		
3. Bella		
4. Kalghatta		
5. Turtha		
6. Ramsagar		
7. Kampli		
8. Belgodhal		
1. Bella	Phase – II during Apr-Jun closure period	Anicut works are taken up in Phase II due to lean flow in Tungabhadra river during April to June. Anicuts in Phase I Channels are taken up under Phase II.
2. Turtha		
3. Ramasagar		
4. Kampli		
5. Deshnur		
6. Shirguppa		
7. Hulugi		
8. Shivpura		
9. Anegundi		
10. Upper Gangavathi		
11. Lower Gangavathi		
12. Bichal		

Chapter 22.
Construction organization

22.1. Organization setup for modernization

The Vijayanagar channels come under the control of Chief Engineer, ICZ, Munirabad. The hierarchical structure of the controlling officers is as follows:

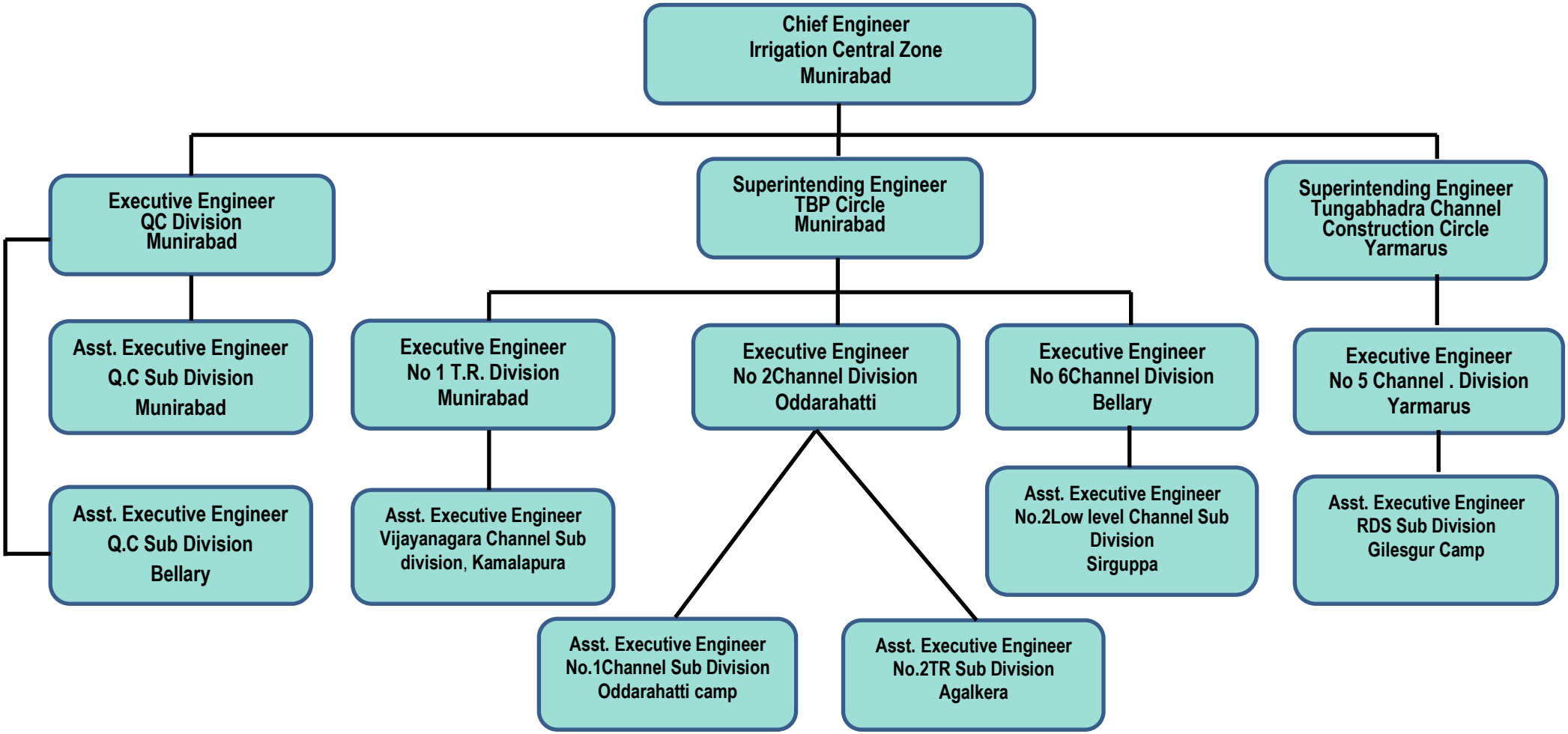


Table 22.1 shows the Engineering divisions in charge of the channels.

Table 22.1 – Divisions in- charge of the channels

No.	Name of the channel	Name of the division
	On right bank of TB river	
1	Raya channel	Executive Engineer No.1 T.R.Division, Munirabad
2	Basavanna Channel	
3	Bella Channel	
4	Kalghatta Channel	
5	Turtha Channel	
6	Ramasagar Channel	
7	Kampli Channel	
8	Belagodahala	
9	Deshnur Channel	Executive Engineer, No.6 Channel Division, Bellary
10	Siruguppa Channel	
	On left bank of TB river	
11	Hulugi Channel	Executive Engineer, No.6 Channel Division, Oddarahatti
12	Shivapura Channel	
13	Anegundi Channel	
14	Gangavathi upper channel	
15	Gangavathi lower channel	
16	Bichal Channel	Executive Engineer, No.5 channel Division Yermarus

Except in the case of Raya and Basavanna channels, where water is let out through a vent, in the case of other channels, the water flows into channel system continuously and the maintenance is carried out by the irrigation department.

Chapter 23.
Environment, Ecology and Forest aspects

Since the proposal is Modernization of the existing canal system (already in practice for more than 400 years,) there will be no effect on the Environment and Ecology of the area. No acquision is envisaged and no forest lands are involved.

23.1. World Heritage Zone

Hampi and its surroundings are located in the buffer zone area of Hampi heritage site which is declared as one of the world heritage center. Any activity of improvement or development are needs to be in sync with its world heritage regulation .Turtha channel (0.00 to 8.00 Km) and Anegundi channel (0.00 to 19.44 Km) runs in this buffer zone area and as such in order to abide by the regulations, these channels are provided with stone pitching (above FSL) instead of cc lining as per the guidelines of the Archeological Survey of India and also Hampi World Heritage Area Management Authority (HWHAMA).

Chapter 24.
Economic Evaluation

24.1. For Channels

The estimate is prepared based on the designed section and cut-off statement of the channel. Provisions made are as follows:

- CC lining of 80 mm thickness is proposed using mechanical pavers where the channel bed is more than 1.2 m.
- Manual lining is proposed where the channel bed width is less than 1.2 m.
- CNS backing is provided as the stratum met with is of B C soil as per BIS.
- Provision of lugs and template walls as per standards
- Improvement of service road
- Improvement of inspection path.
- Removal of silt.
- Earthwork excavation in ordinary soil.
- Constructing uncoursed rubble masonry
- Tarfelt expansion joint for CC lining
- Perforated GI pressure relief pipes for pressure relief arrangement
- Hectometre, kilometre and boundary stones.

24.2. For Structures

- Earthwork excavation in ordinary soil
- M10 , 40 mm CC for foundation
- M15, 40 mm CC for abutment.
- M15, 20 mm CC for sub structure
- M20 , 20 mm for Deck slab, kerb and wearing coat for bridges
- M25, 20 mm CC for sub structure
- Provision for steel reinforcement
- Provision for stone pitching
- Provision for Gates

An estimate for **Rs. 464.43 Crores** is prepared for various works envisaged in the project with the following provisions. The cost estimate is based on the latest schedule of rates of **WRD, Bangalore (2016 -17)** and **PWD SR of North- East zone, Kalburgi (2016-17).** The total cost of modernization is classified into different sub-heads shown below;

A. PRELIMINARY

A provision of **Rs. 178.11 lakhs** is made for charges towards consultancy services viz, detailed survey, investigation, Preparation of DPR etc and other preliminary works as required for the project.

B. LAND

No provision is made in the estimate towards land acquisition.

C. WORKS (ANICUT)

There are 11 anicuts. These anicuts are constructed using huge boulders in a Zig Zag manner. Due to constant wear and tear during the last 400 years of existence, the boulders have been displaced and huge leakages are noticed.

It is proposed to strengthen the anicut by providing cement concrete M 20 skin wall encasement.

The provisions made are as follows:

- Providing anchor rods
- Provision for curtain grouting
- Providing skin wall to the entire length of anicut
- Providing contraction joint
- Providing concrete toe walls on both ends
- Formation of approach roads to anicuts wherever required from the nearest road.

In addition, provision for coffer dam to facilitate unhindered repair works is made.

A provision of **Rs. 6153.29 lakhs** is made for Improvements of 11 anicuts. This involves providing anchor rods to the bed and skin walls with CC M 20 throughout the length and width of the weir.

D. REGULATORS AND MEASURING DEVICES

A provision of **Rs. 3530.45 lakhs** is made towards Repair/Reconstruction/new construction of head regulators, Cross Regulators and measuring devices under main Channel and its networks. The details are as follows:

No	Name of the Channel	Name of Structures	No of Structures	
			Construction	Dismantling & Reconstruction
1.	Raya	Head Regulator		
		Cross Regulator		1
		Measuring Device	1	
		DPO	2	50
2.	Basavanna	Head Regulator		1
		Cross Regulator		1
		Measuring Device		
		DPO		20
3.	Bella	Head Regulator		
		Cross Regulator		1
		Measuring Device	1	
		Distribution box		1
		DPO	1	31
4.	Kalghatta	Head Regulator		1
		Cross Regulator		
		Measuring Device	1	
		DPO		32
5.	Turtha	Head Regulator		
		Cross Regulator		1
		Measuring Device	1	
		DPO		99
6.	Ramsagar	Head Regulator	1	
		Cross Regulator		2
		Measuring Device	1	
		DPO	20	8
7.	Kampli	Head Regulator		
		Cross Regulator		1
		Measuring Device	1	
		DPO	34	4
8.	Belgodhalla	Head Regulator		
		Cross Regulator		
		Measuring Device	1	
		DPO	45	10

No	Name of the Channel	Name of Structures	No of Structures	
			Construction	Dismantling & Reconstruction
9.	Sirguppa	Head Regulator		
		Cross Regulator	2	2
		Measuring Device	1	
		DPO	2	
10.	Deshnur	Head Regulator		
		Cross Regulator		4
		Measuring Device	1	
		DPO		14
11.	Hulugi	Head Regulator		
		Cross Regulator		
		Measuring Device		1
		DPO		55
12.	Shivpura	Head Regulator		
		Cross Regulator	1	
		Measuring Device	1	
		DPO	1	23
13.	Anegundi	Head Regulator		
		Cross Regulator		1
		Measuring Device	1	
		DPO		66
14.	Gangavathi Upper	Head Regulator		
		Cross Regulator		1
		Measuring Device		1
		DPO		30
15.	Gangavathi Lower	Head Regulator		3
		Cross Regulator	1	1
		Measuring Device	1	
		DPO		26
16.	Bichal	Head Regulator		
		Cross Regulator		1
		Measuring Device	1	
		DPO		10

E. FALLS

A provision of **Rs. 104.67 lakhs** is made towards construction of channel drops for different channels and also construction of chambers for linked channels, where the higher level channel joins the lower level channel.

No	Name of the Channel	Name of Structures	No of Structures	
			Construction	Dismantling & Reconstruction
1.	Raya	Canal drop	9	
2.	Basavanna	Canal drop	7	
3.	Bella	Canal drop		
4.	Kalghatta	Canal drop	1	
5.	Turtha	Canal drop	7	
6.	Ramsagar	Canal drop		
7.	Kampli	Canal drop		
8.	Belgodhalla	Canal drop		
9.	Sirguppa	Canal drop		
10.	Deshnur	Canal drop		
11.	Hulugi	Canal drop	1	
12.	Shivpura	Canal drop	1	
13.	Anegundi	Canal drop	2	
14.	Gangavathi Upper	Canal drop		
15.	Gangavathi Lower	Canal drop	1	
16.	Bichal	Canal drop		

F. CROSS DRAINAGE WORKS

A provision of **Rs. 937.63 lakhs** is made towards construction of inlets with CC M15 and under tunnels.

No	Name of the Channel	Name of Structures	No of Structures	
			Construction	Dismantling & Reconstruction
1.	Raya	Inlet	2	
		Undertunnel	2	1
2.	Basavanna	Inlet	2	
		Undertunnel	1	
3.	Bella	Inlet	4	
		Undertunnel		
4.	Kalghatta	Trough	2	
		Undertunnel		
5.	Turtha	Inlet		
		Undertunnel		
6.	Ramsagar	Inlet	11	
		Undertunnel		
7.	Kampli	Inlet	9	
		Trough	2	
8.	Belgodhalla	Inlet	2	
		Undertunnel		

No	Name of the Channel	Name of Structures	No of Structures	
			Construction	Dismantling & Reconstruction
9.	Sirguppa	Inlet		
		Undertunnel		
		Super passage	1	
10.	Deshnur	Inlet		
		Undertunnel		
11.	Hulugi	Inlet	2	
		Undertunnel		
12.	Shivpura	Inlet	6	
		Undertunnel	1	
13.	Anegundi	Inlet	10	
		Undertunnel	2	
14.	Gangavathi Upper	Inlet	17	
		Undertunnel		
15.	Gangavathi Lower	Inlet	4	1
		Undertunnel		
16.	Bichal	Inlet		
		Undertunnel		

G. BRIDGES

A provision of **Rs. 2066.90 lakhs** is made towards construction of Cart Track Crossings/ Village road bridges with deck slab of CC M20, Foot Bridges and Sopanams.

No	Name of the Channel	Name of Structures	No of Structures	
			Construction	Dismantling & Reconstruction
1.	Raya	Cart track Crossing	12	7
		Major Road Bridge	1	1
		Village road bridge	1	2
		Foot bridges	1	
		Sopanams	1	
2.	Basavanna	Cart track Crossing		15
		Village road bridge		8
		Foot bridges		7
		Sopanams	9	
3.	Bella	Cart track Crossing	1	4
		Village road bridge		1
		Road Bridge		1
		Foot bridges	1	
		Cattle ramp	4	

No	Name of the Channel	Name of Structures	No of Structures	
			Construction	Dismantling & Reconstruction
4.	Kalghatta	Cart track Crossing	1	7
		Village road bridge		2
		Foot bridges	1	
5.	Turtha	Cart track Crossing		7
		Sopanams	2	
6.	Ramsagar	Cart track Crossing	6	4
		Cattle ramp	1	
7.	Kampli	Cart track Crossing	20	16
		Village road bridge	3	2
		Foot bridges	16	6
		Sopanams	4	
8.	Belgodhalla	Cart track Crossing	12	4
		Road bridge	1	
		Foot bridges	1	
9.	Sirguppa	Cart track Crossing	2	3
		Retaining Wall	1	
		Sopanams	1	
10.	Deshnur	Cart track Crossing	4	4
		Road bridge	1	
11.	Hulugi	Cart track Crossing		8
		Village road bridge		1
		Foot bridges		1
12.	Shivpura	Cart track Crossing		3
		Village road bridge		5
13.	Anegundi	Cart track Crossing	2	9
		Service Road	3	
		Village road bridge		1
		Road bridge	1	
		Foot bridges		1
		Sopanams		5
		Cattle ramp	3	1
14.	Gangavathi Upper	Cart track Crossing		8
		Village road bridge		1
		Road bridges		1
		Sopanams	6	
15.	Gangavathi Lower	Cart track Crossing		3
		Village road bridge		1
		Road bridges		1
16.	Bichal	Cart track Crossing		11

H. ESCAPES

A provision of **Rs. 731.05 lakhs** is made towards construction of Escapes, relieving weirs, and scouring sluices with CC M15.

No	Name of the Channel	Name of Structures	No of Structures	
			Construction	Dismantling & Reconstruction
1.	Raya	Escapes	2	
		Relieving weirs		
		Scouring sluices	1	3
2.	Basavanna	Escapes		
		Relieving weirs		
		Scouring sluices		
3.	Bella	Escapes		
		Relieving weirs		1
		Scouring sluices		1
4.	Kalghatta	Escapes		
		Relieving weirs		
		Scouring sluices		1
5.	Turtha	Escapes	2	
		Relieving weirs	1	
		Scouring sluices		1
6.	Ramsagara	Escapes	2	
		Relieving weirs		1
		Scouring sluices		
7.	Kampli	Escapes		
		Relieving weirs		
		Scouring sluices	5	1
8.	Belgodhalla	Escapes		
		Relieving weirs		
		Scouring sluices	3	3
9.	Sirguppa	Escapes		
		Relieving weirs		
		Scouring sluices	1	
10.	Deshnur	Escapes		
		Relieving weirs		
		Scouring sluices		2
11.	Hulugi	Escapes	1	
		Relieving weirs		
		Scouring sluices		7
12.	Shivpura	Escapes		
		Relieving weirs		

No	Name of the Channel	Name of Structures	No of Structures	
			Construction	Dismantling & Reconstruction
		Scouring sluices		1
13.	Anegundi	Escapes		3
		Escape/Relieving weirs		2
		Relieving weirs	2	7
		Scouring sluices		
14.	Gangavathi Upper	Escapes		1
		Relieving weirs		
		Scouring sluices		
15.	Gangavathi Lower	Escape / CTC		1
		Relieving weirs		
		Scouring sluices		1
16.	Bichal	Escapes		
		Relieving weirs		
		Scouring sluices		

I. NAVIGATION WORKS

No provision is made in the estimate as there is no navigation needs.

J. POWER PLANT CIVIL WORKS

No provision is made in the estimate as no power generation is involved.

K. BUILDINGS

A provision of **Rs. 329.00 lakhs** is made in the estimate.

L. EARTHWORK, LINING AND SERVICE ROAD (MAIN CHANNEL)

A provision of **Rs. 21476.22 lakhs** is made for 16 Nos channels of total length 215.93 Km towards earthwork, lining and service road for main channels and its networks. CC mechanical paver lining of 80 mm thick is proposed where the bed width is greater than 1.2 m and for other reaches 75 mm thick manual lining with M15 grade is proposed. At every 15 m interval, CC template walls are proposed. Provision of CNS backing is made as the soil met with is of black cotton soil which is expansive in nature.

M. PLANTATION

A provision of **Rs. 67.95 lakhs** is made for plantation on either side of the main channel at 15 m c/c. The rate per Km works out to **Rs. 31,500/-.**

N. TANKS AND RESERVOIRS

No provision is made in the estimate as it is not applicable to the current project.

O. MISCELLANEOUS

No provision is made in the estimate.

P. MAINTENANCE

A provision of **Rs. 422.52 lakhs** is made towards maintenance at 1% of the cost of I – works less A, B,O,M,P,Q and X as per CWC guidance. This covers the cost of maintenance of roads and other structures during the period of construction.

Q. SPECIAL TOOLS AND PLANTS

A provision of **Rs. 40.46 lakhs** is made in the estimate.

R. COMMUNICATIONS

No provision is made in the estimate.

S. POWER PLANT AND ELECTRICAL MECHANICAL SYSTEM

No provision is made in the estimate.

T. WATER SUPPLY WORKS

No provision is made in the estimate.

U. DISTRIBUTARIES MINORS AND SUB-MINORS

A provision of **Rs. 6696.03 lakhs** is made for modernization of 46.908 Kms of distributory networks and 152.072 Kms of minors coming under Vijayanagara channels. Provision of CNS backing with 75 mm thick manual CC lining of grade M15 is made in the estimate.

V. WATER COURSES

No provision is made in the estimate.

W. DRAINAGE

A provision of **Rs. 226.73 lakhs** is made towards construction of drains as two of the channels namely Raya and Basavanna runs in part of municipal area.

X. ENVIRONMENT AND ECOLOGY

No provision is made in the estimate.

Y. LOSSES OF STOCK

A provision of **Rs. 105.63 lakhs** is made in the estimate at 0.25% of the cost of I – works less A, B,O,M,P,Q and X as per CWC guidance.

Z. PROVISION FOR POWER GENERATION

No provision is made in the estimate.

TOTAL OF I - WORKS – 43066.63 LAKHS

II. ESTABLISHMENT CHARGES

No provision is made in the estimate.

III. TOOLS AND PLANTS

A provision of **Rs. 12.40 lakhs** is made in the estimate

IV. SUSPENSE

No provision is made in the estimate.

V. RECEIPTS AND RECOVERIES ON CAPITAL ACCOUNT

No provision is made under this sub head.

TOTAL DIRECT CHARGES

The total direct charges from the above sub head works out to **Rs. 43079.03 lakhs**.

INDIRECT CHARGES

A. Audit and accounts charges (1% of I – works)	Rs 430.67 lakhs has been made in this sub head
B. Miscellaneous unforeseen works and rounding of	

TOTAL INDIRECT CHARGES

Total indirect charges as mentioned above **Rs. 430.67 lakhs**.

GRAND TOTAL = 43509.70 LAKHS

SAY 435.10 CRORES

With Soft Components the Total Cost of the Project works out to **Rs. 46443.00 Lakhs**, **SAY 464.43 CRORES**

Refer **Annexure 24.1** for General Abstract

ABSTRACT COST FOR MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT

No	Particulars	(Rs. In Lakhs)		
		UNIT I Headworks (Anecuts)	UNIT II Canal Works	Total
I	**Direct Charges of Works**			
1	A - Preliminaries		178.11	178.11
2	B - Land		-	-
3	C - Works	6153.29	-	6153.29
4	D - Regulator		3530.45	3530.45
5	E - Falls		104.67	104.67
6	F - Cross Drainage Works		937.63	937.63
7	G - Bridges		2066.90	2066.90
8	H - Escapes		731.05	731.05
9	I - Navigation works		-	-
10	J - Power plants and Civil Works		-	-
11	K - Buildings		329.00	329.00
12	L - Earthwork			
	L1 - Lining		21476.22	21476.22
	L2 - Service Road			
13	M - Plantation		67.95	67.95
14	N - Tank and Reservoirs		-	-
15	O - Miscellaneous		-	-
16	P - Maintenance (1% of cost of I - works except A,B,M,O,Q and X)	61.53	360.99	422.52
17	Q - Special Tools and plants		40.46	40.46
18	R - Communication		-	-
19	S - Power plant and Electrical systems		-	-
20	T - Watersupply works		-	-
21	U - Distributories and Minors		6696.03	6696.03
22	V - Water Courses and Field Channels		-	-
23	W - Drainage		226.73	226.73
24	X - Environment and Ecology		-	-
25	Y - Loss of stocks and unforeseen (0.25% of cost of I - works except A,B,M,O,Q and X)	15.38	90.25	105.63
26	Z- Provision for Power Generation		-	-
	Total of I - Works	**6230.21**	**36836.43**	**43066.63**

No	Particulars	(Rs. In Lakhs)		
		UNIT I Headworks (Anecuts)	UNIT II Canal Works	Total
II	Establishment charges		-	-
III	Tools & Plants		12.40	12.40
IV	Suspense		-	-
V	Receipts & Recoveries on capital account		-	-
	Total Direct charges	**6230.21**	**36848.83**	**43079.03**
VI	**INDIRECT CHARGES**			
	b)Audit and Account charges (1% of cost of I works)	62.30	368.36	430.67
	Total Indirect charges	**62.30**	**368.36**	**430.67**
	TOTAL DIRECT AND INDIRECT CHARGES	**6292.51**	**37217.19**	**43509.70**
VII	**SOFT COMPONENET REQUIREMENTS AS PER KARNATAKA INTEGRATED AND SUSTAINABLE WATER RESOURCES MANAGEMENT INVESTMENT PROGRAM (KISWRMIP), TRANCHE-2**			
i	Command Area Development			341.00
ii	Flow Measurement & Telemetry system			271.00
iii	Equipment and Supplies			12.00
iv	**Training & Consultancy Services**			
1	Training			188.00
2	Support Services Team for WUCs			36.00
3	Surveys and Studies			
a	Monitoring and Evaluation			77.00
b	Survey, Design and Studies			616.00
4	Support Consultants			
a	International Consultants			106.00
b	National Consultants			121.00
c	Consultancy Support			30.00
v	Staff Costs			634.00
vi	Physical Contingencies			173.00
vii	Price Contingencies			198.00
viii	Interest During Implementation			123.00
ix	Commitment Charges			7.00
				46442.70
	Grand Total			**46443.00**
				Say Rs 464.43 Crores

Chief Engineer
KNNL, Irrigation Central Zone
Munirabad

Chapter 25.
Administrative and Legislative provisions

25.1. Administrative set up

The present administration is under the Department of Water resources. It is oriented more towards engineering aspects and is headed by one Chief Engineer (Irrigation Central zone). There are two circles with four divisions and five sub-divisions to monitor the canal system. This department is responsible for construction, maintenance of all structures within the command area and the canal system. In the past few years, WUAS (Waters Users Association Society) named as Water Users Cooperative Society (WUCS) are set up at the village / tank level. However, it is found that even after formation of the WUCS, there has been low impact on the overall operation and maintenance of canal system.

Presently water demands are being done by the Water Resources Dept. /Nigam and the collection is being done by WUCS. After registration of WUCSs, the Asst. Executive Engineer will issue the demand notice to the WUCS and the societies will collect the charges and remit to the Govt. /Nigam as per the notification of the Govt.

25.2. Legal status & Policy framework

The construction and O & M of the Vijayanagar channels are governed by various Government policies, which include:

1. Karnataka Irrigation and Certain Other law (Amendment) Act, 2000
2. Karnataka Community based Integrated Tank System Management Act – 2002

Chapter 26.
Facilities for training the operational and maintenance personnel

26.1. Existing

No facilities for training the O& M personal have been noticed.

26.2. Proposals for improvement and extension

26.2.1. Institution framework

The water User's Association needs to be constituted at the beginning of the implementation of the scheme involving all the direct and indirect beneficiaries. This association shall function within the rules, regulations and the byelaws of the society. There should be an organizing committee of the society and should contain representative of all the sections of the beneficiaries with due representation to various sections such as SC/ST, women, labour, backward class people etc. A proper training for management of its finance is of utmost importance. The Programme / mechanism needs to be provided to make them aware of and be informed to upgrade their managerial skill by way of various courses, training, discussions etc. The society should run on a transparent basis with its finance being audited duly by the competent authority of the year. The Government agencies should in their advisory capacity provides the society with technical inputs.

Chapter 27.
Operation and Maintenance

27.1. Training and Visit system

The Karnataka State Agricultural Department has taken up the training and visit system (T&V) of extensions in the entire State of Karnataka. Under this system, the training programs have been conducted by the Assistant Directors of Agriculture of concerned taluk, with the assistance of village extension workers and progress would be reported to Principal Agriculture Officer. One village extension worker covers 400 farmer families. The village extension worker will conduct regular contact programme once in fortnight. The Department will also conduct regular workshops for every two months to educate farmers on agronomy, land protection, introduction of new technology in the agricultural field etc.

In addition to the above, department has responsibility of proper distribution of subsidized seeds and pesticides through agro centers and private agencies.

Chapter 28.
B C Ratio

28.1. Benefit Cost ratio

The Benefit Cost Ratio (BCR) of the Modernisation of Vijayanagara channels has been prepared as per the guidelines of Central Water Commission (CWC).

The Benefit cost ratio is worked out to **1.51**

While calculating BCR, following have been considered.

28.1.1. Estimated value of produce before channel modernization

The yield of the crops, rate, and particulars of input i.e. seeds; fertilizers and pesticides and hired laborers have been taken into account. Thus the net value of the produce is arrived at **Rs. 12656.40 lakhs**.

28.1.2. Estimated value of produce after channel modernization

After completion of channel Modernisation, to achieve increased production of crops, the cropping pattern has been revised taking into consideration of water availability, soil conditions, present agricultural practice including farmer's attitude to grow the suggested cropping pattern.

Similarly, the yield of the crops, rate, and particulars of input i.e. seeds; fertilizers and pesticides and hired laborers have been taken into account. The net value of the produce after Modernisation is arrived at **Rs.20786.83 lakhs.** The increase in the yield of the crops after completion of Modernisation of Vijayanagara channels, following factors contribute in the increased agricultural activities and thereby increase in the yield.

1. Seepage / wastage are minimised, thereby ensuring the supply of sufficient water to the tail end achkat.
2. Proper and quick distribution and timely supply is assured.

The calculation of B.C. Ratio is appended in **Annexure 28.1**

Figures are in Rs lakhs

A	Gross Receipts		Before Modernisation	After Modernisation
1	Gross value of farm produce		31564.58	40610.29
2	Dung receipts(at 30%of the fodder expenditure)		1420.41	1218.31
3	**Total A : Gross Receipts(1+2)**		**32984.99**	**41828.60**
B	**EXPENSES:**			
1	Expenditure on seeds		1048.89	688.09
2	Expenditure on manure etc.		5170.33	5043.60
3	Expenditure on hired labour(human and bullock)		6312.92	8122.06
4	Fodder expenses(as percentage of gross value of produce)			
	(15% ,10% of item A.1)		4734.69	4061.03
5	Depriciation on implements (2.7% of Item A.1)		852.24	1096.48
6	Share and cash rent (5% 3% of Item A.1)		1578.23	1218.31
7	Land Revenue (2% of Item A.1)		631.29	812.21
8	**Total B : Expenses (1 to 7)**		**20328.59**	**21041.76**
C	**NET VALUE OF PRODUCE**			
1	Total gross receipts(Total A.3)		32984.99	41828.60
2	Minus total expenses (Total B.8)		20328.59	21041.76
3	Net value of produce © : [1-2]		**12656.40**	**20786.83**
D	**ANNUAL BENEFITS:**			
1	Net value after irrigation (C:3)			20786.83
2	Minus Net value before irrigation (C:3)			12656.40
3	Net annual benefits (D):[1-2]			**8130.43**
	TOTAL NET ANNUAL BENEFITS (D3)			**8130.43**
E	**ANNUAL COSTS**			
1	Intrest on Capital @10% (Esimated total cost of the project including cost of land development @ Rs.1000/- per Ha) (Rs 43252 Lakhs + 16.24 Lakhs)			4660.54
2	Depreciation of the project at 1 % of the cost of the project for 100 years life excluding cost of Land, R&R cost.(43252.00 Lakhs x 1%)			464.43
3	Annual operation and maintenance charge at Rs. 1175/ ha			190.86
4	Maintainance of the Head works at 1% its cost (Improvements to anicuts)			61.53
5	Total (E):Annual costs (1 to 4)			**5377.36**
	BENEFITS COST RATIO =	**D 3 : Annual Benefits**	**8130.43**	**1.51**
		E.5: Annual cost	**5377.36**	

MODERNISATION OF VIJAYANAGAR CHANNELS IN TUNGABHADRA PROJECT											
ESTIMATED VALUE OF PRODUCE BEFORE MODERNISATION											
Crop	% Area	Area Ha	Produce (Qtls/Ha)	Rate per Qtl. (Rs)	Value of produce (Rs lakhs)	Input Seed			Manure (Input)		Hired Labour (Human & bullock)
						Quantity Kg/Ha	Rate Rs/Kg	Amount (Rs Lakhs)	Rate Rs/Ha	Amount (Rs Lakhs)	20% of total value of produce (Rs Lakhs)
1	2	3	4	5	6	7	8	9	10	11	12
Khariff											
Paddy	30.90	4056	50	1523.00	3088.36	60.00	24	58.40	40000	1622.25	617.67
Hy. Jowar	5.60	735	20	1356.00	199.33	60.00	24	10.58	23000	169.05	39.87
Rabi											
Paddy	13.90	1824	50	1540.00	1404.77	60.00	24	26.27	40000	729.75	280.95
Groundnut	14.50	1903	20	3000.00	1141.88	100.00	41	78.03	23000	437.72	228.38
Bi seasonal											
Sugarcane	24.20	3176	600	1200.00	22869.00	7500.00	3	714.66	39000	1238.74	4573.80
Garden (Banana)	10.90	1431	100	2000.00	2861.25	2250.00	5	160.95	68000	972.83	572.25
TOTAL	**100.00**	**13125**			**31564.58**			**1048.89**		**5170.33**	**6312.92**

MODERNISATION OF VIJAYANAGAR CHANNELS IN TUNGABHADRA PROJECT											
ESTIMATED VALUE OF PRODUCE AFTER MODERNISATION											
Crop	% Area	Area Ha	Produce (Qtls/Ha)	Rate per Qtl. (Rs)	Value of produce (Rs lakhs)	Input Seed			Manure (Input)		Hired Labour (Human & bullock)
						Quantity Kg/Ha	Rate Rs/Kg	Amount (Rs Lakhs)	Rate Rs/Ha	Amount (Rs Lakhs)	20% of total value of produce (Rs Lakhs)
1	2	3	4	5	6	7	8	9	10	11	12
Khariff											
Paddy	14.18	2304	65.0	2100.00	3144.96	60.00	24	33.18	40000	921.60	628.99
Hy. Jowar	38.95	6326	30.0	1800.00	3415.99	60.00	24	91.09	23000	1454.96	683.20
Rabi											
Paddy	10.19	1655	65.0	2350.00	2528.01	60.00	24	23.83	40000	662.00	505.60
Groundnut	23.12	3755	25.0	3600.00	3379.41	100.00	41	153.95	23000	863.63	675.88
Bi seasonal											
Sugarcane	7.57	1229	1200.0	1750.00	25804.80	7500.00	3	276.48	39000	479.23	5160.96
Garden (Banana)	6.00	974	120.0	2000.00	2337.12	2250.00	5	109.55	68000	662.18	467.42
TOTAL	**100.00**	**16243**			**40610.29**			**688.09**		**5043.60**	**8122.06**

Conclusion

The Vijayanagara channels comprising of 16 channels are in existence for over 400 years. These channels are very old and unlined. Due to lack of adequate maintenance, the channels have lost their shape and the infrastructure is a bad state. Tail end farmers are not getting adequate water. This is resulting in inequity, low productivity. There is dire need to modernize the channels for bringing down the over utilization in a scientific way and for improving water delivery service (reliability, flexibility and equity). Furthermore, due to many factors such as unlined channels, excessive seepage losses, over use of water, cropping pattern etc, the existing channel system is utilizing excess water for irrigation. The master plan of 2003 has recommended modernizing these channels thereby effectively bringing down the utilisation.

The report is prepared considering the above factors and proposal with estimate is prepared with the objective to bring down the utilisation from 12.05 TMC. It is now seen that, on modernization and reworking out crop water requirements as per Modified Penman Method, there is a savings of 6.25 TMC.

The total cost of proposed modernization with soft components is **Rs.464.43 Crores** based on current WRD Bangalore SR of **2016-17** & and **PWD SR of North- East zone, Kalburgi (2016-17)** and the B.C. ratio works out to **1.51.** Hence the project is technically and financially viable. The DPR is submitted for approval.

Chief Engineer
KNNL, Irrigation Central Zone
Munirabad

MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT

DETAILED PROJECT REPORT

ANNEXURES

MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT

DETAILED PROJECT REPORT

ANNEXURE 2.1

STATEMENT SHOWING THE YEAR WISE DETAILS OF INFLOWS, OUTFLOWS (UTILISATION) UNDER DIFFERENT CANAL SYSTEM OF TUNGABHADRA PROJECT (KARNATAKA PORTION) FOR THE PERIOD (WATER YEAR) FROM 1990 -91 TO 2009-10

(APPENDED AS SAPERATE BOOKLET)

PERFORMANCE OF TUNGA BHADRA RESERVOIR

(WORKING TABLE FOR OPERATION OF TUNGA BHADRA RESERVOIR)

FOR THE WATER YEAR 1990-91 TO 2009-10

TUNGABHADRA BOARD
TUNGABHADRA DAM
HOSPET, KARNATAKA

PERFORMANCE OF TUNGABHADRA RESERVOIR FOR THE PERIOD FROM 1-6-1990 TO 31-5-1991 (1990 - 91)

(BASED ON CAPACITY ELEVATION TABLE OF 1981 SURVEYS). (THE DRAWALS ARE INCLUSIVE OF PRO-RATA TRANSMISSION LOSSES).

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopa-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Irrign. drawals Col. 12+16	ration				losses Tmcft. Col. 18 to 21	outflow Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
June 90																								
1-10	1582.74	6.300	1.293	7.593	-	-	0.034	-	-	-	0.034	-	-	-	-	0.034	0.097	-	-	-	0.097	0.131	7.462	1584.55
11-20	1584.55	7.462	9.143	16.605	-	-	0.144	-	-	-	0.144	-	-	-	-	0.144	0.107	-	-	-	0.107	0.251	16.354	1594.05
21-30	1594.05	16.354	15.543	31.897	0.164	-	0.173	-	0.178	-	0.515	0.215	-	-	0.215	0.730	0.194	-	-	-	0.194	0.924	30.973	1604.00
Sub Total			25.979		0.164	-	0.351	-	0.178	-	0.693	0.215	-	-	0.215	0.908	0.398	-	-	-	0.398	1.306		
July 90																								
1-10	1604.00	30.973	33.089	64.062	0.420	-	0.147	0.020	1.057	-	1.644	0.543	-	-	0.543	2.187	0.263	-	-	-	0.263	2.450	61.612	1617.44
11-20	1617.44	61.612	21.371	82.983	0.579	0.363	0.173	0.049	1.814	-	2.978	0.518	0.059	-	0.577	3.555	0.393	-	-	-	0.393	3.948	79.035	1623.13
21-31	1623.13	79.035	34.465	113.500	0.720	1.047	0.178	0.056	3.089	-	5.090	0.547	1.094	-	1.641	6.731	0.551	-	-	-	0.551	7.282	106.218	1630.66
Sub Total			88.925		1.719	1.410	0.498	0.125	5.960	-	9.712	1.608	1.153	-	2.761	12.473	1.207	-	-	-	1.207	13.680		
Aug 90																								
1-10	1630.66	106.218	13.563	119.781	0.701	1.049	0.158	0.036	3.067	-	5.011	0.638	1.465	0.114	2.217	7.228	0.369	0.079	-	-	0.448	7.676	112.105	1632.13
11-20	1632.13	112.105	50.301	162.406	0.602	0.649	0.106	0.023	2.697	-	4.077	0.760	1.444	-	2.204	6.281	0.354	0.112	4.389	37.398	42.253	48.534	113.872	1632.56
21-31	1632.56	113.872	57.432	171.304	0.665	0.841	0.190	-	3.222	-	4.918	0.893	1.776	-	2.669	7.587	0.495	0.056	5.364	42.779	48.694	56.281	115.023	1632.84
Sub Total			121.296		1.968	2.539	0.454	0.059	8.986	-	14.006	2.291	4.685	0.114	7.090	21.096	1.218	0.247	9.753	80.177	91.395	112.491		
Sept 90																								
1-10	1632.84	115.023	32.862	147.885	0.684	1.088	0.163	-	2.945	-	4.880	0.870	1.832	-	2.702	7.582	0.580	0.052	4.718	19.848	25.198	32.780	115.105	1632.86
11-20	1632.86	115.105	12.330	127.435	0.677	0.887	0.169	0.002	2.949	-	4.684	0.878	1.051	-	1.929	6.613	0.741	0.247	3.002	2.138	6.128	12.741	114.694	1632.76
21-30	1632.76	114.694	4.301	118.995	0.675	1.144	0.144	0.026	2.948	-	4.937	0.803	1.681	-	2.484	7.421	0.701	0.105	-	-	0.806	8.227	110.768	1631.80
Sub Total			49.493		2.036	3.119	0.476	0.028	8.842	-	14.501	2.551	4.564	-	7.115	21.616	2.022	0.404	7.720	21.986	32.132	53.748		
Oct. 90																								
1-10	1632.80	110.768	4.252	115.020	0.528	1.028	0.173	0.033	3.059	-	4.821	0.448	1.807	-	2.255	7.076	0.533	0.211	-	-	0.744	7.820	107.200	1630.91
11-20	1630.91	107.200	3.473	110.673	0.595	0.826	0.173	0.041	2.388	-	4.023	0.577	1.961	-	2.538	6.561	0.456	0.145	-	-	0.601	7.162	103.511	1629.97
21-31	1629.97	103.511	4.989 (4.739+0.250)	109.500	0.580	0.543	0.176	0.026	3.027	0.250	4.602	0.733	2.040	-	2.773	7.375	0.454	-	-	-	0.454	7.829	100.671	1929.23
Sub Total			12.714 (12.564+0.250)		1.703	2.397	0.522	0.100	8.474	0.250	13.446	1.758	5.808	-	7.566	21.012	1.443	0.356	-	-	1.799	22.811		
Nov. 90																								
1-10	1629.23	100.671	5.316 (5.066+0.250)	105.987	0.425	0.427	0.173	0.029	2.662	0.250	3.966	0.509	1.657	-	2.166	6.132	0.516	-	-	-	0.516	6.648	99.339	1628.88
11-20	1628.88	99.339	3.879 (3.629+0.250)	103.218	0.445	0.814	0.148	0.034	2.546	0.250	4.237	0.669	1.708	-	2.377	6.614	0.338	-	-	-	0.338	6.952	96.266	1628.06
21-30	1628.06	96.266	2.930	99.196	0.420	0.483	0.156	0.035	2.532	-	3.626	0.706	1.676	-	2.382	6.008	0.353	0.087	-	-	0.440	6.448	92.748	1627.10
Sub Total			12.125 (11.375+0.750)		1.290	1.724	0.477	0.098	7.740	0.500	11.829	1.884	5.041	-	6.925	18.754	1.207	0.087	-	-	1.294	20.048		
Total for Khariff			310.532 (309.782+0.750)		8.880	11.189	2.778	0.410	40.180	0.750	64.187	10.307	21.251	0.114	31.672	95.859	7.495	1.094	17.473	102.163	128.225	224.084		

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopa-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Irrign. drawals Col. 12+16	ration				losses Tmcft. Col. 18 to 21	outflow Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Dec. 90																								
1-10	1627.10	92.748	0.972 (0.722+0.250)	93.720	0.500	0.506	0.173	0.035	2.109	0.250	3.573	0.501	1.707	-	2.208	5.781	0.430	0.300	-	-	0.730	6.511	87.209	1625.54
11-20	1625.54	87.209	0.490 (0.240+0.250)	87.699	0.364	0.797	0.021	0.010	0.373	0.250	1.815	0.784	1.278	0.120	2.182	3.997	0.388	0.368	-	-	0.756	4.753	82.946	1624.30
21-31	1624.30	82.946	(-) 0.040	82.906	0.619	0.483	-	0.076	3.204	-	4.382	0.897	1.788	0.653	3.338	7.720	0.448	0.328	-	-	0.776	8.496	74.410	1621.70
Sub Total			1.422 (0.922+0.500)		1.483	1.786	0.194	0.121	5.686	0.500	9.770	2.182	4.773	0.773	7.728	17.498	1.266	0.996	-	-	2.262	19.760		
Jan. 91																								
1-10	1621.70	74.410	0.018 (-0.232+0.250)	74.428	0.624	0.062	-	0.044	3.062	0.250	4.042	0.834	0.548	0.595	1.977	6.019	0.374	0.192	-	-	0.566	6.585	67.843	1619.58
11-20	1619.58	67.843	(-) 0.407 (-0.657+0.250)	67.436	0.665	0.795	0.107	0.067	3.071	0.250	4.955	0.785	1.388	0.607	2.780	7.735	0.370	0.104	-	-	0.474	8.209	59.227	1616.58
21-31	1616.58	59.227	(-) 0.180	59.047	0.747	0.267	0.190	0.085	3.373	-	4.662	0.871	0.781	0.973	2.625	7.287	0.463	0.114	-	-	0.577	7.864	51.183	1613.49
Sub Total			(-) 0.569 (-1.069+0.500)		2.036	1.124	0.297	0.196	9.506	0.500	13.659	2.490	2.717	2.175	7.382	21.041	1.207	0.410	-	-	1.617	22.658		
Feb. 91																								
1-10	1613.49	51.183	(-) 0.204 (-0.454+0.250)	50.979	0.664	-	0.173	0.061	3.070	0.250	4.218	0.822	-	0.819	1.641	5.859	0.376	0.104	-	-	0.480	6.339	44.640	1610.75
11-20	1610.75	44.640	(-) 1.284	43.356	0.693	0.367	0.173	0.074	3.069	-	4.376	0.795	1.064	0.948	2.807	7.183	0.394	0.104	-	-	0.498	7.681	35.675	1606.53
21-28	1606.53	35.675	(-) 1.301	34.374	0.550	0.132	0.127	0.063	2.456	-	3.328	0.656	0.694	1.012	2.362	5.690	0.280	0.084	-	-	0.364	6.054	28.320	1602.44
Sub Total			(-) 2.789 (-3.039+0.250)		1.907	0.499	0.473	0.198	8.595	0.250	11.922	2.273	1.758	2.779	6.810	18.732	1.050	0.292	-	-	1.342	20.074		
Mar. 91																								
1-10	1602.44	28.320	(-) 1.363	26.957	0.627	-	0.130	0.056	3.068	-	3.881	0.845	-	0.924	1.769	5.650	0.295	0.104	-	-	0.399	6.049	20.908	1597.51
11-20	1597.51	20.908	(-) 1.724	19.084	0.562	-	0.130	0.094	3.066	-	3.852	0.764	-	1.140	1.904	5.756	0.269	0.104	-	-	0.373	6.129	13.055	1591.12
21-31	1591.12	13.055	(-) 1.242	11.813	0.490	-	0.143	0.049	3.308	-	3.990	0.597	-	0.551	1.148	5.138	0.210	-	-	-	0.210	5.348	6.465	1583.02
Sub Total			(-) 4.329		1.679	-	0.403	0.199	9.442	-	11.723	2.206	-	2.615	4.821	16.544	0.774	0.208	-	-	0.982	17.526		
April 91																								
1-10	1583.02	6.465	0.624	7.089	0.094	-	0.121	0.022	1.227	-	1.464	0.046	-	0.474	0.520	1.984	0.097	-	-	-	0.097	2.081	5.008	1580.36
11-20	1580.36	5.008	0.633	5.641	-	-	0.151	-	0.447	-	0.598	-	-	0.131	0.131	0.729	0.116	-	-	-	0.116	0.845	4.796	1579.40
21-30	1579.40	4.796	2.155	6.951	0.273	-	0.173	0.022	0.397	-	0.865	0.492	-	0.475	0.967	1.832	0.091	-	-	-	0.091	1.923	5.028	1580.40
Sub Total			3.412		0.367	-	0.445	0.044	2.071	-	2.927	0.538	-	1.080	1.618	4.545	0.304	-	-	-	0.304	4.849		
May 91																								
1-10	1580.40	5.028	1.536	6.564	0.086	-	0.166	0.033	0.351	-	0.636	0.067	-	0.501	0.568	1.204	0.119	-	-	-	0.119	1.323	5.241	1580.83
11-20	1580.83	5.241	2.758	7.999	-	-	0.171	-	0.026	-	0.197	-	-	-	-	0.197	0.128	-	-	-	0.128	0.325	7.674	1584.86
21-31	1584.86	7.674	4.063	11.737	-	-	0.162	-	-	-	0.162	-	-	-	-	0.162	0.175	-	-	-	0.175	0.337	11.400	1589.43
Sub Total			8.357		0.086	-	0.499	0.033	0.377	-	0.995	0.067	-	0.501	0.568	1.563	0.422	-	-	-	0.422	1.985		
ABSTRACT																								
Total for Khariff June to Nov.	1582.74	6.300	310.532 (309.782+0.750)	316.832	8.880	11.189	2.778	0.410	40.180	0.750	64.187	10.307	21.251	0.114	31.672	95.859	7.495	1.094	17.473	102.163	128.225	224.084	92.748	1627.10
Total for Rabi Dec.to May	1627.10	92.748	5.504 (4.254+1.250)	98.252	7.558	3.409	2.311	0.791	35.677	1.250	50.996	9.756	9.248	9.923	28.927	79.923	5.023	1.906	-	-	6.929	86.852	11.400	1589.43
Grand total Jun to May	1582.74	6.300	316.036 (314.036+2.000)	322.336	16.438	14.598	5.089	1.201	75.857	2.000	115.183	20.063	30.499	10.037	60.599	175.782	12.518	3.000	17.473	102.163	135.154	310.936	11.400	1589.43

Note:- The inflows includes 2.000 TMCft. debit made towards Lift Irrigation Schemes on the periphery of TB Reservoir (Vide Board's letter No. 5031 / B-1 / 88 dt. 13-4-1989.

PERFORMANCE OF TUNGABHADRA RESERVOIR FOR THE PERIOD FROM 1-6-1991 TO 31-5-1992 (1991 - 92)

(BASED ON CAPACITY ELEVATION TABLE OF 1981 SURVEYS). (THE DRAWALS ARE INCLUSIVE OF PRO-RATA TRANSMISSION LOSSES).

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopa-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Irrign. drawals Col. 12+16	ration				losses Tmcft. Col. 18 to 21	outflow Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
June 91																								
1-10	1589.43	11.400	10.928	22.328	-	-	0.106	0.057	-	-	0.163	-	-	-	-	0.163	0.150	-	-	-	0.150	0.313	22.015	1598.30
11-20	1598.30	22.015	29.050	51.065	-	-	0.101	0.060	0.073	-	0.234	-	-	-	-	0.234	0.369	-	-	-	0.369	0.603	50.462	1613.20
21-30	1613.20	50.462	14.074	64.536	0.119	-	0.145	0.005	0.371	-	0.640	0.109	-	-	0.109	0.749	0.365	-	-	-	0.365	1.114	63.422	1618.08
Sub Total			54.052		0.119	-	0.352	0.122	0.444	-	1.037	0.109	-	-	0.109	1.146	0.884	-	-	-	0.884	2.030		
July 91																								
1-10	1618.08	63.422	16.326	79.748	0.389	-	0.171	0.027	1.134	-	1.721	0.412	-	-	0.412	2.133	0.310	-	-	-	0.310	2.443	77.306	1622.60
11-20	1622.60	77.306	38.770	116.076	0.454	0.428	0.172	0.026	2.617	-	3.697	0.470	1.127	-	1.597	5.294	0.416	-	-	-	0.416	5.710	110.366	1631.70
21-31	1631.70	110.366	57.940	168.306	0.743	1.247	0.190	0.038	3.009	-	5.227	0.511	1.581	-	2.092	7.319	0.541	-	5.049	43.826	49.416	56.735	111.571	1632.00
Sub Total			113.036		1.586	1.675	0.533	0.091	6.760	-	10.645	1.393	2.708	-	4.101	14.746	1.267	-	5.049	43.826	50.142	64.888		
Aug 91																								
1-10	1632.00	111.571	56.054	167.625	0.670	1.176	0.147	0.052	2.638	-	4.683	0.633	1.647	-	2.280	6.963	0.397	-	5.188	39.807	45.392	52.355	115.270	1632.90
11-20	1632.90	115.270	56.136	171.406	0.664	1.115	0.172	0.044	2.605	-	4.600	0.730	1.808	-	2.538	7.138	0.349	-	5.231	47.237	52.817	59.955	111.451	1631.97
21-31	1631.97	111.451	45.888	157.339	0.727	1.156	0.190	0.038	2.866	-	4.977	0.833	1.969	-	2.802	7.779	0.520	0.052	5.635	28.412	34.619	42.398	114.941	1632.82
Sub Total			158.078		2.061	3.447	0.509	0.134	8.109	-	14.260	2.196	5.424	-	7.620	21.880	1.266	0.052	16.054	115.456	132.828	154.708		
Sept 91																								
1-10	1632.82	114.941	10.930	125.871	0.668	1.116	0.173	0.017	2.606	-	4.580	0.645	1.828	-	2.473	7.053	0.651	0.114	3.318	-	4.083	11.136	114.735	1632.77
11-20	1632.77	114.735	8.221	122.956	0.664	1.106	0.173	0.052	2.712	-	4.707	0.777	1.918	0.286	2.981	7.688	0.561	0.095	-	-	0.656	8.344	114.612	1632.74
21-30	1632.74	114.612	5.133	119.745	0.538	0.658	0.173	0.031	2.886	-	4.286	0.687	1.829	-	2.516	6.802	0.427	-	-	-	0.427	7.229	112.516	1632.23
Sub Total			24.284		1.870	2.880	0.519	0.100	8.204	-	13.573	2.109	5.575	0.286	7.970	21.543	1.639	0.209	3.318	-	5.166	26.709		
Oct. 91																								
1-10	1632.23	112.516	11.435	123.951	0.639	0.948	0.173	0.026	2.929	-	4.715	0.768	1.932	-	2.700	7.415	0.568	0.105	0.388	-	1.061	8.476	115.475	1632.95
11-20	1632.95	115.475	6.046	121.521	0.648	1.077	0.173	0.026	2.928	-	4.852	0.792	1.980	-	2.772	7.624	0.541	0.095	0.046	-	0.682	8.306	113.215	1632.40
21-31	1632.40	113.215	4.071 (3.821+0.250)	117.286	0.719	1.185	0.191	0.028	2.982	0.250	5.355	0.887	2.141	-	3.028	8.383	0.602	0.105	-	-	0.707	9.090	108.196	1631.16
Sub Total			21.552 (21.302+0.250)		2.006	3.210	0.537	0.080	8.839	0.250	14.922	2.447	6.053	-	8.500	23.422	1.711	0.305	0.434	-	2.450	25.872		
Nov. 91																								
1-10	1631.16	108.196	4.183 (3.933+0.250)	112.379	0.422	0.476	0.173	0.026	2.710	0.250	4.057	0.762	1.869	-	2.631	6.688	0.350	0.066	-	-	0.416	7.104	105.275	1630.42
11-20	1630.42	105.275	1.891 (1.641+0.250)	107.166	0.422	0.869	0.157	0.026	2.647	0.250	4.371	0.733	1.692	-	2.425	6.796	0.342	0.086	-	-	0.428	7.224	99.942	1629.04
21-30	1629.04	99.942	2.336 (2.086+0.250)	102.278	0.540	1.036	0.173	0.031	1.070	0.250	3.100	0.737	1.188	-	1.925	5.025	0.451	0.086	-	-	0.537	5.562	96.716	1628.18
Sub Total			8.410 (7.660+0.750)		1.384	2.381	0.503	0.083	6.427	0.750	11.528	2.232	4.749	-	6.981	18.509	1.143	0.238	-	-	1.381	19.890		
Total for Khariff			379.412 (378.412+1.000)		9.026	13.593	2.953	0.610	38.783	1.000	65.965	10.486	24.509	0.286	35.281	101.246	7.910	0.804	24.855	159.282	192.851	294.097		

Total for Khariff	379.412 (378.412+1.000)	9.026	13.593	2.953	0.610	38.783	1.000	65.965	10.486	24.509	0.286	35.281	101.246	7.910	0.804	24.855	159.282	192.851	294.097		

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total Irrign. drawals	Evopa-ration	S.L.	E.P.G.	Spill	Total losses	Total outflow	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Col. 12+16					Tmcft. Col. 18 to 21	Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Dec. 91																								
1-10	1628.18	96.716	1.169 (0.919+0.250)	97.635	0.464	0.196	0.173	0.052	1.112	0.250	2.247	0.704	0.656	0.494	1.854	4.101	0.474	0.086	-	-	0.560	4.661	93.224	1627.23
11-20	1627.23	93.224	(-) 0.012	93.212	0.312	0.409	0.017	0.041	2.188	-	2.967	0.694	0.799	0.473	1.966	4.933	0.530	0.086	-	-	0.616	5.549	87.662	1625.67
21-31	1625.67	87.662	(-) 0.448	87.214	0.644	1.050	-	0.038	3.197	-	4.926	0.799	0.902	0.236	1.937	6.863	0.523	0.095	-	-	0.618	7.481	79.733	1623.34
Sub Total			0.709 (0.459+0.250)		1.420	1.655	0.190	0.131	6.497	0.250	10.140	2.197	2.357	1.203	5.757	15.897	1.527	0.267	-	-	1.794	17.691		
Jan. 92																								
1-10	1623.34	79.733	(-) 0.714 (-0.964+0.250)	79.019	0.633	0.102	-	0.035	2.972	0.250	3.992	0.753	0.057	0.981	1.791	5.783	0.432	0.104	-	-	0.536	6.319	72.700	1621.16
11-20	1621.16	72.700	(-) 0.915 (-1.165+0.250)	71.785	0.595	0.138	0.101	0.034	2.881	0.250	3.999	0.779	0.216	1.004	1.999	5.998	0.408	0.152	-	-	0.560	6.558	65.227	1618.70
21-31	1618.70	65.227	(-) 1.813	63.414	0.719	0.936	0.190	0.057	3.270	-	5.172	0.895	1.564	0.684	3.143	8.315	0.437	0.115	-	-	0.552	8.867	54.547	1614.82
Sub Total			(-) 3.442 (-3.942+0.500)		1.947	1.176	0.291	0.126	9.123	0.500	13.163	2.427	1.837	2.669	6.933	20.096	1.277	0.371	-	-	1.648	21.744		
Feb. 92																								
1-10	1614.82	54.547	(-) 0.897 (-1.147+0.250)	53.650	0.653	0.023	0.173	0.090	3.059	0.250	4.248	0.812	0.505	1.021	2.338	6.586	0.346	0.104	-	-	0.450	7.036	46.614	1611.60
11-20	1611.60	46.614	(-) 1.336	45.278	0.648	-	0.176	0.091	3.069	-	3.981	0.807	-	0.908	1.715	5.696	0.369	0.104	-	-	0.473	6.169	39.109	1608.23
21-28	1608.23	39.109	(-) 1.006	38.103	0.586	-	0.156	0.084	2.762	-	3.588	0.737	-	0.948	1.685	5.273	0.290	0.094	-	-	0.384	5.657	32.446	1604.82
Sub Total			(-) 3.239 (-4.092+0.250+0.513(BA)		1.887	0.023	0.502	0.265	8.890	0.250	11.817	2.356	0.505	2.877	5.738	17.555	1.005	0.302	-	-	1.307	18.862		
Mar. 92																								
1-10	1604.82	32.446	(-) 2.045	30.401	0.666	-	0.173	0.095	3.066	-	4.000	0.795	-	1.382	2.177	6.177	0.314	0.104	-	-	0.418	6.595	23.806	1599.54
11-20	1599.54	23.806	(-) 2.464	21.342	0.612	-	0.169	0.095	3.067	-	3.943	0.787	-	1.410	2.197	6.140	0.273	0.104	-	-	0.377	6.517	14.825	1592.75
21-31	1592.75	14.825	(-) 1.355	13.470	0.487	-	0.180	0.074	3.368	-	4.109	0.491	-	0.836	1.327	5.436	0.192	-	-	-	0.192	5.628	7.843	1585.10
Sub Total			(-) 5.864 (-7.203+1.339 (BA)		1.765	-	0.522	0.264	9.501	-	12.052	2.073	-	3.628	5.701	17.753	0.779	0.208	-	-	0.987	18.740		
April 92																								
1-10	1585.10	7.843	1.819	9.662	0.374	-	0.173	0.021	3.059	-	3.627	0.095	-	0.023	0.118	3.745	0.170	-	-	-	0.170	3.915	5.747	1581.78
11-20	1581.78	5.747	0.222	5.969	0.343	-	0.173	0.022	0.932	-	1.470	-	-	0.380	0.380	1.850	0.108	0.086	-	-	0.194	2.044	3.925	1576.95
21-30	1576.95	3.925	0.338	4.263	0.159	-	0.173	0.018	0.287	-	0.637	0.295	-	0.141	0.436	1.073	0.077	-	-	-	0.077	1.150	3.113	1574.65
Sub Total			2.379 (-0.480+2.859 (BA)		0.876	-	0.519	0.061	4.278	-	5.734	0.390	-	0.544	0.934	6.668	0.355	0.086	-	-	0.441	7.109		
May 92																								
1-10	1574.65	3.113	0.363	3.476	0.104	-	0.173	-	0.196	-	0.473	-				0.473	0.073	-	-	-	0.073	0.546	2.930	1574.08
11-20	1574.08	2.930	1.196	4.126	-	-	0.173	-	0.013	-	0.186	-	-	-	-	0.186	0.078	0.030	-	-	0.108	0.294	3.832	1576.90
21-31	1576.90	3.832	0.561	4.393	-	-	0.190	0.078	-	-	0.268	-	-	-	-	0.268	0.101	-	-	-	0.101	0.369	4.024	1577.20
Sub Total			2.120 (1.668+0.452 (BA)		0.104	-	0.536	0.078	0.209	-	0.927	-	-	-	-	0.927	0.252	0.030	-	-	0.282	1.209		

ABSTRACT

Total for Khariff June to Nov.	1589.43	11.400	379.412 (378.412+1.000)	390.812	9.026	13.593	2.953	0.610	38.783	1.000	65.965	10.486	24.509	0.286	35.281	101.246	7.910	0.804	24.855	159.282	192.851	294.097	96.716	1628.18
Total for Rabi Dec.to May	1628.18	96.716	(-) 7.337 (-13.500+1.000+5.163 (BA)	89.379	7.999	2.854	2.560	0.925	38.498	1.000	53.833	9.443	4.699	10.921	25.063	78.896	5.195	1.264	-	-	6.459	85.355	4.024	1577.20
Grand total Jun to May	1589.43	11.400	372.075 (364.912+2.000+5.163 (BA)	383.475	17.025	16.447	5.513	1.535	77.281	2.000	119.798	19.929	29.208	11.207	60.344	180.142	13.105	2.068	24.855	159.282	199.310	379.452	4.024	1577.20

Note:- 1. The inflows includes 2.000 TMCft. debit made towards Lift Irrigation Schemes on the Periphery of TB Reservoir.(Vide Board's letter No. 5031/ B-1 / 88 dt. 13-4-1989.
2. B.A.:- Bhadra Assistance.

PERFORMANCE OF TUNGABHADRA RESERVOIR FOR THE PERIOD FROM 1-6-1992 TO 31-5-1993 (1992 - 93)

(BASED ON CAPACITY ELEVATION TABLE OF 1981 SURVEYS). (THE DRAWALS ARE INCLUSIVE OF PRO-RATA TRANSMISSION LOSSES).

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopa-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Irrign. drawals Col. 12+16	ration				losses Tmcft. Col. 18 to 21	outflow Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
June 92																								
1-10	1577.20	4.024	1.937	5.961	-	-	0.173	-	-	-	0.173	-	-	-	-	0.173	0.084	-	-	-	0.084	0.257	5.704	1581.70
11-20	1581.70	5.704	2.451	8.155	-	-	0.173	-	-	-	0.173	-	-	-	-	0.173	0.117	-	-	-	0.117	0.290	7.865	1585.13
21-30	1585.13	7.865	26.130	33.995	0.014	-	0.173	-	-	-	0.187	-	-	-	-	0.187	0.196	-	-	-	0.196	0.383	33.612	1605.45
Sub Total			30.518		0.014	-	0.519	-	-	-	0.533	-	-	-	-	0.533	0.397	-	-	-	0.397	0.930	47.181	
July .92																								
1-10	1605.45	33.612	22.511	56.123	0.434	-	0.173	0.005	1.263	-	1.875	0.369	-	-	0.369	2.244	0.355	-	-	-	0.355	2.599	53.524	1614.42
11-20	1614.42	53.524	5.072	58.596	0.454	0.244	0.173	0.034	3.058	-	3.963	0.427	-	-	0.427	4.390	0.477	-	-	-	0.477	4.867	53.729	1614.50
21-31	1614.50	53.729	68.542	122.271	0.776	1.234	0.179	0.038	3.294	-	5.521	0.588	1.035	0.241	1.864	7.385	0.575	0.114	0.982	3.532	5.203	12.588	109.683	1631.53
Sub Total			96.125	-	1.664	1.478	0.525	0.077	7.615	-	11.359	1.384	1.035	0.241	2.660	14.019	1.407	0.114	0.982	3.532	6.035	20.054		
Aug 92																								
1-10	1631.53	109.683	30.842	140.525	0.669	1.171	0.165	0.027	2.603	-	4.635	0.705	1.755	-	2.460	7.095	0.552	0.043	4.748	12.982	18.325	25.420	115.105	1632.86
11-20	1632.86	115.105	70.592	185.697	0.613	0.667	0.153	0.015	2.602	-	4.049	0.060	1.755	-	1.815	5.864	0.645	0.645	5.266	63.715	70.271	76.135	109.562	1631.50
21-31	1631.50	109.562	74.158	183.720	0.743	1.044	0.190	0.010	1.388	-	3.375	0.686	1.995	-	2.681	6.056	0.682	0.130	5.114	56.674	62.600	68.656	115.064	1632.85
Sub Total			175.592		2.025	2.882	0.508	0.052	6.692	-	12.059	1.451	5.505	-	6.956	19.015	1.879	0.818	15.128	133.371	151.196	170.211		
Sept 92																								
1-10	1632.85	115.064	34.658	149.722	0.661	1.134	0.148	0.017	2.603	-	4.563	0.301	1.887	-	2.188	6.751	0.652	0.489	5.144	21.992	28.277	35.028	114.694	1632.76
11-20	1632.76	114.694	17.773	132.467	0.675	1.158	0.152	0.024	2.603	-	4.612	0.719	1.866	-	2.585	7.197	0.590	0.086	3.862	5.134	9.672	16.869	115.598	1632.98
21-30	1632.98	115.598	7.454	123.052	0.637	1.167	0.136	0.023	2.965	-	4.928	0.752	1.409	-	2.161	7.089	0.570	0.259	0.275	-	1.104	8.193	114.859	1632.80
Sub Total			59.885		1.973	3.459	0.436	0.064	8.171	-	14.103	1.772	5.162	-	6.934	21.037	1.812	0.834	9.281	27.126	39.053	60.090		
Oct. 92																								
1-10	1632.80	114.859	31.213	146.072	0.664	0.755	0.114	0.015	2.616	-	4.164	0.852	1.967	-	2.819	6.983	0.534	0.103	4.915	18.843	24.395	31.378	114.694	1632.76
11-20	1632.76	114.694	8.722	123.416	0.654	0.760	0.173	0.009	2.826	-	4.422	0.827	2.019	-	2.846	7.268	0.663	0.152	1.197	0.264	2.276	9.544	113.872	1632.56
21-31	1632.56	113.872	5.972 (5.722+0.250)	119.844	0.724	1.267	0.190	0.025	3.228	0.250	5.684	0.905	2.059	-	2.964	8.648	0.676	0.114	-	-	0.790	9.438	110.406	1631.71
Sub Total			45.907 (45.657+0.250)		2.042	2.782	0.477	0.049	8.670	0.250	14.270	2.584	6.045	-	8.629	22.899	1.873	0.369	6.112	19.107	27.461	50.360		
Nov. 92																								
1-10	1631.71	110.406	2.903 (2.653+0.250)	113.309	0.661	1.018	0.171	0.026	2.683	0.250	4.809	0.816	1.921	-	2.737	7.546	0.501	0.104	-	-	0.605	8.151	105.158	1630.39
11-20	1630.39	105.158	74.510 (74.260+0.250)	179.668	0.538	0.450	0.110	0.026	2.266	0.250	3.640	0.748	1.802	-	2.550	6.190	0.333	0.234	0.653	66.040	67.260	73.450	106.218	1630.66
21-30	1630.66	106.218	35.304 (35.054+0.250)	141.522	0.155	0.023	0.018	-	0.714	0.250	1.160	0.662	1.600	-	2.262	3.422	0.377	0.017	3.369	18.739	22.502	25.924	115.598	1632.98
Sub Total			112.717 (111.967+0.750)		1.354	1.491	0.299	0.052	5.663	0.750	9.609	2.226	5.323	-	7.549	17.158	1.211	0.355	4.022	84.779	90.367	107.525		
Total for Khariff			520.744 (519.744+1.000)		9.072	12.092	2.764	0.294	36.711	1.000	61.933	9.417	23.070	0.241	32.728	94.661	8.579	2.490	35.525	267.915	314.509	409.170		

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopa-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Irrign. drawals Col. 12+16	ration				losses Tmcft. Col. 18 to 21	outflow Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Dec. 92																								
1-10	1632.98	115.598	5.985 (5.735+0.2500	121.583	0.267	0.284	0.135	0.015	1.279	0.250	2.230	0.729	1.675	-	2.404	4.634	0.486	-	1.111	-	1.597	6.231	115.352	1632.92
11-20	1632.92	115.352	2.844	118.196	0.484	0.975	0.172	0.026	2.268	-	3.925	0.901	1.752	-	2.653	6.578	0.366	0.083	-	-	0.449	7.027	111.169	1631.90
21-31	1631.90	111.169	1.736	112.905	0.722	1.152	0.012	0.012	2.660	-	4.558	0.887	1.928	-	2.815	7.373	0.414	-	-	-	0.414	7.787	105.118	1630.98
Sub Total			10.565 (10.315+0.250)		1.473	2.411	0.319	0.053	6.207	0.250	10.713	2.517	5.355	-	7.872	18.585	1.266	0.083	1.111	-	2.460	21.045		
Jan. 93																								
1-10	1630.38	105.118	0.563 (0.313+0.250)	105.681	0.676	0.954	-	0.017	2.896	0.250	4.793	0.840	1.677	0.517	3.034	7.827	0.472	0.104	-	-	0.576	8.403	97.278	1628.33
11-20	1628.33	97.278	0.103 (-0.147+0.250)	97.381	0.679	1.024	-	0.035	3.054	0.250	5.042	0.851	1.499	0.580	2.930	7.972	0.386	0.104	-	-	0.490	8.462	88.919	1626.03
21-31	1626.03	88.919	-0.060	88.859	0.728	0.645	0.086	0.076	3.427	-	4.962	0.979	1.459	0.978	3.416	8.378	0.468	0.114	-	-	0.582	8.960	79.899	1623.39
Sub Total			0.606 (0.106+0.500)		2.083	2.623	0.086	0.128	9.377	0.500	14.797	2.670	4.635	2.075	9.380	24.177	1.326	0.322	-	-	1.648	25.825		
Feb. 93																								
1-10	1623.39	79.899	-1.366 (-1.616+0.250)	78.533	0.684	1.053	0.152	0.104	3.109	0.250	5.352	0.852	0.906	1.039	2.797	8.149	0.403	0.104	-	-	0.507	8.656	69.877	1620.25
11-20	1620.25	69.877	-0.569	69.308	0.690	1.064	0.173	0.073	3.110	-	5.110	0.849	-	0.854	1.703	6.813	0.441	0.104	-	-	0.545	7.358	61.950	1617.56
21-28	1617.56	61.950	-0.916	61.034	0.563	0.912	0.163	0.089	2.493	-	4.220	0.680	-	0.885	1.565	5.785	0.312	0.083	-	-	0.395	6.180	54.854	1614.94
Sub Total			-2.851 (-3.101+0.250)		1.937	3.029	0.488	0.266	8.712	0.250	14.682	2.381	0.906	2.778	6.065	20.747	1.156	0.291	-	-	1.447	22.194		
Mar. 93																								
1-10	1614.94	54.854	-1.212	53.642	0.685	1.195	0.217	0.100	3.115	-	5.312	0.873	-	1.563	2.436	7.748	0.347	0.104	-	-	0.451	8.199	45.443	1611.10
11-20	1611.10	45.443	-1.522	43.921	0.700	1.253	0.216	0.103	3.115	-	5.387	0.857	-	1.699	2.556	7.943	0.336	0.104	-	-	0.440	8.383	35.538	1606.46
21-31	1606.46	35.538	-2.183	33.355	0.791	0.483	0.238	0.108	3.427	-	5.047	0.930	-	1.792	2.722	7.769	0.351	0.114	-	-	0.465	8.234	25.121	1600.42
Sub Total			-4.917		2.176	2.931	0.671	0.311	9.657	-	15.746	2.660	-	5.054	7.714	23.460	1.034	0.322	-	-	1.356	24.816		
April 93																								
1-10	1600.42	25.121	-2.296	22.825	0.711	-	0.216	0.106	3.115	-	4.148	0.844	-	1.454	2.298	6.446	0.256	0.104	-	-	0.360	6.806	16.019	1593.77
11-20	1593.77	16.019	-2.185	13.834	0.684	-	0.216	0.060	2.984	-	3.944	0.831	-	0.581	1.412	5.356	0.201	0.104	-	-	0.305	5.661	8.173	1585.55
21-30	1585.55	8.173	-0.027	8.146	0.575	-	0.216	0.040	1.524	-	2.355	0.689	-	0.223	0.912	3.267	0.104	-	-	-	0.104	3.371	4.775	1579.02
Sub Total			-4.508		1.970	-	0.648	0.206	7.623	-	10.447	2.364	-	2.258	4.622	15.069	0.561	0.208	-	-	0.769	15.838		
May 93																								
1-10	1579.02	4.775	0.298	5.073	0.006	-	0.216	-	0.282	-	0.504	-	-	-	-	0.504	0.095	-	-	-	0.095	0.599	4.474	1578.30
11-20	1578.30	4.474	0.562	5.036	-	-	0.216	-	0.115	-	0.331	-	-	-	-	0.331	0.085	-	-	-	0.085	0.416	4.620	1578.64
21-31	1578.64	4.620	1.110	5.730	-	-	0.238	0.024	-	-	0.262	-	-	-	-	0.262	0.088	-	-	-	0.088	0.350	5.380	1581.10
Sub Total			1.970		0.006	-	0.670	0.024	0.397	-	1.097	-	-	-	-	1.097	0.268	-	-	-	0.268	1.365		

ABSTRACT

Total for Khariff June to Nov.	1577.20	4.024	520.744 (519.744+1.000)	524.768	9.072	12.092	2.764	0.294	36.711	1.000	61.933	9.417	23.070	0.241	32.728	94.661	8.579	2.490	35.525	267.915	314.509	409.170	115.598	1632.98
Total for Rabi Dec.to May	1632.98	115.598	0.865 (-0.135+1.000)	116.463	9.645	10.994	2.882	0.988	41.973	1.000	67.482	12.592	10.896	12.165	35.653	103.135	5.611	1.226	1.111	-	7.948	111.083	5.380	1581.10
Grand total Jun to May	1577.20	4.024	521.609 (519.609+2.000)	525.633	18.717	23.086	5.646	1.282	78.684	2.000	129.415	22.009	33.966	12.406	68.381	197.796	14.190	3.716	36.636	267.915	322.457	520.253	5.380	1581.10

Details of spillage in November 1992 floods (13 days)

18-11-1992	..	10.766 TMCft.
19-11-1992	..	30.678 TMCft.
20-11-1992	..	24.504 TMCft.
		66.04 TMCft.
21-11-1992 to 30-11-1992		18.793 TMCft.
	Total	84.779 TMCft.

Note:- 1) The inflows includes 2.000 TMCft. etc. debit made towards Lift Irrigation Schemes on the Periphery of TB Reservoir.

PERFORMANCE OF TUNGABHADRA RESERVOIR FOR THE PERIOD FROM 1-6-1993 TO 31-5-1994 (1993 - 94)

(BASED ON CAPACITY ELEVATION TABLE OF 1981 SURVEYS). (THE DRAWALS ARE INCLUSIVE OF PRO-RATA TRANSMISSION LOSSES).

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total Irrign. drawals	Evopa-ration	S.L.	E.P.G.	Spill	Total losses	Total outflow	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Col. 12+16					Tmcft. Col. 18 to 21	Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
June 93																								
1-10	1581.10	5.380	1.351	6.731	-	-	0.216	-	-	-	0.216	-	-	-	-	0.216	0.097	-	-	-	0.097	0.313	6.418	1582.94
11-20	1582.94	6.418	1.503	7.921	-	-	0.216	-	-	-	0.216	-	-	-	-	0.216	0.086	-	-	-	0.086	0.302	7.619	1584.78
21-30	1584.78	7.619	7.704	15.323	0.335	-	0.216	-	0.633	-	1.184	-	-	-	-	1.184	0.154	-	-	-	0.154	1.338	13.985	1592.00
Sub Total			10.558	10.558	0.335	-	0.648	-	0.633	-	1.616	-	-	-	-	1.616	0.337	-	-	-	0.337	1.953		
July 93																								
1-10	1592.00	13.985	5.679	19.664	0.420	-	0.203	0.032	2.767	-	3.422	0.183	-	-	0.183	3.605	0.177	0.468	-	-	0.645	4.250	15.414	1593.26
11-20	1593.26	15.414	33.507	48.921	0.642	0.099	0.193	0.071	2.964	-	3.969	0.582	-	1.416	1.998	5.967	0.187	0.009	-	-	0.196	6.163	42.758	1609.92
21-31	1609.92	42.758	23.240	65.998	0.740	0.945	0.175	0.109	3.366	-	5.335	0.722	0.541	1.852	3.115	8.450	0.256	0.175	-	-	0.431	8.881	57.117	1615.80
Sub Total			62.426	-	1.802	1.044	0.571	0.212	9.097	-	12.726	1.487	0.541	3.268	5.296	18.022	0.620	0.652	-	-	1.272	19.294		
Aug 93																								
1-10	1615.80	57.117	37.993	95.110	0.666	0.405	0.216	0.083	2.978	-	4.348	0.712	0.484	1.213	2.409	6.757	0.315	0.167	-	-	0.482	7.239	87.871	1625.73
11-20	1625.73	87.871	39.551	127.422	0.697	-	0.152	0.057	2.919	-	3.825	0.729	-	0.153	0.882	4.707	0.350	0.104	0.507	9.361	10.322	15.029	112.393	1632.20
21-31	1632.20	112.393	38.592	150.985	0.758	1.069	0.151	0.019	3.092	-	5.089	0.869	0.704	-	1.573	6.662	0.378	0.325	2.866	27.087	30.656	37.318	113.667	1632.51
Sub Total			116.136	-	2.121	1.474	0.519	0.159	8.989	-	13.262	2.310	1.188	1.366	4.864	18.126	1.043	0.596	3.373	36.448	41.460	59.586		
Sept 93																								
1-10	1632.51	113.667	17.587	113.254	0.623	0.867	0.030	0.017	2.685	-	4.222	0.837	1.632	-	2.469	6.691	0.312	0.239	3.589	5.277	9.417	16.108	115.146	1632.87
11-20	1632.87	115.146	8.396	123.542	0.685	1.230	0.203	0.017	2.392	-	4.527	0.855	1.683	0.125	2.663	7.190	0.475	0.104	0.749	0.638	1.966	9.156	114.366	1632.68
21-30	1632.68	114.366	4.860	119.226	0.654	1.165	0.126	0.034	2.987	-	4.966	0.855	1.778	0.314	2.947	7.913	0.433	0.112	-	-	0.545	8.458	110.768	1631.80
Sub Total			30.823	-	1.962	3.262	0.359	0.068	8.064	-	13.715	2.547	5.093	0.439	8.079	21.794	1.220	0.455	4.338	5.915	11.928	33.722		
Oct. 93																								
1-10	1631.80	110.768	11.050	121.818	0.662	1.154	0.205	0.020	3.034	-	5.075	0.880	1.857	0.107	2.844	7.919	0.399	0.121	-	-	0.520	8.439	113.379	1632.44
11-20	1632.44	113.379	39.702	153.081	0.547	0.777	0.155	0.017	1.918	-	3.414	0.799	1.891	-	2.690	6.104	0.220	0.158	3.855	30.597	34.830	40.934	112.147	1632.14
21-31	1632.14	112.147	33.029 (32.779+0.250)	144.926	0.578	0.760	0.229	0.019	2.977	0.250	4.813	0.919	2.015	-	2.934	7.747	0.443	0.124	4.206	17.181	21.954	29.451	115.475	1632.15
Sub Total			83.781 (83.531+0.250)		1.787	2.691	0.589	0.056	7.929	0.250	13.302	2.598	5.763	0.107	8.468	21.770	1.062	0.403	8.061	47.778	57.304	78.824		
Nov. 93																								
1-10	1632.95	115.475	4.051 (3.801+0.250)	119.276	0.657	1.137	0.216	0.038	2.895	0.250	5.193	0.881	1.832	0.214	2.927	8.120	0.415	0.104	0.039	-	0.558	8.678	110.848	1631.82
11-20	1631.82	110.848	5.472 (5.222+0.250)	116.070	0.648	1.150	0.181	0.048	2.292	0.250	4.569	0.852	1.857	0.322	3.031	7.600	0.259	0.104	-	-	0.363	7.963	108.357	1631.20
21-30	1631.20	108.357	2.243 (1.993+0.250)	110.350	0.651	1.140	0.216	0.017	2.334	0.250	4.608	0.849	1.773	-	2.622	7.230	0.444	0.106	-	-	0.550	7.780	102.820	1629.79
Sub Total			11.766 (11.016+0.750)	-	1.956	3.427	0.613	0.103	7.521	0.750	14.370	2.582	5.462	0.536	8.580	22.950	1.118	0.314	0.039	-	1.471	24.421		
Total for Khariff			315.490 (314.490+1.000)	-	9.963	11.898	3.299	0.598	42.233	1.000	68.991	11.524	18.047	5.716	35.287	104.278	5.400	2.420	15.811	90.141	113.772	218.050		

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopa-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Irrign. drawals Col. 12+16	ration				losses Tmcft. Col. 18 to 21	outflow Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Dec. 93																								
1-10	1629.79	102.820	4.746 (4.496+0.250)	107.566	0.564	0.750	0.216	0.017	2.213	0.250	4.010	0.823	1.144	-	1.967	5.977	0.261	0.120	-	-	0.381	6.358	101.208	1629.37
11-20	1629.37	101.208	3.168	104.376	0.386	0.605	0.022	0.007	1.844	-	2.864	0.851	1.903	-	2.754	5.618	0.295	0.136	-	-	0.431	6.049	98.327	1628.61
21-31	1628.61	98.327	0.120	98.447	0.707	0.999	-	-	2.752	-	4.458	0.923	2.072	-	2.995	7.453	0.337	0.132	-	-	0.469	7.922	90.525	1626.48
Sub Total			8.034 (7.785+0.250)		1.657	2.354	0.238	0.024	6.809	0.250	11.332	2.597	5.119	-	7.716	19.048	0.893	0.388	-	-	1.281	20.329		
Jan. 94																								
1-10	1626.48	90.525	(-) 0.275 (-0.525+0.250)	90.250	0.650	0.912	-	-	2.880	0.250	4.692	0.844	1.870	-	2.714	7.406	0.338	0.104	-	-	0.442	7.848	82.402	1624.14
11-20	1624.14	82.402	(-) 0.428 (-0.678+0.250)	81.974	0.680	1.014	-	0.016	2.967	0.250	4.927	0.871	1.850	-	2.721	7.648	0.318	0.104	-	-	0.422	8.070	73.904	1621.54
21-31	1621.54	73.904	(-) 1.540	72.364	0.771	0.950	0.189	0.038	3.346	-	5.294	0.953	1.951	-	2.904	8.198	0.367	0.104	-	-	0.471	8.679	63.685	1618.17
Sub Total			(-) 2.243 (-2.743+0.500)	-	2.101	2.876	0.189	0.054	9.193	0.500	14.913	2.668	5.671	-	8.339	23.252	1.023	0.322	-	-	1.345	24.597		
Feb. 94																								
1-10	1618.17	63.685	(-) 1.637 (-1.887+0.250)	62.048	0.693	0.575	0.173	0.035	3.077	0.250	4.803	0.879	1.284	-	2.163	6.966	0.329	0.104	-	-	0.433	7.899	54.649	1614.86
11-20	1614.86	54.649	(-) 1.720	52.929	0.695	0.388	0.173	0.035	3.091	-	4.382	0.877	1.897	-	2.774	7.156	0.320	0.104	-	-	0.424	7.580	45.349	1611.06
21-28	1611.06	45.349	(-) 1.478	43.871	0.602	0.339	0.138	0.043	2.448	-	3.570	0.769	1.274	0.337	2.380	5.950	0.251	0.083	-	-	0.334	6.284	37.587	1607.49
Sub Total			(-) 4.835 (-5.085+0.250)	-	1.990	1.302	0.484	0.113	8.616	0.250	12.755	2.525	4.455	0.337	7.317	20.072	0.900	0.291	-	-	1.191	21.263		
Mar. 94																								
1-10	1607.49	37.587	(-) 1.234	36.353	0.777	0.101	0.173	0.061	3.042	-	4.154	0.834	0.349	0.239	1.422	5.576	0.330	0.164	-	-	0.494	6.070	30.283	1603.60
11-20	1603.60	30.283	(-) 2.062	28.221	0.841	-	0.173	0.063	2.958	-	4.035	0.118	0.610	0.823	1.551	5.586	0.263	0.228	-	-	0.491	6.077	22.144	1598.39
21-31	1598.39	22.144	(-) 1.298	20.846	0.844	0.073	0.190	0.077	0.843	-	2.027	0.112	-	0.998	1.110	3.137	0.250	0.114	-	-	0.364	3.501	17.345	1594.84
Sub Total			(-) 4.594	-	2.462	0.174	0.536	0.201	6.843	-	10.216	1.064	0.959	2.060	4.083	14.299	0.843	0.506	-	-	1.349	15.648		
April 94																								
1-10	1594.84	17.345	(-) 1.949	15.396	0.856	-	0.173	0.074	2.568	-	3.671	0.110	-	1.117	1.227	4.898	0.182	0.104	-	-	0.286	5.184	10.212	1588.11
11-20	1588.11	10.212	0.514	10.726	0.408	-	0.173	0.035	2.823	-	3.439	0.075	-	0.213	0.288	3.727	0.104	0.062	-	-	0.166	3.893	6.833	1583.60
21-30	1583.60	6.833	(-) 0.072	6.761	0.110	-	0.173	-	1.050	-	1.333	-	-	-	-	1.333	0.112	-	-	-	0.112	1.445	5.316	1580.98
Sub Total			(-) 1.507	-	1.374	-	0.519	0.109	6.441	-	8.443	0.185	-	1.330	1.515	9.958	0.398	0.166	-	-	0.564	10.522		
May 94																								
1-10	1580.98	5.316	(-) 0.215	5.101	0.292	-	0.172	-	0.259	-	0.723	-	-	-	-	0.723	0.097	-	-	-	0.097	0.820	4.281	1577.84
11-20	1577.84	4.281	(-) 0.433	3.848	-	-	0.173	-	0.037	-	0.210	-	-	-	-	0.210	0.084	-	-	-	0.084	0.294	3.554	1575.95
21-31	1575.95	3.554	0.171	3.725	-	-	0.190	0.022	-	-	0.212	-	-	0.460	0.460	0.672	0.062	-	-	-	0.062	0.734	2.991	1574.27
Sub Total			0.477	-	0.292	-	0.535	0.022	0.296	-	1.145	-	-	0.460	0.460	1.605	0.243	-	-	-	0.243	1.848		
ABSTRACT																								
Total for Khariff June to Nov.	1581.10	5.380	315.490 (314.490+1.000)	320.870	9.963	11.898	3.299	0.598	42.233	1.000	68.991	11.524	18.047	5.716	35.287	104.278	5.400	2.420	15.811	90.141	113.772	208.050	102.820	1629.79
Total for Rabi Dec.to May	1629.79	102.820	(-) 5.622 (-6.622+1.000)	97.198	9.876	6.706	2.501	0.523	38.198	1.000	58.804	9.039	16.204	4.187	29.430	88.234	4.300	1.673	-	-	5.973	94.207	2.991	1574.27
Grand total Jun to May	1581.10	5.380	309.868 (307.868+2.000)	315.248	19.839	18.604	5.800	1.121	80.431	2.000	127.795	20.563	34.251	9.903	64.717	192.512	9.700	4.093	15.811	90.141	119.745	312.257	2.991	1574.27

PERFORMANCE OF TUNGABHADRA RESERVOIR FOR THE PERIOD FROM 1-6-1994 TO 31-5-1995 (1994 - 95)

(BASED ON CAPACITY ELEVATION TABLE OF 1981 SURVEYS). (THE DRAWALS ARE INCLUSIVE OF PRO-RATA TRANSMISSION LOSSES).

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopa-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Irrign. drawals Col. 12+16	ration				losses Tmcft. Col. 18 to 21	outflow Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
June 94																								
1-10	1574.27	2.991	0.668	3.659	-	-	0.173	0.130	-	-	0.303	-	-	-	-	0.303	0.044	-	-	-	0.044	0.347	3.312	1575.25
11-20	1575.25	3.312	10.523	13.835	-	-	0.173	-	-	-	0.173	-	-	-	-	0.173	0.178	-	-	-	0.178	0.251	13.584	1591.62
21-30	1591.62	13.584	11.395	24.979	-	-	0.173	-	-	-	0.173	-	-	-	-	0.173	0.172	-	-	-	0.172	0.345	24.634	1600.10
Sub Total			22.586		-	-	0.519	0.130	-	-	0.649	-	-	-	-	0.649	0.294	-	-	-	0.294	0.943		
July 94																								
1-10	1600.10	24.634	42.619	67.253	0.224	-	0.173	0.011	-	-	0.408	-	-	-	-	0.408	0.240	0.355	-	-	0.595	1.003	66.250	1619.05
11-20	1619.05	66.250	114.292	180.542	0.674	0.153	0.173	0.026	0.197	-	1.223	0.063	0.244	-	0.307	1.530	0.292	0.139	0.976	67.762	69.169	70.699	109.843	1631.57
21-31	1631.57	109.843	101.598	211.441	0.758	1.266	0.190	0.029	1.537	-	3.780	0.081	0.076	-	0.157	3.937	0.379	0.062	5.476	90.538	96.455	100.392	111.049	1631.87
Sub Total			258.509		1.656	1.419	0.536	0.066	1.734	-	5.411	0.144	0.320	-	0.464	5.875	0.911	0.556	6.452	158.300	166.219	172.094		
Aug 94																								
1-10	1631.87	111.049	62.211	173.260	0.672	1.201	0.173	0.020	2.694	-	4.760	0.089	0.670	-	0.759	5.519	0.451	0.099	5.458	46.792	52.800	58.319	114.941	1632.82
11-20	1632.82	114.941	17.574	132.515	0.687	1.089	0.216	0.017	2.905	-	4.914	0.108	0.537	-	0.645	5.559	0.420	0.458	4.938	5.911	11.727	17.286	115.229	1632.89
21-31	1632.89	115.229	42.604	157.833	0.747	0.901	0.238	0.019	3.197	-	5.102	0.116	0.879	-	0.995	6.097	0.428	0.419	5.476	30.842	37.165	43.262	114.571	1632.73
Sub Total			122.389		2.106	3.191	0.627	0.056	8.796	-	14.776	0.313	2.086	-	2.399	17.175	1.299	0.976	15.872	83.545	101.692	118.867		
Sept 94																								
1-10	1632.73	114.571	64.743	179.314	0.682	0.649	0.216	0.017	2.903	-	4.467	0.103	1.004	-	1.107	5.574	0.455	0.052	4.942	54.254	59.703	65.277	114.037	1632.60
11-20	1632.60	114.037	17.065	131.102	0.670	1.223	0.216	0.017	2.997	-	5.123	0.101	1.758	-	1.859	6.982	0.614	0.043	2.951	5.119	8.727	15.709	115.393	1632.93
21-30	1632.93	115.393	6.196	121.589	0.797	1.268	0.216	0.121	3.168	-	5.570	0.138	1.713	2.710	4.561	10.131	0.627	0.104	-	-	0.731	10.862	110.727	1631.79
Sub Total			88.004		2.149	3.140	0.648	0.155	9.068	-	15.160	0.342	4.475	2.710	7.527	22.687	1.696	0.199	7.893	59.373	69.161	91.848		
Oct. 94																								
1-10	1631.79	110.727	17.628	128.355	0.741	0.976	0.128	0.083	3.016	-	4.944	0.118	1.641	1.228	2.987	7.931	0.346	0.173	1.909	2.315	4.743	12.674	115.681	1633.00
11-20	1633.00	115.681	11.454	127.135	0.718	0.721	0.216	0.052	3.092	-	4.799	0.106	1.804	-	1.910	6.709	0.388	0.141	3.186	1.113	4.828	11.537	115.598	1632.98
21-31	1632.98	115.598	17.755 (17.505+0.250)	133.103	0.759	0.760	0.238	0.054	3.057	0.250	5.118	0.121	2.156	-	2.277	7.395	0.403	0.201	3.305	6.574	10.483	17.878	115.475	1632.95
Sub Total			46.837 (46.587+0.250)		2.218	2.457	0.582	0.189	9.165	0.250	14.861	0.345	5.601	1.228	7.174	22.035	1.137	0.515	8.400	10.002	20.054	42.089		
Nov. 94																								
1-10	1632.95	115.475	6.838 (6.588+0.250)	122.313	0.558	0.177	0.216	0.052	2.662	0.250	3.915	0.096	1.908	-	2.004	5.919	0.287	0.104	0.786	0.194	1.371	7.290	115.023	1632.84
11-20	1632.84	115.023	3.146 (2.896+0.250)	118.169	0.683	0.851	0.216	0.052	2.834	0.250	4.886	0.290	1.913	-	2.203	7.089	0.381	0.132	-	-	0.513	7.602	110.567	1631.75
21-30	1631.75	110.567	1.869 (1.619+0.250)	112.436	0.634	1.265	0.216	0.052	2.784	0.250	5.201	0.399	1.759	-	2.158	7.359	0.413	0.174	-	-	0.587	7.946	104.490	1630.22
Sub Total			11.853 (11.103+0.750)		1.875	2.293	0.648	0.156	8.280	0.750	14.002	0.785	5.580	-	6.365	20.367	1.081	0.410	0.786	0.194	2.471	22.838		
Total for Khariff			550.178 (549.178+1.000)		10.004	12.500	3.560	0.752	37.043	1.000	64.859	1.929	18.062	3.938	23.929	88.788	6.418	2.656	39.403	311.414	359.891	448.679		

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopa-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Irrign. drawals Col. 12+16	ration				losses Tmcft. Col. 18 to 21	outflow Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Dec. 94																								
1-10	1630.22	104.490	0.604 (0.354+0.250)	105.094	0.667	1.307	0.216	0.055	2.428	0.250	4.923	0.666	1.717	-	2.383	7.306	0.421	0.202	-	-	0.623	7.929	97.165	1628.30
11-20	1628.30	97.165	0.061	97.226	0.737	1.284	0.010	0.020	1.071	-	3.122	0.819	1.740	-	2.559	5.681	0.362	0.122	-	-	0.484	6.165	91.061	1626.63
21-31	1626.63	91.061	(-) 0.481	90.580	0.741	1.152	0.017	0.029	3.007	-	4.946	0.994	2.021	-	3.025	7.971	0.365	0.114	-	-	0.479	8.450	82.130	1624.06
Sub Total			0.184 (-0.066+0.250)		2.145	3.743	0.243	0.104	6.506	0.250	12.991	2.479	5.488	-	7.967	20.958	1.148	0.438	-	-	1.586	22.544		
Jan. 95																								
1-10	1624.06	82.130	(-) 0.243 (-0.493+0.250)	81.887	0.519	0.101	0.173	0.041	2.848	0.250	3.932	0.891	1.950	-	2.841	6.773	0.283	0.104	-	-	0.387	7.160	74.727	1621.80
11-20	1621.80	74.727	(-) 0.444 (-0.694+0.250)	74.283	0.721	0.123	0.173	0.058	2.916	0.250	4.241	1.006	1.567	0.621	3.189	7.430	0.228	0.104	-	-	0.332	7.762	66.521	1619.14
21-31	1619.14	66.520	(-) 1.105	65.416	0.799	0.320	0.190	0.058	3.306	-	4.673	0.958	1.149	0.234	2.341	7.014	0.316	0.114	-	-	0.430	7.444	57.972	1616.12
Sub Total			(-) 1.792 (-2.292+0.500)		2.039	0.544	0.536	0.157	9.070	0.500	12.846	2.850	4.666	0.855	8.371	21.217	0.827	0.322	-	-	1.149	22.366		
Feb. 95																								
1-10	1616.12	57.972	(-) 0.801 (-1.051+0.250)	57.171	0.681	0.847	0.203	0.077	2.914	0.250	4.972	0.922	0.747	0.581	2.250	7.222	0.290	0.104	-	-	0.394	7.616	49.555	1612.83
11-20	1612.83	49.555	(-) 1.182	48.373	0.713	0.434	0.200	0.099	2.863	-	4.309	0.906	0.792	0.824	2.522	6.831	0.306	0.104	-	-	0.410	7.241	41.132	1609.18
21-28	1609.18	41.132	(-) 1.165	39.967	0.545	-	0.138	0.073	2.261	-	3.017	0.692	-	0.652	1.344	4.361	0.237	0.124	-	-	0.361	4.722	35.245	1606.31
Sub Total			(-) 3.148 (-3.398+0.250)		1.939	1.281	0.541	0.249	8.038	0.250	12.298	2.520	1.539	2.057	6.116	18.414	0.833	0.332	-	-	1.165	19.579		
Mar. 95																								
1-10	1606.31	35.245	(-) 1.203	34.042	0.735	0.143	0.173	0.086	2.848	-	3.985	0.836	0.205	0.685	1.726	5.711	0.288	0.104	-	-	0.392	6.103	27.939	1602.21
11-20	1602.21	27.939	(-) 1.783	26.156	0.729	0.627	0.173	0.066	2.847	-	4.442	0.745	1.268	0.438	2.451	6.893	0.264	0.104	-	-	0.368	7.261	18.895	1596.03
21-31	1596.03	18.895	(-) 2.535	16.360	0.794	-	0.190	0.076	3.111	-	4.171	0.754	-	0.644	1.398	5.569	0.209	0.114	-	-	0.323	5.892	10.468	1588.40
Sub Total			(-) 5.521		2.258	0.770	0.536	0.228	8.806	-	12.598	2.335	1.473	1.767	5.575	18.173	0.761	0.322	-	-	1.083	19.256		
April 95																								
1-10	1588.40	10.468	(-) 1.264	9.204	0.525	-	0.173	0.091	2.744	-	3.533	0.242	-	1.070	1.312	4.845	0.122	0.104	-	-	0.226	5.071	4.133	1577.47
11-20	1577.47	4.133	(-) 0.151	3.982	0.438	-	0.173	0.088	0.832	-	1.531	0.279	-	0.914	1.193	2.724	0.051	0.086	-	-	0.137	2.861	1.121	1566.24
21-30	1566.24	1.121	0.742	1.863	-	-	0.094	-	0.110	-	0.204	-	-	-	-	0.204	0.036	-	-	-	0.036	0.240	1.623	1568.90
Sub Total			(-) 0.673		0.963	-	0.440	0.179	3.686	-	5.268	0.521	-	1.984	2.505	7.773	0.209	0.190	-	-	0.399	8.172		
May 95																								
1-10	1568.90	1.623	(-) 0.002	1.621	-	-	0.122	-	0.171	-	0.293	-	-	-	-	0.293	0.034	-	-	-	0.034	0.327	1.294	1567.22
11-20	1567.22	1.294	1.140	2.434	-	-	0.106	-	0.002	-	0.108	-	-	-	-	0.108	0.038	-	-	-	0.038	0.146	2.288	1571.80
21-31	1571.80	2.288	0.232	2.520	-	-	0.190	-	-	-	0.190	-	-	-	-	0.190	0.062	-	-	-	0.062	0.252	2.268	1571.72
Sub Total			1.370		-	-	0.418	-	0.173	-	0.591	-	-	-	-	0.591	0.134	-	-	-	0.134	0.725		
ABSTRACT																								
Total for Khariff June to Nov.	1574.27	2.991	550.178 (549.178+1.000)	553.169	10.004	12.500	3.560	0.752	37.043	1.000	64.859	1.929	18.062	3.938	23.929	88.788	6.418	2.656	39.403	311.414	359.891	448.679	104.490	1630.22
Total for Rabi Dec.to May	1630.22	104.490	(-) 9.580 (-10.580+1.000)	94.910	9.344	6.338	2.714	0.917	36.279	1.000	56.592	10.705	13.166	6.663	30.534	87.126	3.912	1.604	-	-	5.516	92.642	2.268	1571.72
Grand total Jun to May	1571.72	2.268	540.598 (538.598+2.000)	542.866	19.348	18.838	6.274	1.669	73.322	2.000	121.451	12.634	31.228	10.601	54.463	175.914	10.330	4.260	39.403	311.414	365.407	541.321	2.268	1571.72

Note: 1) The inflows includes 2.000 TMCft. debit made towards Lift Irrigation Schemes on the periphery of TB Reservoir.

PERFORMANCE OF TUNGABHADRA RESERVOIR FOR THE PERIOD FROM 1-6-1995 TO 31-5-1996 (1995 - 96)

(BASED ON CAPACITY ELEVATION TABLE OF 1993 SURVEYS). (THE DRAWALS ARE INCLUSIVE OF PRO-RATA TRANSMISSION LOSSES).

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total Irrign. drawals	Evopa-ration	S.L.	E.P.G.	Spill	Total losses	Total outflow	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Col. 12+16					Tmcft. Col. 18 to 21	Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
June 95																								
1-10	1571.72	1.110	0.226	1.336	-	-	0.173	-	-	-	0.173	-	-	-	-	0.173	0.040	-	-	-	0.040	0.213	1.123	1571.80
11-20	1571.80	1.123	0.106	1.229	-	-	0.173	-	-	-	0.173	-	-	-	-	0.173	0.028	-	-	-	0.028	0.201	1.028	1571.25
21-30	1571.25	1.028	0.698	1.726	-	-	0.173	-	-	-	0.173	-	-	-	-	0.173	0.020	-	-	-	0.020	0.193	1.533	1573.83
Sub Total			1.030		-	-	0.519	-	-	-	0.519	-	-	-	-	0.519	0.088	-	-	-	0.088	0.607		
July 95																								
1-10	1573.83	1.533	5.731	7.264	0.178	-	0.173	-	0.357	-	0.708	-	-	-	-	0.708	0.045	-	-	-	0.045	0.753	6.511	1585.42
11-20	1585.42	6.511	19.444	25.955	0.152	-	0.173	0.002	1.750	-	2.077	0.454	-	-	0.454	2.531	0.084	0.040	-	-	0.124	2.655	23.300	1601.34
21-31	1601.34	23.300	39.665	62.965	0.475	0.550	0.164	0.070	3.199	-	4.458	0.750	0.985	0.825	2.560	7.018	0.212	0.114	-	-	0.326	7.344	55.621	1616.64
Sub Total			64.840		0.805	0.550	0.510	0.072	5.306	-	7.243	1.204	0.985	0.825	3.014	10.257	0.341	0.154	-	-	0.495	10.752		
Aug 95																								
1-10	1616.64	55.621	18.364	73.985	0.505	1.101	0.141	0.056	2.932	-	4.735	0.706	1.632	0.441	2.779	7.514	0.309	0.104	-	-	0.413	7.927	66.058	1620.25
11-20	1620.25	66.058	11.885	77.943	0.606	1.053	0.155	0.065	2.865	-	4.744	0.695	1.708	0.581	2.984	7.728	0.373	0.104	-	-	0.477	8.205	69.738	1621.43
21-31	1621.43	69.738	6.391	76.129	0.651	1.054	0.187	0.043	2.402	-	4.344	0.758	2.099	0.050	2.913	7.257	0.438	0.216	-	-	0.654	7.911	68.218	1620.95
Sub Total			36.640	-	1.762	3.208	0.483	0.164	8.206	-	13.823	2.159	5.439	1.078	8.676	22.499	1.120	0.424	-	-	1.544	24.043		
Sept 95																								
1-10	1620.95	68.218	45.729	113.947	0.622	0.557	0.173	0.044	2.720	-	4.116	0.834	1.257	0.087	2.178	6.294	0.447	0.343	-	-	0.790	7.084	106.863	1631.82
11-20	1631.82	106.863	12.210	119.073	0.618	1.151	0.173	0.054	2.852	-	4.848	0.772	1.577	0.238	2.587	7.435	0.410	0.195	-	-	0.605	8.040	111.033	1632.88
21-30	1632.88	111.023	7.194	118.227	0.636	1.128	0.173	0.033	2.968	-	4.938	0.783	1.838	-	2.621	7.559	0.478	0.104	0.434	-	1.016	8.575	109.653	1632.53
Sub Total			65.133		1.876	2.836	0.519	0.131	8.540	-	13.902	2.389	4.672	0.325	7.386	21.288	1.335	0.642	0.434	-	2.411	23.699		
Oct. 95																								
1-10	1632.53	109.653	8.378	118.031	0.629	1.065	0.149	0.032	2.972	-	4.847	0.754	1.900	-	2.654	7.501	0.418	0.104	-	-	0.522	8.023	110.008	1632.62
11-20	1632.62	110.008	4.114	114.122	0.591	0.693	0.166	0.035	2.467	-	3.952	0.791	1.967	-	2.758	6.710	0.406	0.104	-	-	0.510	7.220	106.902	1631.83
21-31	1631.83	106.902	5.366 (5.116+0.250)	112.268	0.654	0.533	0.190	0.038	2.503	0.250	4.168	0.867	2.188	-	3.055	7.223	0.309	0.114	-	-	0.423	7.696	104.572	1631.23
Sub Total			17.858 (17.608+0.250)		1.874	2.291	0.505	0.105	7.942	0.250	12.967	2.412	6.055	-	8.467	21.434	1.183	0.322	-	-	1.505	22.939		
Nov. 95																								
1-10	1631.23	104.572	1.324 (1.074+0.250)	105.896	0.541	0.928	0.173	0.035	2.708	0.250	4.635	0.757	1.495	-	2.252	6.887	0.422	0.277	-	-	0.699	7.586	98.310	1629.59
11-20	1629.59	98.310	1.117 (0.867+0.250)	99.427	0.597	0.600	0.173	0.035	2.537	0.250	4.192	0.750	0.909	-	1.659	5.851	0.421	0.104	-	-	0.525	6.376	93.051	1628.18
21-30	1628.18	93.051	1.772 (1.522+0.250)	94.823	0.450	1.351	0.167	0.035	2.173	0.250	4.426	0.506	1.570	-	2.076	6.502	0.377	0.352	-	-	0.729	7.231	87.592	1626.68
Sub Total			4.213 (3.463+0.750)	-	1.588	2.879	0.513	0.105	7.418	0.750	13.253	2.013	3.974	-	5.987	19.240	1.220	0.733	-	-	1.953	21.193		
Total for Khariff			189.714 (188.714+1.000)	-	7.905	11.764	3.049	0.577	37.412	1.000	61.707	10.177	21.125	2.228	33.530	95.237	5.287	2.275	0.434	-	7.996	103.233		

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopa-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Irrign. drawals Col. 12+16	ration	losses Tmcft. Col. 18 to 21	outflow Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Dec. 95																								
1-10	1626.68	87.592	0.894 (0.644+0.250)	88.486	0.500	1.218	0.115	0.037	1.986	0.250	4.106	0.707	1.764	-	2.471	6.577	0.387	0.104	-	-	0.491	7.068	81.418	1624.94
11-20	1624.94	81.418	0.123	81.541	0.488	0.911	0.001	0.071	2.335	-	3.806	0.765	1.880	0.492	3.137	6.943	0.397	0.104	-	-	0.501	7.444	74.097	1622.78
21-31	1622.78	74.097	(-) 2.171	71.926	0.656	0.345	-	0.078	3.221	-	4.300	0.826	0.681	0.841	2.348	6.648	0.477	0.114	-	-	0.591	7.239	64.687	1619.80
Sub Total			(-) 1.154 (-1.404+0.250)		1.644	2.474	0.116	0.186	7.542	0.250	12.212	2.298	4.325	1.333	7.956	20.168	1.261	0.322	-	-	1.583	21.751		
Jan. 96																								
1-10	1619.80	64.687	(-) 1.742 (-1.992+0.250)	62.945	0.632	-	-	0.048	2.992	0.250	3.922	0.771	-	0.933	1.704	5.626	0.396	0.104	-	-	0.500	6.126	56.819	1617.08
11-20	1617.08	56.819	(-) 1.001 (-1.251+0.250)	55.818	0.634	0.616	0.051	0.062	2.979	0.250	4.592	0.757	0.576	0.987	2.320	6.912	0.327	0.104	-	-	0.431	7.343	48.475	1613.89
21-31	1613.89	48.475	(-) 1.142	47.333	0.732	0.457	0.142	0.092	3.188	-	4.611	0.911	0.484	0.822	2.217	6.828	0.364	0.114	-	-	0.478	7.306	40.027	1610.28
Sub Total			-3.885 (-4.385+0.500)		1.998	1.073	0.193	0.202	9.159	0.500	13.125	2.439	1.060	2.742	6.241	19.366	1.087	0.322	-	-	1.409	20.775		
Feb. 96																								
1-10	1610.28	40.027	(-) 0.968 (1.218+0.250)	39.059	0.677	-	0.128	0.129	2.833	0.250	4.017	0.847	-	1.245	2.092	6.109	0.317	0.104	-	-	0.421	6.530	32.529	1606.65
11-20	1606.65	32.529	(-) 1.868	30.661	0.635	-	0.113	0.128	2.786	-	3.662	0.761	-	1.374	2.135	5.797	0.269	0.104	-	-	0.373	6.170	24.491	1602.10
21-29	1602.10	24.491	(-) 1.468	23.023	0.590	-	0.101	0.109	2.461	-	3.261	0.707	-	0.921	1.628	4.889	0.232	0.093	-	-	0.325	5.214	17.809	1597.46
Sub Total			(-) 4.304 (-4.554+0.250)	-	1.902	-	0.342	0.366	8.080	0.250	10.940	2.315	-	3.540	5.855	16.795	0.818	0.301	-	-	1.119	17.914		
Mar. 96																								
1-10	1597.46	17.809	(-) 1.072	16.737	0.556	-	0.122	0.078	2.657	-	3.413	0.783	-	0.539	1.322	4.735	0.202	0.104	-	-	0.306	5.041	11.696	1591.94
11-20	1591.94	11.696	(-) 1.219	10.477	0.530	-	0.122	0.078	2.604	-	3.333	0.740	-	0.443	1.183	4.516	0.162	0.104	-	-	0.266	4.782	5.695	1584.17
21-31	1584.17	5.695	(-) 0.781	4.914	0.117	-	0.168	0.016	2.545	-	2.846	0.094	-	0.005	0.099	2.945	0.088	-	-	-	0.088	3.033	1.881	1576.26
Sub Total			(-) 3.072	-	1.203	-	0.412	0.172	7.806	-	9.592	1.617	-	0.987	2.604	12.196	0.452	0.208	-	-	0.66	12.856		
April 96																								
1-10	1576.26	1.881	1.401	3.282	0.843	-	0.180	0.073	0.386	-	1.482	-	-	0.389	0.389	1.871	0.037	-	-	-	0.037	1.908	1.374	1573.10
11-20	1573.10	1.374	1.483	2.857	-	-	0.255		0.117	-	0.372	-	-	-	-	0.372	0.052	-	-	-	0.052	0.424	2.433	1577.15
21-30	1577.15	2.433	0.117	2.550	-	-	0.259	-	0.014	-	0.273	-	-	-	-	0.273	0.064	-	-	-	0.064	0.337	2.213	1576.44
Sub Total			3.001 (0.313+2.688(BA)	-	0.843	-	0.694	0.073	0.517	-	2.127	-	-	0.389	0.389	2.516	0.153	-	-	-	0.153	2.669		
May 96																								
1-10	1576.44	2.213	0.077	2.290	-	-	0.259	-	-	-	0.259	-	-	-	-	0.259	0.064	-	-	-	0.064	0.323	1.967	1575.58
11-20	1575.58	1.967	0.025	1.992	-	-	0.259	0.026	-	-	0.285	-	-	-	-	0.285	0.058	-	-	-	0.058	0.343	1.649	1574.33
21-31	1574.33	1.649	0.593	2.242	-	-	0.285	-	-	-	0.285	-	-	-	-	0.285	0.052	-	-	-	0.052	0.337	1.905	1575.35
Sub Total			0.695	-	-	-	0.803	0.026	-	-	0.829	-	-	-	-	0.829	0.174	-	-	-	0.174	1.003		
												ABSTRACT												
Total for Khariff June to Nov.	1571.72	1.110	189.714 188.714 +1.000	190.824	7.905	11.764	3.049	0.577	37.412	1.000	61.707	10.177	21.125	2.228	33.530	95.237	5.287	2.275	0.434	-	7.996	103.233	1626.68	87.592
Total for Rabi Dec.to May	1626.68	87.592	(-) 8.719 (-) 12.407 +2.688BA 1.000	78.873	7.590	3.547	2.560	1.024	33.104	1.000	48.825	8.669	5.385	8.991	23.045	71.870	3.945	1.153	-	-	5.098	76.968	1.905	1575.35
Grand total Jun to May	1571.72	1.110	180.995 176.307 +2.688BA +2.000**	182.105	15.495	15.311	5.609	1.601	70.516	2.000	110.532	18.846	26.510	11.219	56.575	167.107	9.232	3.428	0.434	-	13.094	180.201	1.905	1575.35

Note:- 1) ** The inflows including 2.000 TMCft. debit made towards Lift IIrrigation Scheme on Ithe periphery of TB Reservoir.
2) B.A:- Bhadra assistance.

PERFORMANCE OF TUNGABHADRA RESERVOIR FOR THE PERIOD FROM 1-6-1996 TO 31-5-1997 (1996 - 97)

(BASED ON CAPACITY ELEVATION TABLE OF 1993 SURVEYS). (THE DRAWALS ARE INCLUSIVE OF PRO-RATA TRANSMISSION LOSSES).

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopa-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Irrign. drawals Col. 12+16	ration				losses Tmcft. Col. 18 to 21	outflow Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
June 96																								
1-10	1575.35	1.906	1.525	3.431	-	-	0.143	-	-	-	0.143	-	-	-	-	0.143	0.058	-	-	-	0.058	0.201	3.230	1579.33
11-20	1579.33	3.230	3.615	6.845	B	-	0.086	-	-	-	0.086	-	-	-	-	0.086	0.057	-	-	-	0.057	0.143	6.702	1585.70
21-30	1585.70	6.702	16.936	23.638	-	-	0.093	-	-	-	0.093	-	-	-	-	0.093	0.245	-	-	-	0.245	0.338	23.300	1601.34
Sub Total			22.076	-	-	-	0.322	-	-	-	0.322	-	-	-	-	0.322	0.360	-	-	-	0.360	0.682		
July 96																								
1-10	1601.34	23.300	1.861	25.161	0.182	-	0.173	0.005	-	-	0.360	0.278	-	-	0.278	0.638	0.253	0.050	-	-	0.303	0.941	24.220	1601.93
11-20	1601.93	24.220	1.865	26.085	0.303	-	0.173	0.052	0.002	-	0.530	0.601	-	-	0.601	1.131	0.212	0.119	-	-	0.331	1.462	24.623	1602.18
21-31	1602.18	24.623	44.444	69.067	0.627	0.725	0.173	0.104	0.129	-	1.758	0.749	1.170	1.307	3.226	4.984	0.330	0.114	-	-	0.444	5.428	63.639	1619.45
Sub Total			48.170		1.112	0.725	0.519	0.161	0.131	-	2.648	1.628	1.170	1.307	4.105	6.753	0.795	0.283	-	-	1.078	7.831		
Aug 96																								
1-10	1619.45	63.639	28.488	92.127	0.572	1.221	0.138	0.130	1.553	-	3.614	0.706	1.666	1.305	3.677	7.291	0.390	0.104	-	-	0.494	7.785	84.342	1625.77
11-20	1625.77	84.342	22.148	106.490	0.567	1.114	0.128	0.066	2.384	-	4.259	0.706	1.712	0.243	2.661	6.920	0.268	0.277	-	-	0.545	7.465	99.025	1629.78
21-31	1629.78	99.025	19.239	118.264	0.630	1.259	0.169	0.057	2.962	-	5.077	0.805	0.919	-	1.724	6.801	0.378	0.171	0.511	-	1.060	7.861	110.403	1632.72
Sub Total			69.875		1.769	3.594	0.435	0.253	6.899	-	12.950	2.217	4.297	1.548	8.062	21.012	1.036	0.552	0.511	-	2.099	23.111		
Sept 96																								
1-10	1632.72	110.403	20.413	130.816	0.560	0.381	0.043	0.052	1.360	-	2.396	0.721	1.890	-	2.611	5.007	0.362	0.104	3.066	11.401	14.933	19.940	110.876	1632.84
11-20	1632.84	110.876	8.976	119.852	0.548	0.674	0.013	0.044	0.019	-	1.298	0.638	1.957	-	2.595	3.893	0.412	0.104	2.631	2.015	5.162	9.055	110.797	1632.82
21-30	1632.82	110.797	11.528	122.325	0.574	1.061	0.059	0.042	0.026	-	1.762	0.724	1.963	-	2.687	4.449	0.406	0.117	2.063	4.019	6.605	11.054	111.271	1632.94
Sub Total			40.917		1.682	2.116	0.115	0.138	1.405	-	5.456	2.083	5.810	-	7.893	13.349	1.180	0.325	7.760	17.435	26.700	40.049		
Oct. 96																								
1-10	1632.94	111.271	17.430	128.701	0.529	0.541	0.079	0.054	0.789	-	1.992	0.707	2.007	-	2.714	4.706	0.342	0.120	3.684	8.736	12.882	17.588	111.113	1632.90
11-20	1632.90	111.113	3.560	114.673	0.573	0.603	0.130	0.043	2.477	-	3.826	0.717	1.060	-	1.777	5.603	0.373	0.104	0.005	-	0.482	6.085	108.588	1632.26
21-31	1632.26	109.588	11.874 (11.624+0.250)	130.462	0.584	0.567	0.078	0.061	2.744	0.250	4.284	0.768	1.745	-	2.513	6.797	0.473	0.124	1.000	2.533	4.130	10.927	109.535	1632.50
Sub Total			32.864 (32.614+0.250)		1.686	1.711	0.287	0.158	6.010	0.250	10.102	2.192	4.812	-	7.004	17.106	1.188	0.348	4.689	11.269	17.494	34.600		
Nov. 96																								
1-10	1632.50	109.535	2.775 (2.525+0.250)	112.310	0.551	1.067	0.130	0.055	2.839	0.250	4.892	0.704	1.675	-	2.379	7.271	0.441	0.104	-	-	0.545	7.816	104.494	1631.21
11-20	1631.21	104.494	1.956 (1.706+0.250)	106.450	0.562	1.141	0.130	0.055	2.861	0.250	4.999	0.687	1.883	-	2.570	7.569	0.392	0.104	-	-	0.496	8.065	98.385	1629.61
21-30	1629.61	98.385	1.577 (1.327+0.250)	99.962	0.489	1.087	0.130	0.056	2.635	0.250	4.647	0.724	1.898	-	2.622	7.269	0.314	0.104	-	-	0.418	7.687	92.275	1627.97
Sub Total			6.308 (5.558+0.750)		1.602	3.295	0.390	0.166	8.335	0.750	14.538	2.115	5.456	-	7.571	22.109	1.147	0.312	-	-	1.459	23.568		
Total for Khariff			220.210 (219.210+1.000)		7.851	11.441	2.068	0.876	22.780	1.000	46.016	10.235	21.545	2.855	34.635	80.651	5.706	1.820	12.960	28.704	49.190	129.841		

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopa-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Irrign. drawals Col. 12+16	ration				losses Tmcft. Col. 18 to 21	outflow Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Dec. 96																								
1-10	1627.97	92.275	0.548 (0.298+0.250)	92.823	0.440	0.804	0.124	0.036	2.188	0.250	3.842	0.742	1.773	-	2.515	6.357	0.348	0.104	-	-	0.452	6.809	86.014	1626.24
11-20	1626.24	86.014	(-) 0.256	85.758	0.514	0.832	-	0.029	1.993	-	3.368	0.769	1.417	-	2.186	5.554	0.235	0.104	-	-	0.339	5.893	79.865	1624.49
21-31	1624.49	79.865	(-) 0.013	79.852	0.646	0.070	-	0.009	2.137	-	2.862	0.784	0.166	-	0.950	3.812	0.348	0.114	-	-	0.462	4.274	75.353	1623.16
Sub Total			0.279 (0.029+0.250)		1.600	1.706	0.124	0.074	6.318	0.250	10.072	2.295	3.356	-	5.651	15.723	0.931	0.322	-	-	1.253	17.201		
Jan. 97																								
1-10	1623.16	75.353	(-) 0.714 (-0.964+0.250)	74.639	0.621	1.075	-	0.031	2.656	0.250	4.633	0.672	1.505	0.199	2.376	7.009	0.335	0.104	-	-	0.439	7.448	67.416	1620.69
11-20	1620.69	67.416	(-) 0.554 (-0.804+0.250)	66.862	0.607	0.448	0.104	0.045	2.857	0.250	4.311	0.704	0.415	0.314	1.433	5.744	0.276	0.114	-	-	0.390	6.134	60.728	1618.46
21-31	1618.46	60.728	(-) 0.951	59.777	0.682	-	0.190	0.091	3.148	-	4.111	0.786	-	0.577	1.363	5.474	0.367	0.100	-	-	0.467	5.941	53.836	1615.98
Sub Total			(-) 2.219 (-2.719+0.500)		1.910	1.523	0.294	0.167	8.661	0.500	13.055	2.162	1.920	1.090	5.173	18.228	0.978	0.318	-	-	1.296	19.298		
Feb. 97																								
1-10	1615.98	53.836	(-) 0.651 (-0.901+0.250)	53.185	0.609	-	0.173	0.083	2.861	0.250	3.976	0.651	-	0.881	1.532	5.508	0.342	0.085	-	-	0.427	5.935	47.250	1613.39
11-20	1613.39	47.250	(-) 0.946	46.304	0.620	-	0.173	0.096	2.861	-	3.750	0.608	-	1.235	1.843	5.593	0.336	0.080	-	-	0.416	6.009	40.295	1610.40
21-28	1610.40	40.295	(-) 0.833	39.462	0.504	-	0.138	0.101	2.289	-	3.032	0.537	-	1.246	1.783	4.815	0.279	0.050	-	-	0.329	5.144	34.318	1607.56
Sub Total			(-) 2.430 (-2.680+0.250)	-	1.733	-	0.484	0.280	8.011	0.250	10.758	1.796	-	3.362	5.158	15.916	0.957	0.215	-	-	1.172	17.088		
Mar. 97																								
1-10	1607.56	34.318	(-) 1.475	32.843	0.609	-	0.173	0.087	2.862	-	3.731	0.587	-	1.366	1.953	5.684	0.333	0.050	-	-	0.383	6.067	26.776	1603.48
11-20	1603.48	26.776	(-) 1.409	25.367	0.623	-	0.173	0.087	2.855	-	3.738	0.484	-	0.951	1.435	5.173	0.259	0.050	-	-	0.309	5.482	19.885	1599.02
21-31	1599.02	19.885	(-) 0.991	18.894	0.724	-	0.190	0.095	3.145	-	4.154	0.528	-	0.037	0.565	4.719	0.253	0.055	-	-	0.308	5.027	13.867	1594.10
Sub Total			(-) 3.875		1.956	-	0.536	0.269	8.862	-	11.623	1.599	-	2.354	3.953	15.576	0.845	0.155	-	-	1.000	16.576		
April 97																								
1-10	1594.10	13.867	(-) 0.937	12.930	0.578	-	0.193	0.088	2.853	-	3.712	0.088	-	0.242	0.330	4.042	0.176	-	-	-	0.176	4.218	8.712	1588.44
11-20	1588.44	8.712	(-) 1.137	7.575	-	-	0.216	-	2.787	-	3.003	-	-	-	-	3.003	0.135	-	-	-	0.135	3.138	4.437	1581.96
21-30	1581.96	4.437	(-) 0.420	4.017	-	-	0.216	-	1.890	-	2.106	-	-	-	-	2.106	0.073	-	-	-	0.073	2.179	1.838	1575.10
Sub Total			(-) 2.494		0.578	-	0.625	0.088	7.530	-	8.821	0.088	-	0.242	0.330	9.151	0.384	-	-	-	0.384	9.535		
May 97																								
1-10	1575.10	1.838	0.588	2.426	-	-	0.216	-	0.322	-	0.538	-	-	-	-	0.538	0.050	-	-	-	0.050	0.588	1.838	1575.10
11-20	1575.10	1.838	0.756	2.594	-	-	0.216	0.086	0.034	-	0.336	-	-	-	-	0.336	0.056	-	-	-	0.056	0.392	2.202	1576.40
21-31	1576.40	2.202	0.709	2.911	-	-	0.237	0.052	-	-	0.289	-	-	-	-	0.289	0.080	-	-	-	0.080	0.369	2.542	1577.47
Sub Total			2.053		-	-	0.669	0.138	0.356	-	1.163	-	-	-	-	1.163	0.186	-	-	-	0.186	1.349		

ABSTRACT

Total for Khariff June to Nov.	1575.35	1.906	220.210 (219.210+1.000)	222.116	7.851	11.441	2.068	0.876	22.780	1.000	46.016	10.235	21.545	2.855	34.635	80.651	5.706	1.820	12.960	28.704	49.190	129.841	92.275	1627.97
Total for Rabi Dec.to May	1627.97	92.275	(-) 8.686 (-9.686+1.000)	83.589	7.777	3.229	2.732	1.016	39.738	1.000	55.492	7.940	5.276	7.048	20.264	75.756	4.281	1.010	-	-	5.291	81.047	2.542	1577.47
Grand total Jun to May	1575.35	1.906	211.524 (209.524+2.000)	213.430	15.628	14.67	4.800	1.892	62.518	2.000	101.508	18.175	26.821	9.903	54.899	156.407	9.987	2.830	12.960	28.704	54.481	210.888	2.542	1577.47

Note:- The inflows includes 2.000 TMCft. debit made towards Lift Irrigation schemes on the periphery of TB Reservoir.

PERFORMANCE OF TUNGABHADRA RESERVOIR FOR THE PERIOD FROM 1-6-1997 TO 31-5-1998 (1997 - 98)

(BASED ON CAPACITY ELEVATION TABLE OF 1993 SURVEYS). (THE DRAWALS ARE INCLUSIVE OF PRO-RATA TRANSMISSION LOSSES).

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total Irrign. drawals	Evopa-ration	S.L.	E.P.G.	Spill	Total losses	Total outflow	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total. TMCft. Col. 13 to 15	Col. 12+16					Tmcft. Col. 18 to 21	Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
June 97																								
1-10	1577.47	2.542	0.270	2.812	-	-	0.216	0.112	-	-	0.328	-	-	-	-	0.328	0.060	-	-	-	0.060	0.388	2.424	1577.12
11-20	1577.12	2.424	0.943	3.367	-	-	0.216	-	-	-	0.216	-	-	-	-	0.216	0.057	-	-	-	0.057	0.273	3.094	1579.00
21-30	1579.00	3.094	0.257	3.351	-	-	0.216	-	-	-	0.216	-	-	-	-	0.216	0.059	-	-	-	0.059	0.275	3.076	1578.95
Sub Total			1.470		-	-	0.648	0.112	-	-	0.760	-	-	-	-	0.760	0.176	-	-	-	0.176	0.936		
July 97																								
1-10	1578.95	3.076	34.447	37.523	0.210	-	0.216	0.014	-	-	0.440	0.318	-	-	0.318	0.758	0.174	0.052	-	-	0.226	0.984	36.539	1608.65
11-20	1608.65	36.539	42.938	79.477	0.362	0.087	0.216	0.060	-	-	0.725	0.440	0.575	-	1.015	1.740	0.439	0.468	-	-	0.907	2.647	76.830	1623.60
21-31	1623.60	76.830	28.397	105.227	0.518	0.729	0.238	0.100	0.716	-	2.301	0.574	0.616	0.306	1.496	3.797	0.460	0.386	0.080	-	0.926	4.723	100.504	1630.17
Sub Total			105.782		1.090	0.816	0.670	0.174	0.716	-	3.466	1.332	1.191	0.306	2.829	6.295	1.073	0.906	0.080	-	2.059	8.354		
Aug 97																								
1-10	1630.17	100.504	73.202	173.706	0.735	1.065	0.216	0.063	2.581	-	4.660	0.558	0.929	-	1.487	6.147	0.416	0.225	4.480	55.924	61.045	67.192	106.514	1631.73
11-20	1631.73	106.514	36.923	143.437	0.697	1.112	0.141	0.035	2.844	-	4.829	0.644	1.496	-	2.140	6.969	0.377	0.260	4.592	19.732	24.961	31.930	111.507	1633.00
21-31	1633.00	111.507	60.097	171.604	0.706	1.180	0.143	0.070	3.123	-	5.222	0.787	2.146	-	2.933	8.155	0.453	0.120	4.809	46.560	51.942	60.897	111.507	1633.00
Sub Total			170.222		2.138	3.357	0.500	0.168	8.548	-	14.711	1.989	4.571	-	6.560	21.271	1.246	0.605	13.881	122.216	137.948	159.219		
Sept 97																								
1-10	1633.00	111.507	21.227	132.734	0.611	1.100	0.150	0.063	2.854	-	4.778	0.695	1.924	-	2.619	7.397	0.562	0.104	4.493	8.671	13.830	21.227	111.507	1633.00
11-20	1633.00	111.507	6.308	117.815	0.620	1.146	0.173	0.088	2.374	-	4.401	0.692	1.893	-	2.585	6.986	0.568	0.104	0.385	-	1.057	8.043	109.772	1632.56
21-30	1632.56	109.772	3.401	113.173	0.557	1.167	0.173	0.106	2.314	-	4.317	0.594	1.857	-	2.451	6.768	0.444	0.146	-	-	0.590	7.358	105.815	1631.55
Sub Total			30.936		1.788	3.413	0.496	0.257	7.542	-	13.496	1.981	5.674	-	7.655	21.151	1.574	0.354	4.878	8.671	15.477	36.628		
Oct. 97																								
1-10	1631.55	105.815	5.735	111.550	0.645	1.145	0.173	0.106	2.775	-	4.844	0.005	1.879	-	1.884	6.728	0.457	0.415	-	-	0.872	7.600	103.950	1631.07
11-20	1631.07	103.950	1.726	105.676	0.689	1.141	0.173	0.109	2.775	-	4.887	0.579	1.883	0.098	2.560	7.447	0.455	0.104	-	-	0.559	8.006	97.670	1629.42
21-31	1629.42	97.670	7.000 (6.750+0.250)	104.670	0.690	1.264	0.191	0.180	3.047	0.250	5.622	0.743	2.062	1.649	4.454	10.076	0.391	0.114	-	-	0.505	10.581	94.089	1628.46
Sub Total			14.461 (14.211+0.250)		2.024	3.550	0.537	0.395	8.597	0.250	15.353	1.327	5.824	1.747	8.898	24.251	1.303	0.633	-	-	1.936	26.187		
Nov. 97																								
1-10	1628.46	94.089	5.568 (5.318+0.250)	99.657	0.622	1.093	0.173	0.115	2.892	0.250	5.145	0.705	1.900	1.053	3.658	8.803	0.334	-	-	-	0.334	9.241	90.416	1627.46
11-20	1627.46	90.416	8.146 (7.896+0.250)	98.562	0.448	0.712	0.046	0.062	2.580	0.250	4.098	0.684	1.874	0.603	3.161	7.259	0.309	-	-	-	0.309	7.672	90.890	1627.59
21-30	1627.59	90.890	5.266 (5.016+0.250)	96.156	0.257	0.764	0.117	0.069	2.126	0.250	3.583	0.719	1.866	0.213	2.798	6.381	0.276	-	-	-	0.276	6.761	89.395	1627.18
Sub Total			18.980 (18.230+0.750)		1.327	2.569	0.336	0.246	7.598	0.750	12.826	2.108	5.640	1.869	9.617	22.443	0.919	-	-	-	0.919	23.674		
Total for Khariff			341.851 (340.851+1.000)		8.367	13.705	3.187	1.352	33.001	1.000	60.612	8.737	22.900	3.922	35.559	96.171	6.291	2.810	18.839	130.887	158.827	254.998		

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopa-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Irrign. drawals Col. 12+16	ration				losses Tmcft. Col. 18 to 21	outflow Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Dec. 97																								
1-10	1627.18	89.395	5.840 (5.590+0.250)	95.235	0.319	1.005	0.150	0.068	2.014	0.250	3.806	0.745	1.866	0.033	2.644	6.450	0.300	0.104	-	-	0.404	6.854	88.371	1626.90
11-20	1626.90	88.381	3.351	91.732	0.496	0.528	-	0.015	1.649	-	2.688	0.770	1.139	-	1.909	4.597	0.264	0.104	-	-	0.368	4.965	86.767	1626.45
21-31	1626.45	86.767	0.730	87.497	0.659	0.028	-	0.014	2.339	-	3.040	0.856	0.387	0.076	1.319	4.359	0.411	0.114	-	-	0.525	4.884	82.613	1625.28
Sub Total			9.921 (9.671+0.250)		1.474	1.561	0.150	0.097	6.002	0.250	9.534	2.371	3.392	0.109	5.872	15.406	0.975	0.322	-	-	1.297	16.703		
Jan. 98																								
1-10	1625.28	82.613	(-) 1.277 (-1.527+0.250)	81.336	0.741	0.999	-	0.091	2.872	0.250	4.953	0.874	1.244	1.145	3.263	8.216	0.357	0.104	-	-	0.461	8.677	72.659	1622.34
11-20	1622.34	72.659	(-) 1.328 (-1.578+0.250)	71.331	0.700	0.894	0.075	0.102	2.946	0.250	4.967	0.798	0.976	1.268	3.042	8.009	0.327	0.104	-	-	0.431	8.440	62.891	1619.20
21-31	1619.20	62.891	(-) 1.766	61.125	0.753	0.512	0.184	0.126	3.242	-	4.817	0.870	0.938	0.825	2.633	7.450	0.352	0.114	-	-	0.466	7.916	53.209	1615.74
Sub Total			(-) 4.371 (-4.871+0.500)		2.194	2.405	0.259	0.319	9.060	5.000	14.737	2.542	3.158	3.238	8.938	23.675	1.036	0.322	-	-	1.358	25.033		
Feb. 98																								
1-10	1615.74	53.209	(-) 0.980 (1.230+0.250)	52.229	0.702	-	0.202	0.111	2.948	0.250	4.213	0.803	-	0.697	1.500	5.713	0.354	0.104	-	-	0.458	6.171	46.058	1612.90
11-20	1612.90	46.058	(-) 0.725	45.333	0.698	-	0.194	0.104	2.183	-	3.179	0.788	-	0.621	1.409	4.588	0.301	0.104	-	-	0.405	4.993	40.340	1610.42
21-28	1610.42	40.340	(-) 0.368	39.972	0.554	-	0.148	0.093	0.553	-	1.348	0.646	-	0.601	1.247	2.595	0.279	0.083	-	-	0.362	2.957	37.015	1608.88
Sub Total			(-) 2.073 (2.323+0.250)		1.954	-	0.544	0.308	5.684	0.250	8.740	2.237	-	1.919	4.156	12.896	0.934	0.291	-	-	1.225	14.121		
Mar. 98																								
1-10	1608.88	37.015	(-) 1.788	35.227	0.702	-	0.208	0.154	2.920	-	3.984	0.773	-	1.524	2.297	6.281	0.330	0.104	-	-	0.434	6.715	28.512	1604.48
11-20	1604.48	28.512	(-) 1.830	26.682	0.704	-	0.207	0.127	2.948	-	3.986	0.752	-	0.963	1.715	5.701	0.310	0.104	-	-	0.414	6.115	20.567	1599.50
21-31	1599.50	20.567	(-) 1.590	18.977	0.762	-	0.228	0.101	3.241	-	4.332	0.741	-	0.228	0.969	5.301	0.258	0.114	-	-	0.372	5.673	13.304	1593.56
Sub Total			(-) 5.208		2.168	-	0.643	0.382	9.109	-	12.302	2.266	-	2.715	4.981	17.283	0.898	0.322	-	-	1.220	18.503		
April 98																								
1-10	1593.56	13.304	(-) 1.447	11.857	0.664	-	0.207	0.093	2.864	-	3.828	0.656	-	-	0.656	4.484	0.170	0.104	-	-	0.274	4.758	7.099	1586.27
11-20	1586.27	7.099	(-) 0.917	6.182	0.017	-	0.170	0.048	2.335	-	2.570	0.017	-	-	0.017	2.587	0.130	-	-	-	0.130	2.717	3.465	1579.90
21-30	1579.90	3.465	(-) 0.357	3.108	-	-	0.173	0.043	0.912	-	1.128	-	-	-	-	1.128	0.071	-	-	-	0.071	1.199	1.909	1575.36
Sub Total			(-) 2.721		0.681	-	0.550	0.184	6.111	-	7.526	0.673	-	-	0.673	8.199	0.371	0.104	-	-	0.475	8.674		
May 98																								
1-10	1575.36	1.909	0.157	2.066	-	-	0.173	0.043	0.075	-	0.291	-	-	-	-	0.291	0.050	-	-	-	0.050	0.341	1.725	1574.64
11-20	1574.64	1.725	1.054	2.779	-	-	0.173	0.042	-	-	0.215	-	-	-	-	0.215	0.046	-	-	-	0.046	0.261	2.518	1577.40
21-31	1577.40	2.518	1.205	3.723	-	-	0.190	0.047	-	-	0.237	-	-	-	-	0.235	0.087	-	-	-	0.087	0.324	3.399	1579.74
Sub Total			2.416		-	-	0.536	0.132	0.075	-	0.743	-	-	-	-	0.743	0.183	-	-	-	0.183	0.926		
ABSTRACT																								
Total for Khariff June to Nov.	1577.47	2.542	341.851 (340.851+1.000)	344.393	8.367	13.705	3.187	1.352	33.001	1.000	60.612	8.737	22.900	3.922	35.559	96.171	6.291	2.810	18.839	130.887	158.827	254.998	89.395	1627.18
Total for Rabi Dec.to May	1627.18	89.395	(-) 2.036 (-.3.036+1.000)	87.359	8.471	3.966	2.682	1.422	36.041	1.000	53.582	10.089	6.550	7.981	24.620	78.202	4.397	1.361	-	-	5.758	83.960	3.399	1579.74
Grand total Jun to May	1577.47	2.542	339.815 (337.815+2.000)	342.357	16.838	17.671	5.869	2.774	69.042	2.000	114.194	18.826	29.450	11.903	60.179	174.373	10.688	4.171	18.839	130.887	164.585	338.958	3.399	1579.74

Note:- 1) The inflows lincludes 2 TMCft. debit made towards Lift Irrigation Schemes on the Periphery of TB Reservoir.

PERFORMANCE OF TUNGABHADRA RESERVOIR FOR THE PERIOD FROM 1-6-1998 TO 31-5-1999 (1998 - 99)

(BASED ON CAPACITY ELEVATION TABLE OF 1993 SURVEYS). (THE DRAWALS ARE INCLUSIVE OF PRO-RATA TRANSMISSION LOSSES).

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopa-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Irrign. drawals Col. 12+16	ration				losses Tmcft. Col. 18 to 21	outflow Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
June 98																								
1-10	1579.74	3.399	0.476	3.875	-	-	0.173	0.043	-	-	0.216	-	-	-	-	0.216	0.084	-	-	-	0.084	0.300	3.575	1580.15
11-20	1580.15	3.575	0.628	4.203	0.066	-	0.173	0.047	-	-	0.286	-	-	0.140	0.140	0.426	0.066	-	-	-	0.066	0.492	3.711	1580.45
21-30	1580.45	3.711	5.021	8.732	0.402	-	0.173	0.097	-	-	0.672	0.103	-	0.439	0.542	1.214	0.049	0.028	-	-	0.077	1.291	7.441	1586.75
Sub Total			6.125		0.468	-	0.519	0.187	-	-	1.174	0.103	-	0.579	0.682	1.856	0.199	0.028	-	-	0.227	2.083		
July 98																								
1-10	1586.75	7.441	50.608	58.049	0.318	-	0.216	0.067	-	-	0.601	0.677	-	-	0.677	1.278	0.154	0.184	-	-	0.338	1.616	56.433	1616.94
11-20	1616.94	56.433	35.233	91.666	0.513	0.496	0.216	0.111	0.131	-	1.467	0.69	0.509	0.219	1.418	2.885	0.447	0.204	-	-	0.651	3.536	88.130	1626.83
21-31	1626.83	88.130	15.555	103.685	0.434	1.184	0.238	0.128	2.137	-	4.121	0.513	1.851	1.144	3.508	7.629	0.413	0.295	-	-	0.708	8.337	95.348	1628.80
Sub Total			101.396		1.265	1.680	0.670	0.306	2.268	-	6.189	1.880	2.360	1.363	5.603	11.792	1.014	0.683	-	-	1.697	13.489		
Aug 98																								
1-10	1628.80	95.348	25.765	121.113	0.627	1.083	0.216	0.070	2.799	-	4.795	0.696	1.665	-	2.361	7.156	0.329	0.207	2.269	-	2.805	9.961	111.152	1632.91
11-20	1632.91	111.152	28.318	139.470	0.630	1.112	0.216	0.070	2.818	-	4.846	0.685	1.800	-	2.485	7.331	0.387	0.207	4.624	15.414	20.632	27.963	111.507	1633.00
21-31	1633.00	111.507	22.256	133.763	0.640	1.221	0.152	0.077	3.100	-	5.190	0.845	2.040	-	2.885	8.075	0.441	0.228	4.080	9.984	14.733	22.808	110.955	1632.86
Sub Total			76.339		1.897	3.416	0.584	0.217	8.717	-	14.831	2.226	5.505	-	7.731	22.562	1.157	0.642	10.973	25.398	38.17	60.732		
Sept 98																								
1-10	1632.86	110.955	12.737	123.692	0.633	1.126	0.147	0.070	2.635	-	4.611	0.798	1.838	-	2.636	7.247	0.354	0.207	2.893	1.997	5.451	12.698	110.994	1632.87
11-20	1632.87	110.994	29.644	140.638	0.630	1.141	0.145	0.070	2.473	-	4.459	0.808	1.240	-	2.048	6.507	0.368	0.348	4.124	17.784	22.624	29.131	111.507	1633.00
21-30	1633.00	111.507	21.687	133.194	0.549	1.050	0.131	0.070	2.586	-	4.386	0.732	0.909	-	1.641	6.027	0.329	0.303	4.290	11.527	16.449	22.476	110.718	1632.80
Sub Total			64.068		1.812	3.317	0.423	0.210	7.694	-	13.456	2.338	3.987	-	6.325	19.781	1.051	0.858	11.307	31.308	44.524	64.305		
Oct. 98																								
1-10	1632.80	110.718	23.908	134.626	0.454	0.631	0.015	0.057	1.967	-	3.123	0.695	1.730	-	2.425	5.548	0.367	0.180	5.852	11.172	17.571	23.119	111.507	1633.00
11-20	1633.00	111.507	28.460	139.967	0.385	0.320	0.048	0.057	1.447	-	2.257	0.683	1.660	-	2.344	4.601	0.375	0.153	5.695	17.636	23.859	28.460	111.507	1633.00
21-31	1633.00	111.507	9.121 (8.871+0.250)	120.628	0.541	0.798	0.201	0.080	2.817	0.250	4.687	0.729	1.801	-	2.530	7.217	0.473	0.203	1.657	0.083	2.416	9.634	110.994	1632.87
Sub Total			61.489 (61.239+0.250)		1.380	1.749	0.264	0.194	6.231	0.250	10.067	2.107	5.191	-	7.499	17.566	1.215	0.536	13.204	28.891	43.846	61.213		
Nov. 98																								
1-10	1632.87	110.994	5.495 (5.245+0.250)	116.489	0.575	0.899	0.173	0.100	2.855	0.250	4.852	0.727	1.944	-	2.671	7.523	0.369	0.206	-	-	0.575	8.098	108.391	1632.21
11-20	1632.21	108.391	6.845 (6.595+0.250)	115.236	0.568	0.931	0.173	0.105	2.390	0.250	4.417	0.725	1.934	-	2.659	7.076	0.439	0.157	-	-	0.596	7.673	107.562	1632.00
21-30	1632.00	107.562	2.582 (2.332+0.250)	110.144	0.590	1.038	0.173	0.096	2.436	0.250	4.583	0.722	1.924	-	2.646	7.229	0.428	0.110	-	-	0.538	7.767	102.378	1630.66
Sub Total			14.922 (14.172+0.750)		1.733	2.868	0.519	0.301	7.681	0.750	13.852	2.174	5.802	-	7.976	21.828	1.236	0.473	-	-	1.709	23.538		
Total for Khariff			324.339 (323.339+1.000)	327.738	8.555	13.030	2.979	1.415	32.591	1.000	59.568	10.829	22.844	1.942	35.615	95.183	5.872	3.220	35.485	85.597	130.174	225.36		

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopa-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Irrign. drawals Col. 12+16	ration				losses Tmcft. Col. 18 to 21	outflow Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Dec. 98																								
1-10	1630.66	102.378	1.723 (1.473+0.250)	104.101	0.510	1.101	0.177	0.103	2.411	0.250	4.552	0.708	1.934	-	2.642	7.194	0.503	0.127	-	-	0.63	7.824	96.277	1629.05
11-20	1629.05	96.277	1.165	97.442	0.550	0.658	0.017	0.057	2.411	-	3.692	0.701	1.022	-	1.722	5.414	0.465	0.090	-	-	0.555	5.969	91.473	1627.75
21-31	1627.75	91.473	0.997	92.470	0.713	0.116	0.238	0.039	1.502	-	2.608	0.773	0.158	-	0.930	3.538	0.501	0.122	-	-	0.623	4.161	88.309	1626.88
Sub Total			3.885 (3.635+0.250)		1.773	1.875	0.432	0.199	6.324	0.250	10.852	2.182	3.114	-	5.294	16.146	1.469	0.339	-	-	1.808	17.954		
Jan. 99																								
1-10	1626.88	88.309	(-)0.504 (-0.754+0.250)	87.805	0.672	1.161	0.173	0.047	2.948	0.250	5.251	0.752	1.652	0.707	3.110	8.361	0.464	0.185	-	-	0.649	9.010	78.795	1624.18
11-20	1624.18	78.795	(-)0.391 (-0.641+0.250)	78.404	0.655	0.587	0.125	0.101	2.948	0.250	4.666	0.731	0.750	0.242	1.723	6.389	0.426	0.136	-	-	0.562	6.951	71.453	1621.97
21-31	1621.97	71.453	(-)0.727	70.726	0.728	0.039	0.143	0.148	3.243	0	4.302	0.830	0.878	0.385	2.093	6.395	0.489	0.143	-	-	0.632	7.027	63.699	1619.27
Sub Total			(-)1.622 (-2.122+0.500)		2.055	1.787	0.441	0.296	9.137	0.500	14.219	2.312	3.280	1.334	6.926	21.145	1.380	0.464	-	-	1.844	22.987		
Feb. 99																								
1-10	1619.27	63.699	0.191 (-0.059+0.250)	63.890	0.656	0.923	0.130	0.138	2.856	0.250	4.953	0.742	1.928	0.280	2.950	7.903	0.448	0.190	-	-	0.638	8.541	55.350	1616.54
11-20	1616.54	55.350	(-)1.247	54.103	0.651	0.498	0.130	0.143	2.948	0	4.370	0.744	1.715	0.280	2.739	7.109	0.405	0.147	-	-	0.562	7.661	46.442	1613.06
21-28	1613.06	46.442	(-)1.130	45.312	0.541	0	0.104	0.115	2.358	0	3.118	0.583	0	0.543	1.127	4.245	0.378	0.083	-	-	0.461	4.706	40.606	1610.54
Sub Total			(-)2.186 (-2.436+0.250)		1.848	1.421	0.364	0.396	8.162	0.250	12.441	2.069	3.643	1.103	6.816	19.257	1.231	0.420	-	-	1.651	20.908		
Mar. 99																								
1-10	1610.54	40.606	(-)1.890	38.716	0.683	-	0.130	0.186	2.948	-	3.947	0.715	-	1.343	2.058	6.005	0.442	0.104	-	-	0.546	6.551	32.165	1606.46
11-20	1606.46	32.165	(-)1.751	30.414	0.692	-	0.135	0.186	2.940	-	3.953	0.721	-	1.702	2.423	6.376	0.354	0.104	-	-	0.458	6.834	23.581	1601.52
21-31	1601.52	23.581	(-)1.951	21.630	0.760	-	0.149	0.197	3.237	-	4.343	0.792	-	1.543	2.335	6.678	0.294	0.114	-	-	0.408	7.086	14.544	1594.72
Sub Total			(-)5.592		2.135	-	0.414	0.569	9.125	-	12.243	2.228	-	4.588	6.816	19.059	1.090	0.322	-	-	1.412	20.471		
April. 99																								
1-10	1594.72	14.544	(-) 0.943	13.601	0.722	-	0.164	0.126	2.940	-	3.952	0.674	-	0.192	0.866	4.818	0.202	0.104	-	-	0.306	5.124	8.477	1588.14
11-20	1588.14	8.477	(-)0.776	7.701	0.227	-	0.187	0.075	2.585	-	3.074	0.250	-	-	0.250	3.324	0.143	0.041	-	-	0.184	3.508	4.193	1581.47
21-30	1581.47	4.193	0.399	4.592	-	-	0.185	0.043	0.045	-	0.273	-	-	-	-	0.273	0.106	-	-	-	0.106	0.379	4.213	1581.51
Sub Total			(-) 1.320		0.949	-	0.536	0.244	5.570	-	7.299	0.924	-	0.192	1.116	8.415	0.451	0.145	-	-	0.596	9.011		
May 99																								
1-10	1581.51	4.213	1.090	5.303	-	-	0.170	0.043	-	-	0.213	-	-	-	-	0.213	0.103	-	-	-	0.103	0.316	4.987	1582.98
11-20	1582.98	4.987	2.285	7.272	-	-	0.187	0.043	-	-	0.230	-	-	-	-	0.230	0.108	-	-	-	0.108	0.338	6.934	1586.04
21-31	1586.04	6.934	2.302	9.236	-	-	0.205	0.048	-	-	0.253	-	-	-	-	0.253	0.138	-	-	-	0.138	0.391	8.845	1588.61
Sub Total			5.677		-	-	0.562	0.134	-	-	0.696	-	-	-	-	0.696	0.349	-	-	-	0.349	1.045		

ABSTRACT

Total for Khariff June to Nov	1579.74	3.399	324.339 (323.339+1.000)	327.738	8.555	13.030	2.979	1.415	32.591	1.000	59.568	10.829	22.844	1.942	35.615	95.183	5.872	3.220	35.485	85.597	130.174	225.36	102.378	1630.66
Total for Rabi Dec.to May	1630.66	102.378	(-) 1.158 (-2.158+1.000)	101.220	8.759	5.084	2.748	1.838	38.321	1.000	57.752	9.715	10.035	7.217	26.967	84.719	5.968	1.691	-	-	7.659	92.375	8.845	1588.61
Grand total Jun to May	1579.74	3.399	323.181 321.181+2.000	326.580	17.314	18.114	5.727	3.253	70.912	2.000	117.320	20.544	32.879	9.159	62.582	179.902	11.840	4.911	35.485	85.597	137.833	317.735	8.845	1588.61

Note:- 1) The inflows includes 2 TMCft. debit made towards Lift Irrigation Schemes on the Periphery of TB Reservoir.
2) B.A :- Bhadra Assistance.

PERFORMANCE OF TUNGABHADRA RESERVOIR FOR THE PERIOD FROM 1-6-1999 TO 31-5-2000 (1999 - 2000)

(BASED ON CAPACITY ELEVATION TABLE OF 1993 SURVEYS). (THE DRAWALS ARE INCLUSIVE OF PRO-RATA TRANSMISSION LOSSES).

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopa-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Irrign. drawals Col. 12+16	ration				losses Tmcft. Col. 18 to 21	outflow Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
June 99																								
1-10	1588.61	8.845	1.294	10.139	-	-	0.187	0.043	-	-	0.230	-	-	-	-	0.230	0.152	-	-	-	0.152	0.382	9.757	1589.74
11-20	1589.74	9.757	7.387	17.144	-	-	0.187	0.043	-	-	0.230	-	-	-	-	0.230	0.108	-	-	-	0.108	0.338	16.806	1596.66
21-30	1596.66	16.806	15.594	13.400	0.167	-	0.187	0.050	-	-	0.404	0.195	-	-	0.195	0.599	0.255	0.033	-	-	0.288	0.887	31.513	1606.12
Sub Total			24.275		0.167	-	0.561	0.136	-	-	0.864	0.195	-	-	0.195	1.059	0.515	0.033	-	-	0.548	1.607		
sept 99																								
1-10	1606.12	31.513	3.692	35.205	0.412	0.006	0.187	0.111	-	-	0.716	0.581	0.015	-	0.596	1.312	0.376	0.236	-	-	0.612	1.924	33.281	1607.04
11-20	1607.04	33.281	18.973	52.254	0.546	0.585	0.187	0.126	0.004	-	1.448	0.703	0.911	0.366	1.980	3.428	0.304	0.219	-	-	0.523	3.951	48.304	1613.82
21-31	1613.82	48.304	103.280	151.584	0.682	1.177	0.206	0.136	0.010	-	2.211	0.745	1.875	0.516	3.136	5.347	0.476	0.212	2.039	35.474	38.201	43.548	108.036	1632.12
Sub Total			125.945		1.640	1.768	0.580	0.373	0.014	-	4.375	2.029	2.801	0.882	5.712	10.087	1.156	0.667	2.039	35.474	39.336	49.423		
Aug 99																								
1-10	1632.12	108.036	51.733	159.769	0.649	1.240	0.175	0.061	1.184	-	3.309	0.708	1.910	-	2.618	5.927	0.473	0.147	3.963	37.752	42.335	48.262	111.507	1633.00
11-20	1633.00	111.507	38.795	150.302	0.661	1.222	0.187	0.057	2.925	-	5.502	0.695	1.949	-	2.644	8.146	0.477	0.147	2.711	27.764	31.099	38.795	111.507	1633.00
21-31	1633.00	111.507	11.799	123.306	0.682	1.372	0.211	0.064	3.242	-	5.571	0.778	2.149	-	2.927	8.498	0.535	0.162	2.455	0.149	3.301	11.799	111.507	1633.00
Sub Total			102.327		1.992	3.834	0.573	0.182	7.351	-	13.932	2.181	6.008	-	8.189	22.121	1.485	0.456	9.129	65.665	76.735	98.856		
Sept 99																								
1-10	1633.00	111.507	9.570	121.077	0.633	1.218	0.226	0.052	2.954	-	5.083	0.725	1.959	-	2.684	7.767	0.480	0.146	1.177	-	1.803	9.670	111.507	1633.00
11-20	1633.00	111.507	7.070	118.577	0.631	1.253	0.230	0.052	2.969	-	5.135	0.708	1.923	-	2.631	7.766	0.529	0.147	0.600	-	1.276	9.042	109.535	1632.50
21-30	1632.50	109.535	6.092	115.627	0.650	1.195	0.136	0.084	2.942	-	5.007	0.724	1.954	0.817	3.495	8.502	0.557	0.171	0	-	0.728	9.230	106.379	1631.70
Sub Total			22.732		1.914	3.666	0.592	0.188	8.865	-	15.225	2.157	5.836	0.817	8.810	24.035	1.566	0.464	1.777	-	3.807	27.842		
Oct. 99																								
1-10	1631.70	106.397	18.623	125.020	0.521	0.789	0	0.026	2.579	-	3.915	0.719	1.854	0.028	2.601	6.516	0.355	0.158	2.151	4.333	6.997	13.513	111.507	1633.00
11-20	1633.00	111.507	14.831	126.338	0.540	0.825	0.115	0.031	2.802	-	4.313	0.745	1.830	-	2.575	6.888	0.444	0.151	2.866	4.482	7.943	14.831	111.507	1633.00
21-31	1633.00	111.507	16.729 (16.479+0.250)	128.236	0.584	1.030	0.192	0.036	3.130	0.250	5.222	0.793	1.713	-	2.506	7.728	0.456	0.474	3.095	4.976	9.001	16.729	111.507	1633.00
Sub Total			50.183 (49.933+0.250)		1.645	2.644	0.307	0.093	8.511	0.250	13.450	2.257	5.397	0.028	7.682	21.132	1.255	0.783	8.112	13.791	23.941	45.073		
Nov. 99																								
1-10	1633.00	111.507	7.368 (7.118+0.250)	111.875	0.587	1.036	0.199	0.059	2.271	0.250	4.402	0.700	1.798	0.061	2.559	6.961	0.511	0.150	1.284	-	1.945	8.906	109.969	1632.61
11-20	1632.61	109.969	2.361 (2.111+0.250)	112.330	0.602	1.155	0.213	0.119	2.951	0.250	5.290	0.730	1.645	1.011	3.386	8.676	0.522	0.181	-	-	0.703	9.379	102.951	1630.81
21-30	1630.81	102.951	1.886 (1.636+0.250)	104.837	0.599	1.123	0.213	0.119	2.853	0.250	5.157	0.802	1.638	0.697	3.137	8.294	0.349	0.067	-	-	0.416	8.710	96.127	1629.01
Sub Total			11.615 (10.865+0.750)		1.788	3.314	0.625	0.297	8.075	0.750	14.849	2.232	5.081	1.769	9.082	23.931	1.382	0.398	1.284	-	3.064	26.995		
Total for Khariff			337.077 (336.077+1.000)		9.146	15.226	3.238	1.269	32.816	1.000	62.695	11.051	25.123	3.496	39.670	102.365	7.359	2.801	22.341	114.930	147.431	249.796		

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopa-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Irrign. drawals Col. 12+16	ration				losses Tmcft. Col. 18 to 21	outflow Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Dec. 99																								
1-10	1629.01	96.127	0.888 (1.138+0.250)	97.015	0.506	1.070	0.212	0.125	2.611	0.250	4.774	0.849	1.592	0.353	2.794	7.568	0.425	0.064	-	-	0.489	8.057	88.958	1627.06
11-20	1627.06	88.958	(-)0.570	88.388	0.492	0.547	0.060	0.031	2.595	-	3.725	0.828	0.805	0.088	1.721	5.446	0.435	0.035	-	-	0.470	5.916	82.472	1625.24
21-31	1625.24	82.472	(-)1.751	80.721	0.645	0.061	0	0.010	2.744	-	3.460	0.826	1.578	0	2.404	5.864	0.417	0.115	-	-	0.532	6.396	74.325	1622.85
Sub Total			(-)1.433 (-1.683+0.250)		1.643	1.678	0.272	0.166	7.950	0.250	11.959	2.503	3.975	0.441	6.919	18.878	1.277	0.214	-	-	1.491	20.369		
Jan. 2000																								
1-10	1622.85	74.325	(-)0.745 (-0.995+0.250)	73.580	0.656	0.901	-	0.009	2.806	0.250	4.622	0.682	1.411	0.101	2.194	6.816	0.344	0.146	-	-	0.490	7.306	66.274	1620.32
11-20	1620.32	66.274	(-)1.256 (-1.506+0.250)	65.018	0.660	0.386	0.125	0.056	2.908	0.250	4.385	0.677	0.047	-	0.724	5.109	0.358	0.126	-	-	0.484	5.593	59.425	1618.01
21-31	1618.01	59.425	(-)1.545	57.880	0.730	-	0.230	0.132	3.195	-	4.287	0.788	-	0.616	1.404	5.691	0.357	0.114	-	-	0.471	6.162	51.718	1615.17
Sub Total			(-)3.546 (-4.046+0.500)		2.046	1.287	0.355	0.197	8.909	0.500	13.294	2.147	1.458	0.717	4.322	17.616	1.059	0.386	-	-	1.445	19.061		
Feb. 2000																								
1-10	1615.17	51.718	0.337 (-0.778+0.865+0.250) (Bhadra Assistance + L.I. Scheme)	52.055	0.650	0.801	0.208	0.129	2.904	0.250	4.942	0.678	0.193	0.455	1.326	6.268	0.313	0.104		-	0.417	6.685	45.370	1612.61
11-20	1612.61	45.370	0.125 (-0.719+0.844 Bhadra)	45.495	0.655	0.129	0.208	0.129	0.905	-	4.026	0.673	0.020	0.430	1.123	5.149	0.324	0.104	-	-	0.428	5.577	39.918	1610.23
21-28	1610.23	39.919	(-)0.723 (-0.756+0.033 Bhadra)	39.195	0.587	-	0.187	0.117	2.614	-	3.505	0.598	-	0.364	0.962	4.467	0.238	0.093	-	-	0.331	4.798	34.397	1607.60
Sub Total			(-)0.261 (-2.2530+1.742+0.250) (Bhadra+ L.I.S)		1.892	0.930	0.603	0.375	8.423	0.250	12.473	1.949	0.213	1.249	3.411	15.884	0.875	0.301	-	-	1.176	17.060		
Mar. 2000																								
1-10	1607.60	34.397	(-)1.028	33.369	0.649	-	0.208	0.129	2.905	-	3.891	0.635	-	0.430	1.065	4.956	0.294	0.104	-	-	0.398	5.354	28.015	1604.20
11-20	1604.20	28.015	(-)1.788	26.227	0.659	-	0.209	0.129	2.902	-	3.899	0.625	-	0.759	1.384	5.283	0.273	0.104	-	-	0.377	5.660	20.567	1599.50
21-31	1599.50	20.567	(-)1.308 (-1.386+0.078BA)	19.259	0.765	-	0.229	0.143	3.189	-	4.326	0.667	-	1.050	1.717	6.043 0.000	0.241	0.114	-	-	0.355	6.398	12.861	1593.13
Sub Total			(-)4.124 (-)4.202+0.078(BA)		2.073	-	0.646	0.401	7.996	-	12.116	1.927	-	2.239	4.166	16.282	0.808	0.322	-	-	1.130	17.412		
April 2000																								
1-10	1593.13	12.861	(-)0.657 (-1.010+0.353BA)	12.204	0.615	-	0.208	0.118	2.818	-	3.759	0.376	-	0.484	0.860	4.619	0.158	0.093	-	-	0.251	4.870	7.334	1586.60
11-20	1586.60	7.334	(-)0.614	6.720	0.003	-	0.208	0.044	2.494	-	2.749	(-)004	-	-	(-)0.004	2.745	0.110	-	-	-	0.110	2.855	3.865	1580.79
21-30	1580.79	3.865	(-)0.056 (-0.550+0.494BA)	3.809	0.001	-	0.204	0.047	1.207	-	1.459	0.296	-	-	0.296	1.755	0.075	-	-	-	0.075	1.830	1.979	1575.62
Sub Total			(-)1.327 (-2.174+0.847BA)		0.619	-	0.620	0.209	6.519	-	7.967	0.668	-	0.484	1.152	9.119	0.343	0.093	-	-	0.436	9.555		
May 2000																								
1-10	1575.62	1.979	0.687 (0.039+0.648BA)	2.666	0.047	-	0.187	0.051	0.026	-	0.311	0.203	-	0.079	0.282	0.593	0.046	-	-	-	0.046	0.639	2.027	1575.80
11-20	1575.80	2.027	1.183 (0.767+0.416BA)	3.210	-	-	0.109	0.043	-	-	0.152	-	-	0.661	0.661	0.813	0.068	-	-	-	0.068	0.881	2.329	1576.82
21-31	1576.82	2.329	0.621	2.950	-	-	0.110	0.090	-	-	0.200	-	-	0.718	0.718	0.918	0.053	-	-	-	0.053	0.971	1.979	1575.62
Sub Total			2.491 (1.427+1.064BA)		0.047	-	0.406	0.184	0.026	-	0.663	0.203	-	1.458	1.661	2.324	0.167	-	-	-	0.167	2.491		

ABSTRACT

Total for Khariff June to Nov.	1588.61	8.845	337.077 (336.077+1.000)	345.922	9.146	15.226	3.238	1.269	32.816	1.000	62.695	11.051	25.123	3.496	39.670	102.365	7.359	2.801	22.341	114.930	147.431	249.796	96.127	1629.01
Total for Rabi Dec.to May	1629.01	96.127	(-)8.200 (-12.931+1.000 LIS+3.731BA)		8.320	3.895	2.902	1.532	40.823	1.000	58.472	9.397	5.646	6.588	21.631	80.103	4.529	1.316	-	-	5.845	85.948	1.979	1575.62
Grand total Jun to May	1588.61	8.845	328.877 (323.146+2.000LIS+3.731BA)	337.722	17.466	19.121	6.140	2.801	73.639	2.000	121.167	20.448	30.769	10.084	61.301	182.468	11.888	4.117	22.341	114.930	153.276	335.744	1.979	1575.62

Note:- The inflows includes 2.000 TMCft. debit made towards Lift Irrigation Schemes on the Periphery of TB Reservoir.

B.A:- Bhadra Assistance.

PERFORMANCE OF TUNGABHADRA RESERVOIR FOR THE PERIOD FROM 1-6-2000 TO 31-5-2001 (2000 - 2001)

(BASED ON CAPACITY ELEVATION TABLE OF 1993 SURVEYS). **(THE DRAWALS ARE INCLUSIVE OF PRO-RATA TRANSMISSION LOSSES).**

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopa-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Irrign. drawals Col. 12+16	ration				losses Tmcft. Col. 18 to 21	outflow Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
June 2000																								
1-10	1575.62	1.979	0.486	2.465	-	-	0.180	-	-	-	0.180	-	-	-	-	0.180	0.035	-	-	-	0.035	0.215	2.250	1576.56
11-20	1576.56	2.250	8.949	11.199	-	-	0.187	-	-	-	0.187	-	-	-	-	0.187	0.068	-	-	-	0.068	0.255	10.944	1591.12
21-30	1591.12	10.944	15.811	26.755	0.216	-	0.167	-	-	-	0.383	0.250	-	-	0.250	0.633	0.169	0.043	-	-	0.212	0.845	25.910	1602.97
Sub Total			25.246		0.216	-	0.534	-	-	-	0.750	0.250	-	-	0.250	1.000	0.272	0.043	-	-	0.315	1.315		
July 2000																								
1-10	1602.97	25.910	12.918	38.828	0.271	-	0.156	0.040	-	-	0.467	0.357	0	-	0.357	0.824	0.139	0.302	-	-	0.441	1.265	37.563	1609.14
11-20	1609.14	37.563	64.595	102.158	0.508	0.419	0.185	0.059	0.001	-	1.172	0.701	0.149	-	0.850	2.022	0.224	0.322	-	-	0.546	2.568	99.590	1629.93
21-31	1629.93	99.590	19.930	119.520	0.675	1.239	0.205	0.071	0.520	-	2.710	0.805	1.768	-	2.573	5.283	0.615	0.228	2.652	1.207	4.702	9.985	109.535	1632.50
Sub Total			97.443		1.454	1.658	0.546	0.17	0.521	-	4.349	1.863	1.917	-	3.780	8.129	0.978	0.852	2.652	1.207	5.689	13.818		
Aug 2000																								
1-10	1632.50	109.535	11.333	120.868	0.582	1.136	0.186	0.085	2.654	-	4.643	0.681	1.749	0.304	2.734	7.377	0.472	0.286	1.226	-	1.984	9.361	111.507	1633.00
11-20	1633.00	111.507	17.970	129.477	0.650	1.017	0.186	0.101	2.860	-	4.814	0.657	1.643	-	2.300	7.114	0.424	0.251	4.658	5.523	10.856	17.970	111.507	1633.00
21-31	1633.00	111.507	48.720	160.227	0.685	1.150	0.205	0.055	3.089	-	5.184	0.831	1.983	-	2.814	7.998	0.358	0.228	5.444	34.810	40.840	48.838	111.389	1632.97
Sub Total			78.023		1.917	3.303	0.577	0.241	8.603	-	14.641	2.169	5.375	0.304	7.848	22.489	1.254	0.765	11.328	40.333	53.680	76.169		
Sept 2000																								
1-10	1632.97	111.389	35.595	146.984	0.643	1.110	0.187	0.036	2.860	-	4.836	0.738	1.870	-	2.608	7.444	0.442	0.208	4.920	22.463	28.033	35.477	111.507	1633.00
11-20	1633.00	111.507	11.047	122.554	0.654	1.165	0.187	0.060	2.860	-	4.926	0.754	1.863	-	2.617	7.543	0.441	0.208	2.440	0.415	3.504	11.047	111.507	1633.00
21-30	1633.00	111.507	22.184	133.691	0.634	1.147	0.156	0.087	2.840	-	4.864	0.732	1.901	-	2.633	7.497	0.404	0.208	3.825	10.250	14.687	22.184	111.507	1633.00
Sub Total			68.826		1.931	3.422	0.530	0.183	8.560	-	14.626	2.224	5.634	-	7.858	22.484	1.287	0.624	11.185	33.128	46.224	68.708		
Oct. 2000																								
1-10	1633.00	111.507	26.533	138.040	0.608	1.137	0.168	0.038	2.686	-	4.637	0.765	1.948	-	2.713	7.350	0.411	0.234	3.847	14.691	19.183	26.533	111.507	1633.00
11-20	1633.00	111.507	18.056	129.563	0.566	0.886	0.187	0.031	2.834	-	4.504	0.827	2.002	-	2.829	7.333	0.353	0.208	3.793	6.369	10.723	18.056	111.507	1633.00
21-31	1633.00	111.507	11.761	123.268	0.563	0.966	0.205	0.033	3.137	0.250	5.154	0.724	2.200	-	2.924	8.078	0.444	0.384	2.690	0.914	4.432	12.510	110.758	1632.81
			11.511+0.250																					
Sub Total			56.350		1.737	2.989	0.560	0.102	8.657	0.250	14.295	2.316	6.150	-	8.466	22.761	1.208	0.826	10.330	21.974	34.338	57.099		
			56.100+0.250																					
Nov. 2000																								
1-10	1632.81	110.758	2.660	113.418	0.573	1.096	0.187	0.083	2.860	0.250	5.049	0.731	1.939	-	2.670	7.719	0.376	0.208	-	0	0.584	8.303	105.115	1631.37
			(2.410+0.250)																					
11-20	1631.37	105.115	1.336	106.451	0.552	1.115	0.187	0.093	2.719	0.250	4.916	0.739	1.838	-	2.577	7.493	0.402	0.208	-	-	0.610	8.103	98.348	1629.60
			(1.086+0.250)		630+70	1157+43	250	100	3300+14			90+675+160	1010+143	600				240						
21-30	1629.60	98.348	0.702	99.050	0.490	1.020	0.187	0.090	2.504	0.250	4.541	0.740	1.567	-	2.307	6.848	0.375	0.208	-	-	0.583	7.431	91.619	1627.79
			(0.452+0.250)															120+120						
Sub Total			4.698		1.615	3.231	0.561	0.266	8.083	0.750	14.506	2.210	5.344	0	7.554	22.060	1.153	0.624	-	-	1.777	23.837		
			(3.948+0.750)																					
Total for Khariff			330.586		8.870	14.603	3.308	0.962	34.424	1.000	63.167	11.032	24.420	0.304	35.756	98.923	6.152	3.734	35.495	96.643	142.023	240.946		
			(329.586+1.000)																					

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopa-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Irrign. drawals Col. 12+16	ration			losses Tmcft. Col. 18 to 21	outflow Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Dec. 2000																								
1-10	1627.79	91.619	0.599	92.218	0.424	0.975	0.187	0.095	2.334	0.250	4.265	0.723	1.127	-	1.850	6.115	0.321	0.199	-	-	0.520	6.635	85.583	1626.12
			(0.349 + 0.250)													0.000								
11-20	1626.12	85.583	0.319	85.902	0.441	0.478	-	0.011	2.095	-	3.025	0.658	0.385	-	1.043	4.068	0.403	0.151	-	-	0.554	4.622	81.280	1624.90
21-31	1624.90	81.280	0.349	81.629	0.611	0.430	-	-	2.501	-	3.542	0.773	0.941	-	1.714	5.256	0.379	0.171	-	-	0.550	5.806	75.823	1623.30
Sub Total			1.267		1.476	1.883	0.187	0.106	6.93	0.250	10.832	2.154	2.453	-	4.607	15.439	1.103	0.521	-	-	1.624	17.063		
			(-0.201+0.250+1.218 BA)																					
			(1.017 + 0.250)																					
Jan. 2001																								
1-10	1623.30	75.823	-1.113	74.710	0.598	1.000	-	0.024	2.682	0.250	4.554	0.642	1.635	0.655	2.932	7.486	0.341	0.208	-	-	0.549	8.035	66.675	1620.45
			(-1.363+0.250)																					
11-20	1620.45	66.675	-0.570	66.105	0.602	0.367	0.131	0.103	2.804	0.250	4.257	0.629	0.396	0.731	1.756	6.013	0.334	0.130	-	-	0.464	6.477	59.628	1618.08
			(-0.820+0.250)																					
21-31	1618.08	59.628	-1.614	58.014	0.666	0.404	0.205	0.142	3.097	-	4.514	0.697	0.188	0.669	1.554	6.068	0.365	0.150	-	-	0.515	6.583	51.431	1615.06
Sub Total			-3.297		1.866	1.771	0.336	0.269	8.583	0.500	13.325	1.968	2.219	2.055	6.242	19.567	1.040	0.488	-	-	1.528	21.095		
			(-6.150+0.500+2.353 (B.A)																					
Feb. 2001																								
1-10	1615.06	51.431	-1.229	50.202	0.591	0.588	0.187	0.129	2.817	0.250	4.562	0.645	0.216	0.527	1.388	5.950	0.326	0.164	-	-	0.490	6.440	43.762	1611.93
			(-1.479+0.250)																					
11-20	1611.93	43.762	-1.791	41.971	0.600	-	0.196	0.129	2.817	-	3.742	0.639	-	0.516	1.155	4.897	0.328	0.104	-	-	0.432	5.329	36.642	1608.70
21-28	1608.70	36.642	-0.978	35.664	0.482	-	0.159	0.102	2.229	-	2.972	0.502	-	0.361	0.863	3.835	0.253	0.083	-	-	0.336	4.171	31.493	1606.11
Sub Total			-3.998		1.673	0.588	0.542	0.360	7.863	0.250	11.276	1.786	0.216	1.404	3.406	14.682	0.907	0.351	-	-	1.258	15.940		
			(-4.248+0.250)																					
Mar. 2001																								
1-10	1606.11	31.493	-1.944	29.549	0.669	0.047	0.200	0.132	2.789	-	3.837	0.686	-	0.626	1.312	5.149	0.294	0.104	-	-	0.398	5.547	24.002	1601.79
11-20	1601.79	24.002	-1.815	22.187	0.619	-	0.194	0.131	2.815	-	3.759	0.594	-	0.662	1.256	5.015	0.250	0.104	-	-	0.354	5.369	16.818	1596.67
21-31	1596.67	16.818	-2.030	14.788	0.651	-	0.206	0.133	3.092	-	4.082	0.565	-	0.639	1.204	5.286	0.204	0.114	-	-	0.318	5.604	9.184	1589.04
Sub Total			-5.789		1.939	0.047	0.600	0.396	8.696	-	11.678	1.845	-	1.927	3.772	15.450	0.748	0.322	-	-	1.070	16.520		
April 2001																								
1-10	1589.04	9.184	-1.020	8.164	0.493	-	0.180	0.023	2.703	-	3.399	0.218	-	0.156	0.374	3.773	0.120	0.073	-	-	0.193	3.966	4.198	1581.48
11-20	1581.48	4.198	3.459	7.656	-	-	0.163	0.004	2.060	-	2.227	0.323	-	-	0.323	2.550	0.085	-	-	-	0.085	2.635	5.022	1583.04
21-30	1583.04	5.022	0.137	5.158	0.008	-	0.173	0.016	0.483	-	0.680	0.624	-	-	0.624	1.304	0.099	-	-	-	0.099	1.403	3.756	1580.55
Sub Total			2.576		0.501	-	0.516	0.043	5.246	-	6.306	1.165	-	0.156	1.321	7.627	0.304	0.073	-	-	0.377	8.004		
			(1.496+1.080 BA)																					
May 2001																								
1-10	1580.55	3.756	-0.017	3.739	0.004	-	0.173	-	0.080	-	0.257	-0.004	-	0.224	0.220	0.477	0.089	-	-	-	0.089	0.566	3.173	1579.19
11-20	1579.19	3.173	0.042	3.215	-	-	0.173	-	0.089	-	0.262	-	-	0.732	0.732	0.994	0.080	-	-	-	0.080	1.074	2.141	1576.20
21-31	1576.20	2.141	0.806	2.947	-	-	0.182	0.015	-	-	0.197	-	-	0.922	0.922	1.119	0.053	-	-	-	0.053	1.172	1.775	1574.85
Sub Total			0.831		0.004	-	0.528	0.015	0.169	-	0.716	-0.004	-	1.878	1.874	2.590	0.222	-	-	-	0.222	2.812		

ABSTRACT

Total for Khariff June to Nov.	1575.62	1.979	330.586 (329.586+1.000)	332.565	8.870	14.603	3.308	0.962	34.424	1.000	63.167	11.032	24.420	0.304	35.756	98.923	6.152	3.734	35.495	96.643	142.023	240.946	91.619	1627.79
Total for Rabi Dec.to May	1627.79	91.619	-8.410 (-14.061+1.000 LIS +4.651 BA)	83.209	7.459	4.289	2.709	1.189	37.487	1.000	54.133	8.914	4.888	7.420	21.222	75.355	4.324	1.755	-	-	6.079	81.434	1.775	1574.85
Grand total Jun to May	1575.62	1.979	322.176 (315.525+2.000 LIS +4.651 BA)		16.329	18.892	6.017	2.151	71.911	2.000	117.300	19.946	29.308	7.724	56.978	174.278	10.476	5.489	35.495	96.643	148.102	322.380	1.775	1574.85
Add towards water drawn from TBR during the water year 2000-2001by M/s Kaylyani steels Ltd, Ginigere & M/s Kirloskar Ferrous Ltd., Bevinahalli			0.078								0.078					0.078						0.078		
Grand Total:			322.254	324.233	16.329	18.892	6.017	2.151	71.911	2.000	117.378	19.946	29.308	7.724	56.978	174.356	10.476	5.489	35.495	96.643	148.102	322.458	1.775	1574.85

Note:- 1) The inflows includes 2 TMCft. debit made towards Lift Irrigation Schemes on the Periphery of TB Reservoir.

2) B.A:- Bhadra Assistance.

PERFORMANCE OF TUNGABHADRA RESERVOIR FOR THE PERIOD FROM 1-6-2001 TO 31-5-2002 (2001 - 2002)

(BASED ON CAPACITY ELEVATION TABLE OF 1993 SURVEYS). **(THE DRAWALS ARE INCLUSIVE OF PRO-RATA TRANSMISSION LOSSES).**

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopa-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Irrign. drawals Col. 12+16	ration				losses Tmcft. Col. 18 to 21	outflow Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
June 2001																								
1-10	1574.85	1.775	0.562	2.337	-	-	0.185	0.006	-	-	0.191	-	-	-	-	0.191	0.047	-	-	-	0.047	0.238	2.099	1576.06
11-20	1576.06	2.099	6.230	8.329	-	-	0.192	0.024	-	-	0.216	-	-	-	-	0.216	0.052	-	-	-	0.052	0.268	8.061	1587.59
21-30	1587.59	8.061	11.402	19.463	-	-	0.192	0.024	-	-	0.216	-	-	-	-	0.216	0.162	-	-	-	0.162	0.378	19.082	1598.43
Sub Total			18.194		-	-	0.569	0.054	-	-	0.623	-	-	-	-	0.623	0.261	-	-	-	0.261	0.884		
Jul.2001																								
1-10	1598.43	19.085	17.729	36.814	0.324	-	0.192	0.068	-	-	0.584	0.482	-	-	0.482	1.066	0.180	0.104	-	-	0.284	1.350	35.464	1608.13
11-20	1608.13	35.464	27.460	62.924	0.473	0.487	0.188	0.088	-	-	1.236	0.722	0.326	-	1.048	2.284	0.287	0.261	-	-	0.548	2.832	60.061	1618.24
21-31	1618.24	60.061	14.678	74.739	0.588	1.214	0.200	0.083	0.497	-	2.582	0.570	1.572	0.042	2.184	4.766	0.433	0.467	-	-	0.900	5.666	69.103	1621.23
Sub Total			59.867		1.385	1.701	0.580	0.239	0.497	-	4.402	1.774	1.898	0.042	3.714	8.116	0.900	0.832	-	-	1.732	9.848		
Aug.2001																								
1-10	1621.23	69.103	16.908	86.011	0.689	1.151	0.178	0.096	2.427	-	4.541	0.682	1.747	0.318	2.747	7.288	0.307	0.208	-	-	0.515	7.803	78.208	1624.01
11-20	1624.01	78.208	15.696	93.904	0.682	1.128	0.178	0.083	2.851	-	4.922	0.700	1.764	-	2.464	7.386	0.404	0.208	-	-	0.612	7.998	85.906	1626.21
21-31	1626.21	85.906	27.464	113.370	0.749	1.244	0.196	0.092	3.134	-	5.415	0.769	1.938	-	2.707	8.122	0.448	0.228	-	-	0.676	8.798	104.572	1631.23
Sub Total			60.068		2.120	3.523	0.552	0.271	8.412	-	14.878	2.151	5.449	0.318	7.918	22.796	1.159	0.644	-	-	1.803	24.599		
Sept.2001																								
1-10	1631.23	104.572	6.788	111.360	0.707	1.188	0.187	0.086	2.860	-	5.028	0.678	1.734	-	2.412	7.440	0.569	0.208	-	-	0.777	8.217	103.143	1630.86
11-20	1630.86	103.143	2.894	106.037	0.669	1.116	0.184	0.083	2.846	-	4.898	0.702	1.621	-	2.323	7.221	0.486	0.208	-	-	0.694	7.915	98.122	1629.54
21-30	1629.54	98.122	10.245	108.367	0.494	0.521	0.108	0.070	2.521	-	3.714	0.739	1.159	-	1.898	5.612	0.366	0.164	-	-	0.530	6.142	102.225	1630.62
Sub Total			19.927		1.870	2.825	0.479	0.239	8.227	-	13.640	2.119	4.514	-	6.633	20.273	1.421	0.580	-	-	2.001	22.274		
Oct.2001																								
1-10	1630.62	102.225	7.616	109.841	0.476	0.641	0.166	0.070	2.284	-	3.637	0.765	0.956	-	1.721	5.358	0.345	0.188	-	-	0.533	5.891	103.950	1631.07
11-20	1631.07	103.950	7.519	111.469	0.471	0.606	0.095	0.038	1.615	-	2.825	0.742	0.864	-	1.606	4.431	0.282	0.165	-	-	0.447	4.878	106.591	1631.75
21-31	1631.75	106.591	3.025 (2.775+0.250)	109.616	0.528	0.733	0.130	0.040	2.374	0.250	4.055	0.753	0.629	-	1.382	5.437	0.464	0.228	-	-	0.692	6.129	103.487	1630.95
Sub Total			18.160 (17.910+0.250)		1.475	1.980	0.391	0.148	6.273	0.250	10.517	2.260	2.449	-	4.709	15.226	1.091	0.581	-	-	1.672	16.898		
Nov.2001																								
1-10	1630.95	103.487	-0.119 (-0.369+0.250)	103.368	0.588	1.104	0.183	0.070	2.861	0.250	5.056	0.625	1.073	-	1.698	6.754	0.391	0.208	-	-	0.599	7.353	96.015	1628.98
11-20	1628.98	96.105	0.538 (0.288+0.250)	96.643	0.603	1.010	0.183	0.075	2.730	0.250	4.851	0.699	1.672	-	2.371	7.222	0.347	0.208	-	-	0.555	7.777	88.776	1627.01
21-30	1627.01	88.776	-0.218 (-0.468+0.250)	88.558	0.320	0.769	0.183	0.070	2.516	0.250	4.108	0.742	1.430	-	2.172	6.280	0.374	0.208	-	-	0.582	6.862	81.696	1625.02
Sub Total			0.201 (-0.549+0.750)		1.511	2.883	0.549	0.215	8.107	0.750	14.015	2.066	4.175	-	6.241	20.256	1.112	0.624	-	-	1.736	21.992		
Total for Khariff			176.417 (175.417+1.000)		8.361	12.912	3.120	1.166	31.516	1.000	58.075	10.370	18.485	0.360	29.215	87.290	5.944	3.261			9.205	96.495		

Period	Reservoir at start		Inflow	T.Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopa-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity TMCft.	TMCft.	TMCft. Col.3+4	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total TMCft. Col. 6 to 11	LLC	RB HLC	RR	Total TMCft. Col. 13 to 15	Irrign. drawals Col. 12+16	ration				losses Tmcft. Col. 18 to 21	outflow Tmcft. Col. 17+22	Capacity Tmcft. Col. 5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Dec .2001																								
1-10	1625.02	81.697	(-) 1.049 (-1.299+0.250)	80.648	0.123	0.742	0.172	0.057	2.353	0.250	3.697	0.662	1.425	-	2.087	5.784	0.330	0.208	-	-	0.538	6.322	74.326	1622.85
11-20	1622.85	74.326	(-) 1.497	72.829	0.296	0.298	0.034	0.013	1.793	-	2.434	0.606	0.337	-	0.943	3.377	0.330	0.145	-	-	0.475	3.852	68.977	1621.19
21-31	1621.19	68.977	(-) 1.584	67.393	0.656	0.006	-	0.046	2.507	-	3.215	0.779	0.198	0.687	1.664	4.879	0.288	0.135	-	-	0.423	5.302	62.091	1618.93
Sub Total			(-) 4.130 (-4.380+0.250)		1.075	1.046	0.206	0.116	6.653	0.250	9.346	2.047	1.960	0.687	4.694	14.040	0.948	0.488	-	-	1.436	15.476		
Jan.2002																								
1-10	1618.93	62.091	(-) 2.460 (-2.710+0.250)	59.631	0.576	0.805	-	0.090	2.717	0.250	4.438	0.639	1.511	1.254	3.404	7.842	0.254	0.208	-	-	0.462	8.304	51.327	1615.02
11-20	1615.02	51.327	(-) 1.729 (-1.979+0.250)	49.598	0.574	0.008	0.041	0.084	2.657	0.250	3.614	0.672	1.003	1.022	2.697	6.311	0.228	0.145	-	-	0.373	6.684	42.914	1611.56
21-31	1611.56	42.914	(-) 2.387	40.527	0.640	-	0.184	0.128	2.897	-	3.849	0.732	-	1.039	1.771	5.620	0.275	0.114	-	-	0.389	6.009	34.518	1607.66
Sub Total			(-) 6.576 (-7.076+0.500)		1.790	0.813	0.225	0.302	8.271	0.500	11.901	2.043	2.514	3.315	7.872	19.773	0.757	0.467	-	-	1.224	20.997		
Feb.2002																								
1-10	1607.66	34.518	(-) 1.823 (-2.073+0.250)	32.695	0.576	-	0.173	0.118	2.644	0.250	3.761	0.639	-	0.979	1.618	5.379	0.197	0.104	-	-	0.301	5.680	27.015	1603.62
11-20	1603.62	27.015	(-) 0.782	26.233	0.599	-	0.173	0.102	2.642	-	3.516	0.651	-	0.964	1.615	5.131	0.217	0.104	-	-	0.321	5.452	20.781	1599.65
21-28	1599.65	20.781	(-) 1.643	19.138	0.446	-	0.138	0.060	2.066	-	2.710	0.465	-	0.080	0.545	3.255	0.177	0.093	-	-	0.260	3.515	15.623	1595.67
Sub Total			(-) 4.248 (-4.498+0.250)		1.621	-	0.484	0.280	7.352	0.250	9.987	1.755	-	2.023	3.778	13.765	0.591	0.291	-	-	0.882	14.647		
Mar.2002																								
1-10	1595.67	15.623	(-) 2.082	13.541	0.562	-	0.158	0.060	2.637	-	3.417	0.591	-	-	0.591	4.008	0.171	0.104	-	-	0.275	4.283	9.258	1589.13
11-20	1589.13	9.258	(-) 1.905	7.353	0.491	-	0.156	0.059	2.635	-	3.341	0.545	-	-	0.545	3.886	0.111	0.104	-	-	0.215	4.101	3.252	1579.38
21-31	1579.38	3.252	(-) 0.651	2.601	0.153	-	0.171	0.019	1.453	-	1.796	-	-	-	-	1.796	0.049	-	-	-	0.049	1.845	0.756	1569.43
Sub Total			(-) 4.638		1.206	-	0.485	0.138	6.725	-	8.554	1.136	-	-	1.136	9.690	0.331	0.208	-	-	0.539	10.229		
Apr.2002																								
1-10	1569.43	0.756	(-) 0.055	0.701	-	-	0.077	0.009	0.068	-	0.154	-	-	-	-	0.154	0.025	-	-	-	0.025	0.179	0.522	1567.46
11-20	1567.46	0.522	(-) 0.013	0.509	-	-	0.071	-	0.018	-	0.089	-	-	-	-	0.089	0.018	-	-	-	0.018	0.107	0.402	1566.20
21-31	1566.20	0.402	0.077	0.479	-	-	0.025	-	-	-	0.025	-	-	0.029	0.029	0.054	0.017	-	-	-	0.017	0.071	0.408	1566.26
Sub Total			0.009		-	-	0.173	0.009	0.086	-	0.268	-	-	0.029	0.029	0.297	0.060	-	-	-	0.060	0.357		
May.2002																								
1-10	1566.26	0.408	0.611	1.019	0.007	-	0.192	0.010	-	-	0.209	-	-	0.578	0.578	0.787	0.014	-	-	-	0.014	0.801	0.218	1563.61
11-20	1563.61	0.218	1.505	1.723	-	-	0.130	0.013	-	-	0.143	-	-	0.787	0.787	0.930	0.014	-	-	-	0.014	0.944	0.779	1569.60
21-31	1569.60	0.779	1.132	1.911	-	-	0.167	0.044	-	-	0.211	-	-	1.385	1.385	1.596	0.024	-	-	-	0.024	1.620	0.291	1564.75
Sub Total			3.248	-	0.007	-	0.489	0.067	-	-	0.563	-	-	2.750	2.750	3.313	0.052	-	-	-	0.052	3.365		

ABSTRACT

Total for Khariff Jun to Nov.	1574.85	1.775	176.417 (175.417+1.000)	178.192	8.361	12.912	3.120	1.166	31.516	1.000	58.075	10.370	18.485	0.360	29.215	87.290	5.944	3.261	-	-	9.205	96.495	81.697	1625.02
Total for Rabi from Dec to May	1625.02	81.697	(-) 16.335* (-17.335+1.000)	65.362	5.699	1.859	2.062	0.912	29.087	1.000	40.619	6.981	4.474	8.804	20.259	60.878	2.739	1.454	-	-	4.193	65.071	0.291	1564.75
Grand Total Jun. To May	1574.85	1.775	160.082* (158.082+2.000)	161.857	14.060	14.771	5.182	2.078	60.603	2.000	98.694	17.351	22.959	9.164	49.474	148.168	8.683	4.715	-	-	13.398	161.566	0.291	1564.75

Note:- * This includes Bhadra Assistance in April & May 2002.

STATUS REPORT ON THE OPERATION OF TUNGABHADRA RESERVOIR FOR THE PERIOD FROM 1-6-2002 TO 31-5-2003 (2002 - 2003)

(BASED ON CAPACITY ELEVATION TABLE OF 1993 SURVEYS). (THE DRAWALS ARE INCLUSIVE OF PRO-RATA TRANSMISSION LOSSES).

(All figures are in TMC except Reservoir level which is in feet)

Period	Reservoir at start		Inflow	Total Storage (Col.3+4)	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total drawals. Col.12+16)	Evopara-tion	S.L.	E.P.G.	Spill	Total losses (Col.18 to 21)	Total outflow (Col.17 +22)	Reservoir at end	
	Level	Capacity			PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total (Col.6 to 11)	LLC	RB HLC	RR	Total (Col.13 to 15)								Capacity (Col.5-23)	Level
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Jun.2002																								
1-10	1564.75	0.290	0.830	1.120	-	-	0.127	0.070	-	-	0.197	-	-	-	-	0.197	0.015	-	-	-	0.015	0.212	0.908	1570.50
11-20	1570.50	0.908	0.862	1.770	-	-	0.195	0.042	0.492	-	0.729	-	-	-	-	0.729	0.022	-	-	-	0.022	0.751	1.019	1571.20
21-30	1571.20	1.019	6.548	7.567	-	-	0.200	0.035	0.294	-	0.529	-	-	-	-	0.529	0.046	-	-	-	0.046	0.575	6.992	1586.12
Sub Total			**8.240**		**-**	**-**	**0.522**	**0.147**	**0.786**	**-**	**1.455**	**-**	**-**	**-**	**-**	**1.455**	**0.083**	**-**	**-**	**-**	**0.083**	**1.538**		
Jul.2002																								
1-10	1586.12	6.992	6.713	13.705	0.149	-	0.201	0.039	-	-	0.389	0.382	-	-	0.382	0.771	0.138	0.069	-	-	0.207	0.978	12.727	1593.00
11-20	1593.00	12.727	12.419	25.146	0.213	0.005	0.200	0.039	0.492	-	0.949	0.347	0.008	-	0.355	1.304	0.136	0.063	-	-	0.199	1.503	23.643	1601.56
21-31	1601.56	23.643	7.563	31.206	0.636	0.791	0.221	0.11	1.744	-	3.502	0.669	0.690	-	1.359	4.861	0.224	0.227	-	-	0.451	5.312	25.894	1602.96
Sub Total			**26.695**		**0.998**	**0.796**	**0.622**	**0.188**	**2.236**	**-**	**4.840**	**1.398**	**0.698**	**-**	**2.096**	**6.936**	**0.498**	**0.359**	**-**	**-**	**0.857**	**7.793**		
Aug.2002																								
1-10	1602.96	25.894	11.753	37.647	0.580	1.118	0.201	0.104	2.313	-	4.316	0.608	1.597	-	2.205	6.521	0.190	0.208	-	-	0.398	6.919	30.728	1605.70
11-20	1605.70	30.728	36.964	67.692	0.584	1.092	0.207	0.099	2.685	-	4.667	0.590	1.678	-	2.268	6.935	0.262	0.230	-	-	0.492	7.427	60.265	1618.30
21-31	1618.30	60.265	22.244	82.509	0.659	1.245	0.228	0.097	2.958	-	5.187	0.518	1.813	-	2.331	7.518	0.486	0.310	-	-	0.796	8.314	74.195	1622.81
Sub Total			**70.961**		**1.823**	**3.455**	**0.636**	**0.300**	**7.956**	**-**	**14.170**	**1.716**	**5.088**	**-**	**6.804**	**20.974**	**0.938**	**0.748**	**-**	**-**	**1.686**	**22.660**		
Sept.2002																								
1-10	1622.81	74.195	5.979	80.174	0.227	0.242	0.207	0.058	2.723	-	3.457	0.271	0.432	-	0.703	4.160	0.420	0.141	-	-	0.561	4.721	75.453	1623.19
11-20	1623.19	75.453	7.226	82.679	0.852	0.549	0.207	0.094	2.732	-	4.434	0.468	0.066	0.172	0.706	5.140	0.507	0.168	-	-	0.675	5.815	76.864	1623.61
21-30	1623.61	76.864	1.052	77.916	0.629	1.379	0.207	0.071	2.732	-	5.018	0.573	0.994	0.601	2.168	7.186	0.521	0.344	-	-	0.865	8.051	69.865	1621.47
Sub Total			**14.257**		**1.708**	**2.170**	**0.621**	**0.223**	**8.187**	**-**	**12.909**	**1.312**	**1.492**	**0.773**	**3.577**	**16.486**	**1.448**	**0.653**	**-**	**-**	**2.101**	**18.587**		
Oct.2002																								
1-10	1621.47	69.865	-1.605	68.260	0.624	1.338	0.208	0.023	2.721	-	4.914	0.638	1.323	0.604	2.565	7.479	0.422	0.294	-	-	0.716	8.195	59.975	1618.20
11-20	1618.20	59.975	10.147	70.122	0.483	0.657	0.093	0.042	2.489	-	3.764	0.726	1.496	0.151	2.373	6.137	0.257	0.208	-	-	0.465	6.602	63.520	1619.41
21-31	1619.41	63.520	2.695 (2.445+0.250)	66.215	0.613	1.027	0.189	0.055	2.812	0.250	4.946	0.794	1.630	-	2.424	7.370	0.341	0.228	-	-	0.569	7.939	58.276	1617.60
Sub Total			11.147 (10.897+0.250)		**1.720**	**3.022**	**0.490**	**0.120**	**8.022**	**0.250**	**13.624**	**2.158**	**4.449**	**0.755**	**7.362**	**20.986**	**1.020**	**0.730**	**-**	**-**	**1.750**	**22.736**		
Nov.2002																								
1-10	1617.60	58.276	3.704 (3.455+0.250)	61.980	0.544	1.044	0.200	0.066	2.602	0.250	4.706	0.714	1.484	-	2.198	6.904	0.276	0.208	-	-	0.484	7.388	54.592	1616.26
11-20	1616.26	54.592	0.526 (0.276+0.250)	55.118	0.558	1.119	0.200	0.076	2.502	0.250	4.705	0.733	1.407	-	2.140	6.845	0.251	0.208	-	-	0.459	7.304	47.814	1613.62
21-30	1613.62	47.814	-0.305 (-0.555+0.250)	47.508	0.518	1.043	0.200	0.075	2.422	0.250	4.508	0.773	1.430	0.166	2.369	6.877	0.239	0.208	-	-	0.447	7.324	40.184	1610.35
Sub Total			**3.925**		**1.620**	**3.206**	**0.600**	**0.217**	**7.526**	**0.750**	**13.919**	**2.220**	**4.321**	**0.166**	**6.707**	**20.626**	**0.766**	**0.624**	**-**	**-**	**1.390**	**22.016**		
Total upto 30-11-2002	1564.75	0.290	**135.225**	**135.515**	**7.869**	**12.649**	**3.491**	**1.195**	**34.713**	**1.000**	**60.917**	**8.804**	**16.048**	**1.694**	**26.546**	**87.463**	**4.753**	**3.114**	**-**	**-**	**7.867**	**95.330**	**40.184**	**1610.35**

Period	Reservoir at start		Inflow	Total	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evopara-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level	Capacity		Storage (Col.3+4)	PC+LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total (Col.6 to 11)	LLC	RB HLC	RR	Total (Col.13 to 15)	drawals. Col.12+16)	tion				losses (Col.18 to 21)	outflow (Col.17 +22)	Capacity (Col.5-23)	Level
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Dec. 2002																								
1-10	1610.35	40.184	-0.423 (-0.673+0.250)	39.761	0.520	0.810	0.201	0.050	2.191	0.250	4.022	0.764	1.062	0.668	2.494	6.516	0.219	0.208	-	-	0.427	6.943	32.818	1606.80
11-20	1606.80	32.818	-1.701	31.117	0.510	0.193	0.032	0.093	2.080	-	2.908	0.770	0.748	0.821	2.339	5.247	0.185	0.166	-	-	0.351	5.598	25.519	1602.73
21-31	1602.73	25.519	-1.452	24.067	0.204	-	-	0.083	1.047	-	1.334	0.373	-	1.542	1.915	3.249	0.170	0.052	-	-	0.222	3.471	20.596	1599.52
Sub Total			**-3.576** (-3.826+0.250)		**1.234**	**1.003**	**0.233**	**0.226**	**5.318**	**0.250**	**8.264**	**1.907**	**1.810**	**3.031**	**6.748**	**15.012**	**0.574**	**0.426**	**-**	**-**	**1.000**	**16.012**		
Jan. 2003																								
1-10	1599.52	20.596	-0.042	20.554	-	-	-	0.017	-	-	0.017	-	-	0.557	0.557	0.574	0.151	-	-	-	0.151	0.725	19.829	1598.98
11-20	1598.98	19.829	-0.677	19.152	-	0.183	0.049	0.061	0.032	-	0.325	-	0.317	0.677	0.994	1.319	0.135	0.041	-	-	0.176	1.495	17.657	1597.34
21-31	1597.34	17.657	-0.014	17.643	-	-	0.142	0.029	0.090	-	0.261	-	-	0.030	0.030	0.291	0.181	-	-	-	0.181	0.472	17.171	1596.96
Sub Total			**-0.733**		**0**	**0.183**	**0.191**	**0.107**	**0.122**	**0**	**0.603**	**0**	**0.317**	**1.264**	**1.581**	**2.184**	**0.467**	**0.041**	**-**	**-**	**0.508**	**2.692**		
Feb. 2003																								
1-10	1596.96	17.171	-0.379	16.792	-	-	0.170	0.019	0.060	-	0.249	0.479	-	-	0.479	0.728	0.165	-	-	-	0.165	0.893	15.899	1595.91
11-20	1595.91	15.899	-0.524	15.375	0.077	-	0.190	0.026	0.060	-	0.353	0.554	-	-	0.554	0.907	0.175	-	-	-	0.175	1.082	14.293	1594.49
21-28	1594.49	14.293	-0.436	13.857	0.069	-	0.162	0.034	0.048	-	0.313	0.443	-	-	0.443	0.756	0.127	-	-	-	0.127	0.883	12.974	1593.24
Sub Total			**-1.339**		**0.146**	**0**	**0.522**	**0.079**	**0.168**	**0**	**0.915**	**1.476**	**0**	**0**	**1.476**	**2.391**	**0.467**	**-**	**-**	**-**	**0.467**	**2.858**		
Mar. 2003																								
1-10	1593.24	12.974	-0.705	12.269	0.085	-	0.191	0.032	1.380	-	1.688	0.560	-	-	0.560	2.248	0.158	-	-	-	0.158	2.406	9.863	1589.87
11-20	1589.87	9.863	-0.990	8.873	0.097	-	0.159	0.020	1.767	-	2.043	0.662	-	-	0.662	2.705	0.134	-	-	-	0.134	2.839	6.034	1584.70
21-31	1584.70	6.034	-0.761	5.273	0.083	-	0.171	0.023	0.068	-	0.345	0.717	-	-	0.717	1.062	0.122	-	-	-	0.122	1.184	4.089	1581.26
Sub Total			**-2.456**		**0.265**	**0**	**0.521**	**0.075**	**3.215**	**0**	**4.076**	**1.939**	**0**	**-**	**1.939**	**6.015**	**0.414**				**0.414**	**6.429**		
April 2003																								
1-10	1581.26	4.089	-0.165	3.924	0.004	-	0.140	0.017	0.060	-	0.221	0.026	-	-	0.026	0.247	0.093	-	-	-	0.093	0.340	3.584	1580.17
11-20	1580.17	3.584	-0.406	3.178	-	-	0.114	0.017	0.031	-	0.162	0.043	-	-	0.043	0.205	0.081	-	-	-	0.081	0.286	2.892	1578.46
21-30	1578.46	2.892	-0.410	2.482	0.025	-	0.161	0.012	0.054	-	0.252	0.639	-	-	0.639	0.891	0.056	-	-	-	0.056	0.947	1.535	1573.84
Sub Total			**-0.981**		**0.029**	**0**	**0.415**	**0.046**	**0.145**	**0**	**0.635**	**0.708**	**0**	**0**	**0.708**	**1.343**	**0.230**				**0.230**	**1.573**		
May 2003																								
1-10	1573.84	1.535	0.101	1.636	0.034	-	0.152	0.017	0.060	-	0.263	0.593	-	-	0.593	0.856	0.037	-	-	-	0.037	0.893	0.743	1569.35
11-20	1569.35	0.743	0.065	0.808	0.012	-	0.091	0.009	0.030	-	0.142	0.175	-	-	0.175	0.317	0.021	-	-	-	0.021	0.338	0.470	1566.96
21-31	1566.96	0.470	0.065	0.535	-	-	0.085	0.009	-	-	0.094	-	-	-	-	0.094	0.022	-	-	-	0.022	0.116	0.419	1566.40
Sub Total			**0.231**		**0.046**	**0**	**0.328**	**0.035**	**0.090**	**0**	**0.499**	**0.768**	**0**	**-**	**0.768**	**1.267**	**0.080**				**0.080**	**1.347**		

ABSTRACT

Total for Khariff June to No	1564.75	0.290	135.225	135.515	7.869	12.649	3.491	1.195	34.713	1.000	60.917	8.804	16.048	1.694	26.546	87.463	4.753	3.114	-	-	7.867	95.330	40.184	1610.35
Total for Rabi Dec.to May	1610.35	40.184	-8.854	31.330	1.720	1.186	2.210	0.568	9.058	0.250	14.992	6.798	2.127	4.295	13.220	28.212	2.232	0.467	-	-	2.699	30.911	0.419	1566.40
Grand total Jun to May	1564.75	0.290	126.371	126.661	9.589	13.835	5.701	1.763	43.771	1.250	75.909	15.602	18.175	5.989	39.766	115.675	6.985	3.581	-	-	10.566	126.241	0.419	1566.40

STATUS REPORT ON THE OPERATION OF TUNGABHADRA RESERVOIR FOR THE PERIOD 01-06-2003 TO 31-05-2004 (2003 - 04)

(BASED ON CAPACITY ELEVATION TABLE OF 1993 SURVEYS).

(THE DRAWALS ARE INCLUSIVE OF PRO-RARA TRANSMISSION LOSSES).

(All figures are in TMC.)

Period	Reservoir at start		Inflow	Total	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total Irrigation drawals. Col.12+16	Evopara-tion	S.L.	E.P.G.	Spill	Total losses Col.18 to 21	Total outflow Col.17+22	Reservoir at end	
	Level Ft.	Capacity		(Col.3+4)	PC+ LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total Col.6 to 11	LLC	RB HLC	RR	Total Col.13 to 15								Capacity Col.5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Jun.2003																								
1-10	1566.40	0.419	-0.075	0.344	0	0	0.077	0.008	0	0	0.085	0	0	0	0	0.085	0.016	0	0	0	0.016	0.101	0.243	1564.04
11-20	1564.04	0.243	-0.021	0.222	0	0	0.023	0.002	0	0	0.025	0	0	0	0	0.025	0.010	0	0	0	0.010	0.035	0.187	1563.09
21-30	1563.09	0.187	4.624	4.811	0.014	0	0.065	0	0	0	0.079	0	0	0	0	0.079	0.032	0	0	0	0.032	0.111	4.700	1582.05
Sub Total			**4.528**		**0.014**	**0**	**0.165**	**0.010**	**0**	**0**	**0.189**	**0**	**0**	**0**	**0**	**0.189**	**0.058**	**0**	**0**	**0**	**0.058**	**0.247**		
Jul.2003																								
1-10	1582.05	4.700	7.717	12.417	0.012	0	0.226	0	0	0	0.238	0	0	0	0	0.238	0.105	0	0	0	0.105	0.343	12.074	1592.33
11-20	1592.33	12.074	11.379	23.453	0.047	0	0.216	0.019	0.594	0	0.876	0.003	0	0	0.003	0.879	0.173	0.198	0	0	0.371	1.250	22.203	1600.62
21-31	1600.62	22.203	20.193	42.396	0.343	0.167	0.220	0.061	0.395	0	1.186	0.618	0.301	0	0.919	2.105	0.235	0.271	0	0	0.506	2.611	39.785	1610.17
Sub Total			**39.289**		**0.402**	**0.167**	**0.662**	**0.080**	**0.989**	**0**	**2.300**	**0.621**	**0.301**	**0**	**0.922**	**3.222**	**0.513**	**0.469**	**0**	**0**	**0.982**	**4.204**		
Aug.2003																								
1-10	1610.17	39.785	14.172	53.957	0.551	0.942	0.139	0.009	1.157	0	2.798	0.652	0.349	0	1.001	3.799	0.239	0.467	0	0	0.706	4.505	49.452	1614.28
11-20	1614.28	49.452	11.945	61.397	0.698	1.063	0.164	0.082	2.176	0	4.183	0.620	0.608	0	1.228	5.411	0.329	0.308	0	0	0.637	6.048	55.349	1616.54
21-31	1616.54	55.349	20.487	75.836	0.732	1.280	0.209	0.147	1.173	0	3.541	0.725	1.008	0	1.733	5.274	0.279	0.228	0	0	0.507	5.781	70.055	1621.53
Sub Total			**46.604**		**1.981**	**3.285**	**0.512**	**0.238**	**4.506**	**0**	**10.522**	**1.997**	**1.965**	**0**	**3.962**	**14.484**	**0.847**	**1.003**	**0**	**0**	**1.850**	**16.334**		
Sept.2003																								
1-10	1621.53	70.055	8.328	78.383	0.688	0.941	0.202	0.089	2.489	0	4.409	0.630	0.555	0	1.185	5.594	0.323	0.298	0	0	0.621	6.215	72.168	1622.19
11-20	1622.19	72.168	6.142	78.310	0.680	1.153	0.208	0.084	2.600	0	4.725	0.654	1.196	0	1.850	6.575	0.424	0.208	0	0	0.632	7.207	71.103	1621.86
21-30	1621.86	71.103	-0.907	70.196	0.652	1.145	0.208	0.174	2.685	0	4.864	0.672	1.406	0	2.078	6.942	0.515	0.208	0	0	0.723	7.665	62.531	1619.08
Sub Total			**13.563**		**2.020**	**3.239**	**0.618**	**0.347**	**7.774**	**0**	**13.998**	**1.956**	**3.157**	**0**	**5.113**	**19.111**	**1.262**	**0.714**	**0**	**0**	**1.976**	**21.087**		
Oct.2003																								
1-10	1619.08	62.531	18.617	81.148	0.514	0.814	0.210	0.041	2.628	0	4.207	0.518	1.583	0	2.101	6.308	0.340	0.208	0	0	0.548	6.856	74.292	1622.74
11-20	1622.74	74.292	1.838	76.130	0.583	0.907	0.170	0.019	2.602	0	4.281	0.620	1.509	0	2.129	6.410	0.442	0.208	0	0	0.650	7.060	69.070	1621.22
21-31	1621.22	69.070	5.482 (5.232+0.250)	74.552	0.638	1.103	0.201	0.036	2.769	0.250	4.997	0.801	1.739	0	2.540	7.537	0.329	0.228	0	0	0.557	8.094	66.458	1620.38
Sub Total			**25.937** (25.687+0.250)		**1.735**	**2.824**	**0.581**	**0.096**	**7.999**	**0.250**	**13.485**	**1.939**	**4.831**	**0**	**6.770**	**20.255**	**1.111**	**0.644**	**0**	**0**	**1.755**	**22.010**		
Nov.2003																								
1-10	1620.38	66.458	0.147 (-0.103+0.250)	66.605	0.608	1.053	0.198	0.063	2.601	0.250	4.773	0.700	1.530	0	2.230	7.003	0.335	0.208	0	0	0.543	7.546	59.059	1617.88
11-20	1617.88	59.059	-2.024 (-2.274+0.250)	57.035	0.603	1.190	0.200	0.115	2.601	0.250	4.959	0.696	1.424	1.931	4.051	9.010	0.274	0.208	0	0	0.482	9.492	47.543	1613.51
21-30	1613.51	47.543	-1.801 (-2.051+0.250)	45.742	0.596	1.157	0.198	0.094	2.529	0.250	4.824	0.701	1.461	1.105	3.267	8.091	0.264	0.208	0	0	0.472	8.563	37.179	1608.96
Sub Total			**-3.678** (-4.428+0.750)		**1.807**	**3.400**	**0.596**	**0.272**	**7.731**	**0.750**	**14.556**	**2.097**	**4.415**	**3.036**	**9.548**	**24.104**	**0.873**	**0.624**	**0**	**0**	**1.497**	**25.601**		
Total for	1566.40	0.419	**126.243**	126.662	**7.959**	**12.915**	**3.134**	**1.043**	**28.999**	**1.000**	**55.050**	**8.610**	**14.669**	**3.036**	**26.315**	**81.365**	**4.664**	**3.454**	**0**	**0**	**8.118**	**89.483**	**37.179**	**1608.96**

Period	Reservoir at start		Inflow	Total	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total Irrigation drawals. Col.12+16	Evapora-tion	S.L.	E.P.G.	Spill	Total losses Col.18 to 21	Total outflow Col.17+22	Reservoir at end	
	Level Ft.	Capacity		(Col.3+4)	PC+ LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total Col.6 to 11	LLC	RB HLC	RR	Total Col.13 to 15								Capacity Col.5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Dec. 2003																								
1-10	1608.96	37.179	-1.752 (-2.002+0.250)	35.427	0.373	0.885	0.200	0.090	2.353	0.250	4.151	0.257	1.453	1.080	2.790	6.941	0.201	0.413	0	0	0.614	7.555	27.872	1604.12
11-20	1604.12	27.872	-1.935	25.937	0.419	0.442	0.119	0.151	2.117	0	3.248	0.571	1.268	1.625	3.464	6.712	0.165	0.192	0	0	0.357	7.069	18.868	1598.27
21-31	1598.27	18.868	-1.881	16.987	0.052	0.399	0.009	0.105	1.804	0	2.369	0.265	0.178	1.844	2.287	4.656	0.132	0.097	0	0	0.229	4.885	12.102	1592.36
Sub Total			**-5.568** (-5.818+0.250)		**0.844**	**1.726**	**0.328**	**0.346**	**6.274**	**0.250**	**9.768**	**1.093**	**2.899**	**4.549**	**8.541**	**18.309**	**0.498**	**0.702**	**0**	**0**	**1.200**	**19.509**		
Jan. 2004																								
1-10	1592.36	12.102	-1.570	10.532	0	0.048	0.009	0.004	1.264	0	1.325	0	0.009	0.143	0.152	1.477	0.085	0	0	0	0.085	1.562	8.970	1588.77
11-20	1588.77	8.970	-0.101	8.869	0	0	0.008	0.002	0.013	0	0.023	0	0	0.067	0.067	0.090	0.083	0	0	0	0.083	0.173	8.696	1588.42
21-31	1588.42	8.696	-0.515	8.181	0	0	0.174	0.011	0.062	0	0.247	0	0	0.377	0.377	0.624	0.095	0	0	0	0.095	0.719	7.462	1586.78
Sub Total			**-2.186**		**0**	**0.048**	**0.191**	**0.017**	**1.339**	**0**	**1.595**	**0**	**0.009**	**0.587**	**0.596**	**2.191**	**0.263**	**0**	**0**	**0**	**0.263**	**2.454**		
Feb. 2004																								
1-10	1586.78	7.462	-0.300	7.162	0	0	0.081	0	0.030	0	0.111	0	0	0	0	0.111	0.082	0	0	0	0.082	0.193	6.969	1586.09
11-20	1586.09	6.969	-0.382	6.587	0	0	0.069	0	0.035	0	0.104	0	0	0	0	0.104	0.095	0	0	0	0.095	0.199	6.388	1585.24
21-29	1585.24	6.388	-0.388	6.000	0	0	0.108	0.103	0.254	0	0.465	0	0	0	0	0.465	0.090	0	0	0	0.090	0.555	5.445	1583.76
Sub Total			**-1.070**		**0**	**0**	**0.258**	**0.103**	**0.319**	**0**	**0.680**	**0**	**0**	**0**	**0**	**0.680**	**0.267**	**0**	**0**	**0**	**0.267**	**0.947**		
Mar. 2004																								
1-10	1583.76	5.445	-1.039	4.406	0.121	0	0.096	0.164	1.198	0	1.579	0.447	0	0	0.447	2.026	0.082	0	0	0	0.082	2.108	2.298	1576.72
11-20	1576.72	2.298	-0.184	2.114	0	0	0.121	0.066	0.053	0	0.240	0.333	0	0	0.333	0.573	0.048	0	0	0	0.048	0.621	1.493	1573.65
21-31	1573.65	1.493	-0.136	1.357	0	0	0.105	0	0.039	0	0.144	0	0	0	0	0.144	0.042	0	0	0	0.042	0.186	1.171	1572.07
Sub Total			**-1.359**		**0.121**	**0**	**0.322**	**0.230**	**1.290**	**0**	**1.963**	**0.780**	**0**	**0**	**0.780**	**2.743**	**0.172**	**0**	**0**	**0**	**0.172**	**2.915**		
April 2004																								
1-10	1572.07	1.171	-0.105	1.066	0	0	0.125	0	0.018	0	0.143	0	0	0	0	0.143	0.030	0	0	0	0.030	0.173	0.893	1570.40
11-20	1570.40	0.893	-0.111	0.782	0	0	0.095	0	0.033	0	0.128	0	0	0	0	0.128	0.028	0	0	0	0.028	0.156	0.626	1568.41
21-30	1568.41	0.626	0.327	0.953	0	0	0.171	0	0.037	0	0.208	0	0	0	0	0.208	0.022	0	0	0	0.022	0.230	0.723	1569.20
Sub Total			**0.111**		**0**	**0**	**0.391**	**0**	**0.088**	**0**	**0.479**	**0**	**0**	**0**	**0**	**0.479**	**0.080**	**0**	**0**	**0**	**0.080**	**0.559**		
May 2004																								
1-10	1569.20	0.723	-0.001	0.722	0	0	0.095	0	0.011	0	0.106	0	0	0	0	0.106	0.021	0	0	0	0.021	0.127	0.595	1568.15
11-20	1568.15	0.595	0.131	0.726	0	0	0.156	0.039	0	0	0.195	0	0	0	0	0.195	0.016	0	0	0	0.016	0.211	0.515	1567.40
21-31	1567.40	0.515	0.794	1.309	0	0	0.069	0	0	0	0.069	0	0	0	0	0.069	0.024	0	0	0	0.024	0.093	1.216	1572.30
Sub Total			**0.924**		**0**	**0**	**0.320**	**0.039**	**0.011**	**0**	**0.370**	**0**	**0**	**0**	**0**	**0.370**	**0.061**	**0**	**0**	**0**	**0.061**	**0.431**		
ABSTRACT																								
Total for Khariff from Jun. to Nov.	1566.40	**0.419**	**126.243** (125.243+1.0)	**126.662**	7.959	12.915	3.134	1.043	28.999	1.000	55.050	8.610	14.669	3.036	26.315	81.365	4.664	3.454	0	0	8.118	89.483	37.179	**1608.96**
Total for Rabi from Dec. to May	1608.96	37.179	**-9.148** (-9.398+0.250)	28.031	0.965	1.774	1.810	0.735	9.321	0.250	14.855	1.873	2.908	5.136	9.917	24.772	1.341	0.702	0	0	2.043	26.815	1.216	1572.30
Grand total for 2003-04	**1566.40**	**0.419**	**117.095** (115.845+1.250)	**117.514**	**8.924**	**14.689**	**4.944**	**1.778**	**38.320**	**1.250**	**69.905**	**10.483**	**17.577**	**8.172**	**36.232**	**106.137**	**6.005**	**4.156**	**0**	**0**	**10.161**	**116.298**	**1.216**	1572.30

Karnataka Neeravari Nigam Limited

STATUS REPORT ON THE OPERATION OF TUNGABHADRA RESERVOIR FOR THE PERIOD 01-06-2004 TO 31-05-2005 (2004 - 05)

Modernisation of Vijayanagara Channels in Tungabhadra Project

(BASED ON CAPACITY ELEVATION TABLE OF 1993 SURVEYS). (THE DRAWALS ARE INCLUSIVE OF PRO-RARA TRANSMISSION LOSSES).

(All figures are in TMC.ft.)

Period	Reservoir at start		Inflow	Total	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evapora-	S.L.	E.P.G.	Spill	Total	Total	Reservoir at end	
	Level Ft.	Capacity		Storage (Col.3+4)	PC+ LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total Col.6 to 11	LLC	RB HLC	RR	Total Col.13 to 15	Irrigation drawals. Col.12+16	tion				losses Col.18 to 21	outflow Col.17+22	Capacity Col.5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Jun.2004																								
1-10	1572.30	1.216	2.510	3.726	0	0	0.141	0.023	0	0	0.164	0	0	0	0	0.164	0.046	0	0	0	0.046	0.210	3.516	1580.02
11-20	1580.02	3.516	12.277	15.793	0	0	0.147	0.026	0	0	0.173	0	0	0	0	0.173	0.079	0	0	0	0.079	0.252	15.541	1595.60
21-30	1595.60	15.541	10.790	26.331	0	0	0.160	0.039	0	0	0.199	0	0	0	0	0.199	0.222	0	0	0	0.222	0.421	25.910	1602.97
Sub Total			**25.577**		**0**	**0**	**0.448**	**0.088**	**0**	**0**	**0.536**	**0**	**0**	**0**	**0**	**0.536**	**0.347**	**0**	**0**	**0**	**0.347**	**0.883**		
Jul.2004																								
1-10	1602.97	25.910	15.766	41.676	0	0	0.177 (200)	0.128 (60)	0.177	0	0.482	0	0	0	0	0.482	0.233	0	0	0	0.233	0.715	40.961	1610.67
11-20	1610.67	40.961	7.938	48.899	0.332	0.231	0.185	0.146	1.283	0	2.177	0.269	0	0	0.269	2.446	0.277	0.166	0	0	0.443	2.889	46.010	1612.88
21-31	1612.88	46.010	10.920	56.930	0.774	1.227	0.230	0.100	2.483	0	4.814	0.561	0.746	0	1.307	6.121	0.268	0.228	0	0	0.496	6.617	50.313	1614.62
Sub Total			**34.624**		**1.106**	**1.458**	**0.592**	**0.374**	**3.943**	**0.000**	**7.473**	**0.830**	**0.746**	**0.000**	**1.576**	**9.049**	**0.778**	**0.394**	**0.000**	**0.000**	**1.172**	**10.221**		
Aug.2004																								
1-10	1614.62	50.313	52.872	103.185	0.780	0.459	0.202	0.240	2.643	0	4.324	0.527	0.286	0	0.813	5.137	0.306	0.185	0	0	0.491	5.628	97.557	1629.39
11-20	1629.39	97.557	40.818	138.375	0.765	1.538	0.222	0.075	2.702	0	5.302	0.587	1.059	0	1.646	6.948	0.406	0.208	2.198	18.489	21.301	28.249	110.126	1632.65
21-31	1632.65	110.126	19.029	129.155	0.778	1.403	0.230	0.041	3.064	0	5.516	0.587	1.524	0	2.111	7.627	0.545	0.314	4.551	4.611	10.021	17.648	111.507	1633.00
Sub Total			**112.719**		**2.323**	**3.400**	**0.654**	**0.356**	**8.409**	**0.000**	**15.142**	**1.701**	**2.869**	**0.000**	**4.570**	**19.712**	**1.257**	**0.707**	**6.749**	**23.100**	**31.813**	**51.525**		
Sept.2004																								
1-10	1633.00	111.507	4.898	116.405	0.554	0.987	0.212	0.043	2.621	0	4.417	0.416	1.605	0	2.021	6.438	0.407	0.440	0.019	0	0.866	7.304	109.101	1632.39
11-20	1632.39	109.101	4.745	113.846	0.492	0.924	0.190	0.048	2.581	0	4.235	0.722	1.670	0	2.392	6.627	0.381	0.208	0.000	0	0.589	7.216	106.630	1631.76
21-30	1631.76	106.630	4.447	111.077	0.589	0.972	0.190	0.053	2.562	0	4.366	0.724	1.677	0.000	2.401	6.767	0.424	0.208	0.000	0	0.632	7.399	103.678	1631.00
Sub Total			**14.090**		**1.635**	**2.883**	**0.592**	**0.144**	**7.764**	**0.000**	**13.018**	**1.862**	**4.952**	**0.000**	**6.814**	**19.832**	**1.212**	**0.856**	**0.019**	**0.000**	**2.087**	**21.919**		
Oct.2004																								
1-10	1631.00	103.678	6.879	110.557	0.601	0.981	0.207	0.042	2.670	0	4.501	0.715	1.680	0	2.395	6.896	0.463	0.208	0	0	0.671	7.567	102.990	1630.82
11-20	1630.82	102.990	1.806	104.796	0.573	1.054	0.202	0.042	2.735	0	4.606	0.701	1.606	0	2.307	6.913	0.457	0.208	0	0	0.665	7.578	97.218	1629.30
21-31	1629.30	97.218	0.588 (0.338+0.250)	97.806	0.591	1.169	0.220	0.078	2.756	0.250	5.064	0.747	1.758	0.269	2.774	7.838	0.454	0.228	0	0	0.682	8.520	89.286	1627.15
Sub Total			**9.273**		**1.765**	**3.204**	**0.629**	**0.162**	**8.161**	**0.250**	**14.171**	**2.163**	**5.044**	**0.269**	**7.476**	**21.647**	**1.374**	**0.644**	**0.000**	**0**	**2.018**	**23.665**		
Nov.2004																								
1-10	1627.15	89.286	-1.734 (-1.984+0.250)	87.552	0.472	0.824	0.200	0.088	2.224	0.250	4.058	0.642	1.564	0.427	2.633	6.691	0.339	0.208	0	0	0.547	7.238	80.314	1624.62
11-20	1624.62	80.314	-0.658 (-0.908+0.250)	79.656	0.384	0.878	0.184	0.032	1.999	0.250	3.727	0.681	1.466	0.000	2.147	5.874	0.327	0.208	0	0	0.535	6.409	73.247	1622.52
21-30	1622.52	73.247	-1.940 (-2.190+0.250)	71.307	0.232	0.831	0.183	0.070	1.624	0.250	3.190	0.691	1.176	0.640	2.507	5.697	0.321	0.302	0	0	0.623	6.320	64.987	1619.90
Sub Total			**-4.332** (-5.082+0.750)		**1.088**	**2.533**	**0.567**	**0.190**	**5.847**	**0.750**	**10.975**	**2.014**	**4.206**	**1.067**	**7.287**	**18.262**	**0.987**	**0.718**	**0.000**	**0.000**	**1.705**	**19.967**		
Total for Schariff	1572.30	1.216	**191.951** (190.951+1.000)	**193.167**	**7.917**	**13.478**	**3.482**	**1.314**	**34.124**	**1.000**	**61.315**	**8.570**	**17.817**	**1.336**	**27.723**	**89.038**	**5.955**	**3.319**	**6.768**	**23.100**	**39.142**	**128.180**	**64.987**	**1619.90**

Period	Reservoir at start		Inflow	Total Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total Irrigation drawals. Col.12+16	Evapara-tion	S.L.	E.P.G.	Spill	Total losses Col.18 to 21	Total outflow Col.17+22	Reservoir at end	
	Level Ft.	Capacity		(Col.3+4)	PC+ LLC	RB HLC	RBC	RR	LBMC+ HLC	L.I. Scheme	Total Col.6 to 11	LLC	RB HLC	RR	Total Col.13 to 15								Capacity Col.5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Dec. 2004																								
1-10	1619.90	64.987	-2.205 -2.455+0.250	62.782	0.000	0.210	0.161	0.073	1.590	0.250	2.284	0.673	0.636	0.990	2.299	4.583	0.299	0.156	0	0	0.455	5.038	57.744	1617.41
11-20	1617.41	57.744	-2.058	55.686	0.001	0.859	0.016	0.073	0.294	0	1.243	0.672	1.714	1.007	3.393	4.636	0.251	0.208	0	0	0.459	5.095	50.591	1614.73
21-31	1614.73	50.591	-1.368	49.223	0.262	0.471	0	0.031	0.003	0	0.767	0.788	1.938	1.014	3.740	4.507	0.257	0.228	0	0	0.485	4.992	44.231	1612.13
Sub Total			**-5.631** -5.881+0.250		**0.263**	**1.540**	**0.177**	**0.177**	**1.887**	**0.250**	**4.294**	**2.133**	**4.288**	**3.011**	**9.432**	**13.726**	**0.807**	**0.592**	**0.000**	**0.000**	**1.399**	**15.125**		
Jan. 2005																								
1-10	1612.13	44.231	-1.794 -2.044+0.250	42.437	0.428	0	0	0.036	1.445	0.250	2.159	0.661	1.597	0.903	3.161	5.320	0.225	0.208	0	0	0.433	5.753	36.684	1608.72
11-20	1608.72	36.684	-2.584 -2.834+0.205	34.100	0.418	0	0.136	0.068	1.946	0.250	2.818	0.302	0.682	0.982	1.966	4.784	0.214	0.146	0	0	0.360	5.144	28.956	1604.73
21-31	1604.73	28.956	-2.760	26.196	0.567	0	0.228	0.058	2.147	0	3.000	0.029	0	0.012	0.041	3.041	0.225	0.114	0	0	0.339	3.380	22.816	1601.03
Sub Total			**-7.138** -7.638+0.500		**1.413**	**0.000**	**0.364**	**0.162**	**5.538**	**0.500**	**7.977**	**0.992**	**2.279**	**1.897**	**5.168**	**13.145**	**0.664**	**0.468**	**0.000**	**0.000**	**1.132**	**14.277**		
Feb. 2005																								
1-10	1601.03	22.816	-2.166	20.650	0.343	0	0.107	0.048	1.506	0.000	2.004	0.000	0.000	0.229	0.229	2.233	0.181	0.104	0	0	0.285	2.518	18.132	1597.71
11-20	1597.71	18.131	-2.382	15.749	0.449	0	0.092	0.041	1.390	0	1.972	0.203	0.000	0.284	0.487	2.459	0.161	0.104	0	0	0.265	2.724	13.025	1593.29
21-28	1593.29	13.025	-1.794	11.231	0.328	0	0.094	0.036	1.194	0	1.652	0.326	0	0	0.326	1.978	0.105	0.083	0	0	0.188	2.166	9.065	1588.89
Sub Total			**-6.342**		**1.120**	**0.000**	**0.293**	**0.125**	**4.090**	**0.000**	**5.628**	**0.529**	**0.000**	**0.513**	**1.042**	**6.670**	**0.447**	**0.291**	**0.000**	**0.000**	**0.738**	**7.408**		
Mar. 2005																								
1-10	1588.89	9.065	-1.885	7.180	0.235	0	0.142	0.037	1.653	0	2.067	0.206	0	0.000	0.206	2.273	0.108	0.104	0	0	0.212	2.485	4.695	1582.44
11-20	1582.44	4.695	-1.111	3.584	0.211	0	0.143	0.033	1.668	0	2.055	0	0	0.000	0.000	2.055	0.056	0.072	0	0	0.128	2.183	1.401	1573.22
21-31	1573.22	1.401	-0.176	1.225	0	0	0.161	0.014	0.257	0	0.432	0	0	0.000	0	0.432	0.032	0	0	0	0.032	0.464	0.761	1569.48
Sub Total			**-3.172**		**0.446**	**0.000**	**0.446**	**0.084**	**3.578**	**0.000**	**4.554**	**0.206**	**0.000**	**0.000**	**0.206**	**4.760**	**0.196**	**0.176**	**0.000**	**0.000**	**0.372**	**5.132**		
April 2005																								
1-10	1569.48	0.761	-0.067	0.694	0	0	0.149	0.013	0.035	0	0.197	0	0	0.000	0.000	0.197	0.022	0	0	0	0.022	0.219	0.475	1567.02
11-20	1567.02	0.475	0.039	0.514	0	0	0.096	0.008	0	0	0.104	0	0	0	0.000	0.104	0.013	0	0	0	0.013	0.117	0.397	1566.15
21-30	1566.15	0.397	0.559	0.956	0	0	0.060	0	0	0	0.060	0	0	0	0.000	0.060	0.018	0	0	0	0.018	0.078	0.878	1570.30
Sub Total			**0.531**		**0.000**	**0.000**	**0.305**	**0.021**	**0.035**	**0.000**	**0.361**	**0.000**	**0.000**	**0.000**	**0.000**	**0.361**	**0.053**	**0**	**0**	**0**	**0.053**	**0.414**		
May 2005																								
1-10	1570.30	0.878	0.685	1.563	0	0	0.116	0	0	0	0.116	0	0	0.000	0.000	0.116	0.029	0	0	0	0.029	0.145	1.418	1573.30
11-20	1573.30	1.418	0.065	1.483	0	0	0.129	0	0	0	0.129	0	0	0	0.000	0.129	0.038	0	0	0	0.038	0.167	1.316	1572.31
21-31	1572.31	1.316	0.197	1.513	0	0	0.143	0.043	0	0	0.186	0	0	0	0	0.186	0.033	0	0	0	0.033	0.219	1.294	1572.70
Sub Total			**0.947**		**0**	**0**	**0.388**	**0.043**	**0.000**	**0.000**	**0.431**	**0.000**	**0.000**	**0.000**	**0.000**	**0.431**	**0.100**	**0.000**	**0.000**	**0.000**	**0.100**	**0.531**		
Total for Rabi Dec. to May			**-20.806** -21.555+0.750		**3.242**	**1.540**	**1.973**	**0.612**	**15.128**	**0.750**	**23.245**	**3.860**	**6.567**	**5.421**	**15.848**	**39.093**	**2.267**	**1.527**	**0.000**	**0.000**	**3.794**	**42.887**		
Grand total for 2004-05			**171.145** 169.395+1.750		**11.159**	**15.018**	**5.455**	**1.926**	**49.252**	**1.750**	**84.560**	**12.430**	**24.384**	**6.757**	**43.571**	**128.131**	**8.222**	**4.846**	**6.768**	**23.100**	**42.936**	**171.067**	**1.294**	**1572.70**

STATUS REPORT ON THE OPERATION OF TUNGABHADRA RESERVOIR FOR THE WATER YEAR 2005 - 06 (From 01-06-2005 to 31-05-2006)

Karnataka Neeravari Nigam Limited (BASED ON CAPACITY ELEVATION TABLE OF 1993 SURVEYS). (THE DRAWALS ARE INCLUSIVE OF PRO-RARA TRANSMISSION LOSSES)

(All figures are in TMC.ft.)

Period	Reservoir at start		Inflow	Total	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total	Evapora-	S.L.	E.P.G.	Spillway	Total	Total	Reservoir at end	
	Level Ft.	Capacity		Storage (Col.3+4)	PC+ LLC	RB HLC	RBC+ JVSL	RR	LBMC+ HLC	L.I. Scheme	Total Col.6 to 11	LLC	RB HLC	RR	Total Col.13 to 15	Irrigation drawals. Col.12+16	tion				losses Col.18 to 21	outflow Col.17+22	Capacity Col.5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Jun.2005																								
1-10	1572.70	1.294	0.390	1.684	0	0	0.065	0.130	0	0	0.195	0	0	0	0	0.195	0.028	0	0	0	0.028	0.223	1.461	1573.50
							0.065+0.0																	
11-20	1573.50	1.461	0.717	2.178	0	0	0.124	0.000	0	0	0.124	0	0	0	0	0.124	0.040	0	0	0	0.040	0.164	2.014	1575.75
							0.124+0.0																	
21-30	1575.75	2.014	2.864	4.878	0	0	0.149	0.000	0	0	0.149	0	0	0	0	0.149	0.040	0	0	0	0.040	0.189	4.689	1582.43
							0.139+0.010																	
Sub Total			**3.971**		**0**	**0**	**0.338**	**0.130**	**0**	**0**	**0.468**	**0**	**0**	**0**	**0**	**0.468**	**0.108**	**0**	**0**	**0**	**0.108**	**0.576**		
							0.328+0.010																	
Jul.2005																								
1-10	1582.43	4.689	28.424	33.113	0	0	0.170	0.013	0.000	0	0.183	0	0	0	0	0.183	0.112	0	0	0	0.112	0.295	32.818	1606.80
							0.151+0.019																	
11-20	1606.80	32.818	17.099	49.917	0.061	0.000	0.133	0.165	0.367	0	0.726	0.000	0.000	0	0.000	0.726	0.235	0.334	0	0	0.569	1.295	48.622	1613.95
							0.114+0.019																	
21-31	1613.95	48.622	50.931	99.553	0.199	0.137	0.174	0.023	2.158	0	2.691	0.618	0.736	0	1.354	4.045	0.250	0.355	0	0	0.605	4.650	94.903	1628.68
							0.139+0.035																	
Sub Total			**96.454**		**0.260**	**0.137**	**0.477**	**0.201**	**2.525**	**0.000**	**3.600**	**0.618**	**0.736**	**0.000**	**1.354**	**4.954**	**0.597**	**0.689**	**0.000**	**0.000**	**1.286**	**6.240**		
							0.404+0.073																	
Aug.2005																								
1-10	1628.68	94.903	82.039	176.942	0.498	0.852	0.130	0.017	2.248	0	3.745	0.599	1.434	0	2.033	5.778	0.423	0.208	3.172	56.051	59.854	65.632	111.310	1632.95
							0.104+0.026																	
11-20	1632.95	111.310	49.806	161.116	0.579	0.899	0.113	0.023	2.213	0	3.827	0.683	1.825	0	2.508	6.335	0.345	0.208	4.255	40.044	44.852	51.187	109.929	1632.50
							0.096+0.017																	
21-31	1632.50	109.929	22.796	132.725	0.664	1.131	0.143	0.011	2.372	0.000	4.321	0.758	1.956	0.000	2.714	7.035	0.476	0.228	3.897	9.582	14.183	21.218	111.507	1633.00
							0.124+0.019																	
Sub Total			**154.641**		**1.741**	**2.882**	**0.386**	**0.051**	**6.833**	**0.000**	**11.893**	**2.040**	**5.215**	**0.000**	**7.255**	**19.148**	**1.244**	**0.644**	**11.324**	**105.677**	**118.889**	**138.037**		
							0.324+0.062																	
Sept.2005																								
1-10	1633.00	111.507	16.243	127.750	0.502	0.944	0.089	0.021	2.250	0.000	3.806	0.745	1.755	0.000	2.500	6.306	0.332	0.208	4.831	4.566	9.937	16.243	111.507	1633.00
							0.072+0.017																	
11-20	1633.00	111.507	16.728	128.235	0.524	0.816	0.111	0.016	2.310	0	3.777	0.722	1.189	0.000	1.911	5.688	0.407	0.303	4.432	5.898	11.040	16.728	111.507	1633.00
							0.094+0.017																	
21-30	1633.00	111.507	10.958	122.465	0.609	0.800	0.121	0.014	2.599	0	4.143	0.688	1.133	0.000	1.821	5.964	0.449	0.187	4.358	0	4.994	10.958	111.507	1633.00
							0.104+0.017																	
Sub Total			**43.929**		**1.635**	**2.560**	**0.321**	**0.051**	**7.159**	**0.000**	**11.726**	**2.155**	**4.077**	**0.000**	**6.232**	**17.958**	**1.188**	**0.698**	**13.621**	**10.464**	**25.971**	**43.929**		
							0.270+0.051																	
Oct.2005																								
1-10	1633.00	111.507	5.712	117.219	0.593	1.285	0.121	0.014	2.675	0	4.688	0.639	1.548	0	2.187	6.875	0.458	0.208	0.538	0	1.204	8.079	109.140	1632.40
							0.104+0.017																	
11-20	1632.40	109.140	13.051	122.191	0.527	0.998	0.119	0.021	2.626	0	4.291	0.724	1.793	0	2.517	6.808	0.338	0.208	1.282	2.048	3.876	10.684	111.507	1633.00
							0.102+0.017																	
21-31	1633.00	111.507	11.141	122.648	0.406	0.848	0.041	0.018	2.647	0.250	4.210	0.780	2.001	0.000	2.781	6.991	0.348	0.228	2.518	1.056	4.150	11.141	111.507	1633.00
			10.891+0.250				0.041+0.0																	
Sub Total			**29.904**		**1.526**	**3.131**	**0.281**	**0.053**	**7.948**	**0.250**	**13.189**	**2.143**	**5.342**	**0.000**	**7.485**	**20.674**	**1.144**	**0.644**	**4.338**	**3.104**	**9.230**	**29.904**		
			29.654+0.250				0.247+0.034																	
Nov.2005																								
1-10	1633.00	111.507	6.461	117.968	0.259	0.495	0.028	0.012	2.214	0.250	3.258	0.688	1.703	0.000	2.391	5.649	0.351	0.208	1.152	0.166	1.877	7.526	110.442	1632.73
			6.211+0.250				0.028+0.0																	
11-20	1632.73	110.442	-0.090	110.352	0.443	0.958	0.093	0.016	2.101	0.250	3.861	0.686	1.744	0.000	2.430	6.291	0.481	0.208	0.000	0.000	0.689	6.980	103.372	1630.92
			-0.340+0.250				0.085+0.008																	
21-30	1630.92	103.372	0.512	103.884	0.328	0.675	0.149	0.015	1.752	0.250	3.169	0.707	1.720	0.000	2.427	5.596	0.335	0.208	0.000	0.000	0.543	6.139	97.745	1629.44
			0.262+0.250				0.130+0.019																	
Sub Total			**6.883**		**1.030**	**2.128**	**0.270**	**0.043**	**6.067**	**0.750**	**10.288**	**2.081**	**5.167**	**0.000**	**7.248**	**17.536**	**1.167**	**0.624**	**1.152**	**0.166**	**3.109**	**20.645**		
			6.133+0.750				0.243+0.027																	
Total for Khariff	1572.70	1.294	**335.782**		**6.192**	**10.838**	**2.073**	**0.529**	**30.532**	**1.000**	**51.164**	**9.037**	**20.537**	**0.000**	**29.574**	**80.738**	**5.448**	**3.299**	**30.435**	**119.411**	**158.593**	**239.331**	**97.745**	**1629.44**
			334.782+1.000				1.816+0.257																	

Period	Reservoir at start		Inflow	Total Storage	Drawals by Karnataka state							Drawals by Andhra Pradesh				Total Irrigation drawals.	Evopara-tion	S.L.	E.P.G.	Spill	Total losses	Total outflow	Reservoir at end	
	Level Ft.	Capacity		(Col.3+4)	PC+ LLC	RB HLC	RBC+ JVSL	RR	LBMC+ HLC	L.I. Scheme	Total Col.6 to 11	LLC	RB HLC	RR	Total Col.13 to 15	Col.12+16					Col.18 to 21	Col.17+22	Capacity Col.5-23	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Dec. 2005																								
1-10	1629.44	97.745	0.180 -0.070+0.250	97.925	0.298	0.068	0.147 0.130+0.017	0.017	1.814	0.250	2.594	0.728	1.740	0.000	2.468	5.062	0.307	0.208	0	0	0.515	5.577	92.348	1627.99
11-20	1627.99	92.348	-0.769	91.579	0.355	0.875	0.046 0.013+0.033	0.016	1.472	0	2.764	0.737	1.627	0.000	2.364	5.128	0.373	0.208	0	0	0.581	5.709	85.870	1626.20
21-31	1626.20	85.870	-1.697	84.173	0.598	0.631	0.038 0.0+0.038	0.025	2.354	0	3.646	0.788	1.384	0.305	2.477	6.123	0.454	0.228	0	0	0.682	6.805	77.368	1623.76
Sub Total			-2.286 -2.536+0.250		**1.251**	**1.574**	0.231 0.143+0.088	**0.058**	**5.640**	**0.250**	**9.004**	**2.253**	**4.751**	**0.305**	**7.309**	**16.313**	**1.134**	**0.644**	**0.000**	**0.000**	**1.778**	**18.091**		
Jan. 2006																								
1-10	1623.76	77.368	-1.805 -2.055+0.250	75.563	0.606	0.212	0.035 0.0+0.035	0.065	2.731	0.250	3.899	0.589	1.262	0.873	2.724	6.623	0.359	0.208	0	0	0.567	7.190	68.373	1621.00
11-20	1621.00	68.373	-2.162 -2.412+0.250	66.211	0.608	0.239	0.028 0.0+0.028	0.070	2.804	0.250	3.999	0.603	1.567	0.902	3.072	7.071	0.348	0.208	0	0	0.556	7.627	58.584	1617.71
21-31	1617.71	58.584	-2.784	55.800	0.649	0.048	0.197 0.168+0.029	0.107	3.301	0	4.302	0.663	0.845	1.495	3.003	7.305	0.407	0.176	0	0	0.583	7.888	47.912	1613.66
Sub Total			**-6.751** -7.251+0.500		**1.863**	**0.499**	**0.260** 0.168+0.092	**0.242**	**8.836**	**0.500**	**12.200**	**1.855**	**3.674**	**3.270**	**8.799**	**20.999**	**1.114**	**0.592**	**0.000**	**0.000**	**1.706**	**22.705**		
Feb. 2006																								
1-10	1613.66	47.912	-2.308 -2.558+0.250	45.604	0.633	0	0.199 0.173+0.026	0.047	2.999	0.250	4.128	0.571	0	0.608	1.179	5.307	0.297	0.104	0	0	0.401	5.708	39.896	1610.22
11-20	1610.22	39.896	-2.832	37.064	0.678	0	0.199 0.173+0.026	0.044	3.037	0	3.958	0.530	0	0.628	1.158	5.116	0.312	0.104	0	0	0.416	5.532	31.532	1606.13
21-28	1606.13	31.532	-2.275	29.257	0.529	0	0.159 0.138+0.021	0.036	2.458	0	3.182	0.437	0	0.495	0.932	4.114	0.242	0.083	0	0	0.325	4.439	24.818	1602.30
Sub Total			**-7.415**		**1.840**	**0**	0.557 0.484+0.073	**0.127**	**8.494**	**0.250**	**11.268**	**1.538**	**0.000**	**1.731**	**3.269**	**14.537**	**0.851**	**0.291**	**0.000**	**0.000**	**1.142**	**15.679**		
Mar. 2006																								
1-10	1602.30	24.818	-2.875	21.943	0.564	0	0.199 0.173+0.026	0.083	2.831	0	3.677	0.548	0	0.908	1.456	5.133	0.241	0.104	0	0	0.345	5.478	16.465	1596.38
11-20	1596.38	16.465	-1.927	14.538	0.479	0	0.137 0.111+0.026	0.033	2.835	0	3.484	0.591	0	0.099	0.690	4.174	0.160	0.104	0	0	0.264	4.438	10.100	1590.15
21-31	1590.15	10.100	-1.416	8.684	0.720	0	0.178 0.149+0.029	0.033	3.295	0	4.226	0.486	0	0.000	0.486	4.712	0.125	0.114	0	0	0.239	4.951	3.733	1580.50
Sub Total			**-6.218**		**1.763**	**0**	0.514 0.433+0.081	**0.149**	**8.961**	**0.000**	**11.387**	**1.625**	**0.000**	**1.007**	**2.632**	**14.019**	**0.526**	**0.322**	**0.000**	**0.000**	**0.848**	**14.867**		
April 2006																								
1-10	1580.50	3.733	1.086 This includes B.R	4.819	0.560	0	0.193 0.167+0.026	0.047	2.248	0	3.048	0.000	0	0.000	0.000	3.048	0.053	0.104	0	0	0.157	3.205	1.614	1574.18
11-20	1574.18	1.614	0.785 This includes B,R	2.399	0.204	0	0.193 0.173+0.020	0.022	0.705	0	1.124	0.000	0	0.000	0.000	1.124	0.036	0.042	0	0	0.078	1.202	1.197	1572.20
21-30	1572.20	1.197	0.137	1.334	0	0	0.186 0.173+0.013	0.000	0.043	0	0.229	0	0	0.000	0.000	0.229	0.034	0	0	0	0.034	0.263	1.071	1571.50
Sub Total			**2.008**		**0.764**	**0**	0.572 0.513+0.059	**0.069**	**2.996**	**0.000**	**4.401**	**0.000**	**0.000**	**0.000**	**0.000**	**4.401**	**0.123**	**0.146**	**0**	**0**	**0.269**	**4.670**		
May 2006																								
1-10	1571.50	1.071	0.118	1.189	0	0	0.176 0.173+0.003	0.000	0.043	0	0.219	0.000	0	0.000	0.000	0.219	0.031	0	0	0	0.031	0.250	0.939	1570.70
11-20	1570.70	0.939	0.558	1.497	0	0	0.173 0.173+0	0	0.003	0	0.176	0	0	0	0.000	0.176	0.036	0	0	0	0.036	0.212	1.285	1572.65
21-31	1572.65	1.285	0.990	2.275	0	0	0.052 0.052+0	0.047	0.000	0	0.099	0	0	0	0	0.099	0.035	0	0	0	0.035	0.134	2.141	1576.20
Sub Total			**1.666**		**0**	**0**	0.401 0.398+0.003	**0.047**	**0.046**	**0.000**	**0.494**	**0.000**	**0.000**	**0.000**	**0.000**	**0.494**	**0.102**	**0.000**	**0.000**	**0.000**	**0.102**	**0.596**		
Total for Rabi			**-18.996** -19.996+1.000		**7.481**	**2.073**	**2.535**	**0.692**	**34.973**	**1.000**	**48.754**	**7.271**	**8.425**	**6.313**	**22.009**	**70.763**	**3.850**	**1.995**	**0.000**	**0.000**	**5.845**	**76.608**		
Grand total for 2005-06			**316.786** 314.786+2.000 312.003+2.000+2.683(B.A)		**13.673**	**12.911**	**4.608**	**1.221**	**65.505**	**2.000**	**99.918**	**16.308**	**28.962**	**6.313**	**51.583**	**151.501**	**9.298**	**5.294**	**30.435**	**119.411**	**164.438**	**315.939**	**2.141**	**1576.20**

(*) This includes Bhadra Assistance of 2.683 TMC.

Superintending Engineer,
IB, TB Board, TB Dam.

STATUS REPORT ON THE OPERATION OF TUNGABHADRA RESERVOIR FOR THE PERIOD FROM 1/6/2006 TO 31/5/2007 (2006-2007)

(BASED ON CAPACITY ELEVATION TABLE OF 2004 HYDROGRAPHIC SURVEYS). (THE DRAWALS ARE INCLUSIVE OF PRO-RATA TRANSMISSION LOSSES). (All figures are in TMC except Reservoir Level which is in Feet)

Period	Reservoir at start		Inflow	Total Storage	Drawals by Karnataka state								Drawals by Andhra Pradesh				Total Irrigation drawals.	Evapara-tion	S.L.	E.P.G.	Spillway	Total losses	Total outflow	Reservoir at end	
	Level Ft.	Capacity			PC+ LLC	RB HLC	RBC	RR	LBMC+ HLC	JVSL	L.I. Scheme	Total Col. 6 to 12	LLC	RB HLC	RR	Total Col.14 to 16				ROFS (RB+LB)		Col.19 to 22	Col.18+23	Capacity Col.5-24	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Jun.2006																									
1-10	1576.20	3.116	6.554	9.670	0.000	0.000	0.000	0.000	0.000	0.012	0.000	0.012	0.000	0.000	0.000	0.000	0.012	0.066	0.000	0.000	0.000	0.066	0.078	9.592	1589.00
11-20	1589.00	9.592	3.041	12.633	0.000	0.000	0.044	0.000	0.000	0.000	0.000	0.044	0.000	0.000	0.000	0.000	0.044	0.123	0.000	0.000	0.000	0.123	0.167	12.466	1592.64
21-30	1592.64	12.466	4.617	17.083	0.000	0.000	0.173	0.000	0.000	0.000	0.000	0.173	0.000	0.000	0.000	0.000	0.173	0.121	0.000	0.000	0.000	0.121	0.294	16.789	1597.12
Sub Total			**14.212**		**0.000**	**0.000**	**0.217**	**0.000**	**0.000**	**0.012**	**0.000**	**0.229**	**0.000**	**0.000**	**0.000**	**0.000**	**0.229**	**0.310**	**0.000**	**0.000**	**0.000**	**0.310**	**0.539**		
Jul.2006																									
1-10	1597.12	16.789	33.248	50.037	0.000	0.000	0.173	0.000	0.000	0.001	0.000	0.174	0.000	0.000	0.000	0.000	0.174	0.227	0.000	0.000	0.000	0.227	0.401	49.636	1616.47
11-20	1616.47	49.636	27.987	77.623	0.102	0.195	0.173	0.259	0.221	0.033	0.000	0.983	0.132	0.036	0.000	0.168	1.151	0.400	0.062	0.000	0.000	0.462	1.613	76.010	1625.44
21-31	1625.44	76.010	34.987	110.997	0.624	0.849	0.190	0.069	2.349	0.038	0.000	4.119	0.436	1.046	0.000	1.482	5.601	0.456	0.461	0.510	0.812	2.239	7.840	103.157	1632.70
Sub Total			**96.222**		**0.726**	**1.044**	**0.536**	**0.328**	**2.570**	**0.072**	**0.000**	**5.276**	**0.568**	**1.082**	**0.000**	**1.650**	**6.926**	**1.083**	**0.523**	**0.510**	**0.812**	**2.928**	**9.854**		
Aug.2006																									
1-10	1632.70	103.157	32.833	135.990	0.704	1.193	0.173	0.039	2.197	0.035	0.000	4.341	0.399	1.343	0.000	1.742	6.083	0.420	0.385	5.481	21.726	28.012	34.095	101.895	1632.38
11-20	1632.38	101.895	84.877	186.772	0.741	1.322	0.173	0.039	2.500	0.035	0.000	4.810	0.555	1.574	0.000	2.129	6.939	0.482	0.208	5.195	75.106	80.991	87.930	98.842	1631.60
21-31	1631.60	98.842	28.458	127.300	0.729	1.528	0.190	0.043	2.883	0.038	0.000	5.411	0.319	1.744	0.000	2.063	7.474	0.628	0.590	4.495	10.167	15.880	23.354	103.946	1632.90
Sub Total			**146.168**		**2.174**	**4.043**	**0.536**	**0.121**	**7.580**	**0.108**	**0.000**	**14.562**	**1.273**	**4.661**	**0.000**	**5.934**	**20.496**	**1.530**	**1.183**	**15.171**	**106.999**	**124.883**	**145.379**		
Sept.2006																									
1-10	1632.90	103.946	6.629	110.575	0.762	1.377	0.168	0.089	2.992	0.035	0.000	5.423	0.560	1.599	0.678	2.837	8.260	0.646	0.208	0.000	0.000	0.854	9.114	101.461	1632.27
11-20	1632.27	101.461	13.091	114.552	0.675	0.951	0.173	0.059	3.034	0.035	0.000	4.927	0.663	1.561	0.421	2.645	7.572	0.450	0.208	0.692	1.290	2.640	10.212	104.340	1633.00
21-30	1633.00	104.340	12.140	116.480	0.659	1.042	0.140	0.042	3.034	0.035	0.000	4.952	0.625	1.794	0.000	2.419	7.371	0.487	0.208	2.259	1.815	4.769	12.140	104.340	1633.00
Sub Total			**31.860**		**2.096**	**3.370**	**0.481**	**0.190**	**9.060**	**0.105**	**0.000**	**15.302**	**1.848**	**4.954**	**1.099**	**7.901**	**23.203**	**1.583**	**0.624**	**2.951**	**3.105**	**8.263**	**31.466**		
Oct.2006																									
1-10	1633.00	104.340	6.468	110.808	0.603	0.978	0.060	0.046	3.034	0.035	0.000	4.756	0.681	1.810	0.000	2.491	7.247	0.481	0.208	0.346	0.000	1.035	8.282	102.526	1632.54
11-20	1632.54	102.526	3.021	105.547	0.648	1.196	0.148	0.038	3.034	0.035	0.000	5.099	0.617	1.635	0.157	2.409	7.508	0.504	0.208	0.000	0.000	0.712	8.220	97.327	1631.21
21-31	1631.21	97.327	0.522 (0.272+0.250)	97.849	0.728	1.428	0.166	0.100	2.793	0.038	0.250	5.503	0.684	1.872	0.962	3.518	9.021	0.493	0.228	0.000	0.000	0.721	9.742	88.107	1628.78
Sub Total			**10.011** (9.761+0.250)		**1.979**	**3.602**	**0.374**	**0.184**	**8.861**	**0.108**	**0.250**	**15.358**	**1.982**	**5.317**	**1.119**	**8.418**	**23.776**	**1.478**	**0.644**	**0.346**	**0.000**	**2.468**	**26.244**		
Nov.2006																									
1-10	1628.78	88.107	6.763 (6.513+0.250)	94.870	0.285	0.570	0.110	0.043	2.464	0.035	0.250	3.757	0.728	1.928	0.198	2.854	6.611	0.240	0.208	0.000	0.000	0.448	7.059	87.811	1628.70
11-20	1628.70	87.811	2.288 (2.038+0.250)	90.099	0.310	0.594	0.110	0.035	2.510	0.035	0.250	3.844	0.713	1.907	0.000	2.620	6.464	0.324	0.208	0.000	0.000	0.532	6.996	83.103	1627.42
21-30	1627.42	83.103	-0.629 (0.879+0.250)	82.474	0.339	0.239	0.173	0.037	2.324	0.035	0.250	3.397	0.706	1.803	0.000	2.509	5.906	0.385	0.208	0.000	0.000	0.593	6.499	75.975	1625.43
Sub Total			**8.422** (7.472+0.750)		**0.934**	**1.403**	**0.393**	**0.115**	**7.298**	**0.105**	**0.750**	**10.998**	**2.147**	**5.638**	**0.198**	**7.983**	**18.981**	**0.949**	**0.624**	**0.000**	**0.000**	**1.573**	**20.554**		
Total for Khariff	1572.70	1.294	**306.895** (305.895+1.000)	308.189	**7.909**	**13.462**	**2.537**	**0.938**	**35.369**	**0.510**	**1.000**	**61.725**	**7.818**	**21.652**	**2.416**	**31.886**	**93.611**	**6.933**	**3.598**	**18.978**	**110.916**	**140.425**	**234.036**	**75.975**	**1625.43**

Period	Reservoir at start Level Ft.	Reservoir at start Capacity	Inflow	Total Storage (Col.3+4)	Drawals by Karnataka state PC+ LLC	RB HLC	RBC	RR	LBMC+ HLC	JVSL	L.I. Scheme	Total Col.6 to 12	Drawals by Andhra Pradesh LLC	RB HLC	RR	Total Col.14 to 16	Total Irrigation drawals. Col.13+17	Evopara-tion	S.L.	E.P.G. Losses (RB+LB)	Spillway	Total Losses Col.19 to 22	Total Outflow Col.18+23	Reservoir at end Capacity Col.5-24	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Dec. 2006																									
1-10	1625.43	75.975	-1.147	74.828	0.072	0.324	0.173	0.048	1.381	0.035	0.250	2.283	0.676	1.682	0.000	2.358	4.641	0.371	0.208	0.000	0.000	0.579	5.220	69.608	1623.58
			-1.397+0.250																						
11-20	1623.58	69.608	-2.205	67.403	0.192	0.306	0.042	0.033	1.729	0.034	0	2.336	0.747	1.780	0.000	2.527	4.863	0.310	0.208	0.000	0.000	0.518	5.381	62.022	1621.15
21-31	1621.15	62.022	-2.513	59.509	0.604	0.030	0	0.013	2.666	0.038	0.000	3.351	0.750	1.763	0.000	2.513	5.864	0.285	0.228	0.000	0.000	0.513	6.377	53.132	1617.88
Sub Total			**-5.865**		**0.868**	**0.660**	**0.215**	**0.094**	**5.776**	**0.107**	**0.250**	**7.970**	**2.173**	**5.225**	**0.000**	**7.398**	**15.368**	**0.966**	**0.644**	**0.000**	**0.000**	**1.610**	**16.978**		
			-2.450+0.250																						
Jan. 2007																									
1-10	1617.88	53.132	-1.901	51.231	0.614	0.025	0.000	0.021	2.723	0.035	0.250	3.668	0.629	1.189	0.156	1.974	5.642	0.220	0.208	0.000	0.000	0.428	6.070	45.161	1614.56
			-2.151+0.250																						
11-20	1614.56	45.161	-1.195	43.966	0.612	0.012	0.000	0.030	2.624	0.035	0.250	3.563	0.632	0.382	0.319	1.333	4.896	0.203	0.135	0.000	0.000	0.338	5.234	38.732	1611.57
			-1.445+0.250																						
21-31	1611.57	38.732	-1.535	37.197	0.643	0.000	0.142	0.022	2.824	0.038	0.000	3.669	0.725	0.000	0.000	0.725	4.394	0.242	0.114	0.000	0.000	0.356	4.750	32.447	1608.27
Sub Total			**-4.631**		**1.869**	**0.037**	**0.142**	**0.073**	**8.171**	**0.108**	**0.500**	**10.900**	**1.986**	**1.571**	**0.475**	**4.032**	**14.932**	**0.665**	**0.457**	**0.000**	**0.000**	**1.122**	**16.054**		
			-4.300+0.500																						
Feb. 2007																									
1-10	1608.27	32.447	1.180	33.627	0.583	0	0.210	0.020	2.444	0.035	0.250	3.542	0.661	0.000	0.000	0.661	4.203	0.235	0.104	0.000	0.000	0.339	4.542	29.085	1606.30
			(-1.146+2.076BA+0.250)																						
11-20	1606.30	29.085	-1.309	27.776	0.615	0	0.179	0.055	2.314	0.035	0.000	3.198	0.631	0.000	0.000	0.631	3.829	0.190	0.104	0.000	0.000	0.294	4.123	23.653	1602.71
			(-1.363+0.054BA)																						
21-28	1602.71	23.653	-0.923	22.730	0.434	0	0.138	0.065	1.875	0.028	0.000	2.540	0.509	0.000	0.250	0.759	3.299	0.141	0.083	0.000	0.000	0.224	3.523	19.207	1599.26
					357+43																				
Sub Total			**-1.052**		**1.632**	**0.000**	**0.527**	**0.140**	**6.633**	**0.098**	**0.250**	**9.280**	**1.801**	**0.000**	**0.250**	**2.051**	**11.331**	**0.566**	**0.291**	**0.000**	**0.000**	**0.857**	**12.188**		
			(-3.432+2.130BA+0.250)																						
Mar. 2007																									
1-10	1599.26	19.207	0.609	19.816	0.493	0	0.172	0.025	2.437	0.035	0.000	3.162	0.597	0.000	0.000	0.597	3.759	0.159	0.104	0.000	0.000	0.263	4.022	15.794	1596.17
			(-1.011+1.620BA)																						
11-20	1596.17	15.794	-0.601	15.193	0.525	0	0.172	0.050	2.593	0.035	0.000	3.375	0.558	0.000	0.554	1.112	4.487	0.146	0.104	0.000	0.000	0.250	4.737	10.456	1590.17
			(-1.211+0.610BA)																						
21-31	1590.17	10.456	-1.636	8.820	0.581	0	0.190	0.067	2.497	0.038	0.000	3.373	0.616	0.000	0.259	0.875	4.248	0.110	0.114	0.000	0.000	0.224	4.472	4.348	1579.46
Sub Total			**-1.628**		**1.599**	**0.000**	**0.534**	**0.142**	**7.527**	**0.108**	**0.000**	**9.910**	**1.771**	**0.000**	**0.813**	**2.584**	**12.494**	**0.415**	**0.322**	**0.000**	**0.000**	**0.737**	**13.231**		
April 2007			(-3.868+2.230BA)																						
1-10	1579.46	4.348	-0.469	3.879	0.000	0.000	0.174	0.067	0.123	0.019	0.000	0.383	0.634	0.000	0.769	1.403	1.786	0.052	0.057	0.000	0.000	0.109	1.895	1.984	1572.48
11-20	1572.48	1.984	-0.034	1.950	0.000	0.000	0.175	0.000	0.086	0.001	0.000	0.262	0.000	0.000	0.000	0.000	0.262	0.044	0.000	0.000	0.000	0.044	0.306	1.644	1571.15
										40															
21-30	1571.15	1.644	0.992	2.636	0.000	0.000	0.175	0.000	0.086	0.000	0.000	0.261	0.000	0.000	0.000	0.000	0.261	0.050	0.000	0.000	0.000	0.050	0.311	2.325	1573.70
Sub Total			**0.489**		**0.000**	**0.000**	**0.524**	**0.067**	**0.295**	**0.020**	**0.000**	**0.906**	**0.634**	**0.000**	**0.769**	**1.403**	**2.309**	**0.146**	**0.057**	**0.000**	**0.000**	**0.203**	**2.512**		
May 2007																									
1-10	1573.70	2.325	0.825	3.150	0.000	0.000	0.175	0.000	0.035	0.006	0.000	0.216	0.000	0.000	0.000	0.000	0.216	0.052	0.000	0.000	0.000	0.052	0.268	2.882	1575.50
11-20	1575.50	2.882	0.415	3.297	0.000	0.000	0.194	0.052	0.000	0.034	0.000	0.280	0.000	0.000	0.000	0.000	0.280	0.069	0.000	0.000	0.000	0.069	0.349	2.948	1575.70
21-31	1575.70	2.948	0.826	3.774	0.000	0.000	0.238	0.000	0.000	0.038	0.000	0.276	0.000	0.000	0.000	0.000	0.276	0.065	0.000	0.000	0.000	0.065	0.341	3.433	1577.10
Sub Total			**2.066**		**0.000**	**0.000**	**0.607**	**0.052**	**0.035**	**0.078**	**0.000**	**0.772**	**0.000**	**0.000**	**0.000**	**0.000**	**0.772**	**0.186**	**0.000**	**0.000**	**0.000**	**0.186**	**0.958**		

ABSTRACT

Total for Khariff from June to Nov 06	1572.70	3.116	306.895 (305.895+1.000)	310.011	7.909	13.462	2.537	0.938	35.369	0.510	1.000	61.725	7.818	21.652	2.416	31.886	93.611	6.933	3.598	18.978	110.916	140.425	234.036	75.975	1625.43
Total for Rabi	1625.43	75.975	-10.621 (-15.981 + BA 4.360+1.00)	65.354	5.968	0.697	2.549	0.568	28.437	0.519	1.000	39.738	8.365	6.796	2.307	17.468	57.206	2.944	1.771	0.000	0.000	4.715	61.921	3.433	1577.10
Grand total for 2006-07	1572.70	3.116	296.274 (289.914+4.360 BA+2.000)	299.390	13.877	14.159	5.086	1.506	63.806	1.029	2.000	101.463	16.183	28.448	4.723	49.354	150.817	9.877	5.369	18.978	110.916	145.140	295.957	3.433	1577.10

Water account/dwt 06-07

Superintending Engineer,
IB, TB Board, TB Dam.

STATUS REPORT FOR THE OPERATION OF TUNGABHADRA RESERVOIR FOR THE WATER YEAR 2007 - 08 (From 01-06-2007 to 31-05-2008)
(BASED ON CAPACITY ELEVATION TABLE OF 2004 HYDROGRAPHIC SURVEYS). (THE DRAWALS ARE INCLUSIVE OF PRO-RATA TRANSMISSION LOSSES).
(All figures are in TMC / Cusecs)

Period	Reservoir at start		Inflow	Total Storage (Col.3+4)	Drawals by Karnataka state								Drawals by Andhra Pradesh				Total Irrigation drawals. Col.13+17	Evopara-tion	S.L.	E.P.G. ROFS (RB+LB)	Spillway	Total losses Col.19 to 22	Total outflow Col.18+23	Reservoir at end	
	Level Ft.	Capacity			PC+ LLC	RB HLC	RBC	RR	LBMC+ HLC	JVSL	L.I. Scheme	Total Col.6 to 12	LLC	RB HLC	RR	Total Col.14 to 16								Capacity Col.5-24	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Jun.2007																									
1-10	1577.10	3.433	2.411	5.844	0.000	0.000	0.206	0.000	0.000	0.021	0.000	0.227	0.000	0.000	0.000	0.000	0.227	0.060	0.000	0.000	0.000	0.060	0.287	5.557	1582.15
11-20	1582.15	5.557	0.984	6.541	0.000	0.000	0.135	0.026	0.000	0.034	0.000	0.195	0.000	0.000	0.000	0.000	0.195	0.070	0.000	0.000	0.000	0.070	0.265	6.276	1583.57
21-30	1583.57	6.276	9.874	16.150	0.000	0.000	0.117	0.021	0.000	0.035	0.000	0.173	0.000	0.000	0.000	0.000	0.173	0.058	0.000	0.000	0.000	0.058	0.231	15.919	1596.29
Sub Total			**13.269**		**0.000**	**0.000**	**0.458**	**0.047**	**0.000**	**0.090**	**0.000**	**0.595**	**0.000**	**0.000**	**0.000**	**0.000**	**0.595**	**0.188**	**0.000**	**0.000**	**0.000**	**0.188**	**0.783**		
Jul.2007																									
1-10	1596.29	15.919	52.471	68.390	0.000	0.000	0.147	0.026	0.000	0.034	0.000	0.207	0.000	0.000	0.000	0.000	0.207	0.241	0.000	0.000	0.000	0.241	0.448	67.942	1623.08
11-20	1623.08	67.942	61.916	129.858	0.230	0.457	0.123	0.030	1.299	0.035	0.000	2.174	0.099	0.594	0.000	0.693	2.867	0.446	0.144	3.464	23.318	27.372	30.239	99.619	1631.80
21-31	1631.80	99.619	20.401	120.020	0.369	0.794	0.162	0.045	2.002	0.038	0.000	3.410	0.459	1.734	0.000	2.193	5.603	0.492	0.361	4.570	4.891	10.314	15.917	104.103	1632.94
Sub Total			**134.788**		**0.599**	**1.251**	**0.432**	**0.101**	**3.301**	**0.107**	**0.000**	**5.791**	**0.558**	**2.328**	**0.000**	**2.886**	**8.677**	**1.179**	**0.505**	**8.034**	**28.209**	**37.927**	**46.604**		
Aug.2007																									
1-10	1632.94	104.103	74.591	178.694	0.705	0.983	0.147	0.046	2.260	0.035	0.000	4.176	0.621	1.682	0.000	2.303	6.479	0.379	0.208	2.751	73.590	76.928	83.407	95.287	1630.68
11-20	1630.68	95.287	87.270	182.557	0.738	0.620	0.147	0.046	1.737	0.034	0.000	3.322	0.585	0.983	0.000	1.568	4.890	0.428	0.208	5.672	67.137	73.445	78.335	104.222	1632.97
21-31	1632.97	104.222	13.027	117.249	0.800	0.681	0.161	0.051	1.910	0.038	0.000	3.641	0.462	1.083	0.000	1.545	5.186	0.401	0.422	4.278	2.622	7.723	12.909	104.340	1633.00
Sub Total			**174.888**		**2.243**	**2.284**	**0.455**	**0.143**	**5.907**	**0.107**	**0.000**	**11.139**	**1.668**	**3.748**	**0.000**	**5.416**	**16.555**	**1.208**	**0.838**	**12.701**	**143.349**	**158.096**	**174.651**		
Sept.2007																									
1-10	1633.00	104.340	24.654	128.994	0.650	0.608	0.147	0.046	1.737	0.035	0.000	3.223	0.674	0.995	0.000	1.669	4.892	0.404	0.208	5.527	13.623	19.762	24.654	104.340	1633.00
11-20	1633.00	104.340	44.487	148.827	0.481	0.608	0.103	0.036	1.737	0.035	0.000	3.000	0.689	0.995	0.000	1.684	4.684	0.266	0.286	4.409	37.682	42.643	47.327	101.500	1632.28
21-30	1632.28	101.500	28.742	130.242	0.411	0.688	0.000	0.000	2.174	0.035	0.000	3.308	0.666	1.154	0.000	1.820	5.128	0.445	0.208	4.271	15.850	20.774	25.902	104.340	1633.00
Sub Total			**97.883**		**1.542**	**1.904**	**0.250**	**0.082**	**5.648**	**0.105**	**0.000**	**9.531**	**2.029**	**3.144**	**0.000**	**5.173**	**14.704**	**1.115**	**0.702**	**14.207**	**67.155**	**83.179**	**97.883**		
Oct.2007																									
1-10	1633.00	104.340	14.904	119.244	0.495	1.103	0.037	0.025	3.033	0.035	0.000	4.728	0.673	1.661	0.000	2.334	7.062	0.417	0.208	2.346	4.871	7.842	14.904	104.340	1633.00
11-20	1633.00	104.340	5.671	110.011	0.634	1.147	0.138	0.075	3.033	0.034	0.000	5.061	0.621	1.629	0.336	2.586	7.647	0.459	0.208	0.078	0.000	0.745	8.392	101.619	1632.31
21-31	1632.31	101.619	23.128 22.878+0.250	124.747	0.583	1.037	0.107	0.057	3.017	0.038	0.250	5.089	0.809	1.833	0.187	2.829	7.918	0.267	0.228	3.457	8.537	12.489	20.407	104.340	1633.00
Sub Total			**43.703** 43.453+0.250		**1.712**	**3.287**	**0.282**	**0.157**	**9.083**	**0.107**	**0.250**	**14.878**	**2.103**	**5.123**	**0.523**	**7.749**	**22.627**	**1.143**	**0.644**	**5.881**	**13.408**	**21.076**	**43.703**		
Nov.2007																									
1-10	1633.00	104.340	6.896 6.646+0.250	111.236	0.491	0.750	0.066	0.038	2.517	0.035	0.250	4.147	0.712	1.830	0.000	2.542	6.689	0.339	0.208	0.883	0.000	1.430	8.119	103.117	1632.69
11-20	1632.69	103.117	3.418 3.168+0.250	106.535	0.549	0.936	0.138	0.093	2.440	0.034	0.250	4.440	0.707	1.825	0.346	2.878	7.318	0.361	0.208	0.000	0.000	0.569	7.887	98.648	1631.55
21-30	1631.55	98.648	0.848 0.598+0.250	99.496	0.404	0.980	0.138	0.134	2.034	0.035	0.250	3.975	0.741	1.781	0.864	3.386	7.361	0.332	0.208	0.000	0.000	0.540	7.901	91.595	1629.71
Sub Total			**11.162** 10.412+0.750		**1.444**	**2.666**	**0.342**	**0.265**	**6.991**	**0.104**	**0.750**	**12.562**	**2.160**	**5.436**	**1.210**	**8.806**	**21.368**	**1.032**	**0.624**	**0.883**	**0.000**	**2.539**	**23.907**		
Total for Khariff	1577.10	3.433	**475.693** 474.693+1.000		**7.540**	**11.392**	**2.219**	**0.795**	**30.930**	**0.620**	**1.000**	**54.496**	**8.518**	**19.779**	**1.733**	**30.030**	**84.526**	**5.865**	**3.313**	**41.706**	**252.121**	**303.005**	**387.531**	**91.595**	**1629.71**

Period	Reservoir at start Level ft	Reservoir at start Capacity	Inflow	Total Storage (Col.3+4)	Drawals by Karnataka state PC+ LLC	RB HLC	RBC	RR	LBMC+ HLC	JVSL	L.I. Scheme	Total Col.6 to 12	Drawals by Andhra Pradesh LLC	RB HLC	RR	Total Col.14 to 16	Total Irrigation drawals. Col.13+17	Evapara-tion	S.L.	E.P.G. (RB+LB)	Spillway	Total Col.19 to 22	Total Col.18+23	Reservoir at end Col.5-24	Reservoir at end ft.
Dec. 2007																									
1-10	1629.71	91.595	1.152 0.902+0.250	92.747	0.298	0.194	0.168	0.120	1.648	0.035	0.250	2.713	0.781	1.721	0.706	3.208	5.921	0.289	0.208	0.000	0.000	0.497	6.418	86.329	1628.30
11-20	1628.30	86.329	-0.622	85.707	0.341	0.900	0.040	0.105	1.925	0.035	0.000	3.346	0.764	1.641	0.864	3.269	6.615	0.324	0.208	0.000	0.000	0.532	7.147	78.560	1626.16
21-31	1626.16	78.560	-1.171	77.389	0.656	0.109	0.000	0.018	2.774	0.038	0.000	3.595	0.665	1.970	0.242	2.877	6.472	0.348	0.228	0.000	0.000	0.576	7.048	70.341	1623.80
Sub Total			**-0.641** -0.891+0.250		**1.295**	**1.203**	**0.208**	**0.243**	**6.347**	**0.108**	**0.250**	**9.654**	**2.210**	**5.332**	**1.812**	**9.354**	**19.008**	**0.961**	**0.644**	**0.000**	**0.000**	**1.605**	**20.613**		
Jan. 2008																									
1-10	1623.80	70.341	-2.086 -2.366+0.250	68.255	0.662	0.064	0	0.069	2.846	0.035	0.250	3.926	0.568	1.605	0.886	3.059	6.985	0.302	0.208	0.000	0.000	0.510	7.495	60.760	1620.71
11-20	1620.71	60.760	-2.325 -2.575+0.250	58.435	0.629	0.009	0.017	0.033	2.993	0.034	0.250	3.965	0.629	0.261	0.389	1.279	5.244	0.285	0.125	0.000	0.000	0.410	5.654	52.781	1617.74
21-31	1617.74	52.781	-2.262	50.519	0.657	0	0.219	0.087	3.274	0.038	0.000	4.275	0.742	0.000	0.000	0.742	5.017	0.273	0.114	0.000	0.000	0.387	5.404	45.115	1614.54
Sub Total			**-6.673** -4.300+0.500		**1.948**	**0.073**	**0.236**	**0.189**	**9.113**	**0.107**	**0.500**	**12.166**	**1.939**	**1.866**	**1.275**	**5.080**	**17.246**	**0.860**	**0.447**	**0.000**	**0.000**	**1.307**	**18.553**		
Feb. 2008																									
1-10	1614.54	45.115	-0.549 -0.779+0.250	44.566	0.579	0	0.202	0.064	2.528	0.034	0.250	3.657	0.576	0.000	0.000	0.576	4.233	0.234	0.221	0.000	0.000	0.455	4.688	39.878	1612.13
11-20	1612.13	39.878	-0.457	39.421	0.574	0	0.168	0.052	2.858	0.034	0.000	3.686	0.698	0.000	0.000	0.698	4.384	0.222	0.104	0.000	0.000	0.326	4.710	34.711	1609.51
21-29	1609.51	34.711	0.510	35.221	0.539	0	0.139	0.062	2.572	0.031	0.000	3.343	0.603	0.000	0.000	0.603	3.946	0.235	0.093	0.000	0.000	0.328	4.274	30.947	1607.41
Sub Total			**-0.496** -0.746+0.250		**1.692**	**0.000**	**0.509**	**0.178**	**7.958**	**0.099**	**0.250**	**10.686**	**1.877**	**0.000**	**0.000**	**1.877**	**12.563**	**0.691**	**0.418**	**0.000**	**0.000**	**1.109**	**13.672**		
Mar. 2008																									
1-10	1607.41	30.947	-0.126	30.821	0.605	0	0.173	0.112	2.858	0.035	0.000	3.783	0.649	0.000	0.619	1.268	5.051	0.271	0.104	0.000	0.000	0.375	5.426	25.395	1603.93
11-20	1603.93	25.395	-1.346	24.049	0.592	0	0.173	0.092	2.858	0.035	0.000	3.750	0.660	0.000	0.245	0.905	4.655	0.191	0.104	0.000	0.000	0.295	4.950	19.099	1599.17
21-31	1599.17	19.099	7.207	26.306	0.605	0	0.082	0.070	2.929	0.038	0.000	3.724	0.773	0.000	0.000	0.773	4.497	0.142	0.114	0.000	0.000	0.256	4.753	21.553	1601.15
Sub Total			**5.735**		**1.802**	**0.000**	**0.428**	**0.274**	**8.645**	**0.108**	**0.000**	**11.257**	**2.082**	**0.000**	**0.864**	**2.946**	**14.203**	**0.604**	**0.322**	**0.000**	**0.000**	**0.926**	**15.129**		
April. 2008																									
1-10	1601.15	21.553	0.419	21.972	0.540	0.000	0.132	0.072	1.748	0.035	0.000	2.527	0.713	0.000	0.000	0.713	3.240	0.168	0.104	0.000	0.000	0.272	3.512	18.460	1598.62
11-20	1598.62	18.460	-1.027	17.433	0.480	0.000	0.173	0.074	1.292	0.035	0.000	2.054	0.710	0.000	0.000	0.710	2.764	0.187	0.104	0.000	0.000	0.291	3.055	14.378	1594.74
21-30	1594.74	14.378	0.456	14.834	0.001	0.000	0.173	0.026	0.129	0.034	0.000	0.363	0.292	0.000	0.000	0.292	0.655	0.176	0.041	0.000	0.000	0.217	0.872	13.962	1594.30
Sub Total			**-0.152**		**1.021**	**0.000**	**0.478**	**0.172**	**3.169**	**0.104**	**0.000**	**4.944**	**1.715**	**0.000**	**0.000**	**1.715**	**6.659**	**0.531**	**0.249**	**0.000**	**0.000**	**0.780**	**7.439**		
May 2008																									
1-10	1594.30	13.962	0.672	14.634	0.000	0.000	0.194	0.013	0.086	0.035	0.000	0.328	0.000	0.000	0.000	0.000	0.328	0.193	0.000	0.000	0.000	0.193	0.521	14.113	1594.46
11-20	1594.46	14.113	0.054	14.167	0.000	0.000	0.216	0.000	0.001	0.035	0.000	0.252	0.000	0.000	0.000	0.000	0.252	0.180	0.000	0.000	0.000	0.180	0.432	13.735	1594.06
21-31	1594.06	13.735	1.826	15.561	0.000	0.000	0.238	0.085	0.005	0.038	0.000	0.366	0.000	0.000	1.023	1.023	1.389	0.172	0.000	0.000	0.000	0.172	1.561	14.000	1594.34
Sub Total			**2.552**		**0.000**	**0.000**	**0.648**	**0.098**	**0.092**	**0.108**	**0.000**	**0.946**	**0.000**	**0.000**	**1.023**	**1.023**	**1.969**	**0.545**	**0.000**	**0.000**	**0.000**	**0.545**	**2.514**		
Total for Khariff from Jun'07 to Nov'07	**1577.10**	**3.433**	**475.693** 474.693+1.000	**0.000**	**7.540**	**11.392**	**2.219**	**0.795**	**30.930**	**0.620**	**1.000**	**54.496**	**8.518**	**19.779**	**1.733**	**30.030**	**84.526**	**5.865**	**3.313**	**41.706**	**252.121**	**303.005**	**387.531**	**91.595**	**1629.71**
Total for Rabi from Dec'07 to May'08	**1629.71**	**91.595**	**0.325** -2.985+1.000 LIS + 2.300 (BA)	**0.000**	**7.758**	**1.276**	**2.507**	**1.154**	**35.324**	**0.634**	**1.000**	**49.653**	**9.823**	**7.198**	**4.974**	**21.995**	**71.648**	**4.192**	**2.080**	**0.000**	**0.000**	**6.272**	**77.920**	**0.000**	**0.000**
Grand tota for the year 2007-08	1577.10	3.433	**476.018** 471.718+2.000 LIS + 2.300 (BA)	**0.000**	**15.298**	**12.668**	**4.726**	**1.949**	**66.254**	**1.254**	**2.000**	**104.149**	**18.341**	**26.977**	**6.707**	**52.025**	**156.174**	**10.057**	**5.393**	**41.706**	**252.121**	**309.277**	**465.451**	**14.000**	**1594.340**

Superintending Engineer,

STATUS REPORT OF TUNGABHADRA RESERVOIR FOR THE WATER YEAR 2008-09 (From 01-06-2008 to 31-05-2009)
(BASED ON CAPACITY ELEVATION TABLE OF 2004 HYDROGRAPHIC SURVEYS). (THE DRAWALS ARE INCLUSIVE OF PRO-RATA TRANSMISSION LOSSES).

ANNEXURE - I

(All figures are in TMC / Cusecs)

Period	Reservoir at start		Inflow	Total Storage	Drawals by Karnataka state								Drawals by Andhra Pradesh				Total Irrigation drawals.	Evopara-tion	S.L.	E.P.G.	Spillway	Total losses	Total outflow	Reservoir at end	
	Level Ft.	Capacity	-		PC+ LLC	RB HLC	RBC	RR	LBMC+ HLC	JVSL	L.I. Scheme	Total Col.6 to 12	LLC	RB HLC	RR (RDS+KCC)	Total Col.14 to 16				ROFS (RB+LB)		Col.19 to 22	Col.18+23	Capacity Col.5-24	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Jun.2008																									
1-10	1594.34	14.000	2.743	16.743	0.000	0.000	0.216	0.047	0.000	0.024	0.000	0.287	0.000	0.000	0.000	0.000	0.287	0.142	0.000	0.000	0.000	0.142	0.429	16.314	1596.67
11-20	1596.67	16.314	5.436	21.750	0.000	0.000	0.216	0.000	0.000	0.009	0.000	0.216	0.000	0.000	0.000	0.000	0.216	0.140	0.000	0.000	0.000	0.140	0.356	21.394	1601.03
21-30	1601.03	21.394	7.455	28.849	0.000	0.000	0.216	0.000	0.000	0.007	0.000	0.223	0.000	0.000	0.000	0.000	0.223	0.226	0.000	0.000	0.000	0.226	0.449	28.400	1605.88
Sub Total			**15.634**		**0.000**	**0.000**	**0.648**	**0.047**	**0.000**	**0.031**	**0.000**	**0.726**	**0.000**	**0.000**	**0.000**	**0.000**	**0.726**	**0.508**	**0.000**	**0.000**	**0.000**	**0.508**	**1.234**		
1/2008																									
1-10	1605.88	28.400	14.275	42.675	0.235	0.257	0.209	0.650	0.355	0.034	0.000	1.740	0.000	0.984	0.000	0.984	2.724	0.255	0.153	0.000	0.000	0.408	3.132	39.543	1611.97
11-20	1611.97	39.543	6.984	46.527	0.606	1.076	0.182	0.166	2.380	0.027	0.000	4.437	0.379	1.641	0.000	2.020	6.457	0.258	0.208	0.000	0.000	0.466	6.923	39.604	1612.00
21-31	1612.00	39.604	17.312	56.916	0.785	1.239	0.200	0.384	3.240	0.038	0.000	5.886	0.477	1.663	0.000	2.140	8.026	0.235	0.228	0.000	0.000	0.463	8.489	48.427	1615.97
Sub Total			**38.571**		**1.626**	**2.572**	**0.591**	**1.200**	**5.975**	**0.099**	**0.000**	**12.063**	**0.856**	**4.288**	**0.000**	**5.144**	**17.207**	**0.748**	**0.589**	**0.000**	**0.000**	**1.337**	**18.544**		
1/2008																									
1-10	1615.97	48.427	38.218	86.645	0.699	1.152	0.181	0.100	3.033	0.034	0.000	5.199	0.624	1.509	0.000	2.133	7.332	0.222	0.208	0.000	0.000	0.430	7.762	78.883	1626.25
11-20	1626.25	78.883	113.135	192.018	0.542	0.908	0.181	0.100	2.403	0.034	0.000	4.168	0.701	1.187	0.000	1.888	6.056	0.291	0.208	4.294	77.066	81.859	87.915	104.103	1632.94
21-31	1632.94	104.103	16.804	120.907	0.559	1.009	0.200	0.105	2.589	0.038	0.000	4.500	0.792	1.386	0.000	2.178	6.678	0.477	0.228	4.417	4.767	9.889	16.567	104.340	1633.00
Sub Total			**168.157**		**1.800**	**3.069**	**0.562**	**0.305**	**8.025**	**0.106**	**0.000**	**13.867**	**2.117**	**4.082**	**0.000**	**6.199**	**20.066**	**0.990**	**0.644**	**8.711**	**81.833**	**92.178**	**112.244**		
1/2008																									
1-10	1633.00	104.340	18.408	122.748	0.559	0.984	0.182	0.095	2.394	0.034	0.000	4.248	0.787	1.465	0.000	2.252	6.500	0.354	0.208	4.078	7.268	11.908	18.408	104.340	1633.00
11-20	1633.00	104.340	21.240	125.580	0.587	0.990	0.119	0.070	2.111	0.035	0.000	3.912	0.712	1.269	0.000	1.981	5.893	0.414	0.208	5.612	9.113	15.347	21.240	104.340	1633.00
21-31	1633.00	104.340	8.563	112.903	0.586	0.844	0.182	0.087	2.550	0.035	0.000	4.284	0.664	1.500	0.000	2.164	6.448	0.429	0.208	1.912	0.000	2.549	8.997	103.906	1632.89
Sub Total			**48.211**		**1.732**	**2.818**	**0.483**	**0.252**	**7.055**	**0.104**	**0.000**	**12.444**	**2.163**	**4.234**	**0.000**	**6.397**	**18.841**	**1.197**	**0.624**	**11.602**	**16.381**	**29.804**	**48.645**		
1/2009																									
1-10	1632.89	103.906	5.117	109.023	0.590	0.963	0.181	0.088	3.033	0.037	0.000	4.892	0.679	1.524	0.000	2.203	7.095	0.417	0.208	0.000	0.000	0.625	7.720	101.303	1632.23
11-20	1632.23	101.303	4.099	105.402	0.602	1.103	0.182	0.112	3.033	0.052	0.000	5.084	0.671	1.510	0.309	2.490	7.574	0.371	0.208	0.000	0.000	0.579	8.153	97.249	1631.19
21-31	1631.19	97.249	2.997 (2.747+0.250)	100.246	0.580	0.954	0.200	0.133	3.288	0.057	0.250	5.462	0.788	1.858	0.468	3.114	8.576	0.336	0.228	0.000	0.000	0.564	9.140	91.106	1629.58
Sub Total			**12.213** (11.963+0.250)		**1.772**	**3.020**	**0.563**	**0.333**	**9.354**	**0.146**	**0.250**	**15.438**	**2.138**	**4.892**	**0.777**	**7.807**	**23.245**	**1.124**	**0.644**	**0.000**	**0.000**	**1.768**	**25.013**		
1/2009																									
1-10	1629.58	91.106	0.249 (-0.001+0.250)	91.355	0.444	0.658	0.181	0.133	2.786	0.052	0.250	4.504	0.687	1.477	0.569	2.733	7.237	0.443	0.208	0.000	0.000	0.651	7.888	83.467	1627.52
11-20	1627.52	83.467	-0.806 (-1.056+0.250)	82.661	0.482	0.531	0.168	0.158	2.205	0.052	0.250	3.846	0.708	1.359	1.190	3.257	7.103	0.328	0.208	0.000	0.000	0.536	7.639	75.022	1625.16
21-31	1625.16	75.022	-0.284 (-0.534+0.250)	74.738	0.248	0.363	0.130	0.126	1.792	0.052	0.250	2.961	0.738	1.863	1.037	3.638	6.599	0.256	0.207	0.000	0.000	0.463	7.062	67.676	1623.00
Sub Total			**-0.841** (-1.591+0.750)		**1.174**	**1.552**	**0.479**	**0.417**	**6.783**	**0.156**	**0.750**	**11.311**	**2.133**	**4.699**	**2.796**	**9.628**	**20.939**	**1.027**	**0.623**	**0.000**	**0.000**	**1.650**	**22.589**		
Total	1594.34	14.000	**281.945** (280.945+1.000)	**295.945**	**8.104**	**13.031**	**3.326**	**2.554**	**37.192**	**0.642**	**1.000**	**65.849**	**9.407**	**22.195**	**3.573**	**35.175**	**101.024**	**5.594**	**3.124**	**20.313**	**98.214**	**127.245**	**228.269**	**67.676**	**1623.00**

Period	Level FL	Capacity	Inflow	Total Storage (Col.3+4)	Drawals by Karnataka state: PC+ LLC	RB HLC	RBC	RR	LBMC+ HLC	JVSL	L.I. Scheme	Total Col.6 to 12	Drawals by Andhra Pradesh: LLC	RB HLC	RR (RDS+KCC)	Total Col.14 to 16	Total Irrigation drawals. Col.13+17	Evapora-tion	Seep.	E.P.S. RDFS (RB+LB)	Spillway	Total losses Col.19 to 22	Total outflow Col.18+23	Reservoir at end: Capacity Col.5-24	Reservoir at end: Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Dec. 2008																									
1-10	1623.00	67.676	2.321 (2.071+0.250)	69.997	0.012	0.000	0.130	0.068	1.481	0.052	0.250	1.993	0.735	1.793	0.207	2.735	4.728	0.233	0.125	0.000	0.000	0.358	5.086	64.911	1622.12
11-20	1622.12	64.911	-1.196	63.715	0.009	0.000	0.031	0.053	1.474	0.052	0.000	1.619	0.718	0.995	0.000	1.713	3.332	0.253	0.104	0.000	0.000	0.357	3.689	60.026	1620.45
21-31	1620.45	60.026	-2.003	58.023	0.711	0.000	0.000	0.058	1.999	0.057	0.000	2.825	0.634	1.201	0.720	2.555	5.380	0.301	0.114	0.000	0.000	0.415	5.795	52.228	1617.52
Sub Total			-0.878 (0.310+0.250)		**0.732**	**0.000**	**0.161**	**0.179**	**4.954**	**0.161**	**0.250**	**6.437**	**2.087**	**3.989**	**0.927**	**7.003**	**13.440**	**0.787**	**0.343**	**0.000**	**0.000**	**1.130**	**14.570**		
Jan. 2009																									
1-10	1617.52	52.228	-1.800 (-2.050+0.250)	50.428	0.680	0.000	0.000	0.000	2.260	0.052	0.250	3.242	0.607	0.829	0.000	1.436	4.678	0.214	0.104	0.000	0.000	0.318	4.996	45.432	1614.68
11-20	1614.68	45.432	-1.625 (-1.875+0.450)	43.807	0.654	0.000	0.000	0.000	2.424	0.052	0.250	3.380	0.633	0.000	0.000	0.633	4.013	0.208	0.104	0.000	0.000	0.312	4.325	39.482	1611.94
21-31	1611.94	39.482	-1.984	37.498	0.699	0.000	0.190	0.007	2.667	0.057	0.000	3.620	0.717	0.000	0.187	0.904	4.524	0.234	0.114	0.000	0.000	0.348	4.872	32.626	1608.37
Total			-5.409 (-5.909+0.500)		**2.033**	**0.000**	**0.190**	**0.007**	**7.351**	**0.161**	**0.500**	**10.242**	**1.957**	**0.829**	**0.187**	**2.973**	**13.215**	**0.656**	**0.322**	**0.000**	**0.000**	**0.978**	**14.193**		
Feb. 2009																									
1-10	1608.37	32.626	-0.996 (-1.245+0.250)	31.630	0.645	0.000	0.123	0.002	2.424	0.052	0.250	3.496	0.673	0.856	0.033	1.562	5.058	0.201	0.104	0.000	0.000	0.305	5.363	26.267	1604.51
11-20	1604.51	26.267	-1.026	25.241	0.655	0.000	0.108	0.000	2.423	0.052	0.000	3.238	0.675	0.000	0.000	0.675	3.913	0.159	0.104	0.000	0.000	0.263	4.176	21.065	1600.77
21-28	1600.77	21.065	-0.821	20.244	0.522	0.000	0.086	0.000	1.938	0.041	0.000	2.587	0.513	0.000	0.000	0.513	3.100	0.130	0.083	0.000	0.000	0.213	3.313	16.931	1597.25
Total			-2.843 (-3.093+0.250)		**1.822**	**0.000**	**0.317**	**0.002**	**6.785**	**0.145**	**0.250**	**9.321**	**1.861**	**0.856**	**0.033**	**2.750**	**12.071**	**0.490**	**0.291**	**0.000**	**0.000**	**0.781**	**12.852**		
Mar. 2009																									
1-10	1597.25	16.931	0.172	17.103	0.661	0.000	0.108	0.032	2.421	0.052	0.000	3.274	0.626	0.000	0.507	1.133	4.407	0.143	0.104	0.000	0.000	0.247	4.654	12.449	1592.62
11-20	1592.62	12.449	-0.200	12.249	0.703	0.000	0.130	0.017	2.419	0.032	0.000	3.301	0.584	0.000	0.276	0.860	4.161	0.104	0.104	0.000	0.000	0.208	4.369	7.880	1586.40
21-31	1586.40	7.880	-0.692	7.188	0.823	0.000	0.166	0.000	2.629	0.029	0.000	3.647	0.593	0.000	0.000	0.593	4.240	0.083	0.114	0.000	0.000	0.197	4.437	2.751	1575.10
Total			-0.720		**2.187**	**0.000**	**0.404**	**0.049**	**7.469**	**0.113**	**0.000**	**10.222**	**1.803**	**0.000**	**0.783**	**2.586**	**12.808**	**0.330**	**0.322**	**0.000**	**0.000**	**0.652**	**13.460**		
Apr. 2009																									
1-10	1575.10	2.751	-0.363	2.388	0.217	0.000	0.151	0.022	0.286	0.026	0.000	0.702	0.184	0.000	0.316	0.500	1.202	0.042	0.104	0.000	0.000	0.146	1.348	1.040	1568.30
11-20	1568.30	1.040	0.079	1.119	0.000	0.000	0.151	0.012	0.086	0.026	0.000	0.275	0.000	0.000	0.190	0.190	0.465	0.029	0.000	0.000	0.000	0.029	0.494	0.625	1565.75
21-30	1565.75	0.625	0.196	0.821	0.000	0.000	0.151	0.000	0.078	0.006	0.000	0.235	0.000	0.000	0.000	0.000	0.235	0.021	0.000	0.000	0.000	0.021	0.256	0.565	1565.30
Total			-0.088		**0.217**	**0.000**	**0.453**	**0.034**	**0.450**	**0.058**	**0.000**	**1.212**	**0.184**	**0.000**	**0.506**	**0.690**	**1.902**	**0.092**	**0.104**	**0.000**	**0.000**	**0.196**	**2.098**		
May 2009																									
1-10	1565.30	0.565	0.423	0.988	0.000	0.000	0.151	0.000	0.000	0.000	0.000	0.151	0.000	0.000	0.000	0.000	0.151	0.026	0.000	0.000	0.000	0.026	0.177	0.811	1567.00
11-20	1567.00	0.811	0.871	1.682	0.000	0.000	0.151	0.026	0.000	0.000	0.000	0.177	0.000	0.000	0.000	0.000	0.177	0.034	0.000	0.000	0.000	0.034	0.211	1.471	1570.40
21-31	1570.40	1.471	5.418	6.889	0.000	0.000	0.181	0.127	0.000	0.021	0.000	0.329	0.000	0.000	2.164	2.164	2.493	0.073	0.000	0.000	0.000	0.073	2.566	4.323	1579.40
Total			6.712		**0.000**	**0.000**	**0.483**	**0.153**	**0.000**	**0.021**	**0.000**	**0.657**	**0.000**	**0.000**	**2.164**	**2.164**	**2.821**	**0.133**	**0.000**	**0.000**	**0.000**	**0.133**	**2.954**		
	1594.34	**14.000**	**281.945** (208.945+1.000)	**295.945**	**8.104**	**13.031**	**3.326**	**2.554**	**37.192**	**0.642**	**1.000**	**65.849**	**9.407**	**22.195**	**3.573**	**35.175**	**101.024**	**5.594**	**3.124**	**20.313**	**98.214**	**127.245**	**228.269**		
	1623.00	**67.676**	**-3.226** (-6.585+1.000+2.359)	**64.450**	**6.991**	**0.000**	**2.008**	**0.424**	**27.009**	**0.659**	**1.000**	**38.091**	**7.892**	**5.674**	**4.600**	**18.166**	**56.257**	**2.488**	**1.382**	**0.000**	**0.000**	**3.870**	**60.127**		
	1594.34	**14.000**	**278.719** [274.360+2.000+2.359 (BA)]	**360.395**	**15.095**	**13.031**	**5.334**	**2.978**	**64.201**	**1.301**	**2.000**	**103.940**	**17.299**	**27.869**	**8.173**	**53.341**	**157.281**	**8.082**	**4.506**	**20.313**	**98.214**	**131.115**	**288.396**	**4.323**	**1579.40**

Superintending Engineer,
IB, TB Board, TB Dam.

STATUS REPORT OF TUNGABHADRA RESERVOIR FOR THE WATER YEAR 2009-10 (From 01/06/2009 to 31/05/2010)

(BASED ON CAPACITY ELEVATION TABLE OF 2004 HYDROGRAPHIC SURVEYS).

(THE DRAWALS ARE INCLUSIVE OF PRO-RATA TRANSMISSION LOSSES).

ANNEXURE - I

(All figures are in TMC / Cusecs)

Period	Reservoir at start		Inflow	Total Storage	Drawals by Karnataka state								Drawals by Andhra Pradesh				Total Irrigation drawals.	Evopara-tion	S.L.	E.P.G.	Spillway	Total losses	Total outflow	Reservoir at end	
	Level Ft.	Capacity		(Col.3+4)	PC+ LLC	RB HLC	RBC	RR	LBMC+ HLC	JVSL	L.I. Scheme	Total Col.6 to 12	LLC	RB HLC	RR (RDS+KCC)	Total Col.14 to 16				ROFS (RB+LB)		Col.19 to 22	Col.18+23	Capacity Col.5-24	Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Jun.2009																									
1-10	1579.40	4.323	1.695	6.018	0	0	0.151	0	0	0.022	0	0.173	0	0.000	0	0.000	0.173	0.060	0	0	0	0.060	0.233	5.785	1582.61
11-20	1582.61	5.785	1.846	7.631	0	0	0.151	0	0	0.038	0	0.189	0	0.000	0	0.000	0.189	0.070	0	0	0	0.070	0.259	7.372	1585.55
21-30	1585.55	7.372	0.918	8.290	0	0	0.151	0	0	0.052	0	0.203	0	0.000	0	0.000	0.203	0.083	0	0	0	0.083	0.286	8.004	1586.60
Jun Total			4.459		0.000	0.000	0.453	0.000	0.000	0.112	0.000	0.565	0.000	0.000	0.000	0.000	0.565	0.213	0.000	0.000	0.000	0.213	0.778		
Jul.2009																									
1-10	1586.60	8.004	15.965	23.969	0	0.043	0.151	0	0	0.043	0	0.237	0	0.000	0	0.000	0.237	0.076	0.003	0	0	0.079	0.316	23.653	1602.71
11-20	1602.71	23.653	78.219	101.872	0	0.372	0.149	0.171	0	0.034	0	0.726	0.217	1.053	0	1.270	1.996	0.276	0.083	0.144	0.725	1.228	3.224	98.648	1631.55
21-31	1631.55	98.648	43.966	142.614	0.499	0.712	0.152	0.036	0.832	0.040	0	2.271	0.556	1.134	0	1.690	3.961	0.530	0.284	4.774	29.790	35.378	39.339	103.275	1632.73
Jul Total			138.150		0.499	1.127	0.452	0.207	0.832	0.117	0.000	3.234	0.773	2.187	0.000	2.960	6.194	0.882	0.370	4.918	30.515	36.685	42.879		
Aug.2009																									
1-10	1632.73	103.275	25.150	128.425	0.873	1.157	0.139	0.075	1.167	0.052	0	3.463	0.458	1.414	0	1.872	5.335	0.511	0.208	3.669	14.362	18.750	24.085	104.340	1633.00
11-20	1633.00	104.340	13.184	117.524	0.898	1.338	0.139	0.075	2.129	0.052	0	4.631	0.459	1.636	0	2.095	6.726	0.370	0.208	2.291	3.668	6.537	13.263	104.261	1632.98
21-30	1632.98	104.261	20.117	124.378	0.866	1.182	0.144	0.070	3.047	0.057	0	5.366	0.641	2.020	0	2.661	8.027	0.444	0.228	3.742	7.873	12.287	20.314	104.064	1632.93
Aug Total			58.451		2.637	3.677	0.422	0.220	6.343	0.161	0.000	13.460	1.558	5.070	0.000	6.628	20.088	1.325	0.644	9.702	25.903	37.574	57.662		
Sep.2009																									
1-10	1632.93	104.064	42.178	146.242	0.581	1.015	0.138	0.063	2.773	0.052	0	4.622	0.697	1.710	0	2.407	7.029	0.367	0.208	3.493	30.805	34.873	41.902	104.340	1633.00
11-20	1633.00	104.340	16.080	120.420	0.667	1.093	0.139	0.059	2.774	0.052	0	4.784	0.661	1.685	0	2.346	7.130	0.433	0.208	2.797	5.512	8.950	16.080	104.340	1633.00
21-30	1633.00	104.340	28.589	132.929	0.582	1.093	0.139	0.059	2.773	0.052	0	4.698	0.744	1.685	0	2.429	7.127	0.390	0.208	3.448	17.534	21.580	28.707	104.222	1632.97
Sep Total			86.847	399.591	1.830	3.201	0.416	0.181	8.320	0.156	0.000	14.104	2.102	5.080	0.000	7.182	21.286	1.190	0.624	9.738	53.851	65.403	86.689		
Oct.2009																									
1-10	1632.97	104.222	62.348	166.570	0.288	0.388	0.014	0.022	0.105	0.052	0	0.869	0.364	1.430	0.000	1.794	2.663	0.358	0.197	1.743	57.269	59.567	62.230	104.340	1633.00
11-20	1633.00	104.340	10.246	114.586	0.721	0.827	0.142	0.059	1.798	0.052	0	3.599	0.557	1.532	0.000	2.089	5.688	0.424	0.208	1.718	2.445	4.795	10.483	104.103	1632.94
21-31	1632.94	104.103	2.175 1.925+0.250	106.278	0.770	0.848	0.152	0.071	2.723	0.057	0.250	4.871	0.666	1.576	0.205	2.447	7.318	0.434	0.228	0.000	0.000	0.662	7.980	98.298	1631.46
Oct Total			74.769		1.779	2.063	0.308	0.152	4.626	0.161	0.250	9.339	1.587	4.538	0.205	6.330	15.669	1.216	0.633	3.461	59.714	65.024	80.693		
Nov.2009																									
1-10	1631.46	98.298	1.959 1.709+0.250	100.257	0.662	0.807	0.138	0.072	2.485	0.052	0.250	4.466	0.639	1.576	0.432	2.647	7.113	0.249	0.208	0	0	0.457	7.570	92.687	1630.00
11-20	1630.00	92.687	4.478 4.228+0.250	97.165	0.550	0.810	0.138	0.059	2.622	0.052	0.250	4.481	0.711	1.749	0.000	2.460	6.941	0.266	0.208	0	0	0.474	7.415	89.750	1629.22
21-30	1629.22	89.750	2.258 2.008+0.250	92.008	0.296	0.462	0.138	0.059	2.180	0.052	0.250	3.437	0.729	1.744	0.000	2.473	5.910	0.302	0.208	0	0	0.510	6.420	85.588	1628.10
Nov Total			8.695 7.945+0.750		1.508	2.079	0.414	0.190	7.287	0.156	0.750	12.384	2.079	5.069	0.432	7.580	19.964	0.817	0.624	0.000	0.000	1.441	21.405		
Total for Diff	1579.40	4.323	371.371 370.371+1.000		8.253	12.147	2.465	0.950	27.408	0.863	1.000	53.086	8.099	21.944	0.637	30.680									

Period	Reservoir at start Level Ft.	Reservoir at start Capacity	Inflow	Total Storage (Col.3+4)	Drawals by Karnataka state: PC+ LLC	RB HLC	RBC	RR	LBMC+ HLC	JVSL	L.I. Scheme	Total Col.6 to 12	Drawals by Andhra Pradesh: LLC	RB HLC	RR (RDS, KC-I)	Total Col.14+15	Total Irrigation drawals Col.13+17	Evapora-tion	S.L.	E.P. (RDS, KC-I)	Spillway	Total losses Col.19 to 22	Total outflow Col.18+23	Reservoir at end: Capacity Col.5-24	Reservoir at end: Level ft.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		18	19	20		22	23	24	25	26
Dec. 2009																									
1-10	1628.10	85.588	-0.138	85.450	0.215	0.108	0.139	0.059	1.744	0.052	0.250	2.567	0.780	1.480	0.000			0.339	0.146	0	0	0.485	5.312	80.138	1626.60
			-0.388+0.250																						
11-20	1626.60	80.138	-1.748	78.390	0.228	0.000	0.061	0.050	1.745	0.052	0.000	2.136	0.691	1.136	0.000			0.340	0.104	0	0	0.452	4.415	73.975	1624.86
21-31	1624.86	73.975	-1.449	72.526	0.422	0.000	0.000	0.057	1.939	0.057	0.000	2.475	0.730	0.000	0.351			0.336	0.077	0	0	0.428	3.984	68.542	1623.26
Sub Total			**-3.335**		**0.865**	**0.108**	**0.200**	**0.166**	**5.428**	**0.161**	**0.250**	**7.178**	**2.201**	**2.616**							**0.000**	**1.365**	**13.711**		
			-2.626+0.250																						
Jan. 2010																									
1-10	1623.26	68.542	0.602	69.144	0.766	0.082	0.000	0.102	2.840	0.052	0.250	4.092	0.529	0.313	0.256			0.334	0.104	0	0	0.375	6.265	62.879	1621.44
			0.352+0.250																						
11-20	1621.44	62.879	-0.175	62.704	0.673	0.173	0.000	0.098	3.053	0.052	0.250	4.299	0.295	1.634	0.709			1.207	0.104	0	0	0.311	7.548	55.156	1618.66
			-0.425+0.250																						
21-31	1618.66	55.156	-1.725	53.431	0.737	0.000	0.070	0.063	3.358	0.057	0	4.285	0.686	0.141	0.086			0.554	0.082	0	0	0.368	5.566	47.865	1615.73
Sub Total			**-1.298**		**2.176**	**0.255**	**0.070**	**0.263**	**9.251**	**0.161**	**0.500**	**12.676**	**1.510**	**2.088**							**0.000**	**1.054**	**19.379**		
			-1.798+0.050																						
Feb. 2010																									
1-10	1615.73	47.865	-0.893	46.972	0.663	0.000	0.162	0.124	3.053	0.052	0.250	4.304	0.626	0.000	0.000			0.241	0.104	0	0	0.345	6.104	40.868	1612.60
			-1.143+0.250																						
11-20	1612.60	40.868	-1.138	39.730	0.686	0.000	0.156	0.088	3.053	0.052	0.000	4.035	0.625	0.000	0.397			0.232	0.104	0	0	0.336	5.393	34.337	1609.31
21-28	1609.31	34.337	-0.812	33.525	0.551	0.000	0.124	0.107	2.442	0.041	0.000	3.265	0.498	0.000	0.830			0.176	0.083	0	0	0.259	4.852	28.673	1606.05
Sub Total			**-2.843**		**1.900**	**0.000**	**0.442**	**0.319**	**8.548**	**0.145**	**0.250**	**11.604**	**1.749**	**0.000**	2.056			0.649	0.291	0.000	**0.000**	**0.940**	**16.349**		
			-3.093+0.250																						
Mar. 2010																									
1-10	1606.05	28.673	-0.894	27.779	0.676	0.000	0.156	0.101	3.050	0.052	0.000	4.035	0.610	0.000	0.518			0.221	0.104	0	0	0.325	5.488	22.291	1601.71
11-20	1601.71	22.291	-1.206	21.085	0.702	0.000	0.156	0.122	3.049	0.052	0.000	4.081	0.584	0.000	0.798			0.149	0.104	0	0	0.253	5.716	15.369	1595.75
21-31	1595.75	15.369	-1.186	14.183	0.751	0.000	0.171	0.113	3.337	0.057	0.000	4.429	0.664	0.000	0.698			0.127	0.114	0	0	0.241	6.032	8.151	1586.84
Sub Total			**-3.286**		**2.129**	**0.000**	**0.483**	**0.336**	**9.436**	**0.161**	**0.000**	**12.545**	**1.858**	**0.000**	2.014			0.497	0.322	0.000	**0.000**	**0.819**	**17.236**		
April 2010																									
1-10	1586.84	8.151	-1.185	6.966	0.584	0.000	0.156	0.059	2.468	0.051	0.000	3.318	0.679	0.000	0.000			0.078	0.104	0.000	0.000	0.182	4.179	2.787	1575.21
11-20	1575.21	2.787	-0.139	2.648	0.025	0.000	0.156	0.018	0.509	0.015	0.000	0.723	0.152	0.000	0.000			0.038	0.031	0.000	0.000	0.069	0.944	1.704	1571.39
21-30	1571.39	1.704	0.917	2.621	0.000	0.000	0.156	0.017	0.072	0.000	0.000	0.245	0.000	0.000	0.000			0.046	0.000	0.000	0.000	0.046	0.291	2.330	1573.72
Sub Total			**-0.407**		**0.609**	**0.000**	**0.468**	**0.094**	**3.049**	**0.066**	**0.000**	**4.286**	**0.831**	**0.000**	0.000			0.162	0.135	0.000	**0.000**	**0.297**	**5.414**		
May 2009																									
1-10	1573.72	2.330	1.645	3.975	0.000	0.000	0.156	0.072	0.000	0.000	0.000	0.228	0.000	0	1.008			0.052	0.000	0.000	0.000	0.052	1.288	2.687	1574.90
11-20	1574.90	2.687	1.427	4.114	0.000	0.000	0.156	0.111	0.000	0.000	0.000	0.267	0.000	0	1.728			0.050	0.000	0.000	0.000	0.050	2.045	2.069	1572.80
21-31	1572.80	2.069	3.324	5.393	0.000	0.000	0.171	0.057	0.000	0.000	0.000	0.228	0.000	0	0.691			0.067	0.000	0.000	0.000	0.067	0.986	4.407	1579.60
Sub Total			**6.396**		**0.000**	**0.000**	**0.483**	**0.240**	**0.000**	**0.000**	**0.000**	**0.723**	**0.000**	**0.000**	3.427			0.169	0.000	0.000	**0.000**	**0.169**	**4.319**		
Total for Tariff	1579.40	4.323	371.371	375.694	8.253	12.147	2.465	0.950	27.408	0.863	1.000	53.086	8.099	21.944	0.637	30.680	85.766	5.643	2.895	27.819	169.983	206.340	290.106	85.588	1628.10
			370.371+1.000																						
Total for Sub	1628.10	85.588	-4.773	80.815	7.679	0.363	2.146	1.418	35.712	0.694	1.000	49.012	8.149	4.704	9.599	22.752	71.764	2.210	1.434	0.000	0.000	4.644	76.408	4.407	1579.60
			-5.773+1.000																						
Grand total 2009-10	1579.40	4.323	366.598	370.921	15.932	12.510	4.611	2.368	63.120	1.557	2.000	102.098	16.248	26.648	10.236	53.432	157.530	7.853	4.329	27.819	169.983	210.984	366.514	4.407	1579.60
			357.793+2.000																						

MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT

DETAILED PROJECT REPORT

ANNEXURE 2.2

DETAILS OF RIVER RELEASES FOR VIJAYNAGARA CHANNELS AND RAJOLIBANDA DIVERSION SCHEME

ANNEXURE 2.2

Annual Utilisation of RBC and Vijayanagra Channels

Sno.	Year	RBC (Raya and Basavanna channels)	River Releases to Vijayanagra Channels	Total (RBC +RR)
		TMCft	TMCft	TMCft
1	1990-91	5.089	0.964	6.053
2	1991-92	5.513	1.233	6.746
3	1992-93	5.646	1.029	6.675
4	1993-94	5.800	0.900	6.700
5	1994-95	6.274	1.340	7.614
6	1995-96	5.609	1.285	6.894
7	1996-97	4.800	1.519	6.319
8	1997-98	5.869	2.227	8.096
9	1998-99	5.727	2.612	8.339
10	1999-00	6.140	2.249	8.389
11	2000-01	6.017	1.727	7.744
12	2001-02	4.522	1.668	6.190
13	2002-03	4.845	1.415	6.260
14	2003-04	4.255	1.427	5.682
15	2004-05	4.851	1.546	6.397
16	2005-06	3.955	0.980	4.935
17	2006-07	5.086	1.209	6.295
18	2007-08	4.726	1.565	6.291
19	2008-09	5.334	2.390	7.724
20	2009-10	4.611	1.901	6.512
			Average	6.793

MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT

DETAILED PROJECT REPORT

ANNEXURE 6.1

MONTHLY RAINFALL DATA FROM YEAR 1980 TO 2009

- **Annexure 6.1/1 – Monthly rainfall data of Station Munirabad**
- **Annexure 6.1/2 – Monthly rainfall data of Station Kamalapura**
- **Annexure 6.1/3 – Monthly rainfall data of Station Gangavathi**
- **Annexure 6.1/4 – Monthly rainfall data of Station Kampli**
- **Annexure 6.1/5 – Monthly rainfall data of Station Sirguppa**

KARNATAKA NEERAVARI NIGAM LIMITED

MODERNISATION OF VIJAYANAGAR CHANNELS IN TUNGABHADRA PROJECT

MONTHLY RAINFALL DATA

Rain gauge station: **Munirabad** Unit:-mm

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual
1980	0.0	0.0	0.0	27.0	26.0	36.0	30.0	133.0	100.0	71.0	56.0	0.0	479
1981	0.0	0.0	22.0	0.0	4.0	21.0	106.0	70.0	204.0	55.0	8.0	0.0	490
1982	0.0	0.0	0.0	10.0	34.0	10.0	63.0	55.0	93.0	57.0	72.0	0.0	394
1983	0.0	0.0	0.0	0.0	17.0	98.0	79.0	104.0	85.0	57.0	4.0	10.0	454
1984	0.0	0.0	0.0	36.0	0.0	0.0	134.0	0.0	89.0	65.0	0.0	0.0	324
1985	0.0	0.0	0.0	0.0	44.0	102.0	138.0	19.0	55.0	69.0	0.0	0.0	427
1986	5.0	0.0	0.0	14.0	60.0	134.0	0.0	157.0	96.0	12.0	65.0	0.0	543
1987	0.0	0.0	0.0	0.0	12.0	133.0	0.0	135.0	127.0	86.0	62.0	31.0	586
1988	0.0	0.0	0.0	57.0	28.0	0.0	76.0	497.0	867.0	0.0	0.0	0.0	1525
1989	0.0	0.0	8.0	18.0	23.0	47.0	48.0	50.0	365.0	0.0	19.0	16.0	594
1990	3.0	0.0	0.0	7.0	215.0	103.0	106.0	84.0	86.0	118.0	45.0	0.0	767
1991	0.0	0.0	0.0	66.0	124.0	128.0	28.0	72.0	84.0	35.0	15.0	0.0	552
1992	0.0	0.0	0.0	1.0	90.0	174.0	25.0	134.0	157.0	124.0	270.0	0.0	975
1993	0.0	0.0	6.0	9.0	31.0	52.0	108.0	196.0	230.0	132.0	38.0	85.0	887
1994	0.0	0.0	0.0	52.0	8.0	43.0	78.0	44.0	24.0	214.0	2.0	0.0	465
1995	15.0	0.0	0.0	3.0	33.0	124.0	99.0	52.0	33.0	96.0	2.0	0.0	457
1996	0.0	0.0	0.0	6.0	5.0	205.0	5.0	172.0	454.0	159.0	3.0	17.0	1026
1997	4.0	0.0	3.0	0.0	0.0	15.0	27.0	181.0	40.0	67.0	74.0	67.0	478
1998	0.0	0.0	0.0	0.0	57.0	80.0	110.0	142.0	271.0	176.0	0.0	0.0	836
1999	0.0	0.0	0.0	0.0	131.0	14.0	33.0	62.0	264.0	199.0	0.0	0.0	703
2000	0.0	0.0	0.0	0.0	30.0	119.0	78.0	163.0	130.0	123.0	0.0	0.0	643
2001	0.0	0.0	0.0	9.0	18.0	36.0	28.0	130.0	330.0	157.0	0.0	0.0	708
2002	1.0	9.0	0.0	0.0	59.0	96.0	52.0	36.0	30.0	140.0	5.0	0.0	428
2003	0.0	0.0	0.0	6.0	0.0	0.0	54.0	161.0	20.0	141.0	0.0	0.0	382
2004	0.0	0.0	0.0	10.0	56.0	138.0	105.0	21.0	75.0	82.0	0.0	0.0	487
2005	0.0	0.0	0.0	91.0	12.0	93.0	129.0	196.0	73.0	148.0	33.0	0.0	775
2006	0.0	0.0	22.0	6.0	78.0	122.0	30.0	28.0	110.0	30.0	24.0	0.0	450
2007	0.0	0.0	0.0	18.0	83.0	98.0	147.0	76.0	215.0	125.0	0.0	0.0	762
2008	0.0	0.0	152.0	0.0	17.0	18.0	62.0	45.0	173.0	39.0	69.0	0.0	575
2009	0.0	7.0	4.0	189.0	88.0	45.0	121.0	242.0	169.0	50.0	23.0	0.0	938
Avg	0.9	0.5	7.2	21.2	46.1	76.1	70.0	115.2	168.3	94.2	29.6	7.5	637

KARNATAKA NEERAVARI NIGAM LIMITED

MODERNISATION OF VIJAYANAGAR CHANNELS IN TUNGABHADRA PROJECT

MONTHLY RAINFALL DATA

Rain gauge station : Kamalapura Unit:-mm

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	155.0	93.0	4.0	23.0	0.0	275
1981	2.0	0.0	0.0	6.0	33.0	83.0	172.0	198.0	331.0	70.0	3.0	0.0	898
1982	0.0	0.0	0.0	4.0	105.0	24.0	58.0	64.0	180.0	55.0	75.0	0.0	565
1983	0.0	0.0	0.0	0.0	55.0	105.0	106.0	113.0	113.0	131.0	8.0	12.0	643
1984	0.0	16.0	0.0	7.0	17.0	43.0	204.0	22.0	73.0	182.0	0.0	0.0	564
1985	0.0	0.0	5.0	13.0	50.0	56.0	161.0	23.0	45.0	25.0	0.0	0.0	378
1986	0.0	10.0	0.0	9.0	70.0	102.0	39.0	103.0	141.0	0.0	54.0	0.0	528
1987	0.0	0.0	0.0	0.0	9.0	166.0	18.0	133.0	133.0	63.0	76.0	31.0	629
1988	0.0	0.0	0.0	20.0	20.0	40.0	50.0	212.0	251.0	18.0	0.0	19.0	630
1989	0.0	0.0	4.0	8.0	31.0	29.0	177.0	55.0	304.0	0.0	94.0	27.0	729
1990	0.0	0.0	0.0	6.0	135.0	63.0	155.0	141.0	56.0	187.0	26.0	0.0	769
1991	0.0	0.0	0.0	40.0	110.0	263.0	92.0	80.0	205.0	54.0	17.0	0.0	861
1992	0.0	0.0	0.0	11.0	64.0	82.0	8.0	87.0	185.0	128.0	244.0	0.0	809
1993	0.0	0.0	0.0	0.0	0.0	41.0	94.0	329.0	37.0	129.0	21.0	91.0	742
1994	2.0	0.0	0.0	43.0	4.0	16.0	70.0	21.0	13.0	192.0	7.0	0.0	368
1995	4.0	0.0	8.0	8.0	32.0	94.0	86.0	97.0	40.0	109.0	0.0	0.0	478
1996	0.0	0.0	0.0	6.0	18.0	106.0	6.0	170.0	370.0	225.0	9.0	24.0	934
1997	0.0	0.0	0.0	0.0	21.0	12.0	70.0	149.0	16.0	101.0	54.0	29.0	452
1998	0.0	0.0	0.0	0.0	38.0	46.0	29.0	227.0	178.0	189.0	0.0	0.0	707
1999	0.0	0.0	0.0	0.0	105.0	57.0	13.0	67.0	160.0	305.0	0.0	0.0	707
2000	0.0	0.0	0.0	0.0	0.0	68.0	60.0	114.0	114.0	93.0	0.0	0.0	449
2001	0.0	0.0	0.0	0.0	21.0	25.0	11.0	134.0	237.0	211.0	0.0	0.0	639
2002	0.0	0.0	0.0	0.0	25.0	158.0	35.0	39.0	32.0	134.0	0.0	0.0	423
2003	0.0	0.0	0.0	34.0	0.0	15.0	137.0	51.0	50.0	149.0	0.0	0.0	436
2004	0.0	0.0	6.0	19.0	53.0	84.0	84.0	6.0	60.0	49.0	0.0	0.0	361
2005	11.0	0.0	0.0	44.0	38.0	134.0	179.0	64.0	107.0	258.0	0.0	0.0	835
2006	0.0	0.0	0.0	0.0	90.0	80.0	42.0	71.0	110.0	40.0	28.0	0.0	461
2007	0.0	0.0	7.0	0.0	12.0	117.0	41.0	93.0	183.0	67.0	0.0	0.0	520
2008	0.0	26.0	171.0	0.0	12.0	20.0	11.0	65.0	217.0	57.0	65.0	0.0	644
2009	0.0	0.0	0.0	0.0	178.0	22.0	20.0	163.0	244.0	215.0	46.0	22.0	910
Avg	**0.6**	**1.7**	**6.7**	**9.3**	**44.9**	**71.7**	**74.3**	**108.2**	**142.6**	**114.7**	**28.3**	**8.5**	611

KARNATAKA NEERAVARI NIGAM LIMITED

MODERNISATION OF VIJAYANAGAR CHANNELS IN TUNGABHADRA PROJECT

MONTHLY RAINFALL DATA

Rain gauge station : **Gangavathi** Unit:-mm

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual
1980	0.0	0.0	0.0	27.0	47.0	86.0	62.0	73.0	102.0	18.0	138.0	0.0	553
1981	0.0	0.0	8.0	0.0	5.0	80.0	197.0	132.0	444.0	126.0	12.0	0.0	1004
1982	0.0	0.0	0.0	0.0	47.0	74.0	84.0	80.0	233.0	156.0	102.0	0.0	776
1983	0.0	0.0	0.0	0.0	96.0	95.0	190.0	85.0	210.0	90.0	11.0	18.0	795
1984	0.0	6.0	0.0	9.0	10.0	5.0	163.0	13.0	142.0	143.0	0.0	0.0	491
1985	0.0	0.0	0.0	23.0	52.0	26.0	103.0	44.0	58.0	34.0	10.0	0.0	350
1986	10.0	0.0	0.0	49.0	50.0	84.0	51.0	61.0	232.0	8.0	87.0	4.0	636
1987	0.0	0.0	0.0	0.0	15.0	207.0	37.0	79.0	157.0	81.0	43.0	24.0	643
1988	0.0	0.0	0.0	0.0	3.0	61.0	67.0	211.0	449.0	6.0	0.0	10.0	807
1989	0.0	0.0	32.0	9.0	48.0	36.0	147.0	35.0	211.0	27.0	30.0	0.0	575
1990	5.0	0.0	0.0	3.0	146.1	117.5	110.4	153.4	23.8	189.9	37.3	0.0	786
1991	0.0	0.0	0.0	26.6	31.5	175.8	28.4	43.2	75.5	38.8	8.2	0.0	428
1992	0.0	0.0	0.0	91.0	83.5	206.4	22.5	112.8	129.4	112.6	302.1	0.0	1060
1993	0.0	0.0	0.0	0.0	0.0	54.4	100.2	220.5	139.8	190.0	15.5	102.5	823
1994	0.5	0.0	0.0	30.0	11.3	9.6	60.8	37.1	6.0	290.0	28.2	0.0	474
1995	12.4	0.0	16.0	0.0	77.0	70.2	79.1	168.3	98.3	112.2	4.5	0.0	638
1996	0.0	0.0	0.0	21.5	21.0	178.8	31.0	303.1	228.8	143.7	6.0	26.5	960
1997	0.0	0.0	5.0	1.0	15.4	36.6	54.9	19.2	62.5	33.0	42.0	67.0	337
1998	0.0	0.0	0.0	9.5	24.2	4.5	134.5	102.5	200.0	204.5	35.0	0.0	715
1999	0.0	14.0	0.0	1.0	104.5	61.3	10.0	45.5	126.5	334.7	0.0	0.0	698
2000	0.0	0.0	0.0	0.0	21.0	21.1	59.5	136.5	299.7	107.5	0.0	11.0	656
2001	0.0	0.0	0.0	8.5	11.0	27.0	21.6	109.5	177.5	317.7	0.0	0.0	673
2002	0.0	2.5	0.0	0.0	6.5	110.8	44.1	25.3	36.5	160.0	12.0	0.0	398
2003	0.0	0.0	0.0	34.2	0.0	5.5	84.0	74.5	25.8	138.2	0.0	0.0	362
2004	0.0	0.0	0.0	16.5	14.9	143.6	56.7	2.0	169.7	61.9	0.0	0.0	465
2005	2.0	1.0	8.0	35.0	5.9	58.0	192.8	69.2	165.7	88.5	1.5	0.0	628
2006	0.0	0.0	21.0	0.0	126.0	7.0	55.0	10.0	88.0	40.0	40.0	0.0	387
2007	0.0	0.0	0.0	0.0	23.0	210.0	34.0	38.0	268.0	25.0	0.0	1.0	599
2008	0.0	3.0	124.0	0.0	15.0	88.0	8.0	23.0	200.0	64.0	43.0	0.0	568
2009	0.0	0.0	2.0	115.0	48.0	12.0	188.0	249.0	324.0	97.0	24.0	0.0	1059
Avg	1.0	0.9	7.2	17.0	38.6	78.4	82.6	91.9	169.5	114.6	34.4	8.8	645

KARNATAKA NEERAVARI NIGAM LIMITED

MODERNISATION OF VIJAYANAGAR CHANNELS IN TUNGABHADRA PROJECT

MONTHLY RAINFALL DATA

Rain gauge station : **Kampli** Unit:-mm

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual
1980	0.0	0.0	0.0	34.0	0.0	61.0	49.0	56.0	73.0	0.0	54.0	0.0	327
1981	0.0	0.0	17.0	0.0	9.0	73.0	89.0	186.0	204.0	99.0	46.0	6.0	729
1982	0.0	0.0	0.0	18.0	57.0	58.0	77.0	31.0	170.0	66.0	20.0	0.0	497
1983	0.0	0.0	0.0	0.0	46.0	60.0	103.0	47.0	138.0	116.0	2.0	0.0	512
1984	0.0	5.0	0.0	17.0	10.0	6.0	94.0	5.0	137.0	148.0	4.0	0.0	426
1985	0.0	0.0	0.0	12.0	65.0	5.0	69.0	26.0	22.0	20.0	0.0	0.0	219
1986	18.0	9.0	0.0	23.0	50.0	63.0	14.0	47.0	189.0	6.0	28.0	9.0	456
1987	0.0	0.0	0.0	0.0	7.0	128.0	14.0	47.0	191.0	120.0	41.0	35.0	583
1988	0.0	0.0	0.0	22.0	32.0	18.0	58.0	171.0	516.0	37.0	0.0	62.0	916
1989	0.0	0.0	3.0	0.0	33.0	24.0	125.0	22.0	219.0	15.0	24.0	12.0	477
1990	2.0	0.0	0.0	0.0	283.0	95.0	54.0	82.0	10.0	176.0	22.0	0.0	724
1991	0.0	0.0	0.0	71.0	108.0	226.0	8.0	32.0	213.0	103.0	3.0	0.0	764
1992	0.0	0.0	0.0	78.0	22.0	65.0	3.0	95.0	148.0	57.0	297.0	0.0	765
1993	0.0	0.0	0.0	0.0	0.0	53.0	68.0	152.0	110.0	157.0	11.0	94.0	645
1994	0.0	0.0	0.0	25.0	0.0	1.0	22.0	12.0	6.0	253.0	34.0	0.0	353
1995	26.0	0.0	26.0	14.0	44.0	69.0	53.0	168.0	38.0	150.0	7.0	0.0	595
1996	0.0	0.0	0.0	7.0	27.0	173.0	3.0	284.0	478.0	156.0	4.0	31.0	1163
1997	0.0	0.0	6.0	3.0	0.0	36.0	26.0	34.0	41.0	9.0	40.0	26.0	221
1998	0.0	0.0	0.0	25.0	45.0	51.0	130.0	107.0	172.0	229.0	14.0	0.0	773
1999	0.0	4.0	0.0	0.0	87.0	59.0	14.0	34.0	128.0	195.0	2.0	0.0	523
2000	0.0	0.0	0.0	0.0	25.0	26.0	80.0	90.0	153.0	84.0	0.0	8.0	466
2001	0.0	0.0	0.0	0.0	0.0	38.0	3.0	80.0	197.0	241.0	0.0	0.0	559
2002	26.0	3.0	0.0	0.0	20.0	51.0	59.0	34.0	20.0	168.0	0.0	0.0	381
2003	0.0	0.0	0.0	38.0	0.0	0.0	70.0	72.0	10.0	95.0	0.0	0.0	285
2004	0.0	0.0	0.0	18.0	23.0	101.0	55.0	6.0	87.0	27.0	0.0	0.0	317
2005	10.0	0.0	6.0	28.0	32.0	38.0	138.0	69.0	93.0	111.0	0.0	0.0	525
2006	0.0	0.0	0.0	0.0	84.0	2.0	54.0	23.0	43.0	57.0	55.0	0.0	318
2007	0.0	0.0	0.0	0.0	7.0	102.0	45.0	46.0	199.0	27.0	0.0	0.0	426
2008	0.0	9.0	100.0	0.0	2.0	20.0	3.0	54.0	104.0	88.0	36.0	0.0	416
2009	0.0	0.0	0.0	0.0	35.0	47.0	4.0	98.0	261.0	308.0	117.0	48.0	918
Avg	**2.7**	**1.0**	**5.3**	**14.4**	**38.4**	**58.3**	**52.8**	**73.7**	**145.7**	**110.6**	**28.7**	**11.0**	543

KARNATAKA NEERAVARI NIGAM LIMITED

MODERNISATION OF VIJAYANAGAR CHANNELS IN TUNGABHADRA PROJECT

MONTHLY RAINFALL DATA

Rain gauge station : Siruguppa Unit:-mm

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual
1980	0.0	0.0	0.0	34.0	39.0	37.0	77.0	228.0	104.0	30.0	34.0	6.0	589
1981	12.0	0.0	0.0	3.0	25.0	76.0	53.0	84.0	368.0	100.0	19.0	7.0	747
1982	0.0	0.0	0.0	33.0	57.0	82.0	88.0	68.0	218.0	77.0	41.0	0.0	664
1983	0.0	0.0	0.0	0.0	32.0	170.0	73.0	129.0	234.0	114.0	11.0	9.0	772
1984	0.0	13.0	0.0	9.0	6.0	33.0	236.0	53.0	145.0	92.0	0.0	20.0	607
1985	0.0	0.0	4.0	25.0	73.0	24.0	175.0	69.0	91.0	44.0	15.0	3.0	523
1986	30.0	0.0	0.0	6.0	33.0	163.0	16.0	141.0	218.0	99.0	80.0	0.0	786
1987	0.0	0.0	0.0	0.0	26.0	293.0	32.0	160.0	158.0	185.0	57.0	30.0	941
1988	0.0	0.0	0.0	4.0	29.0	55.0	45.0	113.0	450.0	8.0	0.0	3.0	707
1989	0.0	0.0	15.0	0.0	9.0	68.0	108.0	49.0	285.0	27.0	9.0	6.0	576
1990	0.5	0.0	8.2	0.0	241.8	162.6	30.6	122.0	75.6	749.4	24.6	1.4	1417
1991	0.6	0.0	5.2	67.8	16.0	272.6	60.2	79.3	88.6	28.3	13.0	0.0	632
1992	0.0	0.0	0.0	55.6	53.4	45.6	21.8	45.8	37.8	72.8	304.4	0.0	637
1993	0.0	0.0	1.4	3.2	13.8	43.4	133.2	140.1	184.8	214.2	4.0	67.2	805
1994	0.2	0.4	0.0	46.2	6.4	48.0	60.6	37.6	11.4	268.0	8.4	0.0	487
1995	27.8	0.0	2.0	0.0	9.6	36.6	83.8	144.0	78.6	103.0	0.5	0.0	486
1996	0.0	0.0	0.0	29.6	31.0	212.2	26.8	214.6	135.7	256.0	2.4	9.0	917
1997	0.8	0.0	7.0	49.0	4.0	85.4	28.8	74.2	120.8	32.0	32.0	29.2	463
1998	0.0	0.0	0.0	23.2	33.2	55.8	75.0	124.0	365.8	282.2	16.2	2.6	978
1999	0.0	3.4	0.0	0.0	79.8	110.6	55.0	82.4	178.0	127.6	0.0	0.0	637
2000	0.0	0.0	0.0	0.0	69.4	65.6	65.0	185.6	88.0	169.2	0.0	2.6	645
2001	0.0	0.0	0.0	9.2	8.0	47.2	22.1	228.5	281.2	183.8	0.0	0.0	780
2002	8.8	0.0	0.0	0.0	26.3	31.5	22.9	44.4	15.2	154.3	3.9	0.0	307
2003	0.0	0.0	27.8	12.0	0.0	11.1	129.7	81.2	26.6	81.6	0.0	0.0	370
2004	0.0	0.0	1.2	105.8	50.4	170.4	119.4	28.0	177.9	63.8	22.0	0.0	739
2005	8.8	20.0	9.0	18.6	28.4	56.4	119.1	110.8	135.0	233.6	1.4	0.0	741
2006	0.0	0.0	66.0	2.0	92.0	86.0	66.0	39.0	132.0	21.0	97.0	0.0	601
2007	0.0	0.0	0.0	13.0	142.0	261.0	95.0	73.0	277.0	39.0	9.0	0.0	909
2008	0.0	21.0	71.0	0.0	0.0	1.0	48.0	158.0	127.0	85.0	25.0	0.0	536
2009	0.0	0.0	4.0	12.0	74.0	151.0	33.0	133.0	416.0	398.0	65.0	5.0	1291
Avg	3.0	1.9	7.4	18.7	43.6	98.5	73.3	108.0	174.1	144.6	29.8	6.7	710

MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT

DETAILED PROJECT REPORT

ANNEXURE 6.2

AVERAGE ANNUAL RAINFALL AND MONTHLY NORMAL RAINFALL OF INFLUENCING RAIN GAUGE STATIONS (ACCORDING TO THEISSEN POLYGON)

Annexure 6.2

Average annual rainfall and monthy normal rainfall of influencing rain gauge stations (according to Thessein polygon)

Rain gauge station		Average	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Munirabad	0.274	637	0.26	0.15	1.98	5.80	12.64	20.87	19.18	31.58	46.13	25.83	8.12	2.06	**174.60**
Kamlapur	0.276	611	0.17	0.48	1.85	2.56	12.38	19.79	20.50	29.86	39.36	31.65	7.82	2.35	**168.76**
Gangavathi	0.187	645	0.19	0.17	1.35	3.18	7.22	14.66	15.44	17.18	31.69	21.43	6.43	1.65	**120.57**
Kampli	0.128	543	0.35	0.13	0.67	1.85	4.92	7.46	6.76	9.43	18.65	14.16	3.67	1.41	**69.46**
Sirguppa	0.135	710	0.40	0.26	1.00	2.53	5.89	13.30	9.90	14.58	23.51	19.52	4.03	0.90	**95.81**
		629.2	**1.37**	**1.18**	**6.85**	**15.91**	**43.05**	**76.08**	**71.77**	**102.63**	**159.33**	**112.59**	**30.08**	**8.37**	**629.20**

MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT

DETAILED PROJECT REPORT

ANNEXURE 6.3

AGRO-CLIMATOLOGICAL DATA OF BELLARY IMD STATION

Agroclimatic data of Bellary IMD station

No.	Crops	AGROCLIMATIC ZONE-3																						I.M.D Station:		BELLARY	
		Nov.		Dec		Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Period
1	Fortnight	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	
2	Daily evapotranspiration	-	-	-	-	3.71	3.71	4.59	4.59	5.51	5.51	6.03	6.03	6.28	6.28	5.57	5.57	5.02	5.02	4.93	4.93	4.61	4.61	3.98	3.98	3.50	3.50	3.35	3.35	
3	Fortnightly evapotranspiration	-	-	-	-	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	75.30	80.32	73.95	78.83	69.15	69.15	59.70	63.68	52.50	52.50	50.25	53.60	
	KHARIFF						CROP COEFFICIENT																							
4	Sorghum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.35	0.58	0.81	1.05	1.05	1.05	0.70	0.53	-	-	-	-		June-II to Oct-I
5	Bajra & other Millets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.35	0.70	1.05	1.05	0.67	1.05	-	-	-	-	-	-		June-II to Sep-I
6	Maize	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.35	0.60	0.85	1.10	1.10	1.10	0.84	0.58	-	-	-	-		June-II to Oct-I
7	Pulses (Tur)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.35	0.60	0.95	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	0.69	0.28	June-II to Dec-II
8	Pulses (Horsegram,Greengram)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.35	0.72	1.10	1.10	0.69	0.58	-	-	-	-	-	-		June-II to Sep-I
9	Chillies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.35	0.57	0.79	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.70	0.40		June-II to Dec-I
10	Groundnut	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.35	0.57	0.79	1.00	1.00	1.00	0.79	0.58	-	-	-	-		June-II to Oct-I
	RABI																													
11	Sorghum	-	-	-	-	0.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		0.35	0.58	0.81	1.05	1.05	1.05	0.82	Sep-II to Jan-I
12	Wheat	-	-	-	-	1.10	0.66	0.23	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	0.35	0.72	1.10	1.10	Nov-I to Feb-I
13	Bengalgram	-	-	-	-	1.10	0.69	0.28	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	0.60	0.85	1.10	1.10	Nov-I to Feb-I
14	Sunflower	-	-	-	-	1.10	1.10	0.67	0.23	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	0.35	0.60	0.85	1.10	Nov-I to Feb-II
15	Linseed	-	-	-	-	1.10	1.10	0.67	0.23	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	0.35	0.60	0.85	1.10	Nov-I to Feb-II
	HOT WEATHER																													
16	Pulse (G.Gram,Black Gram, Cowpes)	-	-	-	-	-	-	-	0.35	0.75	1.15	1.15	0.72	0.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Feb-I to May-I
	TWO SEASONAL																													
17	Cotton	-	-	-	-	-	-	-	-	-	-	-	-	-	0.35	0.61	0.87	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	0.89	0.65		May-II to Dec-I
	PERENNIAL																													
18	Sugarcane	-	-	-	-	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	0.88	0.88	0.70	0.70	0.78	0.48	0.78	0.78	0.93	1.05	1.05	1.05	1.15	1.15	Aug-I to Jul-II
	KHARIFF																													
19	Rice (Paddy)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.10	1.10	1.10	1.05	1.05	1.05	1.05	-	-	-	-	-	July-I to Oct-I
	PERENNIAL																													
20	Banana(Garden)	1.10	1.10	1.10	1.10	1.10	1.10	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85	0.85	0.50	0.50	0.50	0.50	0.85	0.85	0.85	0.85	1.10	1.10	1.10	1.10	Jan-I to Dec-I

The details are collected from the guidelines for preparation of Minor Irrigation tank projects issued by the Minor Irrigation Department

MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT

DETAILED PROJECT REPORT

ANNEXURE 6.4

DETAILED CALCULATIONS OF CROP WATER REQUIREMENTS (CHANNEL WISE/CROP WISE)

Total crop water requirement for proposed cropping pattern of Vijaynagara channel system

(Demand Table)

Unit : Area in ha

No	Name of canal	Phy. Area (CCA)	Khariff		Rabi		Bi seasonal		Total	Peak discharge m3/sec	WR in TMC
			Paddy	Jowar	Paddy	Groundnut	Sugarcane	Garden			
1	Raya	2226	441	1285	250	429	400	50	2855	1.75	1.03
2	Basavanna	1240	100	740	20	388	170	29	1447	0.81	0.45
3	Bella	600	70	396	14	127	80	54	741	0.37	0.24
4	Kalaghatta	237	30	172	10	102	15	20	349	0.19	0.1
5	Turtha	931	110	461	75	165	100	260	1171	0.82	0.47
6	Ramasagar	673	98	440	75	276	50	85	1024	0.66	0.34
7	Kampli	620	152	301	152	125	60	104	894	0.75	0.36
8	Belagodahala	210	41	112	35	83	17	40	328	0.24	0.12
9	Sirguppa	764	165	476	202	381	90	30	1344	1.09	0.48
10	Deshnur	478	188	224	121	217	55	10	815	0.64	0.31
	Total		**1395**	**4607**	**954**	**2293**	**1037**	**682**	**10968**		**3.90**
11	Hulugi	265	91	129	82	77	20	20	419	0.36	0.16
12	Shivapura	403	190	176	117	202	2	30	717	0.57	0.27
13	Anegundi	789	234	417	128	450	6	124	1359	0.96	0.48
14	Upper Gangavathi	775	217	453	195	412	56	30	1363	1.05	0.48
15	Lower Gangavathi	667	164	404	170	317	48	38	1141	0.89	0.4
16	Bichal	276	13	140	9	4	60	50	276	0.18	0.11
	Total		**909**	**1719**	**701**	**1462**	**192**	**292**	**5275**		**1.90**
Total Area		**11154**	**2304**	**6326**	**1655**	**3755**	**1229**	**974**	**16243**		**5.80**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Name of the Canal: Raya Canal									Unit: MCM				Cropped Area: 2855 ha
No	Khariff				Rabi				Perennial				Total WR in MCM
	Paddy	WR in MCM	Jowar	WR in MCM	Paddy	WR in MCM	Groundnut	WR in MCM	Sugarcane	WR in MCM	Garden (Banana)	WR in MCM	
Jun	441	0.82	1285	0.532					400	0.74	50	0.076	2.17
Jul	441	2.21	1285	1.528					400	0.48	50	0.031	4.25
Aug	441	1.25	1285	2.225					400	0.08	50	0.012	3.57
Sep	441	0.88	1285	0.544					400	0.08	50	0.015	1.52
Oct	441	0.62	1285	0.036					400	0.36	50	0.031	1.05
Nov									400	0.73	50	0.091	0.82
Dec											50	0.000	0.00
Jan					250	0.60	429	0.69	400	0.88	50	0.129	2.30
Feb					250	1.45	429	1.00	400	1.21	50	0.115	3.76
Mar					250	1.18	429	1.45	400	1.56	50	0.170	4.37
Apr					250	1.01	429	0.99	400	1.60	50	0.172	3.77
May										1.51	50	0.135	1.64
Total in MCM		**5.78**		**4.87**		**4.24**		**4.13**		**9.22**		**0.98**	**29.21**
Total in TMC		**0.20**		**0.17**		**0.15**		**0.15**		**0.33**		**0.03**	**1.03**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

IMD Station : Bellary **Agro climatic zone : 3**

Canal : Raya **Duration: 107 days** **Crop : Paddy = 441 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc			1.1	1.1	1.1	1.05	1.05	1.05	1.05	
4	ETc (mm)			82.83	88.35	81.35	82.82	72.61	72.61	62.69	
5	Nursery (mm)	28.00	16.00								
6	Land preparation (mm)		150								
7	Transplantation (mm)			125							
8	Percolation @ 3mm/day (mm)			45.00	48.00	45.00	48.00	45.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	252.83	136.35	126.35	130.82	117.61	117.61	107.69	1183.25
10	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	466.13
11	Eff RF (mm) from table		64.82		71.78		79.01		110.78	37.80	
		32.41	32.41	34.45	37.33	37.92	41.09	55.39	55.39	18.90	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	31.44	31.44	33.42	36.21	36.79	39.85	53.73	53.73	18.33	
13	NIR for Nursery (mm)	0.00	0.00								
14	NIR for other period (mm)		118.56	219.41	100.15	89.56	90.97	63.88	63.88	89.35	835.76
15	Field Irrigation requirement FIR = NIR/0.85		139.49	258.13	117.82	105.36	107.03	75.15	75.15	105.12	
16	GIR for nursery (mm) = GIR=FIR/0.75	0.00	0.00								
17	GIR for other period (mm) = GIR=FIR/0.75		185.98	344.17	157.09	140.48	142.70	100.20	100.20	140.16	1310.99
18	Area (Ha) for nursery	44.10	44.10								
19	Area (Ha) for other period					441					
20	Water Requirement for nursery in MCM	0.000	0.000								
21	WR for other period in MCM		0.820	1.518	0.693	0.620	0.629	0.442	0.442	0.618	
22	Total Water requirement in MCM	0.000	0.820	1.518	0.693	0.620	0.629	0.442	0.442	0.618	**5.78**
23	Discharge in m^3/sec	**0.000**	**0.633**	**1.171**	**0.501**	**0.478**	**0.455**	**0.341**	**0.341**	**0.477**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Raya **Duration: 120 days** **Crop : Jowar = 1285 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc		0.35	0.58	0.81	1.05	1.05	1.05	0.70	0.53	
4	ETc (mm)		29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	
5	Pre sowing requirement (mm)	40.00									
6	Gross Water Requirement (mm)	40.00	29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	491.10
7	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	409.83
8	Monthy Eff RF (mm) from table		50.57		52.34		78.40		107.14	31.21	
9	Eff RF (mm) from table	25.29	25.29	25.12	27.21	37.63	40.77	53.57	53.57	31.21	
10	(0.97 * Effective Rainfall) mm at 50% chance of occurance	24.53	24.53	24.37	26.40	36.50	39.55	51.97	51.97	30.27	
11	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 10)	15.47	4.71	19.31	38.66	41.14	43.28	20.64	0.00	1.37	184.59
12	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	23.80	7.25	29.70	59.48	63.30	66.58	31.76	0.00	2.11	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	31.74	9.67	39.60	79.31	84.40	88.77	42.34	0.00	2.81	378.64
14	Area (Ha)	1285									
15	Water Requirement in MCM	0.408	0.124	0.509	1.019	1.084	1.141	0.544	0.000	0.036	**4.87**
16	Discharge in m3/sec	**0.315**	**0.096**	**0.393**	**0.737**	**0.837**	**0.825**	**0.420**	**0.000**	**0.028**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Agro climatic zone : 3

Canal : Raya **Duration: 120 days** **Crop : Paddy = 250 ha**

Season : Rabi **Sowing time: Jan-01** **IMD Station : Bellary**

No.	Particulars	Jan		Feb		March		April		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc			1.25	1.25	1.25	1.25	1.00	1.00	
4	ETc (mm)			86.06	74.59	103.31	110.20	90.45	90.45	
5	Nursery (mm)	28.00	16.00							
6	Land preparation		150							
7	Transplantation			125						
8	Percolation @ 3 mm/day(mm)			45.00	39.00	45.00	48.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	256.06	113.59	148.31	158.20	135.45	135.45	1141.06
10	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
11	Eff RF (mm) from table		1.19		1.05		6.03		13.52	
		0.5712	0.62	0.56	0.49	2.89	3.14	6.76	6.76	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.55	0.60	0.54	0.47	2.81	3.04	6.56	6.56	
13	NIR for nusery (mm)	27.45	15.40							
14	NIR for other period (mm) (6 - 12)		149.40	255.52	113.11	145.50	155.16	128.89	128.89	1076.48
15	Field Irrigation Requirement FIR (mm) = NIR/0.85		175.76	300.61	133.08	171.18	182.54	151.64	151.64	
16	GIR for nursery	36.59	20.53							
17	Gross Irrigation Requirement GIR (mm) = FIR/0.75		234.35	400.81	177.44	228.24	243.39	202.18	202.18	1688.60
18	Area (Ha) for nursery	25.00	25.00							
19	Area (Ha) for other period					250				
20	Water Requirement for nursery	0.009	0.005							
21	Water Requirement in MCM		0.586	1.002	0.444	0.571	0.608	0.505	0.505	
22	Total water requirement in MCM	0.009	0.591	1.002	0.444	0.571	0.608	0.505	0.505	**4.24**
23	Discharge in m3/sec	**0.007**	**0.428**	**0.773**	**0.395**	**0.440**	**0.440**	**0.390**	**0.390**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Raya **Crop : Groundnut = 429 ha**

Season : Rabi **Duration: 120 days**

No.	Particulars	Jan		Feb		Mar		Apr		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc		0.67	0.79	1	1	1.00	0.79	0.58	
4	ETc (mm)		39.77	54.39	59.67	82.65	88.16	71.46	52.46	
5	Pre sowing requirement (mm)	40.00								
6	Gross Water Requirement (mm)	40.00	39.77	54.39	59.67	82.65	88.16	71.46	52.46	488.56
7	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
8	Eff RF (mm) from table		0.99		0.88		5.71		12.07	
		0.48	0.51	0.47	0.41	2.74	2.97	6.04	6.04	
9	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.46	0.50	0.46	0.40	2.66	2.88	5.85	5.85	
10	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 9)	39.54	39.27	53.93	59.27	79.99	85.28	65.60	46.61	469.50
11	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	60.83	60.42	82.98	91.19	123.06	131.20	100.93	71.70	
12	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.11	80.56	110.64	121.59	164.08	174.93	134.57	95.60	963.08
13	Area (Ha)	429								
14	Water Requirement in MCM	0.348	0.346	0.475	0.522	0.704	0.750	0.577	0.410	**4.13**
15	Discharge in m^3/sec	**0.268**	**0.250**	**0.366**	**0.464**	**0.543**	**0.543**	**0.445**	**0.316**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Raya **Crop : Sugarcane = 400 ha** **Duration : 304 days**

Season : Perennial **Sowing time: Jan-01**

No	Particulars	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II			
1	No of Days	15	16	15	13	15	16	15	15	15	16	15	15	15	16	15	16	15	15	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	
3	Crop Factor, Kc		1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	0.88	0.88	0.70	0.70	0.48	0.48	0.78	0.78	0.93	1.05	1.05	1.05	
4	ETc (mm)		68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	
5	Plant use (Pre-sowing) mm	40.00																						
7	Gross Water Requirement (mm)	40.00	68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	1554.26
8	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	20.66	22.39	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	54.04	58.55	15.04	15.04	620.87
9	Monthy Eff RF (mm) from table		1.00		0.95		5.99		14.01		41.44		58.50		52.35		65.21		101.50		80.53		22.06	
10	Eff RF (mm) from table	0.48	0.52	0.51	0.44	2.88	3.29	7.01	7.01	19.89	21.55	29.25	29.25	25.13	27.22	31.30	33.91	50.75	50.75	38.66	41.88	11.03	11.03	
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.47	0.50	0.49	0.43	2.79	3.20	6.79	6.79	19.29	20.90	28.37	28.37	24.37	26.41	30.36	32.89	49.23	49.23	37.50	40.62	10.70	10.70	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	39.53	67.76	78.68	68.19	92.26	98.19	97.22	97.22	89.04	94.65	45.15	45.15	28.34	29.82	5.13	4.97	4.71	4.71	18.02	26.24	44.43	44.43	1123.85
13	Field Irrigation Requirement = FIR = NIR/0.65	60.82	104.25	121.05	104.91	141.94	151.06	149.57	149.57	136.98	145.62	69.47	69.47	43.59	45.87	7.90	7.65	7.24	7.24	27.73	40.37	68.35	68.35	
14	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.10	138.99	161.40	139.88	189.25	201.41	199.43	199.43	182.64	194.15	92.62	92.62	58.12	61.17	10.53	10.19	9.66	9.66	36.97	53.83	91.13	91.13	2305.32
15	Area (Ha)	400																						
16	Water Requirement in MCM	0.324	0.556	0.646	0.560	0.757	0.806	0.798	0.798	0.731	0.777	0.370	0.370	0.232	0.245	0.042	0.041	0.039	0.039	0.148	0.215	0.365	0.365	**9.22**
17	Discharge in m3/sec	**0.250**	**0.402**	**0.498**	**0.498**	**0.584**	**0.583**	**0.616**	**0.616**	**0.564**	**0.562**	**0.286**	**0.286**	**0.179**	**0.177**	**0.032**	**0.029**	**0.030**	**0.030**	**0.114**	**0.156**	**0.281**	**0.281**	

Note : Irrigation cut days = 15 days before harvest

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Raya **Crop : Garden (Banana) = 50 ha** **Duration : 365 days**

Season : Perennial **Sowing time: Jul-01**

No	Particulars	Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	16	15	15	15	16	15	15	15	16	15	16	15	13	15	16	15	15	15	16	15	15	
2	ETo (mm)	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	50.25	53.60	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	
3	Crop Factor, Kc	0.50	0.50	0.50	0.50	0.85	0.85	0.85	0.85	1.05	1.05	1.05	1.05	1.10	1.10	0.90	0.85	1.00	1.00	1.00	1.00	0.85	0.85	0.80	0.75	
4	ETc (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	
7	Gross Water Requirement (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	1481.83
8	Rainfall (mm)	34.5	37.3	49.3	53.4	79.7	79.7	54.0	58.5	15.0	15.0	4.0	4.4	0.7	0.6	0.6	0.6	3.3	3.6	8.0	8.0	20.7	22.4	38.0	38.0	629.16
9	Monthy Eff RF (mm) from table		49.25		66.30		105.66		77.03		22.06		6.15		0.98		0.88		5.71		13.52		35.06		57.09	
10	Eff RF (mm) from table	23.64	25.61	31.83	34.48	52.83	52.83	36.97	40.05	11.03	11.03	2.95	3.20	0.47	0.51	0.47	0.41	2.74	2.97	6.76	6.76	16.83	18.23	28.55	28.55	363.94
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	22.93	24.84	30.87	33.44	51.24	51.24	35.86	38.85	10.70	10.70	2.86	3.10	0.46	0.49	0.46	0.40	2.66	2.88	6.56	6.56	16.32	17.68	27.69	27.69	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	14.72	15.32	6.10	6.00	7.53	7.53	14.88	15.28	44.43	44.43	0.00	0.00	60.76	64.80	61.51	50.32	79.99	85.28	83.89	83.89	63.75	67.72	39.15	34.97	952.26
	Field Irrigation Requirement = FIR = NIR/0.65	22.65	23.57	9.39	9.23	11.59	11.59	22.89	23.50	68.35	68.35	0.00	0.00	93.47	99.69	94.63	77.42	123.06	131.20	129.07	129.07	98.07	104.19	60.23	53.80	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	30.196	31.425	12.522	12.302	15.451	15.451	30.526	31.335	91.130	91.130	0.000	0.000	124.633	132.927	126.169	103.228	164.085	174.933	172.088	172.088	130.762	138.921	80.306	71.737	1953.34
14	Area (Ha)													50												
15	Water Requirement in MCM	0.015	0.016	0.006	0.006	0.008	0.008	0.015	0.016	0.046	0.046	0.000	0.000	0.062	0.066	0.063	0.052	0.082	0.087	0.086	0.086	0.065	0.069	0.040	0.036	**0.98**
16	Discharge in m3/sec	**0.012**	**0.011**	**0.005**	**0.004**	**0.006**	**0.006**	**0.012**	**0.011**	**0.035**	**0.035**	**0.000**	**0.000**	**0.048**	**0.048**	**0.049**	**0.046**	**0.063**	**0.063**	**0.066**	**0.066**	**0.050**	**0.050**	**0.031**	**0.028**	
Note : Irrigation cut days = 15 days before harvest																										

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Peak Discharge Table for Raya canal

No	Particulars	January		February		March		April		May		June		July		August		September		October		November		December		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
For Khariff Season																										
	Paddy											0.000	0.633	1.171	0.501	0.478	0.455	0.341	0.341	0.477						
	Light											0.315	0.096	0.393	0.737	0.837	0.825	0.420	0.000	0.028						
For Rabi Season																										
	Paddy	0.007	0.428	0.773	0.395	0.440	0.440	0.390	0.390																	
	Light	0.268	0.250	0.366	0.464	0.543	0.543	0.445	0.316																	
Perrinial																										
	Sugarcane	0.250	0.402	0.498	0.498	0.584	0.583	0.616	0.616	0.564	0.562	0.286	0.286	0.179	0.177	0.032	0.029	0.030	0.030	0.114	0.156	0.281	0.281			
	Garden	0.048	0.048	0.049	0.046	0.063	0.063	0.066	0.066	0.050	0.050	0.031	0.028	0.012	0.011	0.005	0.004	0.006	0.006	0.012	0.011	0.035	0.035	0.000	0.000	
Total		0.57	1.13	1.69	1.40	1.63	1.63	1.52	1.39	0.61	0.61	0.63	1.04	1.75	1.43	1.35	1.31	0.80	0.38	0.63	0.17	0.32	0.32	0.00	0.00	**1.75**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Name of the Canal: Basavanna Canal									Unit: MCM				Cropped Area: 1447 ha
No	Khariff				Rabi				Perennial				Total WR in MCM
	Paddy	WR in MCM	Jowar	WR in MCM	Paddy	WR in MCM	Groundnut	WR in MCM	Sugarcane	WR in MCM	Garden (Banana)	WR in MCM	
Jun	100	0.19	740	0.306					170	0.31	29	0.044	0.85
Jul	100	0.50	740	0.880					170	0.20	29	0.018	1.60
Aug	100	0.28	740	1.281					170	0.04	29	0.007	1.61
Sep	100	0.20	740	0.313					170	0.03	29	0.009	0.56
Oct	100	0.14	740	0.021					170	0.15	29	0.018	0.33
Nov									170	0.31	29	0.053	0.36
Dec											29	0.000	0.00
Jan					20	0.05	388	0.63	170	0.37	29	0.075	1.12
Feb					20	0.12	388	0.90	170	0.51	29	0.067	1.60
Mar					20	0.09	388	1.32	170	0.66	29	0.098	2.17
Apr					20	0.08	388	0.89	170	0.68	29	0.100	1.75
May										0.64	29	0.078	0.72
Total in MCM		**1.31**		**2.80**		**0.34**		**3.74**		**3.92**		**0.57**	**12.67**
Total in TMC		**0.05**		**0.10**		**0.01**		**0.13**		**0.14**		**0.02**	**0.45**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

IMD Station : Bellary **Agro climatic zone : 3**

Canal : Basavanna **Duration: 107 days** **Crop : Paddy = 100 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc			1.1	1.1	1.1	1.05	1.05	1.05	1.05	
4	ETc (mm)			82.83	88.35	81.35	82.82	72.61	72.61	62.69	
5	Nursery (mm)	28.00	16.00								
6	Land preparation (mm)		150								
7	Transplantation (mm)			125							
8	Percolation @ 3mm/day (mm)			45.00	48.00	45.00	48.00	45.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	252.83	136.35	126.35	130.82	117.61	117.61	107.69	1183.25
10	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	466.13
11	Eff RF (mm) from table		64.82		71.78		79.01		110.78	37.80	
		32.41	32.41	34.45	37.33	37.92	41.09	55.39	55.39	18.90	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	31.44	31.44	33.42	36.21	36.79	39.85	53.73	53.73	18.33	
13	NIR for Nursery (mm)	0.00	0.00								
14	NIR for other period (mm)		118.56	219.41	100.15	89.56	90.97	63.88	63.88	89.35	835.76
15	Field Irrigation requirement FIR = NIR/0.85		139.49	258.13	117.82	105.36	107.03	75.15	75.15	105.12	
16	GIR for nursery (mm) = GIR=FIR/0.75	0.00	0.00								
17	GIR for other period (mm) = GIR=FIR/0.75		185.98	344.17	157.09	140.48	142.70	100.20	100.20	140.16	1310.99
18	Area (Ha) for nursery	10.00	10.00								
19	Area (Ha) for other period					100					
20	Water Requirement for nursery in MCM	0.000	0.000								
21	WR for other period in MCM		0.186	0.344	0.157	0.140	0.143	0.100	0.100	0.140	
22	Total Water requirement in MCM	0.000	0.186	0.344	0.157	0.140	0.143	0.100	0.100	0.140	**1.31**
23	Discharge in m^3/sec	**0.000**	**0.144**	**0.266**	**0.114**	**0.108**	**0.103**	**0.077**	**0.077**	**0.108**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Basavanna **Duration: 120 days** **Crop : Jowar = 740 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc		0.35	0.58	0.81	1.05	1.05	1.05	0.70	0.53	
4	ETc (mm)		29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	
5	Pre sowing requirement (mm)	40.00									
6	Gross Water Requirement (mm)	40.00	29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	491.10
7	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	409.83
8	Monthy Eff RF (mm) from table		50.57		52.34		78.40		107.14	31.21	
9	Eff RF (mm) from table	25.29	25.29	25.12	27.21	37.63	40.77	53.57	53.57	31.21	
10	(0.97 * Effective Rainfall) mm at 50% chance of occurance	24.53	24.53	24.37	26.40	36.50	39.55	51.97	51.97	30.27	
11	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 10)	15.47	4.71	19.31	38.66	41.14	43.28	20.64	0.00	1.37	184.59
12	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	23.80	7.25	29.70	59.48	63.30	66.58	31.76	0.00	2.11	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	31.74	9.67	39.60	79.31	84.40	88.77	42.34	0.00	2.81	378.64
14	Area (Ha)	740									
15	Water Requirement in MCM	0.235	0.072	0.293	0.587	0.625	0.657	0.313	0.000	0.021	**2.80**
16	Discharge in m3/sec	**0.181**	**0.055**	**0.226**	**0.425**	**0.482**	**0.475**	**0.242**	**0.000**	**0.016**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Agro climatic zone : 3

Canal : Basavanna **Duration: 120 days** **Crop : Paddy = 20 ha**

Season : Rabi **Sowing time: Jan-01** **IMD Station : Bellary**

No.	Particulars	Jan		Feb		March		April		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc			1.25	1.25	1.25	1.25	1.00	1.00	
4	ETc (mm)			86.06	74.59	103.31	110.20	90.45	90.45	
5	Nursery (mm)	28.00	16.00							
6	Land preparation		150							
7	Transplantation			125						
8	Percolation @ 3 mm/day(mm)			45.00	39.00	45.00	48.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	256.06	113.59	148.31	158.20	135.45	135.45	1141.06
10	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
11	Eff RF (mm) from table		1.19		1.05		6.03		13.52	
		0.5712	0.62	0.56	0.49	2.89	3.14	6.76	6.76	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.55	0.60	0.54	0.47	2.81	3.04	6.56	6.56	
13	NIR for nusery (mm)	27.45	15.40							
14	NIR for other period (mm) (6 - 12)		149.40	255.52	113.11	145.50	155.16	128.89	128.89	1076.48
15	Field Irrigation Requirement FIR (mm) = NIR/0.85		175.76	300.61	133.08	171.18	182.54	151.64	151.64	
16	GIR for nursery	36.59	20.53							
17	Gross Irrigation Requirement GIR (mm) = FIR/0.75		234.35	400.81	177.44	228.24	243.39	202.18	202.18	1688.60
18	Area (Ha) for nursery	2.00	2.00							
19	Area (Ha) for other period					20				
20	Water Requirement for nursery	0.001	0.000							
21	Water Requirement in MCM		0.047	0.080	0.035	0.046	0.049	0.040	0.040	
22	Total water requirement in MCM	0.001	0.047	0.080	0.035	0.046	0.049	0.040	0.040	**0.34**
23	Discharge in m3/sec	**0.001**	**0.034**	**0.062**	**0.032**	**0.035**	**0.035**	**0.031**	**0.031**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Basavanna **Crop : Groundnut = 388 ha**

Season : Rabi **Duration: 120 days**

No.	Particulars	Jan		Feb		Mar		Apr		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc		0.67	0.79	1	1	1.00	0.79	0.58	
4	ETc (mm)		39.77	54.39	59.67	82.65	88.16	71.46	52.46	
5	Pre sowing requirement (mm)	40.00								
6	Gross Water Requirement (mm)	40.00	39.77	54.39	59.67	82.65	88.16	71.46	52.46	488.56
7	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
8	Eff RF (mm) from table		0.99		0.88		5.71		12.07	
		0.48	0.51	0.47	0.41	2.74	2.97	6.04	6.04	
9	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.46	0.50	0.46	0.40	2.66	2.88	5.85	5.85	
10	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 9)	39.54	39.27	53.93	59.27	79.99	85.28	65.60	46.61	469.50
11	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	60.83	60.42	82.98	91.19	123.06	131.20	100.93	71.70	
12	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.11	80.56	110.64	121.59	164.08	174.93	134.57	95.60	963.08
13	Area (Ha)	388								
14	Water Requirement in MCM	0.315	0.313	0.429	0.472	0.637	0.679	0.522	0.371	**3.74**
15	Discharge in m^3/sec	**0.243**	**0.226**	**0.331**	**0.420**	**0.491**	**0.491**	**0.403**	**0.286**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Basavanna **Crop : Sugarcane = 170 ha** **Duration : 304 days**

Season : Perennial **Sowing time: Jan-01**

No	Particulars	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II			
1	No of Days	15	16	15	13	15	16	15	15	15	16	15	15	15	16	15	16	15	15	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	
3	Crop Factor, Kc		1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	0.88	0.88	0.70	0.70	0.48	0.48	0.78	0.78	0.93	1.05	1.05	1.05	
4	ETc (mm)		68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	
5	Plant use (Pre-sowing) mm	40.00																						
7	Gross Water Requirement (mm)	40.00	68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	1554.26
8	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	20.66	22.39	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	54.04	58.55	15.04	15.04	620.87
9	Monthy Eff RF (mm) from table		1.00		0.95		5.99		14.01		41.44		58.50		52.35		65.21		101.50		80.53		22.06	
10	Eff RF (mm) from table	0.48	0.52	0.51	0.44	2.88	3.29	7.01	7.01	19.89	21.55	29.25	29.25	25.13	27.22	31.30	33.91	50.75	50.75	38.66	41.88	11.03	11.03	
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.47	0.50	0.49	0.43	2.79	3.20	6.79	6.79	19.29	20.90	28.37	28.37	24.37	26.41	30.36	32.89	49.23	49.23	37.50	40.62	10.70	10.70	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	39.53	67.76	78.68	68.19	92.26	98.19	97.22	97.22	89.04	94.65	45.15	45.15	28.34	29.82	5.13	4.97	4.71	4.71	18.02	26.24	44.43	44.43	1123.85
13	Field Irrigation Requirement = FIR = NIR/0.65	60.82	104.25	121.05	104.91	141.94	151.06	149.57	149.57	136.98	145.62	69.47	69.47	43.59	45.87	7.90	7.65	7.24	7.24	27.73	40.37	68.35	68.35	
14	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.10	138.99	161.40	139.88	189.25	201.41	199.43	199.43	182.64	194.15	92.62	92.62	58.12	61.17	10.53	10.19	9.66	9.66	36.97	53.83	91.13	91.13	2305.32
15	Area (Ha)	170																						
16	Water Requirement in MCM	0.138	0.236	0.274	0.238	0.322	0.342	0.339	0.339	0.310	0.330	0.157	0.157	0.099	0.104	0.018	0.017	0.016	0.016	0.063	0.092	0.155	0.155	**3.92**
17	Discharge in m3/sec	**0.106**	**0.171**	**0.212**	**0.212**	**0.248**	**0.248**	**0.262**	**0.262**	**0.240**	**0.239**	**0.121**	**0.121**	**0.076**	**0.075**	**0.014**	**0.013**	**0.013**	**0.013**	**0.048**	**0.066**	**0.120**	**0.120**	
Note : Irrigation cut days = 15 days before harvest																								

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Basavanna **Crop : Garden (Banana) = 29 ha** **Duration : 365 days**

Season : Perennial **Sowing time: Jul-01**

No	Particulars	Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	16	15	15	15	16	15	15	15	16	15	16	15	13	15	16	15	15	15	16	15	15	
2	ETo (mm)	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	50.25	53.60	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	
3	Crop Factor, Kc	0.50	0.50	0.50	0.50	0.85	0.85	0.85	0.85	1.05	1.05	1.05	1.05	1.10	1.10	0.90	0.85	1.00	1.00	1.00	1.00	0.85	0.85	0.80	0.75	
4	ETc (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	
7	Gross Water Requirement (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	1481.83
8	Rainfall (mm)	34.5	37.3	49.3	53.4	79.7	79.7	54.0	58.5	15.0	15.0	4.0	4.4	0.7	0.6	0.6	0.6	3.3	3.6	8.0	8.0	20.7	22.4	38.0	38.0	629.16
9	Monthy Eff RF (mm) from table		49.25		66.30		105.66		77.03		22.06		6.15		0.98		0.88		5.71		13.52		35.06		57.09	
10	Eff RF (mm) from table	23.64	25.61	31.83	34.48	52.83	52.83	36.97	40.05	11.03	11.03	2.95	3.20	0.47	0.51	0.47	0.41	2.74	2.97	6.76	6.76	16.83	18.23	28.55	28.55	363.94
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	22.93	24.84	30.87	33.44	51.24	51.24	35.86	38.85	10.70	10.70	2.86	3.10	0.46	0.49	0.46	0.40	2.66	2.88	6.56	6.56	16.32	17.68	27.69	27.69	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	14.72	15.32	6.10	6.00	7.53	7.53	14.88	15.28	44.43	44.43	0.00	0.00	60.76	64.80	61.51	50.32	79.99	85.28	83.89	83.89	63.75	67.72	39.15	34.97	952.26
	Field Irrigation Requirement = FIR = NIR/0.65	22.65	23.57	9.39	9.23	11.59	11.59	22.89	23.50	68.35	68.35	0.00	0.00	93.47	99.69	94.63	77.42	123.06	131.20	129.07	129.07	98.07	104.19	60.23	53.80	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	30.196	31.425	12.522	12.302	15.451	15.451	30.526	31.335	91.130	91.130	0.000	0.000	124.633	132.927	126.169	103.228	164.085	174.933	172.088	172.088	130.762	138.921	80.306	71.737	1953.34
14	Area (Ha)													29												
15	Water Requirement in MCM	0.009	0.009	0.004	0.004	0.004	0.004	0.009	0.009	0.026	0.026	0.000	0.000	0.036	0.039	0.037	0.030	0.048	0.051	0.050	0.050	0.038	0.040	0.023	0.021	**0.57**
16	Discharge in m3/sec	**0.007**	**0.007**	**0.003**	**0.003**	**0.003**	**0.003**	**0.007**	**0.007**	**0.020**	**0.020**	**0.000**	**0.000**	**0.028**	**0.028**	**0.028**	**0.027**	**0.037**	**0.037**	**0.039**	**0.039**	**0.029**	**0.029**	**0.018**	**0.016**	
Note : Irrigation cut days = 15 days before harvest																										

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Peak Discharge Table for Basavanna canal

No	Particulars	January		February		March		April		May		June		July		August		September		October		November		December		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
For Khariff Season																										
	Paddy											0.000	0.144	0.266	0.114	0.108	0.103	0.077	0.077	0.108						
	Light											0.181	0.055	0.226	0.425	0.482	0.475	0.242	0.000	0.016						
For Rabi Season																										
	Paddy	0.001	0.034	0.062	0.032	0.035	0.035	0.031	0.031																	
	Light	0.243	0.226	0.331	0.420	0.491	0.491	0.403	0.286																	
Perrinial																										
	Sugarcane	0.106	0.171	0.212	0.212	0.248	0.248	0.262	0.262	0.240	0.239	0.121	0.121	0.076	0.075	0.014	0.013	0.013	0.013	0.048	0.066	0.120	0.120			
	Garden	0.028	0.028	0.028	0.027	0.037	0.037	0.039	0.039	0.029	0.029	0.018	0.016	0.007	0.007	0.003	0.003	0.003	0.003	0.007	0.007	0.020	0.020	0.000	0.000	
Total		0.38	0.46	0.63	0.69	0.81	0.81	0.73	0.62	0.27	0.27	0.32	0.34	0.57	0.62	0.61	0.59	0.34	0.09	0.18	0.07	0.14	0.14	0.00	0.00	**0.81**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Name of the Canal: Bella Canal									Unit: MCM				Cropped Area: 741 ha
No	Khariff				Rabi				Perennial				Total WR in MCM
	Paddy	WR in MCM	Jowar	WR in MCM	Paddy	WR in MCM	Groundnut	WR in MCM	Sugarcane	WR in MCM	Garden (Banana)	WR in MCM	
Jun	70	0.13	396	0.164					80	0.15	54	0.082	0.52
Jul	70	0.35	396	0.471					80	0.10	54	0.033	0.95
Aug	70	0.20	396	0.686					80	0.02	54	0.013	0.91
Sep	70	0.14	396	0.168					80	0.02	54	0.017	0.34
Oct	70	0.10	396	0.011					80	0.07	54	0.033	0.22
Nov									80	0.15	54	0.098	0.24
Dec											54	0.000	0.00
Jan					14	0.03	127	0.21	80	0.18	54	0.139	0.55
Feb					14	0.08	127	0.29	80	0.24	54	0.124	0.74
Mar					14	0.07	127	0.43	80	0.31	54	0.183	0.99
Apr					14	0.06	127	0.29	80	0.32	54	0.186	0.85
May										0.30	54	0.146	0.45
Total in MCM		**0.92**		**1.50**		**0.24**		**1.22**		**1.84**		**1.05**	**6.78**
Total in TMC		**0.03**		**0.05**		**0.01**		**0.04**		**0.07**		**0.04**	**0.24**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

IMD Station : Bellary **Agro climatic zone : 3**

Canal : Bella **Duration: 107 days** **Crop : Paddy = 70 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc			1.1	1.1	1.1	1.05	1.05	1.05	1.05	
4	ETc (mm)			82.83	88.35	81.35	82.82	72.61	72.61	62.69	
5	Nursery (mm)	28.00	16.00								
6	Land preparation (mm)		150								
7	Transplantation (mm)			125							
8	Percolation @ 3mm/day (mm)			45.00	48.00	45.00	48.00	45.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	252.83	136.35	126.35	130.82	117.61	117.61	107.69	1183.25
10	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	466.13
11	Eff RF (mm) from table		64.82		71.78		79.01		110.78	37.80	
		32.41	32.41	34.45	37.33	37.92	41.09	55.39	55.39	18.90	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	31.44	31.44	33.42	36.21	36.79	39.85	53.73	53.73	18.33	
13	NIR for Nursery (mm)	0.00	0.00								
14	NIR for other period (mm)		118.56	219.41	100.15	89.56	90.97	63.88	63.88	89.35	835.76
15	Field Irrigation requirement FIR = NIR/0.85		139.49	258.13	117.82	105.36	107.03	75.15	75.15	105.12	
16	GIR for nursery (mm) = GIR=FIR/0.75	0.00	0.00								
17	GIR for other period (mm) = GIR=FIR/0.75		185.98	344.17	157.09	140.48	142.70	100.20	100.20	140.16	1310.99
18	Area (Ha) for nursery	7.00	7.00								
19	Area (Ha) for other period					70					
20	Water Requirement for nursery in MCM	0.000	0.000								
21	WR for other period in MCM		0.130	0.241	0.110	0.098	0.100	0.070	0.070	0.098	
22	Total Water requirement in MCM	0.000	0.130	0.241	0.110	0.098	0.100	0.070	0.070	0.098	**0.92**
23	Discharge in m^3/sec	**0.000**	**0.100**	**0.186**	**0.080**	**0.076**	**0.072**	**0.054**	**0.054**	**0.076**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Bella **Duration: 120 days** **Crop : Jowar = 396 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc		0.35	0.58	0.81	1.05	1.05	1.05	0.70	0.53	
4	ETc (mm)		29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	
5	Pre sowing requirement (mm)	40.00									
6	Gross Water Requirement (mm)	40.00	29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	491.10
7	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	409.83
8	Monthy Eff RF (mm) from table		50.57		52.34		78.40		107.14	31.21	
9	Eff RF (mm) from table	25.29	25.29	25.12	27.21	37.63	40.77	53.57	53.57	31.21	
10	(0.97 * Effective Rainfall) mm at 50% chance of occurance	24.53	24.53	24.37	26.40	36.50	39.55	51.97	51.97	30.27	
11	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 10)	15.47	4.71	19.31	38.66	41.14	43.28	20.64	0.00	1.37	184.59
12	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	23.80	7.25	29.70	59.48	63.30	66.58	31.76	0.00	2.11	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	31.74	9.67	39.60	79.31	84.40	88.77	42.34	0.00	2.81	378.64
14	Area (Ha)	396									
15	Water Requirement in MCM	0.126	0.038	0.157	0.314	0.334	0.352	0.168	0.000	0.011	**1.50**
16	Discharge in m3/sec	**0.097**	**0.030**	**0.121**	**0.227**	**0.258**	**0.254**	**0.129**	**0.000**	**0.009**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Agro climatic zone : 3

Canal : Bella **Duration: 120 days** **Crop : Paddy = 14 ha**

Season : Rabi **Sowing time: Jan-01** **IMD Station : Bellary**

No.	Particulars	Jan		Feb		March		April		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc			1.25	1.25	1.25	1.25	1.00	1.00	
4	ETc (mm)			86.06	74.59	103.31	110.20	90.45	90.45	
5	Nursery (mm)	28.00	16.00							
6	Land preparation		150							
7	Transplantation			125						
8	Percolation @ 3 mm/day(mm)			45.00	39.00	45.00	48.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	256.06	113.59	148.31	158.20	135.45	135.45	1141.06
10	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
11	Eff RF (mm) from table		1.19		1.05		6.03		13.52	
		0.5712	0.62	0.56	0.49	2.89	3.14	6.76	6.76	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.55	0.60	0.54	0.47	2.81	3.04	6.56	6.56	
13	NIR for nusery (mm)	27.45	15.40							
14	NIR for other period (mm) (6 - 12)		149.40	255.52	113.11	145.50	155.16	128.89	128.89	1076.48
15	Field Irrigation Requirement FIR (mm) = NIR/0.85		175.76	300.61	133.08	171.18	182.54	151.64	151.64	
16	GIR for nursery	36.59	20.53							
17	Gross Irrigation Requirement GIR (mm) = FIR/0.75		234.35	400.81	177.44	228.24	243.39	202.18	202.18	1688.60
18	Area (Ha) for nursery	1.40	1.40							
19	Area (Ha) for other period					14				
20	Water Requirement for nursery	0.001	0.000							
21	Water Requirement in MCM		0.033	0.056	0.025	0.032	0.034	0.028	0.028	
22	Total water requirement in MCM	0.001	0.033	0.056	0.025	0.032	0.034	0.028	0.028	**0.24**
23	Discharge in m3/sec	**0.000**	**0.024**	**0.043**	**0.022**	**0.025**	**0.025**	**0.022**	**0.022**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Bella **Crop : Groundnut = 127 ha**

Season : Rabi **Duration: 120 days**

No.	Particulars	Jan		Feb		Mar		Apr		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc		0.67	0.79	1	1	1.00	0.79	0.58	
4	ETc (mm)		39.77	54.39	59.67	82.65	88.16	71.46	52.46	
5	Pre sowing requirement (mm)	40.00								
6	Gross Water Requirement (mm)	40.00	39.77	54.39	59.67	82.65	88.16	71.46	52.46	488.56
7	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
8	Eff RF (mm) from table		0.99		0.88		5.71		12.07	
		0.48	0.51	0.47	0.41	2.74	2.97	6.04	6.04	
9	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.46	0.50	0.46	0.40	2.66	2.88	5.85	5.85	
10	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 9)	39.54	39.27	53.93	59.27	79.99	85.28	65.60	46.61	469.50
11	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	60.83	60.42	82.98	91.19	123.06	131.20	100.93	71.70	
12	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.11	80.56	110.64	121.59	164.08	174.93	134.57	95.60	963.08
13	Area (Ha)	127								
14	Water Requirement in MCM	0.103	0.102	0.141	0.154	0.208	0.222	0.171	0.121	**1.22**
15	Discharge in m^3/sec	**0.079**	**0.074**	**0.108**	**0.137**	**0.161**	**0.161**	**0.132**	**0.094**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Bella **Crop :** Sugarcane = 80 ha **Duration :** 304 days

Season : Perennial **Sowing time:** Jan-01

No	Particulars	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II			
1	No of Days	15	16	15	13	15	16	15	15	15	16	15	15	15	16	15	16	15	15	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	
3	Crop Factor, Kc		1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	0.88	0.88	0.70	0.70	0.48	0.48	0.78	0.78	0.93	1.05	1.05	1.05	
4	ETc (mm)		68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	
5	Plant use (Pre-sowing) mm	40.00																						
7	Gross Water Requirement (mm)	40.00	68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	1554.26
8	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	20.66	22.39	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	54.04	58.55	15.04	15.04	620.87
9	Monthy Eff RF (mm) from table		1.00		0.95		5.99		14.01		41.44		58.50		52.35		65.21		101.50		80.53		22.06	
10	Eff RF (mm) from table	0.48	0.52	0.51	0.44	2.88	3.29	7.01	7.01	19.89	21.55	29.25	29.25	25.13	27.22	31.30	33.91	50.75	50.75	38.66	41.88	11.03	11.03	
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.47	0.50	0.49	0.43	2.79	3.20	6.79	6.79	19.29	20.90	28.37	28.37	24.37	26.41	30.36	32.89	49.23	49.23	37.50	40.62	10.70	10.70	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	39.53	67.76	78.68	68.19	92.26	98.19	97.22	97.22	89.04	94.65	45.15	45.15	28.34	29.82	5.13	4.97	4.71	4.71	18.02	26.24	44.43	44.43	1123.85
13	Field Irrigation Requirement = FIR = NIR/0.65	60.82	104.25	121.05	104.91	141.94	151.06	149.57	149.57	136.98	145.62	69.47	69.47	43.59	45.87	7.90	7.65	7.24	7.24	27.73	40.37	68.35	68.35	
14	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.10	138.99	161.40	139.88	189.25	201.41	199.43	199.43	182.64	194.15	92.62	92.62	58.12	61.17	10.53	10.19	9.66	9.66	36.97	53.83	91.13	91.13	2305.32
15	Area (Ha)	80																						
16	Water Requirement in MCM	0.065	0.111	0.129	0.112	0.151	0.161	0.160	0.160	0.146	0.155	0.074	0.074	0.046	0.049	0.008	0.008	0.008	0.008	0.030	0.043	0.073	0.073	**1.84**
17	Discharge in m3/sec	**0.050**	**0.080**	**0.100**	**0.100**	**0.117**	**0.117**	**0.123**	**0.123**	**0.113**	**0.112**	**0.057**	**0.057**	**0.036**	**0.035**	**0.006**	**0.006**	**0.006**	**0.006**	**0.023**	**0.031**	**0.056**	**0.056**	

Note : Irrigation cut days = 15 days before harvest

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Bella **Crop : Garden (Banana) = 54 ha** **Duration : 365 days**

Season : Perennial **Sowing time: Jul-01**

No	Particulars	Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	16	15	15	15	16	15	15	15	16	15	16	15	13	15	16	15	15	15	16	15	15	
2	ETo (mm)	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	50.25	53.60	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	
3	Crop Factor, Kc	0.50	0.50	0.50	0.50	0.85	0.85	0.85	0.85	1.05	1.05	1.05	1.05	1.10	1.10	0.90	0.85	1.00	1.00	1.00	1.00	0.85	0.85	0.80	0.75	
4	ETc (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	
7	Gross Water Requirement (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	1481.83
8	Rainfall (mm)	34.5	37.3	49.3	53.4	79.7	79.7	54.0	58.5	15.0	15.0	4.0	4.4	0.7	0.6	0.6	0.6	3.3	3.6	8.0	8.0	20.7	22.4	38.0	38.0	629.16
9	Monthy Eff RF (mm) from table		49.25		66.30		105.66		77.03		22.06		6.15		0.98		0.88		5.71		13.52		35.06		57.09	
10	Eff RF (mm) from table	23.64	25.61	31.83	34.48	52.83	52.83	36.97	40.05	11.03	11.03	2.95	3.20	0.47	0.51	0.47	0.41	2.74	2.97	6.76	6.76	16.83	18.23	28.55	28.55	363.94
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	22.93	24.84	30.87	33.44	51.24	51.24	35.86	38.85	10.70	10.70	2.86	3.10	0.46	0.49	0.46	0.40	2.66	2.88	6.56	6.56	16.32	17.68	27.69	27.69	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	14.72	15.32	6.10	6.00	7.53	7.53	14.88	15.28	44.43	44.43	0.00	0.00	60.76	64.80	61.51	50.32	79.99	85.28	83.89	83.89	63.75	67.72	39.15	34.97	952.26
	Field Irrigation Requirement = FIR = NIR/0.65	22.65	23.57	9.39	9.23	11.59	11.59	22.89	23.50	68.35	68.35	0.00	0.00	93.47	99.69	94.63	77.42	123.06	131.20	129.07	129.07	98.07	104.19	60.23	53.80	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	30.196	31.425	12.522	12.302	15.451	15.451	30.526	31.335	91.130	91.130	0.000	0.000	124.633	132.927	126.169	103.228	164.085	174.933	172.088	172.088	130.762	138.921	80.306	71.737	1953.34
14	Area (Ha)													54												
15	Water Requirement in MCM	0.016	0.017	0.007	0.007	0.008	0.008	0.016	0.017	0.049	0.049	0.000	0.000	0.067	0.072	0.068	0.056	0.089	0.094	0.093	0.093	0.071	0.075	0.043	0.039	**1.05**
16	Discharge in m3/sec	**0.013**	**0.012**	**0.005**	**0.005**	**0.006**	**0.006**	**0.013**	**0.012**	**0.038**	**0.038**	**0.000**	**0.000**	**0.052**	**0.052**	**0.053**	**0.050**	**0.068**	**0.068**	**0.072**	**0.072**	**0.054**	**0.054**	**0.033**	**0.030**	
Note : Irrigation cut days = 15 days before harvest																										

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Peak Discharge Table for Bella canal

No	Particulars	January		February		March		April		May		June		July		August		September		October		November		December		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
For Khariff Season																										
	Paddy											0.000	0.100	0.186	0.080	0.076	0.072	0.054	0.054	0.076						
	Light											0.097	0.030	0.121	0.227	0.258	0.254	0.129	0.000	0.009						
For Rabi Season																										
	Paddy	0.000	0.024	0.043	0.022	0.025	0.025	0.022	0.022																	
	Light	0.079	0.074	0.108	0.137	0.161	0.161	0.132	0.094																	
Perrinial																										
	Sugarcane	0.050	0.080	0.100	0.100	0.117	0.117	0.123	0.123	0.113	0.112	0.057	0.057	0.036	0.035	0.006	0.006	0.006	0.006	0.023	0.031	0.056	0.056			
	Garden	0.052	0.052	0.053	0.050	0.068	0.068	0.072	0.072	0.054	0.054	0.033	0.030	0.013	0.012	0.005	0.005	0.006	0.006	0.013	0.012	0.038	0.038	0.000	0.000	
Total		0.18	0.23	0.30	0.31	0.37	0.37	0.35	0.31	0.17	0.17	0.19	0.22	0.36	0.35	0.35	0.34	0.20	0.07	0.12	0.04	0.09	0.09	0.00	0.00	**0.37**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Name of the Canal: Kalghatta Canal									Unit: MCM				Cropped Area : 349 ha
No	Khariff				Rabi				Perennial				Total WR in MCM
	Paddy	WR in MCM	Jowar	WR in MCM	Paddy	WR in MCM	Groundnut	WR in MCM	Sugarcane	WR in MCM	Garden (Banana)	WR in MCM	
Jun	30	0.06	172	0.071					15	0.03	20	0.030	0.19
Jul	30	0.15	172	0.205					15	0.02	20	0.012	0.39
Aug	30	0.08	172	0.298					15	0.00	20	0.005	0.39
Sep	30	0.06	172	0.073					15	0.00	20	0.006	0.14
Oct	30	0.04	172	0.005					15	0.01	20	0.012	0.07
Nov									15	0.03	20	0.036	0.06
Dec											20	0.000	0.00
Jan					10	0.02	102	0.16	15	0.03	20	0.052	0.27
Feb					10	0.06	102	0.24	15	0.05	20	0.046	0.39
Mar					10	0.05	102	0.35	15	0.06	20	0.068	0.52
Apr					10	0.04	102	0.23	15	0.06	20	0.069	0.40
May										0.06	20	0.054	0.11
Total in MCM		**0.39**		**0.65**		**0.17**		**0.98**		**0.35**		**0.39**	**2.93**
Total in TMC		**0.01**		**0.02**		**0.01**		**0.03**		**0.01**		**0.01**	**0.10**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

IMD Station : Bellary **Agro climatic zone : 3**

Canal : Kalghatta **Duration: 107 days** **Crop : Paddy = 30 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc			1.1	1.1	1.1	1.05	1.05	1.05	1.05	
4	ETc (mm)			82.83	88.35	81.35	82.82	72.61	72.61	62.69	
5	Nursery (mm)	28.00	16.00								
6	Land preparation (mm)		150								
7	Transplantation (mm)			125							
8	Percolation @ 3mm/day (mm)			45.00	48.00	45.00	48.00	45.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	252.83	136.35	126.35	130.82	117.61	117.61	107.69	1183.25
10	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	466.13
11	Eff RF (mm) from table		64.82		71.78		79.01		110.78	37.80	
		32.41	32.41	34.45	37.33	37.92	41.09	55.39	55.39	18.90	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	31.44	31.44	33.42	36.21	36.79	39.85	53.73	53.73	18.33	
13	NIR for Nursery (mm)	0.00	0.00								
14	NIR for other period (mm)		118.56	219.41	100.15	89.56	90.97	63.88	63.88	89.35	835.76
15	Field Irrigation requirement FIR = NIR/0.85		139.49	258.13	117.82	105.36	107.03	75.15	75.15	105.12	
16	GIR for nursery (mm) = GIR=FIR/0.75	0.00	0.00								
17	GIR for other period (mm) = GIR=FIR/0.75		185.98	344.17	157.09	140.48	142.70	100.20	100.20	140.16	1310.99
18	Area (Ha) for nursery	3.00	3.00								
19	Area (Ha) for other period					30					
20	Water Requirement for nursery in MCM	0.000	0.000								
21	WR for other period in MCM		0.056	0.103	0.047	0.042	0.043	0.030	0.030	0.042	
22	Total Water requirement in MCM	0.000	0.056	0.103	0.047	0.042	0.043	0.030	0.030	0.042	**0.39**
23	Discharge in m^3/sec	**0.000**	**0.043**	**0.080**	**0.034**	**0.033**	**0.031**	**0.023**	**0.023**	**0.032**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Kalghatta **Duration: 120 days** **Crop : Jowar = 172 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc		0.35	0.58	0.81	1.05	1.05	1.05	0.70	0.53	
4	ETc (mm)		29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	
5	Pre sowing requirement (mm)	40.00									
6	Gross Water Requirement (mm)	40.00	29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	491.10
7	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	409.83
8	Monthy Eff RF (mm) from table		50.57		52.34		78.40		107.14	31.21	
9	Eff RF (mm) from table	25.29	25.29	25.12	27.21	37.63	40.77	53.57	53.57	31.21	
10	(0.97 * Effective Rainfall) mm at 50% chance of occurance	24.53	24.53	24.37	26.40	36.50	39.55	51.97	51.97	30.27	
11	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 10)	15.47	4.71	19.31	38.66	41.14	43.28	20.64	0.00	1.37	184.59
12	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	23.80	7.25	29.70	59.48	63.30	66.58	31.76	0.00	2.11	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	31.74	9.67	39.60	79.31	84.40	88.77	42.34	0.00	2.81	378.64
14	Area (Ha)	172									
15	Water Requirement in MCM	0.055	0.017	0.068	0.136	0.145	0.153	0.073	0.000	0.005	**0.65**
16	Discharge in m3/sec	**0.042**	**0.013**	**0.053**	**0.099**	**0.112**	**0.110**	**0.056**	**0.000**	**0.004**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Agro climatic zone : 3

Canal : Kalghatta **Duration: 120 days** **Crop : Paddy = 10 ha**

Season : Rabi **Sowing time: Jan-01** **IMD Station : Bellary**

No.	Particulars	Jan		Feb		March		April		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc			1.25	1.25	1.25	1.25	1.00	1.00	
4	ETc (mm)			86.06	74.59	103.31	110.20	90.45	90.45	
5	Nursery (mm)	28.00	16.00							
6	Land preparation		150							
7	Transplantation			125						
8	Percolation @ 3 mm/day(mm)			45.00	39.00	45.00	48.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	256.06	113.59	148.31	158.20	135.45	135.45	1141.06
10	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
11	Eff RF (mm) from table		1.19		1.05		6.03		13.52	
		0.5712	0.62	0.56	0.49	2.89	3.14	6.76	6.76	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.55	0.60	0.54	0.47	2.81	3.04	6.56	6.56	
13	NIR for nusery (mm)	27.45	15.40							
14	NIR for other period (mm) (6 - 12)		149.40	255.52	113.11	145.50	155.16	128.89	128.89	1076.48
15	Field Irrigation Requirement FIR (mm) = NIR/0.85		175.76	300.61	133.08	171.18	182.54	151.64	151.64	
16	GIR for nursery	36.59	20.53							
17	Gross Irrigation Requirement GIR (mm) = FIR/0.75		234.35	400.81	177.44	228.24	243.39	202.18	202.18	1688.60
18	Area (Ha) for nursery	1.00	1.00							
19	Area (Ha) for other period					10				
20	Water Requirement for nursery	0.000	0.000							
21	Water Requirement in MCM		0.023	0.040	0.018	0.023	0.024	0.020	0.020	
22	Total water requirement in MCM	0.000	0.024	0.040	0.018	0.023	0.024	0.020	0.020	**0.17**
23	Discharge in m3/sec	**0.000**	**0.017**	**0.031**	**0.016**	**0.018**	**0.018**	**0.016**	**0.016**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Kalghatta **Crop : Groundnut = 102 ha**

Season : Rabi **Duration: 120 days**

No.	Particulars	Jan		Feb		Mar		Apr		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc		0.67	0.79	1	1	1.00	0.79	0.58	
4	ETc (mm)		39.77	54.39	59.67	82.65	88.16	71.46	52.46	
5	Pre sowing requirement (mm)	40.00								
6	Gross Water Requirement (mm)	40.00	39.77	54.39	59.67	82.65	88.16	71.46	52.46	488.56
7	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
8	Eff RF (mm) from table		0.99		0.88		5.71		12.07	
		0.48	0.51	0.47	0.41	2.74	2.97	6.04	6.04	
9	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.46	0.50	0.46	0.40	2.66	2.88	5.85	5.85	
10	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 9)	39.54	39.27	53.93	59.27	79.99	85.28	65.60	46.61	469.50
11	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	60.83	60.42	82.98	91.19	123.06	131.20	100.93	71.70	
12	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.11	80.56	110.64	121.59	164.08	174.93	134.57	95.60	963.08
13	Area (Ha)	102								
14	Water Requirement in MCM	0.083	0.082	0.113	0.124	0.167	0.178	0.137	0.098	**0.98**
15	Discharge in m^3/sec	**0.064**	**0.059**	**0.087**	**0.110**	**0.129**	**0.129**	**0.106**	**0.075**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Kalghatta **Crop : Sugarcane = 15 ha** **Duration : 304 days**

Season : Perennial **Sowing time: Jan-01**

No	Particulars	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II			
1	No of Days	15	16	15	13	15	16	15	15	15	16	15	15	15	16	15	16	15	15	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	
3	Crop Factor, Kc		1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	0.88	0.88	0.70	0.70	0.48	0.48	0.78	0.78	0.93	1.05	1.05	1.05	
4	ETc (mm)		68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	
5	Plant use (Pre-sowing) mm	40.00																						
7	Gross Water Requirement (mm)	40.00	68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	1554.26
8	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	20.66	22.39	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	54.04	58.55	15.04	15.04	620.87
9	Monthy Eff RF (mm) from table		1.00		0.95		5.99		14.01		41.44		58.50		52.35		65.21		101.50		80.53		22.06	
10	Eff RF (mm) from table	0.48	0.52	0.51	0.44	2.88	3.29	7.01	7.01	19.89	21.55	29.25	29.25	25.13	27.22	31.30	33.91	50.75	50.75	38.66	41.88	11.03	11.03	
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.47	0.50	0.49	0.43	2.79	3.20	6.79	6.79	19.29	20.90	28.37	28.37	24.37	26.41	30.36	32.89	49.23	49.23	37.50	40.62	10.70	10.70	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	39.53	67.76	78.68	68.19	92.26	98.19	97.22	97.22	89.04	94.65	45.15	45.15	28.34	29.82	5.13	4.97	4.71	4.71	18.02	26.24	44.43	44.43	1123.85
13	Field Irrigation Requirement = FIR = NIR/0.65	60.82	104.25	121.05	104.91	141.94	151.06	149.57	149.57	136.98	145.62	69.47	69.47	43.59	45.87	7.90	7.65	7.24	7.24	27.73	40.37	68.35	68.35	
14	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.10	138.99	161.40	139.88	189.25	201.41	199.43	199.43	182.64	194.15	92.62	92.62	58.12	61.17	10.53	10.19	9.66	9.66	36.97	53.83	91.13	91.13	2305.32
15	Area (Ha)	15																						
16	Water Requirement in MCM	0.012	0.021	0.024	0.021	0.028	0.030	0.030	0.030	0.027	0.029	0.014	0.014	0.009	0.009	0.002	0.002	0.001	0.001	0.006	0.008	0.014	0.014	**0.35**
17	Discharge in m3/sec	**0.009**	**0.015**	**0.019**	**0.019**	**0.022**	**0.022**	**0.023**	**0.023**	**0.021**	**0.021**	**0.011**	**0.011**	**0.007**	**0.007**	**0.001**	**0.001**	**0.001**	**0.001**	**0.004**	**0.006**	**0.011**	**0.011**	

Note : Irrigation cut days = 15 days before harvest

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Kalghatta **Crop : Garden (Banana) = 20 ha** **Duration : 365 days**

Season : Perennial **Sowing time: Jul-01**

No	Particulars	Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	16	15	15	15	16	15	15	15	16	15	16	15	13	15	16	15	15	15	16	15	15	
2	ETo (mm)	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	50.25	53.60	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	
3	Crop Factor, Kc	0.50	0.50	0.50	0.50	0.85	0.85	0.85	0.85	1.05	1.05	1.05	1.05	1.10	1.10	0.90	0.85	1.00	1.00	1.00	1.00	0.85	0.85	0.80	0.75	
4	ETc (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	
7	Gross Water Requirement (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	1481.83
8	Rainfall (mm)	34.5	37.3	49.3	53.4	79.7	79.7	54.0	58.5	15.0	15.0	4.0	4.4	0.7	0.6	0.6	0.6	3.3	3.6	8.0	8.0	20.7	22.4	38.0	38.0	629.16
9	Monthy Eff RF (mm) from table		49.25		66.30		105.66		77.03		22.06		6.15		0.98		0.88		5.71		13.52		35.06		57.09	
10	Eff RF (mm) from table	23.64	25.61	31.83	34.48	52.83	52.83	36.97	40.05	11.03	11.03	2.95	3.20	0.47	0.51	0.47	0.41	2.74	2.97	6.76	6.76	16.83	18.23	28.55	28.55	363.94
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	22.93	24.84	30.87	33.44	51.24	51.24	35.86	38.85	10.70	10.70	2.86	3.10	0.46	0.49	0.46	0.40	2.66	2.88	6.56	6.56	16.32	17.68	27.69	27.69	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	14.72	15.32	6.10	6.00	7.53	7.53	14.88	15.28	44.43	44.43	0.00	0.00	60.76	64.80	61.51	50.32	79.99	85.28	83.89	83.89	63.75	67.72	39.15	34.97	952.26
	Field Irrigation Requirement = FIR = NIR/0.65	22.65	23.57	9.39	9.23	11.59	11.59	22.89	23.50	68.35	68.35	0.00	0.00	93.47	99.69	94.63	77.42	123.06	131.20	129.07	129.07	98.07	104.19	60.23	53.80	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	30.196	31.425	12.522	12.302	15.451	15.451	30.526	31.335	91.130	91.130	0.000	0.000	124.633	132.927	126.169	103.228	164.085	174.933	172.088	172.088	130.762	138.921	80.306	71.737	1953.34
14	Area (Ha)	20																								
15	Water Requirement in MCM	0.006	0.006	0.003	0.002	0.003	0.003	0.006	0.006	0.018	0.018	0.000	0.000	0.025	0.027	0.025	0.021	0.033	0.035	0.034	0.034	0.026	0.028	0.016	0.014	**0.39**
16	Discharge in m3/sec	**0.005**	**0.005**	**0.002**	**0.002**	**0.002**	**0.002**	**0.005**	**0.005**	**0.014**	**0.014**	**0.000**	**0.000**	**0.019**	**0.019**	**0.019**	**0.018**	**0.025**	**0.025**	**0.027**	**0.027**	**0.020**	**0.020**	**0.012**	**0.011**	
Note : Irrigation cut days = 15 days before harvest																										

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Peak Discharge Table for Kalghatta canal

No	Particulars	January		February		March		April		May		June		July		August		September		October		November		December		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
For Khariff Season																										
	Paddy											0.000	0.043	0.080	0.034	0.033	0.031	0.023	0.023	0.032						
	Light											0.042	0.013	0.053	0.099	0.112	0.110	0.056	0.000	0.004						
For Rabi Season																										
	Paddy	0.000	0.017	0.031	0.016	0.018	0.018	0.016	0.016																	
	Light	0.064	0.059	0.087	0.110	0.129	0.129	0.106	0.075																	
Perrinial																										
	Sugarcane	0.009	0.015	0.019	0.019	0.022	0.022	0.023	0.023	0.021	0.021	0.011	0.011	0.007	0.007	0.001	0.001	0.001	0.001	0.004	0.006	0.011	0.011			
	Garden	0.019	0.019	0.019	0.018	0.025	0.025	0.027	0.027	0.020	0.020	0.012	0.011	0.005	0.005	0.002	0.002	0.002	0.002	0.005	0.005	0.014	0.014	0.000	0.000	
Total		0.09	0.11	0.16	0.16	0.19	0.19	0.17	0.14	0.04	0.04	0.07	0.08	0.14	0.14	0.15	0.14	0.08	0.03	0.05	0.01	0.02	0.02	0.00	0.00	**0.19**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Name of the Canal: Turtha Canal									Unit: MCM				Cropped Area : 1171 ha
No	Khariff				Rabi				Perennial				Total WR in MCM
	Paddy	WR in MCM	Jowar	WR in MCM	Paddy	WR in MCM	Groundnut	WR in MCM	Sugarcane	WR in MCM	Garden (Banana)	WR in MCM	
Jun	110	0.20	461	0.191					100	0.19	260	0.395	0.98
Jul	110	0.55	461	0.548					100	0.12	260	0.160	1.38
Aug	110	0.31	461	0.798					100	0.02	260	0.065	1.20
Sep	110	0.22	461	0.195					100	0.02	260	0.080	0.52
Oct	110	0.15	461	0.013					100	0.09	260	0.161	0.42
Nov									100	0.18	260	0.474	0.66
Dec											260	0.000	0.00
Jan					75	0.18	165	0.27	100	0.22	260	0.670	1.34
Feb					75	0.43	165	0.38	100	0.30	260	0.596	1.71
Mar					75	0.35	165	0.56	100	0.39	260	0.881	2.19
Apr					75	0.30	165	0.38	100	0.40	260	0.895	1.98
May										0.38	260	0.701	1.08
Total in MCM		**1.44**		**1.75**		**1.27**		**1.59**		**2.31**		**5.08**	**13.43**
Total in TMC		**0.05**		**0.06**		**0.04**		**0.06**		**0.08**		**0.18**	**0.47**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

IMD Station : Bellary **Agro climatic zone : 3**

Canal : Turtha **Duration: 107 days** **Crop : Paddy = 110 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc			1.1	1.1	1.1	1.05	1.05	1.05	1.05	
4	ETc (mm)			82.83	88.35	81.35	82.82	72.61	72.61	62.69	
5	Nursery (mm)	28.00	16.00								
6	Land preparation (mm)		150								
7	Transplantation (mm)			125							
8	Percolation @ 3mm/day (mm)			45.00	48.00	45.00	48.00	45.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	252.83	136.35	126.35	130.82	117.61	117.61	107.69	1183.25
10	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	466.13
11	Eff RF (mm) from table		64.82		71.78		79.01		110.78	37.80	
		32.41	32.41	34.45	37.33	37.92	41.09	55.39	55.39	18.90	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	31.44	31.44	33.42	36.21	36.79	39.85	53.73	53.73	18.33	
13	NIR for Nursery (mm)	0.00	0.00								
14	NIR for other period (mm)		118.56	219.41	100.15	89.56	90.97	63.88	63.88	89.35	835.76
15	Field Irrigation requirement FIR = NIR/0.85		139.49	258.13	117.82	105.36	107.03	75.15	75.15	105.12	
16	GIR for nursery (mm) = GIR=FIR/0.75	0.00	0.00								
17	GIR for other period (mm) = GIR=FIR/0.75		185.98	344.17	157.09	140.48	142.70	100.20	100.20	140.16	1310.99
18	Area (Ha) for nursery	11.00	11.00								
19	Area (Ha) for other period					110					
20	Water Requirement for nursery in MCM	0.000	0.000								
21	WR for other period in MCM		0.205	0.379	0.173	0.155	0.157	0.110	0.110	0.154	
22	Total Water requirement in MCM	0.000	0.205	0.379	0.173	0.155	0.157	0.110	0.110	0.154	**1.44**
23	Discharge in m^3/sec	**0.000**	**0.158**	**0.292**	**0.125**	**0.119**	**0.114**	**0.085**	**0.085**	**0.119**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Turtha **Duration: 120 days** **Crop : Jowar = 461 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc		0.35	0.58	0.81	1.05	1.05	1.05	0.70	0.53	
4	ETc (mm)		29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	
5	Pre sowing requirement (mm)	40.00									
6	Gross Water Requirement (mm)	40.00	29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	491.10
7	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	409.83
8	Monthy Eff RF (mm) from table		50.57		52.34		78.40		107.14	31.21	
9	Eff RF (mm) from table	25.29	25.29	25.12	27.21	37.63	40.77	53.57	53.57	31.21	
10	(0.97 * Effective Rainfall) mm at 50% chance of occurance	24.53	24.53	24.37	26.40	36.50	39.55	51.97	51.97	30.27	
11	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 10)	15.47	4.71	19.31	38.66	41.14	43.28	20.64	0.00	1.37	184.59
12	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	23.80	7.25	29.70	59.48	63.30	66.58	31.76	0.00	2.11	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	31.74	9.67	39.60	79.31	84.40	88.77	42.34	0.00	2.81	378.64
14	Area (Ha)	461									
15	Water Requirement in MCM	0.146	0.045	0.183	0.366	0.389	0.409	0.195	0.000	0.013	**1.75**
16	Discharge in m3/sec	**0.113**	**0.034**	**0.141**	**0.264**	**0.300**	**0.296**	**0.151**	**0.000**	**0.010**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Agro climatic zone : 3

Canal : Turtha **Duration: 120 days** **Crop : Paddy = 75 ha**

Season : Rabi **Sowing time: Jan-01** **IMD Station : Bellary**

No.	Particulars	Jan		Feb		March		April		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc			1.25	1.25	1.25	1.25	1.00	1.00	
4	ETc (mm)			86.06	74.59	103.31	110.20	90.45	90.45	
5	Nursery (mm)	28.00	16.00							
6	Land preparation		150							
7	Transplantation			125						
8	Percolation @ 3 mm/day(mm)			45.00	39.00	45.00	48.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	256.06	113.59	148.31	158.20	135.45	135.45	1141.06
10	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
11	Eff RF (mm) from table		1.19		1.05		6.03		13.52	
		0.5712	0.62	0.56	0.49	2.89	3.14	6.76	6.76	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.55	0.60	0.54	0.47	2.81	3.04	6.56	6.56	
13	NIR for nusery (mm)	27.45	15.40							
14	NIR for other period (mm) (6 - 12)		149.40	255.52	113.11	145.50	155.16	128.89	128.89	1076.48
15	Field Irrigation Requirement FIR (mm) = NIR/0.85		175.76	300.61	133.08	171.18	182.54	151.64	151.64	
16	GIR for nursery	36.59	20.53							
17	Gross Irrigation Requirement GIR (mm) = FIR/0.75		234.35	400.81	177.44	228.24	243.39	202.18	202.18	1688.60
18	Area (Ha) for nursery	7.50	7.50							
19	Area (Ha) for other period					75				
20	Water Requirement for nursery	0.003	0.002							
21	Water Requirement in MCM		0.176	0.301	0.133	0.171	0.183	0.152	0.152	
22	Total water requirement in MCM	0.003	0.177	0.301	0.133	0.171	0.183	0.152	0.152	**1.27**
23	Discharge in m3/sec	**0.002**	**0.128**	**0.232**	**0.118**	**0.132**	**0.132**	**0.117**	**0.117**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Turtha **Crop : Groundnut = 165 ha**

Season : Rabi **Duration: 120 days**

No.	Particulars	Jan		Feb		Mar		Apr		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc		0.67	0.79	1	1	1.00	0.79	0.58	
4	ETc (mm)		39.77	54.39	59.67	82.65	88.16	71.46	52.46	
5	Pre sowing requirement (mm)	40.00								
6	Gross Water Requirement (mm)	40.00	39.77	54.39	59.67	82.65	88.16	71.46	52.46	488.56
7	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
8	Eff RF (mm) from table		0.99		0.88		5.71		12.07	
		0.48	0.51	0.47	0.41	2.74	2.97	6.04	6.04	
9	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.46	0.50	0.46	0.40	2.66	2.88	5.85	5.85	
10	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 9)	39.54	39.27	53.93	59.27	79.99	85.28	65.60	46.61	469.50
11	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	60.83	60.42	82.98	91.19	123.06	131.20	100.93	71.70	
12	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.11	80.56	110.64	121.59	164.08	174.93	134.57	95.60	963.08
13	Area (Ha)	165								
14	Water Requirement in MCM	0.134	0.133	0.183	0.201	0.271	0.289	0.222	0.158	**1.59**
15	Discharge in m^3/sec	**0.103**	**0.096**	**0.141**	**0.179**	**0.209**	**0.209**	**0.171**	**0.122**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Turtha **Crop : Sugarcane = 100 ha** **Duration : 304 days**

Season : Perennial **Sowing time: Jan-01**

No	Particulars	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II			
1	No of Days	15	16	15	13	15	16	15	15	15	16	15	15	15	16	15	16	15	15	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	
3	Crop Factor, Kc		1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	0.88	0.88	0.70	0.70	0.48	0.48	0.78	0.78	0.93	1.05	1.05	1.05	
4	ETc (mm)		68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	
5	Plant use (Pre-sowing) mm	40.00																						
7	Gross Water Requirement (mm)	40.00	68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	1554.26
8	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	20.66	22.39	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	54.04	58.55	15.04	15.04	620.87
9	Monthy Eff RF (mm) from table		1.00		0.95		5.99		14.01		41.44		58.50		52.35		65.21		101.50		80.53		22.06	
10	Eff RF (mm) from table	0.48	0.52	0.51	0.44	2.88	3.29	7.01	7.01	19.89	21.55	29.25	29.25	25.13	27.22	31.30	33.91	50.75	50.75	38.66	41.88	11.03	11.03	
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.47	0.50	0.49	0.43	2.79	3.20	6.79	6.79	19.29	20.90	28.37	28.37	24.37	26.41	30.36	32.89	49.23	49.23	37.50	40.62	10.70	10.70	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	39.53	67.76	78.68	68.19	92.26	98.19	97.22	97.22	89.04	94.65	45.15	45.15	28.34	29.82	5.13	4.97	4.71	4.71	18.02	26.24	44.43	44.43	1123.85
13	Field Irrigation Requirement = FIR = NIR/0.65	60.82	104.25	121.05	104.91	141.94	151.06	149.57	149.57	136.98	145.62	69.47	69.47	43.59	45.87	7.90	7.65	7.24	7.24	27.73	40.37	68.35	68.35	
14	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.10	138.99	161.40	139.88	189.25	201.41	199.43	199.43	182.64	194.15	92.62	92.62	58.12	61.17	10.53	10.19	9.66	9.66	36.97	53.83	91.13	91.13	2305.32
15	Area (Ha)	100																						
16	Water Requirement in MCM	0.081	0.139	0.161	0.140	0.189	0.201	0.199	0.199	0.183	0.194	0.093	0.093	0.058	0.061	0.011	0.010	0.010	0.010	0.037	0.054	0.091	0.091	**2.31**
17	Discharge in m3/sec	**0.063**	**0.101**	**0.125**	**0.125**	**0.146**	**0.146**	**0.154**	**0.154**	**0.141**	**0.140**	**0.071**	**0.071**	**0.045**	**0.044**	**0.008**	**0.007**	**0.007**	**0.007**	**0.029**	**0.039**	**0.070**	**0.070**	

Note : Irrigation cut days = 15 days before harvest

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Turtha **Crop : Garden (Banana) = 260 ha** **Duration : 365 days**

Season : Perennial **Sowing time: Jul-01**

No	Particulars	Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	16	15	15	15	16	15	15	15	16	15	16	15	13	15	16	15	15	15	16	15	15	
2	ETo (mm)	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	50.25	53.60	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	
3	Crop Factor, Kc	0.50	0.50	0.50	0.50	0.85	0.85	0.85	0.85	1.05	1.05	1.05	1.05	1.10	1.10	0.90	0.85	1.00	1.00	1.00	1.00	0.85	0.85	0.80	0.75	
4	ETc (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	
7	Gross Water Requirement (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	1481.83
8	Rainfall (mm)	34.5	37.3	49.3	53.4	79.7	79.7	54.0	58.5	15.0	15.0	4.0	4.4	0.7	0.6	0.6	0.6	3.3	3.6	8.0	8.0	20.7	22.4	38.0	38.0	629.16
9	Monthy Eff RF (mm) from table		49.25		66.30		105.66		77.03		22.06		6.15		0.98		0.88		5.71		13.52		35.06		57.09	
10	Eff RF (mm) from table	23.64	25.61	31.83	34.48	52.83	52.83	36.97	40.05	11.03	11.03	2.95	3.20	0.47	0.51	0.47	0.41	2.74	2.97	6.76	6.76	16.83	18.23	28.55	28.55	363.94
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	22.93	24.84	30.87	33.44	51.24	51.24	35.86	38.85	10.70	10.70	2.86	3.10	0.46	0.49	0.46	0.40	2.66	2.88	6.56	6.56	16.32	17.68	27.69	27.69	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	14.72	15.32	6.10	6.00	7.53	7.53	14.88	15.28	44.43	44.43	0.00	0.00	60.76	64.80	61.51	50.32	79.99	85.28	83.89	83.89	63.75	67.72	39.15	34.97	952.26
	Field Irrigation Requirement = FIR = NIR/0.65	22.65	23.57	9.39	9.23	11.59	11.59	22.89	23.50	68.35	68.35	0.00	0.00	93.47	99.69	94.63	77.42	123.06	131.20	129.07	129.07	98.07	104.19	60.23	53.80	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	30.196	31.425	12.522	12.302	15.451	15.451	30.526	31.335	91.130	91.130	0.000	0.000	124.633	132.927	126.169	103.228	164.085	174.933	172.088	172.088	130.762	138.921	80.306	71.737	1953.34
14	Area (Ha)													260												
15	Water Requirement in MCM	0.079	0.082	0.033	0.032	0.040	0.040	0.079	0.081	0.237	0.237	0.000	0.000	0.324	0.346	0.328	0.268	0.427	0.455	0.447	0.447	0.340	0.361	0.209	0.187	**5.08**
16	Discharge in m3/sec	**0.061**	**0.059**	**0.025**	**0.023**	**0.031**	**0.031**	**0.061**	**0.059**	**0.183**	**0.183**	**0.000**	**0.000**	**0.250**	**0.250**	**0.253**	**0.239**	**0.329**	**0.329**	**0.345**	**0.345**	**0.262**	**0.261**	**0.161**	**0.144**	
Note : Irrigation cut days = 15 days before harvest																										

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Peak Discharge Table for Turtha canal

No	Particulars	January		February		March		April		May		June		July		August		September		October		November		December		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
For Khariff Season																										
	Paddy											0.000	0.158	0.292	0.125	0.119	0.114	0.085	0.085	0.119						
	Light											0.113	0.034	0.141	0.264	0.300	0.296	0.151	0.000	0.010						
For Rabi Season																										
	Paddy	0.002	0.128	0.232	0.118	0.132	0.132	0.117	0.117																	
	Light	0.103	0.096	0.141	0.179	0.209	0.209	0.171	0.122																	
Perrinial																										
	Sugarcane	0.063	0.101	0.125	0.125	0.146	0.146	0.154	0.154	0.141	0.140	0.071	0.071	0.045	0.044	0.008	0.007	0.007	0.007	0.029	0.039	0.070	0.070			
	Garden	0.250	0.250	0.253	0.239	0.329	0.329	0.345	0.345	0.262	0.261	0.161	0.144	0.061	0.059	0.025	0.023	0.031	0.031	0.061	0.059	0.183	0.183	0.000	0.000	
Total		0.42	0.57	0.75	0.66	0.82	0.82	0.79	0.74	0.40	0.40	0.35	0.41	0.54	0.49	0.45	0.44	0.27	0.12	0.22	0.10	0.25	0.25	0.00	0.00	**0.82**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Name of the Canal: Ramsagar Canal									Unit: MCM				Cropped Area : 1024 ha
No	Khariff				Rabi				Perennial				Total WR in MCM
	Paddy	WR in MCM	Jowar	WR in MCM	Paddy	WR in MCM	Groundnut	WR in MCM	Sugarcane	WR in MCM	Garden (Banana)	WR in MCM	
Jun	98	0.18	440	0.182					50	0.09	85	0.129	0.59
Jul	98	0.49	440	0.523					50	0.06	85	0.052	1.13
Aug	98	0.28	440	0.762					50	0.01	85	0.021	1.07
Sep	98	0.20	440	0.186					50	0.01	85	0.026	0.42
Oct	98	0.14	440	0.012					50	0.05	85	0.053	0.25
Nov									50	0.09	85	0.155	0.25
Dec											85	0.000	0.00
Jan					75	0.18	276	0.45	50	0.11	85	0.219	0.96
Feb					75	0.43	276	0.64	50	0.15	85	0.195	1.42
Mar					75	0.35	276	0.94	50	0.20	85	0.288	1.77
Apr					75	0.30	276	0.64	50	0.20	85	0.293	1.43
May										0.19	85	0.229	0.42
Total in MCM		**1.28**		**1.67**		**1.27**		**2.66**		**1.15**		**1.66**	**9.69**
Total in TMC		**0.05**		**0.06**		**0.04**		**0.09**		**0.04**		**0.06**	**0.34**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

IMD Station : Bellary **Agro climatic zone : 3**

Canal : Ramsagar **Duration: 107 days** **Crop : Paddy = 98 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc			1.1	1.1	1.1	1.05	1.05	1.05	1.05	
4	ETc (mm)			82.83	88.35	81.35	82.82	72.61	72.61	62.69	
5	Nursery (mm)	28.00	16.00								
6	Land preparation (mm)		150								
7	Transplantation (mm)			125							
8	Percolation @ 3mm/day (mm)			45.00	48.00	45.00	48.00	45.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	252.83	136.35	126.35	130.82	117.61	117.61	107.69	1183.25
10	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	466.13
11	Eff RF (mm) from table		64.82		71.78		79.01		110.78	37.80	
		32.41	32.41	34.45	37.33	37.92	41.09	55.39	55.39	18.90	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	31.44	31.44	33.42	36.21	36.79	39.85	53.73	53.73	18.33	
13	NIR for Nursery (mm)	0.00	0.00								
14	NIR for other period (mm)		118.56	219.41	100.15	89.56	90.97	63.88	63.88	89.35	835.76
15	Field Irrigation requirement FIR = NIR/0.85		139.49	258.13	117.82	105.36	107.03	75.15	75.15	105.12	
16	GIR for nursery (mm) = GIR=FIR/0.75	0.00	0.00								
17	GIR for other period (mm) = GIR=FIR/0.75		185.98	344.17	157.09	140.48	142.70	100.20	100.20	140.16	1310.99
18	Area (Ha) for nursery	9.80	9.80								
19	Area (Ha) for other period					98					
20	Water Requirement for nursery in MCM	0.000	0.000								
21	WR for other period in MCM		0.182	0.337	0.154	0.138	0.140	0.098	0.098	0.137	
22	Total Water requirement in MCM	0.000	0.182	0.337	0.154	0.138	0.140	0.098	0.098	0.137	**1.28**
23	Discharge in m^3/sec	**0.000**	**0.141**	**0.260**	**0.111**	**0.106**	**0.101**	**0.076**	**0.076**	**0.106**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Ramsagar **Duration: 120 days** **Crop : Jowar = 440 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc		0.35	0.58	0.81	1.05	1.05	1.05	0.70	0.53	
4	ETc (mm)		29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	
5	Pre sowing requirement (mm)	40.00									
6	Gross Water Requirement (mm)	40.00	29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	491.10
7	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	409.83
8	Monthy Eff RF (mm) from table		50.57		52.34		78.40		107.14	31.21	
9	Eff RF (mm) from table	25.29	25.29	25.12	27.21	37.63	40.77	53.57	53.57	31.21	
10	(0.97 * Effective Rainfall) mm at 50% chance of occurance	24.53	24.53	24.37	26.40	36.50	39.55	51.97	51.97	30.27	
11	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 10)	15.47	4.71	19.31	38.66	41.14	43.28	20.64	0.00	1.37	184.59
12	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	23.80	7.25	29.70	59.48	63.30	66.58	31.76	0.00	2.11	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	31.74	9.67	39.60	79.31	84.40	88.77	42.34	0.00	2.81	378.64
14	Area (Ha)	440									
15	Water Requirement in MCM	0.140	0.043	0.174	0.349	0.371	0.391	0.186	0.000	0.012	**1.67**
16	Discharge in m3/sec	**0.108**	**0.033**	**0.134**	**0.252**	**0.287**	**0.283**	**0.144**	**0.000**	**0.010**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Agro climatic zone : 3

Canal : Ramsagar **Duration: 120 days** **Crop : Paddy = 75 ha**

Season : Rabi **Sowing time: Jan-01** **IMD Station : Bellary**

No.	Particulars	Jan		Feb		March		April		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc			1.25	1.25	1.25	1.25	1.00	1.00	
4	ETc (mm)			86.06	74.59	103.31	110.20	90.45	90.45	
5	Nursery (mm)	28.00	16.00							
6	Land preparation		150							
7	Transplantation			125						
8	Percolation @ 3 mm/day(mm)			45.00	39.00	45.00	48.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	256.06	113.59	148.31	158.20	135.45	135.45	1141.06
10	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
11	Eff RF (mm) from table		1.19		1.05		6.03		13.52	
		0.5712	0.62	0.56	0.49	2.89	3.14	6.76	6.76	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.55	0.60	0.54	0.47	2.81	3.04	6.56	6.56	
13	NIR for nusery (mm)	27.45	15.40							
14	NIR for other period (mm) (6 - 12)		149.40	255.52	113.11	145.50	155.16	128.89	128.89	1076.48
15	Field Irrigation Requirement FIR (mm) = NIR/0.85		175.76	300.61	133.08	171.18	182.54	151.64	151.64	
16	GIR for nursery	36.59	20.53							
17	Gross Irrigation Requirement GIR (mm) = FIR/0.75		234.35	400.81	177.44	228.24	243.39	202.18	202.18	1688.60
18	Area (Ha) for nursery	7.50	7.50							
19	Area (Ha) for other period					75				
20	Water Requirement for nursery	0.003	0.002							
21	Water Requirement in MCM		0.176	0.301	0.133	0.171	0.183	0.152	0.152	
22	Total water requirement in MCM	0.003	0.177	0.301	0.133	0.171	0.183	0.152	0.152	**1.27**
23	Discharge in m3/sec	**0.002**	**0.128**	**0.232**	**0.118**	**0.132**	**0.132**	**0.117**	**0.117**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Ramsagar **Crop : Groundnut = 276 ha**

Season : Rabi **Duration: 120 days**

No.	Particulars	Jan		Feb		Mar		Apr		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc		0.67	0.79	1	1	1.00	0.79	0.58	
4	ETc (mm)		39.77	54.39	59.67	82.65	88.16	71.46	52.46	
5	Pre sowing requirement (mm)	40.00								
6	Gross Water Requirement (mm)	40.00	39.77	54.39	59.67	82.65	88.16	71.46	52.46	488.56
7	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
8	Eff RF (mm) from table		0.99		0.88		5.71		12.07	
		0.48	0.51	0.47	0.41	2.74	2.97	6.04	6.04	
9	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.46	0.50	0.46	0.40	2.66	2.88	5.85	5.85	
10	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 9)	39.54	39.27	53.93	59.27	79.99	85.28	65.60	46.61	469.50
11	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	60.83	60.42	82.98	91.19	123.06	131.20	100.93	71.70	
12	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.11	80.56	110.64	121.59	164.08	174.93	134.57	95.60	963.08
13	Area (Ha)	276								
14	Water Requirement in MCM	0.224	0.222	0.305	0.336	0.453	0.483	0.371	0.264	**2.66**
15	Discharge in m^3/sec	**0.173**	**0.161**	**0.236**	**0.299**	**0.349**	**0.349**	**0.287**	**0.204**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Ramsagar **Crop :** Sugarcane = 50 ha **Duration :** 304 days

Season : Perennial **Sowing time:** Jan-01

No	Particulars	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II			
1	No of Days	15	16	15	13	15	16	15	15	15	16	15	15	15	16	15	16	15	15	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	
3	Crop Factor, Kc		1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	0.88	0.88	0.70	0.70	0.48	0.48	0.78	0.78	0.93	1.05	1.05	1.05	
4	ETc (mm)		68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	
5	Plant use (Pre-sowing) mm	40.00																						
7	Gross Water Requirement (mm)	40.00	68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	1554.26
8	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	20.66	22.39	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	54.04	58.55	15.04	15.04	620.87
9	Monthy Eff RF (mm) from table		1.00		0.95		5.99		14.01		41.44		58.50		52.35		65.21		101.50		80.53		22.06	
10	Eff RF (mm) from table	0.48	0.52	0.51	0.44	2.88	3.29	7.01	7.01	19.89	21.55	29.25	29.25	25.13	27.22	31.30	33.91	50.75	50.75	38.66	41.88	11.03	11.03	
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.47	0.50	0.49	0.43	2.79	3.20	6.79	6.79	19.29	20.90	28.37	28.37	24.37	26.41	30.36	32.89	49.23	49.23	37.50	40.62	10.70	10.70	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	39.53	67.76	78.68	68.19	92.26	98.19	97.22	97.22	89.04	94.65	45.15	45.15	28.34	29.82	5.13	4.97	4.71	4.71	18.02	26.24	44.43	44.43	1123.85
13	Field Irrigation Requirement = FIR = NIR/0.65	60.82	104.25	121.05	104.91	141.94	151.06	149.57	149.57	136.98	145.62	69.47	69.47	43.59	45.87	7.90	7.65	7.24	7.24	27.73	40.37	68.35	68.35	
14	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.10	138.99	161.40	139.88	189.25	201.41	199.43	199.43	182.64	194.15	92.62	92.62	58.12	61.17	10.53	10.19	9.66	9.66	36.97	53.83	91.13	91.13	2305.32
15	Area (Ha)	50																						
16	Water Requirement in MCM	0.041	0.069	0.081	0.070	0.095	0.101	0.100	0.100	0.091	0.097	0.046	0.046	0.029	0.031	0.005	0.005	0.005	0.005	0.018	0.027	0.046	0.046	**1.15**
17	Discharge in m3/sec	**0.031**	**0.050**	**0.062**	**0.062**	**0.073**	**0.073**	**0.077**	**0.077**	**0.070**	**0.070**	**0.036**	**0.036**	**0.022**	**0.022**	**0.004**	**0.004**	**0.004**	**0.004**	**0.014**	**0.019**	**0.035**	**0.035**	

Note : Irrigation cut days = 15 days before harvest

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Ramsagar **Crop : Garden (Banana) = 85 ha** **Duration : 365 days**

Season : Perennial **Sowing time: Jul-01**

No	Particulars	Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	16	15	15	15	16	15	15	15	16	15	16	15	13	15	16	15	15	15	16	15	15	
2	ETo (mm)	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	50.25	53.60	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	
3	Crop Factor, Kc	0.50	0.50	0.50	0.50	0.85	0.85	0.85	0.85	1.05	1.05	1.05	1.05	1.10	1.10	0.90	0.85	1.00	1.00	1.00	1.00	0.85	0.85	0.80	0.75	
4	ETc (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	
7	Gross Water Requirement (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	1481.83
8	Rainfall (mm)	34.5	37.3	49.3	53.4	79.7	79.7	54.0	58.5	15.0	15.0	4.0	4.4	0.7	0.6	0.6	0.6	3.3	3.6	8.0	8.0	20.7	22.4	38.0	38.0	629.16
9	Monthy Eff RF (mm) from table		49.25		66.30		105.66		77.03		22.06		6.15		0.98		0.88		5.71		13.52		35.06		57.09	
10	Eff RF (mm) from table	23.64	25.61	31.83	34.48	52.83	52.83	36.97	40.05	11.03	11.03	2.95	3.20	0.47	0.51	0.47	0.41	2.74	2.97	6.76	6.76	16.83	18.23	28.55	28.55	363.94
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	22.93	24.84	30.87	33.44	51.24	51.24	35.86	38.85	10.70	10.70	2.86	3.10	0.46	0.49	0.46	0.40	2.66	2.88	6.56	6.56	16.32	17.68	27.69	27.69	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	14.72	15.32	6.10	6.00	7.53	7.53	14.88	15.28	44.43	44.43	0.00	0.00	60.76	64.80	61.51	50.32	79.99	85.28	83.89	83.89	63.75	67.72	39.15	34.97	952.26
	Field Irrigation Requirement = FIR = NIR/0.65	22.65	23.57	9.39	9.23	11.59	11.59	22.89	23.50	68.35	68.35	0.00	0.00	93.47	99.69	94.63	77.42	123.06	131.20	129.07	129.07	98.07	104.19	60.23	53.80	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	30.196	31.425	12.522	12.302	15.451	15.451	30.526	31.335	91.130	91.130	0.000	0.000	124.633	132.927	126.169	103.228	164.085	174.933	172.088	172.088	130.762	138.921	80.306	71.737	1953.34
14	Area (Ha)													85												
15	Water Requirement in MCM	0.026	0.027	0.011	0.010	0.013	0.013	0.026	0.027	0.077	0.077	0.000	0.000	0.106	0.113	0.107	0.088	0.139	0.149	0.146	0.146	0.111	0.118	0.068	0.061	**1.66**
16	Discharge in m3/sec	**0.020**	**0.019**	**0.008**	**0.008**	**0.010**	**0.010**	**0.020**	**0.019**	**0.060**	**0.060**	**0.000**	**0.000**	**0.082**	**0.082**	**0.083**	**0.078**	**0.108**	**0.108**	**0.113**	**0.113**	**0.086**	**0.085**	**0.053**	**0.047**	
Note : Irrigation cut days = 15 days before harvest																										

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Peak Discharge Table for Ramsagar canal

No	Particulars	January		February		March		April		May		June		July		August		September		October		November		December		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
For Khariff Season																										
	Paddy											0.000	0.141	0.260	0.111	0.106	0.101	0.076	0.076	0.106						
	Light											0.108	0.033	0.134	0.252	0.287	0.283	0.144	0.000	0.010						
For Rabi Season																										
	Paddy	0.002	0.128	0.232	0.118	0.132	0.132	0.117	0.117																	
	Light	0.173	0.161	0.236	0.299	0.349	0.349	0.287	0.204																	
Perrinial																										
	Sugarcane	0.031	0.050	0.062	0.062	0.073	0.073	0.077	0.077	0.070	0.070	0.036	0.036	0.022	0.022	0.004	0.004	0.004	0.004	0.014	0.019	0.035	0.035			
	Garden	0.082	0.082	0.083	0.078	0.108	0.108	0.113	0.113	0.086	0.085	0.053	0.047	0.020	0.019	0.008	0.008	0.010	0.010	0.020	0.019	0.060	0.060	0.000	0.000	
Total		0.29	0.42	0.61	0.56	0.66	0.66	0.59	0.51	0.16	0.16	0.20	0.26	0.44	0.41	0.41	0.39	0.23	0.09	0.15	0.04	0.09	0.09	0.00	0.00	**0.66**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Name of the Canal: Kampli Canal									Unit: MCM		Cropped Area:		894 ha
No	Khariff				Rabi				Perennial				Total WR in MCM
	Paddy	WR in MCM	Jowar	WR in MCM	Paddy	WR in MCM	Groundnut	WR in MCM	Sugarcane	WR in MCM	Garden (Banana)	WR in MCM	
Jun	152	0.28	301	0.125					60	0.11	104	0.158	0.68
Jul	152	0.76	301	0.358					60	0.07	104	0.064	1.26
Aug	152	0.43	301	0.521					60	0.01	104	0.026	0.99
Sep	152	0.30	301	0.127					60	0.01	104	0.032	0.48
Oct	152	0.21	301	0.008					60	0.05	104	0.064	0.34
Nov									60	0.11	104	0.190	0.30
Dec											104	0.000	0.00
Jan					152	0.36	125	0.20	60	0.13	104	0.268	0.97
Feb					152	0.88	125	0.29	60	0.18	104	0.239	1.59
Mar					152	0.72	125	0.42	60	0.23	104	0.353	1.73
Apr					152	0.61	125	0.29	60	0.24	104	0.358	1.50
May										0.23	104	0.280	0.51
Total in MCM		**1.99**		**1.14**		**2.58**		**1.20**		**1.38**		**2.03**	**10.33**
Total in TMC		**0.07**		**0.04**		**0.09**		**0.04**		**0.05**		**0.07**	**0.36**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

IMD Station : Bellary **Agro climatic zone : 3**

Canal : Kampli **Duration: 107 days** **Crop : Paddy = 152 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc			1.1	1.1	1.1	1.05	1.05	1.05	1.05	
4	ETc (mm)			82.83	88.35	81.35	82.82	72.61	72.61	62.69	
5	Nursery (mm)	28.00	16.00								
6	Land preparation (mm)		150								
7	Transplantation (mm)			125							
8	Percolation @ 3mm/day (mm)			45.00	48.00	45.00	48.00	45.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	252.83	136.35	126.35	130.82	117.61	117.61	107.69	1183.25
10	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	466.13
11	Eff RF (mm) from table		64.82		71.78		79.01		110.78	37.80	
		32.41	32.41	34.45	37.33	37.92	41.09	55.39	55.39	18.90	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	31.44	31.44	33.42	36.21	36.79	39.85	53.73	53.73	18.33	
13	NIR for Nursery (mm)	0.00	0.00								
14	NIR for other period (mm)		118.56	219.41	100.15	89.56	90.97	63.88	63.88	89.35	835.76
15	Field Irrigation requirement FIR = NIR/0.85		139.49	258.13	117.82	105.36	107.03	75.15	75.15	105.12	
16	GIR for nursery (mm) = GIR=FIR/0.75	0.00	0.00								
17	GIR for other period (mm) = GIR=FIR/0.75		185.98	344.17	157.09	140.48	142.70	100.20	100.20	140.16	1310.99
18	Area (Ha) for nursery	15.20	15.20								
19	Area (Ha) for other period	152									
20	Water Requirement for nursery in MCM	0.000	0.000								
21	WR for other period in MCM		0.283	0.523	0.239	0.214	0.217	0.152	0.152	0.213	
22	Total Water requirement in MCM	0.000	0.283	0.523	0.239	0.214	0.217	0.152	0.152	0.213	**1.99**
23	Discharge in m^3/sec	**0.000**	**0.218**	**0.404**	**0.173**	**0.165**	**0.157**	**0.118**	**0.118**	**0.164**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Kampli **Duration: 120 days** **Crop : Jowar = 301 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc		0.35	0.58	0.81	1.05	1.05	1.05	0.70	0.53	
4	ETc (mm)		29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	
5	Pre sowing requirement (mm)	40.00									
6	Gross Water Requirement (mm)	40.00	29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	491.10
7	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	409.83
8	Monthy Eff RF (mm) from table		50.57		52.34		78.40		107.14	31.21	
9	Eff RF (mm) from table	25.29	25.29	25.12	27.21	37.63	40.77	53.57	53.57	31.21	
10	(0.97 * Effective Rainfall) mm at 50% chance of occurance	24.53	24.53	24.37	26.40	36.50	39.55	51.97	51.97	30.27	
11	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 10)	15.47	4.71	19.31	38.66	41.14	43.28	20.64	0.00	1.37	184.59
12	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	23.80	7.25	29.70	59.48	63.30	66.58	31.76	0.00	2.11	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	31.74	9.67	39.60	79.31	84.40	88.77	42.34	0.00	2.81	378.64
14	Area (Ha)	301									
15	Water Requirement in MCM	0.096	0.029	0.119	0.239	0.254	0.267	0.127	0.000	0.008	**1.14**
16	Discharge in m3/sec	**0.074**	**0.022**	**0.092**	**0.173**	**0.196**	**0.193**	**0.098**	**0.000**	**0.007**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Agro climatic zone : 3

Canal : Kampli **Duration: 120 days** **Crop : Paddy = 152 ha**

Season : Rabi **Sowing time: Jan-01** **IMD Station : Bellary**

No.	Particulars	Jan		Feb		March		April		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc			1.25	1.25	1.25	1.25	1.00	1.00	
4	ETc (mm)			86.06	74.59	103.31	110.20	90.45	90.45	
5	Nursery (mm)	28.00	16.00							
6	Land preparation		150							
7	Transplantation			125						
8	Percolation @ 3 mm/day(mm)			45.00	39.00	45.00	48.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	256.06	113.59	148.31	158.20	135.45	135.45	1141.06
10	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
11	Eff RF (mm) from table		1.19		1.05		6.03		13.52	
		0.5712	0.62	0.56	0.49	2.89	3.14	6.76	6.76	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.55	0.60	0.54	0.47	2.81	3.04	6.56	6.56	
13	NIR for nusery (mm)	27.45	15.40							
14	NIR for other period (mm) (6 - 12)		149.40	255.52	113.11	145.50	155.16	128.89	128.89	1076.48
15	Field Irrigation Requirement FIR (mm) = NIR/0.85		175.76	300.61	133.08	171.18	182.54	151.64	151.64	
16	GIR for nursery	36.59	20.53							
17	Gross Irrigation Requirement GIR (mm) = FIR/0.75		234.35	400.81	177.44	228.24	243.39	202.18	202.18	1688.60
18	Area (Ha) for nursery	15.20	15.20							
19	Area (Ha) for other period					152				
20	Water Requirement for nursery	0.006	0.003							
21	Water Requirement in MCM		0.356	0.609	0.270	0.347	0.370	0.307	0.307	
22	Total water requirement in MCM	0.006	0.359	0.609	0.270	0.347	0.370	0.307	0.307	**2.58**
23	Discharge in m3/sec	**0.004**	**0.260**	**0.470**	**0.240**	**0.268**	**0.268**	**0.237**	**0.237**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Kampli **Crop : Groundnut = 125 ha**

Season : Rabi **Duration: 120 days**

No.	Particulars	Jan		Feb		Mar		Apr		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc		0.67	0.79	1	1	1.00	0.79	0.58	
4	ETc (mm)		39.77	54.39	59.67	82.65	88.16	71.46	52.46	
5	Pre sowing requirement (mm)	40.00								
6	Gross Water Requirement (mm)	40.00	39.77	54.39	59.67	82.65	88.16	71.46	52.46	488.56
7	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
8	Eff RF (mm) from table		0.99		0.88		5.71		12.07	
		0.48	0.51	0.47	0.41	2.74	2.97	6.04	6.04	
9	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.46	0.50	0.46	0.40	2.66	2.88	5.85	5.85	
10	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 9)	39.54	39.27	53.93	59.27	79.99	85.28	65.60	46.61	469.50
11	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	60.83	60.42	82.98	91.19	123.06	131.20	100.93	71.70	
12	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.11	80.56	110.64	121.59	164.08	174.93	134.57	95.60	963.08
13	Area (Ha)	125								
14	Water Requirement in MCM	0.101	0.101	0.138	0.152	0.205	0.219	0.168	0.120	**1.20**
15	Discharge in m^3/sec	**0.078**	**0.073**	**0.107**	**0.135**	**0.158**	**0.158**	**0.130**	**0.092**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Kampli **Crop : Sugarcane = 60 ha** **Duration : 304 days**

Season : Perennial **Sowing time: Jan-01**

No	Particulars	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II			
1	No of Days	15	16	15	13	15	16	15	15	15	16	15	15	15	16	15	16	15	15	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	
3	Crop Factor, Kc		1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	0.88	0.88	0.70	0.70	0.48	0.48	0.78	0.78	0.93	1.05	1.05	1.05	
4	ETc (mm)		68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	
5	Plant use (Pre-sowing) mm	40.00																						
7	Gross Water Requirement (mm)	40.00	68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	1554.26
8	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	20.66	22.39	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	54.04	58.55	15.04	15.04	620.87
9	Monthy Eff RF (mm) from table		1.00		0.95		5.99		14.01		41.44		58.50		52.35		65.21		101.50		80.53		22.06	
10	Eff RF (mm) from table	0.48	0.52	0.51	0.44	2.88	3.29	7.01	7.01	19.89	21.55	29.25	29.25	25.13	27.22	31.30	33.91	50.75	50.75	38.66	41.88	11.03	11.03	
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.47	0.50	0.49	0.43	2.79	3.20	6.79	6.79	19.29	20.90	28.37	28.37	24.37	26.41	30.36	32.89	49.23	49.23	37.50	40.62	10.70	10.70	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	39.53	67.76	78.68	68.19	92.26	98.19	97.22	97.22	89.04	94.65	45.15	45.15	28.34	29.82	5.13	4.97	4.71	4.71	18.02	26.24	44.43	44.43	1123.85
13	Field Irrigation Requirement = FIR = NIR/0.65	60.82	104.25	121.05	104.91	141.94	151.06	149.57	149.57	136.98	145.62	69.47	69.47	43.59	45.87	7.90	7.65	7.24	7.24	27.73	40.37	68.35	68.35	
14	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.10	138.99	161.40	139.88	189.25	201.41	199.43	199.43	182.64	194.15	92.62	92.62	58.12	61.17	10.53	10.19	9.66	9.66	36.97	53.83	91.13	91.13	2305.32
15	Area (Ha)	60																						
16	Water Requirement in MCM	0.049	0.083	0.097	0.084	0.114	0.121	0.120	0.120	0.110	0.116	0.056	0.056	0.035	0.037	0.006	0.006	0.006	0.006	0.022	0.032	0.055	0.055	**1.38**
17	Discharge in m3/sec	**0.038**	**0.060**	**0.075**	**0.075**	**0.088**	**0.087**	**0.092**	**0.092**	**0.085**	**0.084**	**0.043**	**0.043**	**0.027**	**0.027**	**0.005**	**0.004**	**0.004**	**0.004**	**0.017**	**0.023**	**0.042**	**0.042**	

Note : Irrigation cut days = 15 days before harvest

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Kampli **Crop : Garden (Banana) = 104 ha** **Duration : 365 days**

Season : Perennial **Sowing time: Jul-01**

No	Particulars	Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	16	15	15	15	16	15	15	15	16	15	16	15	13	15	16	15	15	15	16	15	15	
2	ETo (mm)	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	50.25	53.60	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	
3	Crop Factor, Kc	0.50	0.50	0.50	0.50	0.85	0.85	0.85	0.85	1.05	1.05	1.05	1.05	1.10	1.10	0.90	0.85	1.00	1.00	1.00	1.00	0.85	0.85	0.80	0.75	
4	ETc (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	
7	Gross Water Requirement (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	1481.83
8	Rainfall (mm)	34.5	37.3	49.3	53.4	79.7	79.7	54.0	58.5	15.0	15.0	4.0	4.4	0.7	0.6	0.6	0.6	3.3	3.6	8.0	8.0	20.7	22.4	38.0	38.0	629.16
9	Monthy Eff RF (mm) from table		49.25		66.30		105.66		77.03		22.06		6.15		0.98		0.88		5.71		13.52		35.06		57.09	
10	Eff RF (mm) from table	23.64	25.61	31.83	34.48	52.83	52.83	36.97	40.05	11.03	11.03	2.95	3.20	0.47	0.51	0.47	0.41	2.74	2.97	6.76	6.76	16.83	18.23	28.55	28.55	363.94
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	22.93	24.84	30.87	33.44	51.24	51.24	35.86	38.85	10.70	10.70	2.86	3.10	0.46	0.49	0.46	0.40	2.66	2.88	6.56	6.56	16.32	17.68	27.69	27.69	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	14.72	15.32	6.10	6.00	7.53	7.53	14.88	15.28	44.43	44.43	0.00	0.00	60.76	64.80	61.51	50.32	79.99	85.28	83.89	83.89	63.75	67.72	39.15	34.97	952.26
	Field Irrigation Requirement = FIR = NIR/0.65	22.65	23.57	9.39	9.23	11.59	11.59	22.89	23.50	68.35	68.35	0.00	0.00	93.47	99.69	94.63	77.42	123.06	131.20	129.07	129.07	98.07	104.19	60.23	53.80	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	30.196	31.425	12.522	12.302	15.451	15.451	30.526	31.335	91.130	91.130	0.000	0.000	124.633	132.927	126.169	103.228	164.085	174.933	172.088	172.088	130.762	138.921	80.306	71.737	1953.34
14	Area (Ha)													104												
15	Water Requirement in MCM	0.031	0.033	0.013	0.013	0.016	0.016	0.032	0.033	0.095	0.095	0.000	0.000	0.130	0.138	0.131	0.107	0.171	0.182	0.179	0.179	0.136	0.144	0.084	0.075	**2.03**
16	Discharge in m3/sec	**0.024**	**0.024**	**0.010**	**0.009**	**0.012**	**0.012**	**0.024**	**0.024**	**0.073**	**0.073**	**0.000**	**0.000**	**0.100**	**0.100**	**0.101**	**0.096**	**0.132**	**0.132**	**0.138**	**0.138**	**0.105**	**0.105**	**0.064**	**0.058**	
Note : Irrigation cut days = 15 days before harvest																										

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Peak Discharge Table for Kampli canal

No	Particulars	January		February		March		April		May		June		July		August		September		October		November		December		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
For Khariff Season																										
	Paddy											0.000	0.218	0.404	0.173	0.165	0.157	0.118	0.118	0.164						
	Light											0.074	0.022	0.092	0.173	0.196	0.193	0.098	0.000	0.007						
For Rabi Season																										
	Paddy	0.004	0.260	0.470	0.240	0.268	0.268	0.237	0.237																	
	Light	0.078	0.073	0.107	0.135	0.158	0.158	0.130	0.092																	
Perrinial																										
	Sugarcane	0.038	0.060	0.075	0.075	0.088	0.087	0.092	0.092	0.085	0.084	0.043	0.043	0.027	0.027	0.005	0.004	0.004	0.004	0.017	0.023	0.042	0.042			
	Garden	0.100	0.100	0.101	0.096	0.132	0.132	0.138	0.138	0.105	0.105	0.064	0.058	0.024	0.024	0.010	0.009	0.012	0.012	0.024	0.024	0.073	0.073	0.000	0.000	
Total		0.22	0.49	0.75	0.55	0.65	0.64	0.60	0.56	0.19	0.19	0.18	0.34	0.55	0.40	0.38	0.36	0.23	0.13	0.21	0.05	0.12	0.12	0.00	0.00	**0.75**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Name of the Canal: Belgodhal Canal									Unit: MCM				Cropped Area : 328 ha
No	Khariff				Rabi				Perennial				Total WR in MCM
	Paddy	WR in MCM	Jowar	WR in MCM	Paddy	WR in MCM	Groundnut	WR in MCM	Sugarcane	WR in MCM	Garden (Banana)	WR in MCM	
Jun	41	0.08	112	0.046					17	0.03	40	0.061	0.21
Jul	41	0.21	112	0.133					17	0.02	40	0.025	0.38
Aug	41	0.12	112	0.194					17	0.00	40	0.010	0.32
Sep	41	0.08	112	0.047					17	0.00	40	0.012	0.15
Oct	41	0.06	112	0.003					17	0.02	40	0.025	0.10
Nov									17	0.03	40	0.073	0.10
Dec											40	0.000	0.00
Jan					35	0.08	83	0.13	17	0.04	40	0.103	0.36
Feb					35	0.20	83	0.19	17	0.05	40	0.092	0.54
Mar					35	0.17	83	0.28	17	0.07	40	0.136	0.65
Apr					35	0.14	83	0.19	17	0.07	40	0.138	0.54
May										0.06	40	0.108	0.17
Total in MCM		**0.54**		**0.42**		**0.59**		**0.80**		**0.39**		**0.78**	**3.53**
Total in TMC		**0.02**		**0.01**		**0.02**		**0.03**		**0.01**		**0.03**	**0.12**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

IMD Station : Bellary **Agro climatic zone : 3**

Canal : Belgodhal **Duration: 107 days** **Crop : Paddy = 41 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc			1.1	1.1	1.1	1.05	1.05	1.05	1.05	
4	ETc (mm)			82.83	88.35	81.35	82.82	72.61	72.61	62.69	
5	Nursery (mm)	28.00	16.00								
6	Land preparation (mm)		150								
7	Transplantation (mm)			125							
8	Percolation @ 3mm/day (mm)			45.00	48.00	45.00	48.00	45.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	252.83	136.35	126.35	130.82	117.61	117.61	107.69	1183.25
10	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	466.13
11	Eff RF (mm) from table		64.82		71.78		79.01		110.78	37.80	
		32.41	32.41	34.45	37.33	37.92	41.09	55.39	55.39	18.90	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	31.44	31.44	33.42	36.21	36.79	39.85	53.73	53.73	18.33	
13	NIR for Nursery (mm)	0.00	0.00								
14	NIR for other period (mm)		118.56	219.41	100.15	89.56	90.97	63.88	63.88	89.35	835.76
15	Field Irrigation requirement FIR = NIR/0.85		139.49	258.13	117.82	105.36	107.03	75.15	75.15	105.12	
16	GIR for nursery (mm) = GIR=FIR/0.75	0.00	0.00								
17	GIR for other period (mm) = GIR=FIR/0.75		185.98	344.17	157.09	140.48	142.70	100.20	100.20	140.16	1310.99
18	Area (Ha) for nursery	4.10	4.10								
19	Area (Ha) for other period					41					
20	Water Requirement for nursery in MCM	0.000	0.000								
21	WR for other period in MCM		0.076	0.141	0.064	0.058	0.059	0.041	0.041	0.057	
22	Total Water requirement in MCM	0.000	0.076	0.141	0.064	0.058	0.059	0.041	0.041	0.057	**0.54**
23	Discharge in m^3/sec	**0.000**	**0.059**	**0.109**	**0.047**	**0.044**	**0.042**	**0.032**	**0.032**	**0.044**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Belgodhal **Duration: 120 days** **Crop : Jowar = 112 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc		0.35	0.58	0.81	1.05	1.05	1.05	0.70	0.53	
4	ETc (mm)		29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	
5	Pre sowing requirement (mm)	40.00									
6	Gross Water Requirement (mm)	40.00	29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	491.10
7	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	409.83
8	Monthy Eff RF (mm) from table		50.57		52.34		78.40		107.14	31.21	
9	Eff RF (mm) from table	25.29	25.29	25.12	27.21	37.63	40.77	53.57	53.57	31.21	
10	(0.97 * Effective Rainfall) mm at 50% chance of occurance	24.53	24.53	24.37	26.40	36.50	39.55	51.97	51.97	30.27	
11	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 10)	15.47	4.71	19.31	38.66	41.14	43.28	20.64	0.00	1.37	184.59
12	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	23.80	7.25	29.70	59.48	63.30	66.58	31.76	0.00	2.11	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	31.74	9.67	39.60	79.31	84.40	88.77	42.34	0.00	2.81	378.64
14	Area (Ha)	112									
15	Water Requirement in MCM	0.036	0.011	0.044	0.089	0.095	0.099	0.047	0.000	0.003	**0.42**
16	Discharge in m3/sec	**0.027**	**0.008**	**0.034**	**0.064**	**0.073**	**0.072**	**0.037**	**0.000**	**0.002**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Agro climatic zone : 3

Canal : Belgodhal **Duration: 120 days** **Crop : Paddy = 35 ha**

Season : Rabi **Sowing time: Jan-01** **IMD Station : Bellary**

No.	Particulars	Jan		Feb		March		April		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc			1.25	1.25	1.25	1.25	1.00	1.00	
4	ETc (mm)			86.06	74.59	103.31	110.20	90.45	90.45	
5	Nursery (mm)	28.00	16.00							
6	Land preparation		150							
7	Transplantation			125						
8	Percolation @ 3 mm/day(mm)			45.00	39.00	45.00	48.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	256.06	113.59	148.31	158.20	135.45	135.45	1141.06
10	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
11	Eff RF (mm) from table		1.19		1.05		6.03		13.52	
		0.5712	0.62	0.56	0.49	2.89	3.14	6.76	6.76	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.55	0.60	0.54	0.47	2.81	3.04	6.56	6.56	
13	NIR for nusery (mm)	27.45	15.40							
14	NIR for other period (mm) (6 - 12)		149.40	255.52	113.11	145.50	155.16	128.89	128.89	1076.48
15	Field Irrigation Requirement FIR (mm) = NIR/0.85		175.76	300.61	133.08	171.18	182.54	151.64	151.64	
16	GIR for nursery	36.59	20.53							
17	Gross Irrigation Requirement GIR (mm) = FIR/0.75		234.35	400.81	177.44	228.24	243.39	202.18	202.18	1688.60
18	Area (Ha) for nursery	3.50	3.50							
19	Area (Ha) for other period					35				
20	Water Requirement for nursery	0.001	0.001							
21	Water Requirement in MCM		0.082	0.140	0.062	0.080	0.085	0.071	0.071	
22	Total water requirement in MCM	0.001	0.083	0.140	0.062	0.080	0.085	0.071	0.071	**0.59**
23	Discharge in m3/sec	**0.001**	**0.060**	**0.108**	**0.055**	**0.062**	**0.062**	**0.055**	**0.055**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Belgodhal **Crop : Groundnut = 83 ha**

Season : Rabi **Duration: 120 days**

No.	Particulars	Jan		Feb		Mar		Apr		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc		0.67	0.79	1	1	1.00	0.79	0.58	
4	ETc (mm)		39.77	54.39	59.67	82.65	88.16	71.46	52.46	
5	Pre sowing requirement (mm)	40.00								
6	Gross Water Requirement (mm)	40.00	39.77	54.39	59.67	82.65	88.16	71.46	52.46	488.56
7	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
8	Eff RF (mm) from table		0.99		0.88		5.71		12.07	
		0.48	0.51	0.47	0.41	2.74	2.97	6.04	6.04	
9	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.46	0.50	0.46	0.40	2.66	2.88	5.85	5.85	
10	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 9)	39.54	39.27	53.93	59.27	79.99	85.28	65.60	46.61	469.50
11	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	60.83	60.42	82.98	91.19	123.06	131.20	100.93	71.70	
12	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.11	80.56	110.64	121.59	164.08	174.93	134.57	95.60	963.08
13	Area (Ha)	83								
14	Water Requirement in MCM	0.067	0.067	0.092	0.101	0.136	0.145	0.112	0.079	**0.80**
15	Discharge in m^3/sec	**0.052**	**0.048**	**0.071**	**0.090**	**0.105**	**0.105**	**0.086**	**0.061**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Belgodhal **Crop : Sugarcane = 17 ha** **Duration : 304 days**

Season : Perennial **Sowing time: Jan-01**

No	Particulars	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II			
1	No of Days	15	16	15	13	15	16	15	15	15	16	15	15	15	16	15	16	15	15	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	
3	Crop Factor, Kc		1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	0.88	0.88	0.70	0.70	0.48	0.48	0.78	0.78	0.93	1.05	1.05	1.05	
4	ETc (mm)		68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	
5	Plant use (Pre-sowing) mm	40.00																						
7	Gross Water Requirement (mm)	40.00	68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	1554.26
8	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	20.66	22.39	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	54.04	58.55	15.04	15.04	620.87
9	Monthy Eff RF (mm) from table		1.00		0.95		5.99		14.01		41.44		58.50		52.35		65.21		101.50		80.53		22.06	
10	Eff RF (mm) from table	0.48	0.52	0.51	0.44	2.88	3.29	7.01	7.01	19.89	21.55	29.25	29.25	25.13	27.22	31.30	33.91	50.75	50.75	38.66	41.88	11.03	11.03	
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.47	0.50	0.49	0.43	2.79	3.20	6.79	6.79	19.29	20.90	28.37	28.37	24.37	26.41	30.36	32.89	49.23	49.23	37.50	40.62	10.70	10.70	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	39.53	67.76	78.68	68.19	92.26	98.19	97.22	97.22	89.04	94.65	45.15	45.15	28.34	29.82	5.13	4.97	4.71	4.71	18.02	26.24	44.43	44.43	1123.85
13	Field Irrigation Requirement = FIR = NIR/0.65	60.82	104.25	121.05	104.91	141.94	151.06	149.57	149.57	136.98	145.62	69.47	69.47	43.59	45.87	7.90	7.65	7.24	7.24	27.73	40.37	68.35	68.35	
14	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.10	138.99	161.40	139.88	189.25	201.41	199.43	199.43	182.64	194.15	92.62	92.62	58.12	61.17	10.53	10.19	9.66	9.66	36.97	53.83	91.13	91.13	2305.32
15	Area (Ha)	17																						
16	Water Requirement in MCM	0.014	0.024	0.027	0.024	0.032	0.034	0.034	0.034	0.031	0.033	0.016	0.016	0.010	0.010	0.002	0.002	0.002	0.002	0.006	0.009	0.015	0.015	**0.39**
17	Discharge in m3/sec	**0.011**	**0.017**	**0.021**	**0.021**	**0.025**	**0.025**	**0.026**	**0.026**	**0.024**	**0.024**	**0.012**	**0.012**	**0.008**	**0.008**	**0.001**	**0.001**	**0.001**	**0.001**	**0.005**	**0.007**	**0.012**	**0.012**	

Note : Irrigation cut days = 15 days before harvest

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Belgodhal **Crop : Garden (Banana) = 40 ha** **Duration : 365 days**

Season : Perennial **Sowing time: Jul-01**

No	Particulars	Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	16	15	15	15	16	15	15	15	16	15	16	15	13	15	16	15	15	15	16	15	15	
2	ETo (mm)	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	50.25	53.60	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	
3	Crop Factor, Kc	0.50	0.50	0.50	0.50	0.85	0.85	0.85	0.85	1.05	1.05	1.05	1.05	1.10	1.10	0.90	0.85	1.00	1.00	1.00	1.00	0.85	0.85	0.80	0.75	
4	ETc (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	
7	Gross Water Requirement (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	1481.83
8	Rainfall (mm)	34.5	37.3	49.3	53.4	79.7	79.7	54.0	58.5	15.0	15.0	4.0	4.4	0.7	0.6	0.6	0.6	3.3	3.6	8.0	8.0	20.7	22.4	38.0	38.0	629.16
9	Monthy Eff RF (mm) from table		49.25		66.30		105.66		77.03		22.06		6.15		0.98		0.88		5.71		13.52		35.06		57.09	
10	Eff RF (mm) from table	23.64	25.61	31.83	34.48	52.83	52.83	36.97	40.05	11.03	11.03	2.95	3.20	0.47	0.51	0.47	0.41	2.74	2.97	6.76	6.76	16.83	18.23	28.55	28.55	363.94
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	22.93	24.84	30.87	33.44	51.24	51.24	35.86	38.85	10.70	10.70	2.86	3.10	0.46	0.49	0.46	0.40	2.66	2.88	6.56	6.56	16.32	17.68	27.69	27.69	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	14.72	15.32	6.10	6.00	7.53	7.53	14.88	15.28	44.43	44.43	0.00	0.00	60.76	64.80	61.51	50.32	79.99	85.28	83.89	83.89	63.75	67.72	39.15	34.97	952.26
	Field Irrigation Requirement = FIR = NIR/0.65	22.65	23.57	9.39	9.23	11.59	11.59	22.89	23.50	68.35	68.35	0.00	0.00	93.47	99.69	94.63	77.42	123.06	131.20	129.07	129.07	98.07	104.19	60.23	53.80	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	30.196	31.425	12.522	12.302	15.451	15.451	30.526	31.335	91.130	91.130	0.000	0.000	124.633	132.927	126.169	103.228	164.085	174.933	172.088	172.088	130.762	138.921	80.306	71.737	1953.34
14	Area (Ha)													40												
15	Water Requirement in MCM	0.012	0.013	0.005	0.005	0.006	0.006	0.012	0.013	0.036	0.036	0.000	0.000	0.050	0.053	0.050	0.041	0.066	0.070	0.069	0.069	0.052	0.056	0.032	0.029	**0.78**
16	Discharge in m3/sec	**0.009**	**0.009**	**0.004**	**0.004**	**0.005**	**0.005**	**0.009**	**0.009**	**0.028**	**0.028**	**0.000**	**0.000**	**0.038**	**0.038**	**0.039**	**0.037**	**0.051**	**0.051**	**0.053**	**0.053**	**0.040**	**0.040**	**0.025**	**0.022**	
Note : Irrigation cut days = 15 days before harvest																										

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Peak Discharge Table for Belgodhal canal

No	Particulars	January		February		March		April		May		June		July		August		September		October		November		December		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
For Khariff Season																										
	Paddy											0.000	0.059	0.109	0.047	0.044	0.042	0.032	0.032	0.044						
	Light											0.027	0.008	0.034	0.064	0.073	0.072	0.037	0.000	0.002						
For Rabi Season																										
	Paddy	0.001	0.060	0.108	0.055	0.062	0.062	0.055	0.055																	
	Light	0.052	0.048	0.071	0.090	0.105	0.105	0.086	0.061																	
Perrinial																										
	Sugarcane	0.011	0.017	0.021	0.021	0.025	0.025	0.026	0.026	0.024	0.024	0.012	0.012	0.008	0.008	0.001	0.001	0.001	0.001	0.005	0.007	0.012	0.012			
	Garden	0.038	0.038	0.039	0.037	0.051	0.051	0.053	0.053	0.040	0.040	0.025	0.022	0.009	0.009	0.004	0.004	0.005	0.005	0.009	0.009	0.028	0.028	0.000	0.000	
Total		0.10	0.16	0.24	0.20	0.24	0.24	0.22	0.20	0.06	0.06	0.06	0.10	0.16	0.13	0.12	0.12	0.07	0.04	0.06	0.02	0.04	0.04	0.00	0.00	**0.24**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Name of the Canal: Sirguppa Canal									Unit: MCM				Cropped Area : 1344 ha
No	Khariff				Rabi				Perennial				Total WR in MCM
	Paddy	WR in MCM	Jowar	WR in MCM	Paddy	WR in MCM	Groundnut	WR in MCM	Sugarcane	WR in MCM	Garden (Banana)	WR in MCM	
Jun	165	0.31	476	0.197					90	0.17	30	0.046	0.72
Jul	165	0.83	476	0.566					90	0.11	30	0.018	1.52
Aug	165	0.47	476	0.824					90	0.02	30	0.007	1.32
Sep	165	0.33	476	0.202					90	0.02	30	0.009	0.56
Oct	165	0.23	476	0.013					90	0.08	30	0.019	0.34
Nov									90	0.16	30	0.055	0.22
Dec											30	0.000	0.00
Jan					202	0.48	381	0.62	90	0.20	30	0.077	1.38
Feb					202	1.17	381	0.88	90	0.27	30	0.069	2.39
Mar					202	0.95	381	1.29	90	0.35	30	0.102	2.70
Apr					202	0.82	381	0.88	90	0.36	30	0.103	2.16
May										0.34	30	0.081	0.42
Total in MCM		**2.16**		**1.80**		**3.42**		**3.67**		**2.07**		**0.59**	**13.72**
Total in TMC		**0.08**		**0.06**		**0.12**		**0.13**		**0.07**		**0.02**	**0.48**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

IMD Station : Bellary **Agro climatic zone : 3**

Canal : Sirguppa **Duration: 107 days** **Crop : Paddy = 165 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc			1.1	1.1	1.1	1.05	1.05	1.05	1.05	
4	ETc (mm)			82.83	88.35	81.35	82.82	72.61	72.61	62.69	
5	Nursery (mm)	28.00	16.00								
6	Land preparation (mm)		150								
7	Transplantation (mm)			125							
8	Percolation @ 3mm/day (mm)			45.00	48.00	45.00	48.00	45.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	252.83	136.35	126.35	130.82	117.61	117.61	107.69	1183.25
10	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	466.13
11	Eff RF (mm) from table		64.82		71.78		79.01		110.78	37.80	
		32.41	32.41	34.45	37.33	37.92	41.09	55.39	55.39	18.90	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	31.44	31.44	33.42	36.21	36.79	39.85	53.73	53.73	18.33	
13	NIR for Nursery (mm)	0.00	0.00								
14	NIR for other period (mm)		118.56	219.41	100.15	89.56	90.97	63.88	63.88	89.35	835.76
15	Field Irrigation requirement FIR = NIR/0.85		139.49	258.13	117.82	105.36	107.03	75.15	75.15	105.12	
16	GIR for nursery (mm) = GIR=FIR/0.75	0.00	0.00								
17	GIR for other period (mm) = GIR=FIR/0.75		185.98	344.17	157.09	140.48	142.70	100.20	100.20	140.16	1310.99
18	Area (Ha) for nursery	16.50	16.50								
19	Area (Ha) for other period					165					
20	Water Requirement for nursery in MCM	0.000	0.000								
21	WR for other period in MCM		0.307	0.568	0.259	0.232	0.235	0.165	0.165	0.231	
22	Total Water requirement in MCM	0.000	0.307	0.568	0.259	0.232	0.235	0.165	0.165	0.231	**2.16**
23	Discharge in m^3/sec	**0.000**	**0.237**	**0.438**	**0.188**	**0.179**	**0.170**	**0.128**	**0.128**	**0.178**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Sirguppa **Duration: 120 days** **Crop : Jowar = 476 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc		0.35	0.58	0.81	1.05	1.05	1.05	0.70	0.53	
4	ETc (mm)		29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	
5	Pre sowing requirement (mm)	40.00									
6	Gross Water Requirement (mm)	40.00	29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	491.10
7	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	409.83
8	Monthy Eff RF (mm) from table		50.57		52.34		78.40		107.14	31.21	
9	Eff RF (mm) from table	25.29	25.29	25.12	27.21	37.63	40.77	53.57	53.57	31.21	
10	(0.97 * Effective Rainfall) mm at 50% chance of occurance	24.53	24.53	24.37	26.40	36.50	39.55	51.97	51.97	30.27	
11	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 10)	15.47	4.71	19.31	38.66	41.14	43.28	20.64	0.00	1.37	184.59
12	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	23.80	7.25	29.70	59.48	63.30	66.58	31.76	0.00	2.11	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	31.74	9.67	39.60	79.31	84.40	88.77	42.34	0.00	2.81	378.64
14	Area (Ha)	476									
15	Water Requirement in MCM	0.151	0.046	0.189	0.377	0.402	0.423	0.202	0.000	0.013	**1.80**
16	Discharge in m3/sec	**0.117**	**0.036**	**0.145**	**0.273**	**0.310**	**0.306**	**0.156**	**0.000**	**0.010**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Agro climatic zone : 3

Canal : Sirguppa **Duration: 120 days** **Crop : Paddy = 202 ha**

Season : Rabi **Sowing time: Jan-01** **IMD Station : Bellary**

No.	Particulars	Jan		Feb		March		April		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc			1.25	1.25	1.25	1.25	1.00	1.00	
4	ETc (mm)			86.06	74.59	103.31	110.20	90.45	90.45	
5	Nursery (mm)	28.00	16.00							
6	Land preparation		150							
7	Transplantation			125						
8	Percolation @ 3 mm/day(mm)			45.00	39.00	45.00	48.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	256.06	113.59	148.31	158.20	135.45	135.45	1141.06
10	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
11	Eff RF (mm) from table		1.19		1.05		6.03		13.52	
		0.5712	0.62	0.56	0.49	2.89	3.14	6.76	6.76	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.55	0.60	0.54	0.47	2.81	3.04	6.56	6.56	
13	NIR for nusery (mm)	27.45	15.40							
14	NIR for other period (mm) (6 - 12)		149.40	255.52	113.11	145.50	155.16	128.89	128.89	1076.48
15	Field Irrigation Requirement FIR (mm) = NIR/0.85		175.76	300.61	133.08	171.18	182.54	151.64	151.64	
16	GIR for nursery	36.59	20.53							
17	Gross Irrigation Requirement GIR (mm) = FIR/0.75		234.35	400.81	177.44	228.24	243.39	202.18	202.18	1688.60
18	Area (Ha) for nursery	20.20	20.20							
19	Area (Ha) for other period					202				
20	Water Requirement for nursery	0.007	0.004							
21	Water Requirement in MCM		0.473	0.810	0.358	0.461	0.492	0.408	0.408	
22	Total water requirement in MCM	0.007	0.478	0.810	0.358	0.461	0.492	0.408	0.408	**3.42**
23	Discharge in m3/sec	**0.006**	**0.345**	**0.625**	**0.319**	**0.356**	**0.356**	**0.315**	**0.315**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Sirguppa **Crop : Groundnut = 381 ha**

Season : Rabi **Duration: 120 days**

No.	Particulars	Jan		Feb		Mar		Apr		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc		0.67	0.79	1	1	1.00	0.79	0.58	
4	ETc (mm)		39.77	54.39	59.67	82.65	88.16	71.46	52.46	
5	Pre sowing requirement (mm)	40.00								
6	Gross Water Requirement (mm)	40.00	39.77	54.39	59.67	82.65	88.16	71.46	52.46	488.56
7	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
8	Eff RF (mm) from table		0.99		0.88		5.71		12.07	
		0.48	0.51	0.47	0.41	2.74	2.97	6.04	6.04	
9	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.46	0.50	0.46	0.40	2.66	2.88	5.85	5.85	
10	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 9)	39.54	39.27	53.93	59.27	79.99	85.28	65.60	46.61	469.50
11	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	60.83	60.42	82.98	91.19	123.06	131.20	100.93	71.70	
12	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.11	80.56	110.64	121.59	164.08	174.93	134.57	95.60	963.08
13	Area (Ha)	381								
14	Water Requirement in MCM	0.309	0.307	0.422	0.463	0.625	0.666	0.513	0.364	**3.67**
15	Discharge in m^3/sec	**0.238**	**0.222**	**0.325**	**0.412**	**0.482**	**0.482**	**0.396**	**0.281**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Sirguppa **Crop : Sugarcane = 90 ha** **Duration : 304 days**

Season : Perennial **Sowing time: Jan-01**

No	Particulars	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II			
1	No of Days	15	16	15	13	15	16	15	15	15	16	15	15	15	16	15	16	15	15	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	
3	Crop Factor, Kc		1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	0.88	0.88	0.70	0.70	0.48	0.48	0.78	0.78	0.93	1.05	1.05	1.05	
4	ETc (mm)		68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	
5	Plant use (Pre-sowing) mm	40.00																						
7	Gross Water Requirement (mm)	40.00	68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	1554.26
8	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	20.66	22.39	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	54.04	58.55	15.04	15.04	620.87
9	Monthy Eff RF (mm) from table		1.00		0.95		5.99		14.01		41.44		58.50		52.35		65.21		101.50		80.53		22.06	
10	Eff RF (mm) from table	0.48	0.52	0.51	0.44	2.88	3.29	7.01	7.01	19.89	21.55	29.25	29.25	25.13	27.22	31.30	33.91	50.75	50.75	38.66	41.88	11.03	11.03	
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.47	0.50	0.49	0.43	2.79	3.20	6.79	6.79	19.29	20.90	28.37	28.37	24.37	26.41	30.36	32.89	49.23	49.23	37.50	40.62	10.70	10.70	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	39.53	67.76	78.68	68.19	92.26	98.19	97.22	97.22	89.04	94.65	45.15	45.15	28.34	29.82	5.13	4.97	4.71	4.71	18.02	26.24	44.43	44.43	1123.85
13	Field Irrigation Requirement = FIR = NIR/0.65	60.82	104.25	121.05	104.91	141.94	151.06	149.57	149.57	136.98	145.62	69.47	69.47	43.59	45.87	7.90	7.65	7.24	7.24	27.73	40.37	68.35	68.35	
14	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.10	138.99	161.40	139.88	189.25	201.41	199.43	199.43	182.64	194.15	92.62	92.62	58.12	61.17	10.53	10.19	9.66	9.66	36.97	53.83	91.13	91.13	2305.32
15	Area (Ha)	90																						
16	Water Requirement in MCM	0.073	0.125	0.145	0.126	0.170	0.181	0.179	0.179	0.164	0.175	0.083	0.083	0.052	0.055	0.009	0.009	0.009	0.009	0.033	0.048	0.082	0.082	**2.07**
17	Discharge in m3/sec	**0.056**	**0.090**	**0.112**	**0.112**	**0.131**	**0.131**	**0.138**	**0.138**	**0.127**	**0.126**	**0.064**	**0.064**	**0.040**	**0.040**	**0.007**	**0.007**	**0.007**	**0.007**	**0.026**	**0.035**	**0.063**	**0.063**	

Note : Irrigation cut days = 15 days before harvest

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Sirguppa **Crop : Garden (Banana) = 30 ha** **Duration : 365 days**

Season : Perennial **Sowing time: Jul-01**

No	Particulars	Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	16	15	15	15	16	15	15	15	16	15	16	15	13	15	16	15	15	15	16	15	15	
2	ETo (mm)	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	50.25	53.60	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	
3	Crop Factor, Kc	0.50	0.50	0.50	0.50	0.85	0.85	0.85	0.85	1.05	1.05	1.05	1.05	1.10	1.10	0.90	0.85	1.00	1.00	1.00	1.00	0.85	0.85	0.80	0.75	
4	ETc (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	
7	Gross Water Requirement (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	1481.83
8	Rainfall (mm)	34.5	37.3	49.3	53.4	79.7	79.7	54.0	58.5	15.0	15.0	4.0	4.4	0.7	0.6	0.6	0.6	3.3	3.6	8.0	8.0	20.7	22.4	38.0	38.0	629.16
9	Monthy Eff RF (mm) from table		49.25		66.30		105.66		77.03		22.06		6.15		0.98		0.88		5.71		13.52		35.06		57.09	
10	Eff RF (mm) from table	23.64	25.61	31.83	34.48	52.83	52.83	36.97	40.05	11.03	11.03	2.95	3.20	0.47	0.51	0.47	0.41	2.74	2.97	6.76	6.76	16.83	18.23	28.55	28.55	363.94
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	22.93	24.84	30.87	33.44	51.24	51.24	35.86	38.85	10.70	10.70	2.86	3.10	0.46	0.49	0.46	0.40	2.66	2.88	6.56	6.56	16.32	17.68	27.69	27.69	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	14.72	15.32	6.10	6.00	7.53	7.53	14.88	15.28	44.43	44.43	0.00	0.00	60.76	64.80	61.51	50.32	79.99	85.28	83.89	83.89	63.75	67.72	39.15	34.97	952.26
	Field Irrigation Requirement = FIR = NIR/0.65	22.65	23.57	9.39	9.23	11.59	11.59	22.89	23.50	68.35	68.35	0.00	0.00	93.47	99.69	94.63	77.42	123.06	131.20	129.07	129.07	98.07	104.19	60.23	53.80	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	30.196	31.425	12.522	12.302	15.451	15.451	30.526	31.335	91.130	91.130	0.000	0.000	124.633	132.927	126.169	103.228	164.085	174.933	172.088	172.088	130.762	138.921	80.306	71.737	1953.34
14	Area (Ha)													30												
15	Water Requirement in MCM	0.009	0.009	0.004	0.004	0.005	0.005	0.009	0.009	0.027	0.027	0.000	0.000	0.037	0.040	0.038	0.031	0.049	0.052	0.052	0.052	0.039	0.042	0.024	0.022	**0.59**
16	Discharge in m3/sec	**0.007**	**0.007**	**0.003**	**0.003**	**0.004**	**0.004**	**0.007**	**0.007**	**0.021**	**0.021**	**0.000**	**0.000**	**0.029**	**0.029**	**0.029**	**0.028**	**0.038**	**0.038**	**0.040**	**0.040**	**0.030**	**0.030**	**0.019**	**0.017**	
Note : Irrigation cut days = 15 days before harvest																										

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Peak Discharge Table for Sirguppa canal

No	Particulars	January		February		March		April		May		June		July		August		September		October		November		December		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
For Khariff Season																										
	Paddy											0.000	0.237	0.438	0.188	0.179	0.170	0.128	0.128	0.178						
	Light											0.117	0.036	0.145	0.273	0.310	0.306	0.156	0.000	0.010						
For Rabi Season																										
	Paddy	0.006	0.345	0.625	0.319	0.356	0.356	0.315	0.315																	
	Light	0.238	0.222	0.325	0.412	0.482	0.482	0.396	0.281																	
Perrinial																										
	Sugarcane	0.056	0.090	0.112	0.112	0.131	0.131	0.138	0.138	0.127	0.126	0.064	0.064	0.040	0.040	0.007	0.007	0.007	0.007	0.026	0.035	0.063	0.063			
	Garden	0.029	0.029	0.029	0.028	0.038	0.038	0.040	0.040	0.030	0.030	0.019	0.017	0.007	0.007	0.003	0.003	0.004	0.004	0.007	0.007	0.021	0.021	0.000	0.000	
Total		0.33	0.69	1.09	0.87	1.01	1.01	0.89	0.77	0.16	0.16	0.20	0.35	0.63	0.51	0.50	0.49	0.29	0.14	0.22	0.04	0.08	0.08	0.00	0.00	**1.09**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Name of the Canal: Deshnur Canal									Unit: MCM				Cropped Area: 815 ha
No	Khariff				Rabi				Perennial				Total WR in MCM
	Paddy	WR in MCM	Jowar	WR in MCM	Paddy	WR in MCM	Groundnut	WR in MCM	Sugarcane	WR in MCM	Garden (Banana)	WR in MCM	
Jun	188	0.35	224	0.093					55	0.10	10	0.015	0.56
Jul	188	0.94	224	0.266					55	0.07	10	0.006	1.28
Aug	188	0.53	224	0.388					55	0.01	10	0.002	0.93
Sep	188	0.38	224	0.095					55	0.01	10	0.003	0.49
Oct	188	0.26	224	0.006					55	0.05	10	0.006	0.33
Nov									55	0.10	10	0.018	0.12
Dec											10	0.000	0.00
Jan					121	0.29	217	0.35	55	0.12	10	0.026	0.79
Feb					121	0.70	217	0.50	55	0.17	10	0.023	1.39
Mar					121	0.57	217	0.74	55	0.21	10	0.034	1.56
Apr					121	0.49	217	0.50	55	0.22	10	0.034	1.24
May										0.21	10	0.027	0.23
Total in MCM		**2.46**		**0.85**		**2.05**		**2.09**		**1.27**		**0.20**	**8.92**
Total in TMC		**0.09**		**0.03**		**0.07**		**0.07**		**0.04**		**0.01**	**0.31**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

IMD Station : Bellary **Agro climatic zone : 3**

Canal : Deshnur **Duration: 107 days** **Crop : Paddy = 188 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc			1.1	1.1	1.1	1.05	1.05	1.05	1.05	
4	ETc (mm)			82.83	88.35	81.35	82.82	72.61	72.61	62.69	
5	Nursery (mm)	28.00	16.00								
6	Land preparation (mm)		150								
7	Transplantation (mm)			125							
8	Percolation @ 3mm/day (mm)			45.00	48.00	45.00	48.00	45.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	252.83	136.35	126.35	130.82	117.61	117.61	107.69	1183.25
10	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	466.13
11	Eff RF (mm) from table		64.82		71.78		79.01		110.78	37.80	
		32.41	32.41	34.45	37.33	37.92	41.09	55.39	55.39	18.90	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	31.44	31.44	33.42	36.21	36.79	39.85	53.73	53.73	18.33	
13	NIR for Nursery (mm)	0.00	0.00								
14	NIR for other period (mm)		118.56	219.41	100.15	89.56	90.97	63.88	63.88	89.35	835.76
15	Field Irrigation requirement FIR = NIR/0.85		139.49	258.13	117.82	105.36	107.03	75.15	75.15	105.12	
16	GIR for nursery (mm) = GIR=FIR/0.75	0.00	0.00								
17	GIR for other period (mm) = GIR=FIR/0.75		185.98	344.17	157.09	140.48	142.70	100.20	100.20	140.16	1310.99
18	Area (Ha) for nursery	18.80	18.80								
19	Area (Ha) for other period					188					
20	Water Requirement for nursery in MCM	0.000	0.000								
21	WR for other period in MCM		0.350	0.647	0.295	0.264	0.268	0.188	0.188	0.264	
22	Total Water requirement in MCM	0.000	0.350	0.647	0.295	0.264	0.268	0.188	0.188	0.264	**2.46**
23	Discharge in m^3/sec	**0.000**	**0.270**	**0.499**	**0.214**	**0.204**	**0.194**	**0.145**	**0.145**	**0.203**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Deshnur **Duration: 120 days** **Crop : Jowar = 224 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc		0.35	0.58	0.81	1.05	1.05	1.05	0.70	0.53	
4	ETc (mm)		29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	
5	Pre sowing requirement (mm)	40.00									
6	Gross Water Requirement (mm)	40.00	29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	491.10
7	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	409.83
8	Monthy Eff RF (mm) from table		50.57		52.34		78.40		107.14	31.21	
9	Eff RF (mm) from table	25.29	25.29	25.12	27.21	37.63	40.77	53.57	53.57	31.21	
10	(0.97 * Effective Rainfall) mm at 50% chance of occurance	24.53	24.53	24.37	26.40	36.50	39.55	51.97	51.97	30.27	
11	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 10)	15.47	4.71	19.31	38.66	41.14	43.28	20.64	0.00	1.37	184.59
12	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	23.80	7.25	29.70	59.48	63.30	66.58	31.76	0.00	2.11	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	31.74	9.67	39.60	79.31	84.40	88.77	42.34	0.00	2.81	378.64
14	Area (Ha)	224									
15	Water Requirement in MCM	0.071	0.022	0.089	0.178	0.189	0.199	0.095	0.000	0.006	**0.85**
16	Discharge in m3/sec	**0.055**	**0.017**	**0.068**	**0.129**	**0.146**	**0.144**	**0.073**	**0.000**	**0.005**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Agro climatic zone : 3

Canal : Deshnur **Duration: 120 days** **Crop : Paddy = 121 ha**

Season : Rabi **Sowing time: Jan-01** **IMD Station : Bellary**

No.	Particulars	Jan		Feb		March		April		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc			1.25	1.25	1.25	1.25	1.00	1.00	
4	ETc (mm)			86.06	74.59	103.31	110.20	90.45	90.45	
5	Nursery (mm)	28.00	16.00							
6	Land preparation		150							
7	Transplantation			125						
8	Percolation @ 3 mm/day(mm)			45.00	39.00	45.00	48.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	256.06	113.59	148.31	158.20	135.45	135.45	1141.06
10	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
11	Eff RF (mm) from table		1.19		1.05		6.03		13.52	
		0.5712	0.62	0.56	0.49	2.89	3.14	6.76	6.76	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.55	0.60	0.54	0.47	2.81	3.04	6.56	6.56	
13	NIR for nusery (mm)	27.45	15.40							
14	NIR for other period (mm) (6 - 12)		149.40	255.52	113.11	145.50	155.16	128.89	128.89	1076.48
15	Field Irrigation Requirement FIR (mm) = NIR/0.85		175.76	300.61	133.08	171.18	182.54	151.64	151.64	
16	GIR for nursery	36.59	20.53							
17	Gross Irrigation Requirement GIR (mm) = FIR/0.75		234.35	400.81	177.44	228.24	243.39	202.18	202.18	1688.60
18	Area (Ha) for nursery	12.10	12.10							
19	Area (Ha) for other period					121				
20	Water Requirement for nursery	0.004	0.002							
21	Water Requirement in MCM		0.284	0.485	0.215	0.276	0.294	0.245	0.245	
22	Total water requirement in MCM	0.004	0.286	0.485	0.215	0.276	0.294	0.245	0.245	**2.05**
23	Discharge in m3/sec	**0.003**	**0.207**	**0.374**	**0.191**	**0.213**	**0.213**	**0.189**	**0.189**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Deshnur **Crop : Groundnut = 217 ha**

Season : Rabi **Duration: 120 days**

No.	Particulars	Jan		Feb		Mar		Apr		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc		0.67	0.79	1	1	1.00	0.79	0.58	
4	ETc (mm)		39.77	54.39	59.67	82.65	88.16	71.46	52.46	
5	Pre sowing requirement (mm)	40.00								
6	Gross Water Requirement (mm)	40.00	39.77	54.39	59.67	82.65	88.16	71.46	52.46	488.56
7	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
8	Eff RF (mm) from table		0.99		0.88		5.71		12.07	
		0.48	0.51	0.47	0.41	2.74	2.97	6.04	6.04	
9	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.46	0.50	0.46	0.40	2.66	2.88	5.85	5.85	
10	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 9)	39.54	39.27	53.93	59.27	79.99	85.28	65.60	46.61	469.50
11	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	60.83	60.42	82.98	91.19	123.06	131.20	100.93	71.70	
12	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.11	80.56	110.64	121.59	164.08	174.93	134.57	95.60	963.08
13	Area (Ha)	217								
14	Water Requirement in MCM	0.176	0.175	0.240	0.264	0.356	0.380	0.292	0.207	**2.09**
15	Discharge in m^3/sec	**0.136**	**0.126**	**0.185**	**0.235**	**0.275**	**0.275**	**0.225**	**0.160**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Deshnur **Crop : Sugarcane = 55 ha** **Duration : 304 days**

Season : Perennial **Sowing time: Jan-01**

No	Particulars	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II			
1	No of Days	15	16	15	13	15	16	15	15	15	16	15	15	15	16	15	16	15	15	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	
3	Crop Factor, Kc		1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	0.88	0.88	0.70	0.70	0.48	0.48	0.78	0.78	0.93	1.05	1.05	1.05	
4	ETc (mm)		68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	
5	Plant use (Pre-sowing) mm	40.00																						
7	Gross Water Requirement (mm)	40.00	68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	1554.26
8	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	20.66	22.39	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	54.04	58.55	15.04	15.04	620.87
9	Monthy Eff RF (mm) from table		1.00		0.95		5.99		14.01		41.44		58.50		52.35		65.21		101.50		80.53		22.06	
10	Eff RF (mm) from table	0.48	0.52	0.51	0.44	2.88	3.29	7.01	7.01	19.89	21.55	29.25	29.25	25.13	27.22	31.30	33.91	50.75	50.75	38.66	41.88	11.03	11.03	
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.47	0.50	0.49	0.43	2.79	3.20	6.79	6.79	19.29	20.90	28.37	28.37	24.37	26.41	30.36	32.89	49.23	49.23	37.50	40.62	10.70	10.70	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	39.53	67.76	78.68	68.19	92.26	98.19	97.22	97.22	89.04	94.65	45.15	45.15	28.34	29.82	5.13	4.97	4.71	4.71	18.02	26.24	44.43	44.43	1123.85
13	Field Irrigation Requirement = FIR = NIR/0.65	60.82	104.25	121.05	104.91	141.94	151.06	149.57	149.57	136.98	145.62	69.47	69.47	43.59	45.87	7.90	7.65	7.24	7.24	27.73	40.37	68.35	68.35	
14	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.10	138.99	161.40	139.88	189.25	201.41	199.43	199.43	182.64	194.15	92.62	92.62	58.12	61.17	10.53	10.19	9.66	9.66	36.97	53.83	91.13	91.13	2305.32
15	Area (Ha)	55																						
16	Water Requirement in MCM	0.045	0.076	0.089	0.077	0.104	0.111	0.110	0.110	0.100	0.107	0.051	0.051	0.032	0.034	0.006	0.006	0.005	0.005	0.020	0.030	0.050	0.050	**1.27**
17	Discharge in m3/sec	**0.034**	**0.055**	**0.068**	**0.068**	**0.080**	**0.080**	**0.085**	**0.085**	**0.078**	**0.077**	**0.039**	**0.039**	**0.025**	**0.024**	**0.004**	**0.004**	**0.004**	**0.004**	**0.016**	**0.021**	**0.039**	**0.039**	

Note : Irrigation cut days = 15 days before harvest

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Deshnur **Crop : Garden (Banana) = 10 ha** **Duration : 365 days**

Season : Perennial **Sowing time: Jul-01**

No	Particulars	Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	16	15	15	15	16	15	15	15	16	15	16	15	13	15	16	15	15	15	16	15	15	
2	ETo (mm)	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	50.25	53.60	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	
3	Crop Factor, Kc	0.50	0.50	0.50	0.50	0.85	0.85	0.85	0.85	1.05	1.05	1.05	1.05	1.10	1.10	0.90	0.85	1.00	1.00	1.00	1.00	0.85	0.85	0.80	0.75	
4	ETc (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	
7	Gross Water Requirement (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	1481.83
8	Rainfall (mm)	34.5	37.3	49.3	53.4	79.7	79.7	54.0	58.5	15.0	15.0	4.0	4.4	0.7	0.6	0.6	0.6	3.3	3.6	8.0	8.0	20.7	22.4	38.0	38.0	629.16
9	Monthy Eff RF (mm) from table		49.25		66.30		105.66		77.03		22.06		6.15		0.98		0.88		5.71		13.52		35.06		57.09	
10	Eff RF (mm) from table	23.64	25.61	31.83	34.48	52.83	52.83	36.97	40.05	11.03	11.03	2.95	3.20	0.47	0.51	0.47	0.41	2.74	2.97	6.76	6.76	16.83	18.23	28.55	28.55	363.94
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	22.93	24.84	30.87	33.44	51.24	51.24	35.86	38.85	10.70	10.70	2.86	3.10	0.46	0.49	0.46	0.40	2.66	2.88	6.56	6.56	16.32	17.68	27.69	27.69	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	14.72	15.32	6.10	6.00	7.53	7.53	14.88	15.28	44.43	44.43	0.00	0.00	60.76	64.80	61.51	50.32	79.99	85.28	83.89	83.89	63.75	67.72	39.15	34.97	952.26
	Field Irrigation Requirement = FIR = NIR/0.65	22.65	23.57	9.39	9.23	11.59	11.59	22.89	23.50	68.35	68.35	0.00	0.00	93.47	99.69	94.63	77.42	123.06	131.20	129.07	129.07	98.07	104.19	60.23	53.80	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	30.196	31.425	12.522	12.302	15.451	15.451	30.526	31.335	91.130	91.130	0.000	0.000	124.633	132.927	126.169	103.228	164.085	174.933	172.088	172.088	130.762	138.921	80.306	71.737	1953.34
14	Area (Ha)													10												
15	Water Requirement in MCM	0.003	0.003	0.001	0.001	0.002	0.002	0.003	0.003	0.009	0.009	0.000	0.000	0.012	0.013	0.013	0.010	0.016	0.017	0.017	0.017	0.013	0.014	0.008	0.007	**0.20**
16	Discharge in m3/sec	**0.002**	**0.002**	**0.001**	**0.001**	**0.001**	**0.001**	**0.002**	**0.002**	**0.007**	**0.007**	**0.000**	**0.000**	**0.010**	**0.010**	**0.010**	**0.009**	**0.013**	**0.013**	**0.013**	**0.013**	**0.010**	**0.010**	**0.006**	**0.006**	
Note : Irrigation cut days = 15 days before harvest																										

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Peak Discharge Table for Deshnur canal

No	Particulars	January		February		March		April		May		June		July		August		September		October		November		December		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
For Khariff Season																										
	Paddy											0.000	0.270	0.499	0.214	0.204	0.194	0.145	0.145	0.203						
	Light											0.055	0.017	0.068	0.129	0.146	0.144	0.073	0.000	0.005						
For Rabi Season																										
	Paddy	0.003	0.207	0.374	0.191	0.213	0.213	0.189	0.189																	
	Light	0.136	0.126	0.185	0.235	0.275	0.275	0.225	0.160																	
Perrinial																										
	Sugarcane	0.034	0.055	0.068	0.068	0.080	0.080	0.085	0.085	0.078	0.077	0.039	0.039	0.025	0.024	0.004	0.004	0.004	0.004	0.016	0.021	0.039	0.039			
	Garden	0.010	0.010	0.010	0.009	0.013	0.013	0.013	0.013	0.010	0.010	0.006	0.006	0.002	0.002	0.001	0.001	0.001	0.001	0.002	0.002	0.007	0.007	0.000	0.000	
Total		0.18	0.40	0.64	0.50	0.58	0.58	0.51	0.45	0.09	0.09	0.10	0.33	0.59	0.37	0.36	0.34	0.22	0.15	0.23	0.02	0.05	0.05	0.00	0.00	**0.64**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Name of the Canal: Hulugi Canal									Unit: MCM				Cropped Area : 419 ha
No	Khariff				Rabi				Perennial				Total WR in MCM
	Paddy	WR in MCM	Jowar	WR in MCM	Paddy	WR in MCM	Groundnut	WR in MCM	Sugarcane	WR in MCM	Garden (Banana)	WR in MCM	
Jun	91	0.17	129	0.053					20	0.04	20	0.030	0.29
Jul	91	0.46	129	0.153					20	0.02	20	0.012	0.65
Aug	91	0.26	129	0.223					20	0.00	20	0.005	0.49
Sep	91	0.18	129	0.055					20	0.00	20	0.006	0.25
Oct	91	0.13	129	0.004					20	0.02	20	0.012	0.16
Nov									20	0.04	20	0.036	0.07
Dec											20	0.000	0.00
Jan					82	0.20	77	0.12	20	0.04	20	0.052	0.42
Feb					82	0.47	77	0.18	20	0.06	20	0.046	0.76
Mar					82	0.39	77	0.26	20	0.08	20	0.068	0.79
Apr					82	0.33	77	0.18	20	0.08	20	0.069	0.66
May										0.08	20	0.054	0.13
Total in MCM		**1.19**		**0.49**		**1.39**		**0.74**		**0.46**		**0.39**	**4.66**
Total in TMC		**0.04**		**0.02**		**0.05**		**0.03**		**0.02**		**0.01**	**0.16**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

IMD Station : Bellary **Agro climatic zone : 3**

Canal : Hulugi **Duration: 107 days** **Crop : Paddy = 91 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc			1.1	1.1	1.1	1.05	1.05	1.05	1.05	
4	ETc (mm)			82.83	88.35	81.35	82.82	72.61	72.61	62.69	
5	Nursery (mm)	28.00	16.00								
6	Land preparation (mm)		150								
7	Transplantation (mm)			125							
8	Percolation @ 3mm/day (mm)			45.00	48.00	45.00	48.00	45.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	252.83	136.35	126.35	130.82	117.61	117.61	107.69	1183.25
10	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	466.13
11	Eff RF (mm) from table		64.82		71.78		79.01		110.78	37.80	
		32.41	32.41	34.45	37.33	37.92	41.09	55.39	55.39	18.90	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	31.44	31.44	33.42	36.21	36.79	39.85	53.73	53.73	18.33	
13	NIR for Nursery (mm)	0.00	0.00								
14	NIR for other period (mm)		118.56	219.41	100.15	89.56	90.97	63.88	63.88	89.35	835.76
15	Field Irrigation requirement FIR = NIR/0.85		139.49	258.13	117.82	105.36	107.03	75.15	75.15	105.12	
16	GIR for nursery (mm) = GIR=FIR/0.75	0.00	0.00								
17	GIR for other period (mm) = GIR=FIR/0.75		185.98	344.17	157.09	140.48	142.70	100.20	100.20	140.16	1310.99
18	Area (Ha) for nursery	9.10	9.10								
19	Area (Ha) for other period					91					
20	Water Requirement for nursery in MCM	0.000	0.000								
21	WR for other period in MCM		0.169	0.313	0.143	0.128	0.130	0.091	0.091	0.128	
22	Total Water requirement in MCM	0.000	0.169	0.313	0.143	0.128	0.130	0.091	0.091	0.128	**1.19**
23	Discharge in m^3/sec	**0.000**	**0.131**	**0.242**	**0.103**	**0.099**	**0.094**	**0.070**	**0.070**	**0.098**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Hulugi **Duration: 120 days** **Crop : Jowar = 129 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc		0.35	0.58	0.81	1.05	1.05	1.05	0.70	0.53	
4	ETc (mm)		29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	
5	Pre sowing requirement (mm)	40.00									
6	Gross Water Requirement (mm)	40.00	29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	491.10
7	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	409.83
8	Monthy Eff RF (mm) from table		50.57		52.34		78.40		107.14	31.21	
9	Eff RF (mm) from table	25.29	25.29	25.12	27.21	37.63	40.77	53.57	53.57	31.21	
10	(0.97 * Effective Rainfall) mm at 50% chance of occurance	24.53	24.53	24.37	26.40	36.50	39.55	51.97	51.97	30.27	
11	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 10)	15.47	4.71	19.31	38.66	41.14	43.28	20.64	0.00	1.37	184.59
12	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	23.80	7.25	29.70	59.48	63.30	66.58	31.76	0.00	2.11	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	31.74	9.67	39.60	79.31	84.40	88.77	42.34	0.00	2.81	378.64
14	Area (Ha)	129									
15	Water Requirement in MCM	0.041	0.012	0.051	0.102	0.109	0.115	0.055	0.000	0.004	**0.49**
16	Discharge in m3/sec	**0.032**	**0.010**	**0.039**	**0.074**	**0.084**	**0.083**	**0.042**	**0.000**	**0.003**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Agro climatic zone : 3

Canal : Hulugi **Duration: 120 days** **Crop : Paddy = 82 ha**

Season : Rabi **Sowing time: Jan-01** **IMD Station : Bellary**

No.	Particulars	Jan		Feb		March		April		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc			1.25	1.25	1.25	1.25	1.00	1.00	
4	ETc (mm)			86.06	74.59	103.31	110.20	90.45	90.45	
5	Nursery (mm)	28.00	16.00							
6	Land preparation		150							
7	Transplantation			125						
8	Percolation @ 3 mm/day(mm)			45.00	39.00	45.00	48.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	256.06	113.59	148.31	158.20	135.45	135.45	1141.06
10	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
11	Eff RF (mm) from table		1.19		1.05		6.03		13.52	
		0.5712	0.62	0.56	0.49	2.89	3.14	6.76	6.76	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.55	0.60	0.54	0.47	2.81	3.04	6.56	6.56	
13	NIR for nusery (mm)	27.45	15.40							
14	NIR for other period (mm) (6 - 12)		149.40	255.52	113.11	145.50	155.16	128.89	128.89	1076.48
15	Field Irrigation Requirement FIR (mm) = NIR/0.85		175.76	300.61	133.08	171.18	182.54	151.64	151.64	
16	GIR for nursery	36.59	20.53							
17	Gross Irrigation Requirement GIR (mm) = FIR/0.75		234.35	400.81	177.44	228.24	243.39	202.18	202.18	1688.60
18	Area (Ha) for nursery	8.20	8.20							
19	Area (Ha) for other period					82				
20	Water Requirement for nursery	0.003	0.002							
21	Water Requirement in MCM		0.192	0.329	0.145	0.187	0.200	0.166	0.166	
22	Total water requirement in MCM	0.003	0.194	0.329	0.145	0.187	0.200	0.166	0.166	**1.39**
23	Discharge in m3/sec	**0.002**	**0.140**	**0.254**	**0.130**	**0.144**	**0.144**	**0.128**	**0.128**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Hulugi **Crop : Groundnut = 77 ha**

Season : Rabi **Duration: 120 days**

No.	Particulars	Jan		Feb		Mar		Apr		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc		0.67	0.79	1	1	1.00	0.79	0.58	
4	ETc (mm)		39.77	54.39	59.67	82.65	88.16	71.46	52.46	
5	Pre sowing requirement (mm)	40.00								
6	Gross Water Requirement (mm)	40.00	39.77	54.39	59.67	82.65	88.16	71.46	52.46	488.56
7	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
8	Eff RF (mm) from table		0.99		0.88		5.71		12.07	
		0.48	0.51	0.47	0.41	2.74	2.97	6.04	6.04	
9	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.46	0.50	0.46	0.40	2.66	2.88	5.85	5.85	
10	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 9)	39.54	39.27	53.93	59.27	79.99	85.28	65.60	46.61	469.50
11	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	60.83	60.42	82.98	91.19	123.06	131.20	100.93	71.70	
12	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.11	80.56	110.64	121.59	164.08	174.93	134.57	95.60	963.08
13	Area (Ha)	77								
14	Water Requirement in MCM	0.062	0.062	0.085	0.094	0.126	0.135	0.104	0.074	**0.74**
15	Discharge in m^3/sec	**0.048**	**0.045**	**0.066**	**0.083**	**0.097**	**0.097**	**0.080**	**0.057**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Hulugi **Crop : Sugarcane = 20 ha** **Duration : 304 days**

Season : Perennial **Sowing time: Jan-01**

No	Particulars	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II			
1	No of Days	15	16	15	13	15	16	15	15	15	16	15	15	15	16	15	16	15	15	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	
3	Crop Factor, Kc		1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	0.88	0.88	0.70	0.70	0.48	0.48	0.78	0.78	0.93	1.05	1.05	1.05	
4	ETc (mm)		68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	
5	Plant use (Pre-sowing) mm	40.00																						
7	Gross Water Requirement (mm)	40.00	68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	1554.26
8	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	20.66	22.39	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	54.04	58.55	15.04	15.04	620.87
9	Monthy Eff RF (mm) from table		1.00		0.95		5.99		14.01		41.44		58.50		52.35		65.21		101.50		80.53		22.06	
10	Eff RF (mm) from table	0.48	0.52	0.51	0.44	2.88	3.29	7.01	7.01	19.89	21.55	29.25	29.25	25.13	27.22	31.30	33.91	50.75	50.75	38.66	41.88	11.03	11.03	
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.47	0.50	0.49	0.43	2.79	3.20	6.79	6.79	19.29	20.90	28.37	28.37	24.37	26.41	30.36	32.89	49.23	49.23	37.50	40.62	10.70	10.70	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	39.53	67.76	78.68	68.19	92.26	98.19	97.22	97.22	89.04	94.65	45.15	45.15	28.34	29.82	5.13	4.97	4.71	4.71	18.02	26.24	44.43	44.43	1123.85
13	Field Irrigation Requirement = FIR = NIR/0.65	60.82	104.25	121.05	104.91	141.94	151.06	149.57	149.57	136.98	145.62	69.47	69.47	43.59	45.87	7.90	7.65	7.24	7.24	27.73	40.37	68.35	68.35	
14	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.10	138.99	161.40	139.88	189.25	201.41	199.43	199.43	182.64	194.15	92.62	92.62	58.12	61.17	10.53	10.19	9.66	9.66	36.97	53.83	91.13	91.13	2305.32
15	Area (Ha)	20																						
16	Water Requirement in MCM	0.016	0.028	0.032	0.028	0.038	0.040	0.040	0.040	0.037	0.039	0.019	0.019	0.012	0.012	0.002	0.002	0.002	0.002	0.007	0.011	0.018	0.018	**0.46**
17	Discharge in m3/sec	**0.013**	**0.020**	**0.025**	**0.025**	**0.029**	**0.029**	**0.031**	**0.031**	**0.028**	**0.028**	**0.014**	**0.014**	**0.009**	**0.009**	**0.002**	**0.001**	**0.001**	**0.001**	**0.006**	**0.008**	**0.014**	**0.014**	

Note : Irrigation cut days = 15 days before harvest

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Hulugi **Crop : Garden (Banana) = 20 ha** **Duration : 365 days**

Season : Perennial **Sowing time: Jul-01**

No	Particulars	Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	16	15	15	15	16	15	15	15	16	15	16	15	13	15	16	15	15	15	16	15	15	
2	ETo (mm)	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	50.25	53.60	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	
3	Crop Factor, Kc	0.50	0.50	0.50	0.50	0.85	0.85	0.85	0.85	1.05	1.05	1.05	1.05	1.10	1.10	0.90	0.85	1.00	1.00	1.00	1.00	0.85	0.85	0.80	0.75	
4	ETc (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	
7	Gross Water Requirement (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	1481.83
8	Rainfall (mm)	34.5	37.3	49.3	53.4	79.7	79.7	54.0	58.5	15.0	15.0	4.0	4.4	0.7	0.6	0.6	0.6	3.3	3.6	8.0	8.0	20.7	22.4	38.0	38.0	629.16
9	Monthy Eff RF (mm) from table		49.25		66.30		105.66		77.03		22.06		6.15		0.98		0.88		5.71		13.52		35.06		57.09	
10	Eff RF (mm) from table	23.64	25.61	31.83	34.48	52.83	52.83	36.97	40.05	11.03	11.03	2.95	3.20	0.47	0.51	0.47	0.41	2.74	2.97	6.76	6.76	16.83	18.23	28.55	28.55	363.94
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	22.93	24.84	30.87	33.44	51.24	51.24	35.86	38.85	10.70	10.70	2.86	3.10	0.46	0.49	0.46	0.40	2.66	2.88	6.56	6.56	16.32	17.68	27.69	27.69	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	14.72	15.32	6.10	6.00	7.53	7.53	14.88	15.28	44.43	44.43	0.00	0.00	60.76	64.80	61.51	50.32	79.99	85.28	83.89	83.89	63.75	67.72	39.15	34.97	952.26
	Field Irrigation Requirement = FIR = NIR/0.65	22.65	23.57	9.39	9.23	11.59	11.59	22.89	23.50	68.35	68.35	0.00	0.00	93.47	99.69	94.63	77.42	123.06	131.20	129.07	129.07	98.07	104.19	60.23	53.80	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	30.196	31.425	12.522	12.302	15.451	15.451	30.526	31.335	91.130	91.130	0.000	0.000	124.633	132.927	126.169	103.228	164.085	174.933	172.088	172.088	130.762	138.921	80.306	71.737	1953.34
14	Area (Ha)	20																								
15	Water Requirement in MCM	0.006	0.006	0.003	0.002	0.003	0.003	0.006	0.006	0.018	0.018	0.000	0.000	0.025	0.027	0.025	0.021	0.033	0.035	0.034	0.034	0.026	0.028	0.016	0.014	**0.39**
16	Discharge in m3/sec	**0.005**	**0.005**	**0.002**	**0.002**	**0.002**	**0.002**	**0.005**	**0.005**	**0.014**	**0.014**	**0.000**	**0.000**	**0.019**	**0.019**	**0.019**	**0.018**	**0.025**	**0.025**	**0.027**	**0.027**	**0.020**	**0.020**	**0.012**	**0.011**	
Note : Irrigation cut days = 15 days before harvest																										

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Peak Discharge Table for Hulugi canal

No	Particulars	January		February		March		April		May		June		July		August		September		October		November		December		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
For Khariff Season																										
	Paddy											0.000	0.131	0.242	0.103	0.099	0.094	0.070	0.070	0.098						
	Light											0.032	0.010	0.039	0.074	0.084	0.083	0.042	0.000	0.003						
For Rabi Season																										
	Paddy	0.002	0.140	0.254	0.130	0.144	0.144	0.128	0.128																	
	Light	0.048	0.045	0.066	0.083	0.097	0.097	0.080	0.057																	
Perrinial																										
	Sugarcane	0.013	0.020	0.025	0.025	0.029	0.029	0.031	0.031	0.028	0.028	0.014	0.014	0.009	0.009	0.002	0.001	0.001	0.001	0.006	0.008	0.014	0.014			
	Garden	0.019	0.019	0.019	0.018	0.025	0.025	0.027	0.027	0.020	0.020	0.012	0.011	0.005	0.005	0.002	0.002	0.002	0.002	0.005	0.005	0.014	0.014	0.000	0.000	
Total		0.08	0.22	0.36	0.26	0.30	0.30	0.27	0.24	0.05	0.05	0.06	0.17	0.29	0.19	0.19	0.18	0.12	0.07	0.11	0.01	0.03	0.03	0.00	0.00	**0.36**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Name of the Canal: Shivpura Canal									Unit: MCM				Cropped Area : 717 ha
No	Khariff				Rabi				Perennial				Total WR in MCM
	Paddy	WR in MCM	Jowar	WR in MCM	Paddy	WR in MCM	Groundnut	WR in MCM	Sugarcane	WR in MCM	Garden (Banana)	WR in MCM	
Jun	190	0.35	176	0.073					2	0.00	30	0.046	0.48
Jul	190	0.95	176	0.209					2	0.00	30	0.018	1.18
Aug	190	0.54	176	0.305					2	0.00	30	0.007	0.85
Sep	190	0.38	176	0.075					2	0.00	30	0.009	0.46
Oct	190	0.27	176	0.005					2	0.00	30	0.019	0.29
Nov									2	0.00	30	0.055	0.06
Dec											30	0.000	0.00
Jan					117	0.28	202	0.33	2	0.00	30	0.077	0.69
Feb					117	0.68	202	0.47	2	0.01	30	0.069	1.22
Mar					117	0.55	202	0.68	2	0.01	30	0.102	1.35
Apr					117	0.47	202	0.46	2	0.01	30	0.103	1.05
May										0.01	30	0.081	0.09
Total in MCM		**2.49**		**0.67**		**1.98**		**1.95**		**0.05**		**0.59**	**7.72**
Total in TMC		**0.09**		**0.02**		**0.07**		**0.07**		**0.00**		**0.02**	**0.27**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

IMD Station : Bellary **Agro climatic zone : 3**

Canal : Shivpura **Duration: 107 days** **Crop : Paddy = 190 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc			1.1	1.1	1.1	1.05	1.05	1.05	1.05	
4	ETc (mm)			82.83	88.35	81.35	82.82	72.61	72.61	62.69	
5	Nursery (mm)	28.00	16.00								
6	Land preparation (mm)		150								
7	Transplantation (mm)			125							
8	Percolation @ 3mm/day (mm)			45.00	48.00	45.00	48.00	45.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	252.83	136.35	126.35	130.82	117.61	117.61	107.69	1183.25
10	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	466.13
11	Eff RF (mm) from table		64.82		71.78		79.01		110.78	37.80	
		32.41	32.41	34.45	37.33	37.92	41.09	55.39	55.39	18.90	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	31.44	31.44	33.42	36.21	36.79	39.85	53.73	53.73	18.33	
13	NIR for Nursery (mm)	0.00	0.00								
14	NIR for other period (mm)		118.56	219.41	100.15	89.56	90.97	63.88	63.88	89.35	835.76
15	Field Irrigation requirement FIR = NIR/0.85		139.49	258.13	117.82	105.36	107.03	75.15	75.15	105.12	
16	GIR for nursery (mm) = GIR=FIR/0.75	0.00	0.00								
17	GIR for other period (mm) = GIR=FIR/0.75		185.98	344.17	157.09	140.48	142.70	100.20	100.20	140.16	1310.99
18	Area (Ha) for nursery	19.00	19.00								
19	Area (Ha) for other period					190					
20	Water Requirement for nursery in MCM	0.000	0.000								
21	WR for other period in MCM		0.353	0.654	0.298	0.267	0.271	0.190	0.190	0.266	
22	Total Water requirement in MCM	0.000	0.353	0.654	0.298	0.267	0.271	0.190	0.190	0.266	**2.49**
23	Discharge in m^3/sec	**0.000**	**0.273**	**0.505**	**0.216**	**0.206**	**0.196**	**0.147**	**0.147**	**0.205**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Shivpura **Duration: 120 days** **Crop : Jowar = 176 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc		0.35	0.58	0.81	1.05	1.05	1.05	0.70	0.53	
4	ETc (mm)		29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	
5	Pre sowing requirement (mm)	40.00									
6	Gross Water Requirement (mm)	40.00	29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	491.10
7	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	409.83
8	Monthy Eff RF (mm) from table		50.57		52.34		78.40		107.14	31.21	
9	Eff RF (mm) from table	25.29	25.29	25.12	27.21	37.63	40.77	53.57	53.57	31.21	
10	(0.97 * Effective Rainfall) mm at 50% chance of occurance	24.53	24.53	24.37	26.40	36.50	39.55	51.97	51.97	30.27	
11	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 10)	15.47	4.71	19.31	38.66	41.14	43.28	20.64	0.00	1.37	184.59
12	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	23.80	7.25	29.70	59.48	63.30	66.58	31.76	0.00	2.11	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	31.74	9.67	39.60	79.31	84.40	88.77	42.34	0.00	2.81	378.64
14	Area (Ha)	176									
15	Water Requirement in MCM	0.056	0.017	0.070	0.140	0.149	0.156	0.075	0.000	0.005	**0.67**
16	Discharge in m3/sec	**0.043**	**0.013**	**0.054**	**0.101**	**0.115**	**0.113**	**0.058**	**0.000**	**0.004**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Agro climatic zone : 3

Canal : Shivpura **Duration: 120 days** **Crop : Paddy = 117 ha**

Season : Rabi **Sowing time: Jan-01** **IMD Station : Bellary**

No.	Particulars	Jan		Feb		March		April		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc			1.25	1.25	1.25	1.25	1.00	1.00	
4	ETc (mm)			86.06	74.59	103.31	110.20	90.45	90.45	
5	Nursery (mm)	28.00	16.00							
6	Land preparation		150							
7	Transplantation			125						
8	Percolation @ 3 mm/day(mm)			45.00	39.00	45.00	48.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	256.06	113.59	148.31	158.20	135.45	135.45	1141.06
10	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
11	Eff RF (mm) from table		1.19		1.05		6.03		13.52	
		0.5712	0.62	0.56	0.49	2.89	3.14	6.76	6.76	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.55	0.60	0.54	0.47	2.81	3.04	6.56	6.56	
13	NIR for nusery (mm)	27.45	15.40							
14	NIR for other period (mm) (6 - 12)		149.40	255.52	113.11	145.50	155.16	128.89	128.89	1076.48
15	Field Irrigation Requirement FIR (mm) = NIR/0.85		175.76	300.61	133.08	171.18	182.54	151.64	151.64	
16	GIR for nursery	36.59	20.53							
17	Gross Irrigation Requirement GIR (mm) = FIR/0.75		234.35	400.81	177.44	228.24	243.39	202.18	202.18	1688.60
18	Area (Ha) for nursery	11.70	11.70							
19	Area (Ha) for other period					117				
20	Water Requirement for nursery	0.004	0.002							
21	Water Requirement in MCM		0.274	0.469	0.208	0.267	0.285	0.237	0.237	
22	Total water requirement in MCM	0.004	0.277	0.469	0.208	0.267	0.285	0.237	0.237	**1.98**
23	Discharge in m3/sec	**0.003**	**0.200**	**0.362**	**0.185**	**0.206**	**0.206**	**0.183**	**0.183**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Shivpura **Crop : Groundnut = 202 ha**

Season : Rabi **Duration: 120 days**

No.	Particulars	Jan		Feb		Mar		Apr		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc		0.67	0.79	1	1	1.00	0.79	0.58	
4	ETc (mm)		39.77	54.39	59.67	82.65	88.16	71.46	52.46	
5	Pre sowing requirement (mm)	40.00								
6	Gross Water Requirement (mm)	40.00	39.77	54.39	59.67	82.65	88.16	71.46	52.46	488.56
7	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
8	Eff RF (mm) from table		0.99		0.88		5.71		12.07	
		0.48	0.51	0.47	0.41	2.74	2.97	6.04	6.04	
9	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.46	0.50	0.46	0.40	2.66	2.88	5.85	5.85	
10	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 9)	39.54	39.27	53.93	59.27	79.99	85.28	65.60	46.61	469.50
11	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	60.83	60.42	82.98	91.19	123.06	131.20	100.93	71.70	
12	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.11	80.56	110.64	121.59	164.08	174.93	134.57	95.60	963.08
13	Area (Ha)	202								
14	Water Requirement in MCM	0.164	0.163	0.223	0.246	0.331	0.353	0.272	0.193	**1.95**
15	Discharge in m^3/sec	**0.126**	**0.118**	**0.172**	**0.219**	**0.256**	**0.256**	**0.210**	**0.149**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Shivpura **Crop : Sugarcane = 2 ha** **Duration : 304 days**

Season : Perennial **Sowing time: Jan-01**

No	Particulars	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II			
1	No of Days	15	16	15	13	15	16	15	15	15	16	15	15	15	16	15	16	15	15	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	
3	Crop Factor, Kc		1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	0.88	0.88	0.70	0.70	0.48	0.48	0.78	0.78	0.93	1.05	1.05	1.05	
4	ETc (mm)		68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	
5	Plant use (Pre-sowing) mm	40.00																						
7	Gross Water Requirement (mm)	40.00	68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	1554.26
8	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	20.66	22.39	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	54.04	58.55	15.04	15.04	620.87
9	Monthy Eff RF (mm) from table		1.00		0.95		5.99		14.01		41.44		58.50		52.35		65.21		101.50		80.53		22.06	
10	Eff RF (mm) from table	0.48	0.52	0.51	0.44	2.88	3.29	7.01	7.01	19.89	21.55	29.25	29.25	25.13	27.22	31.30	33.91	50.75	50.75	38.66	41.88	11.03	11.03	
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.47	0.50	0.49	0.43	2.79	3.20	6.79	6.79	19.29	20.90	28.37	28.37	24.37	26.41	30.36	32.89	49.23	49.23	37.50	40.62	10.70	10.70	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	39.53	67.76	78.68	68.19	92.26	98.19	97.22	97.22	89.04	94.65	45.15	45.15	28.34	29.82	5.13	4.97	4.71	4.71	18.02	26.24	44.43	44.43	1123.85
13	Field Irrigation Requirement = FIR = NIR/0.65	60.82	104.25	121.05	104.91	141.94	151.06	149.57	149.57	136.98	145.62	69.47	69.47	43.59	45.87	7.90	7.65	7.24	7.24	27.73	40.37	68.35	68.35	
14	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.10	138.99	161.40	139.88	189.25	201.41	199.43	199.43	182.64	194.15	92.62	92.62	58.12	61.17	10.53	10.19	9.66	9.66	36.97	53.83	91.13	91.13	2305.32
15	Area (Ha)	2																						
16	Water Requirement in MCM	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.004	0.002	0.002	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.002	0.002	**0.05**
17	Discharge in m3/sec	**0.001**	**0.002**	**0.002**	**0.002**	**0.003**	**0.003**	**0.003**	**0.003**	**0.003**	**0.003**	**0.001**	**0.001**	**0.001**	**0.001**	**0.000**	**0.000**	**0.000**	**0.000**	**0.001**	**0.001**	**0.001**	**0.001**	

Note : Irrigation cut days = 15 days before harvest

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Shivpura **Crop : Garden (Banana) = 30 ha** **Duration : 365 days**

Season : Perennial **Sowing time: Jul-01**

No	Particulars	Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	16	15	15	15	16	15	15	15	16	15	16	15	13	15	16	15	15	15	16	15	15	
2	ETo (mm)	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	50.25	53.60	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	
3	Crop Factor, Kc	0.50	0.50	0.50	0.50	0.85	0.85	0.85	0.85	1.05	1.05	1.05	1.05	1.10	1.10	0.90	0.85	1.00	1.00	1.00	1.00	0.85	0.85	0.80	0.75	
4	ETc (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	
7	Gross Water Requirement (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	1481.83
8	Rainfall (mm)	34.5	37.3	49.3	53.4	79.7	79.7	54.0	58.5	15.0	15.0	4.0	4.4	0.7	0.6	0.6	0.6	3.3	3.6	8.0	8.0	20.7	22.4	38.0	38.0	629.16
9	Monthy Eff RF (mm) from table		49.25		66.30		105.66		77.03		22.06		6.15		0.98		0.88		5.71		13.52		35.06		57.09	
10	Eff RF (mm) from table	23.64	25.61	31.83	34.48	52.83	52.83	36.97	40.05	11.03	11.03	2.95	3.20	0.47	0.51	0.47	0.41	2.74	2.97	6.76	6.76	16.83	18.23	28.55	28.55	363.94
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	22.93	24.84	30.87	33.44	51.24	51.24	35.86	38.85	10.70	10.70	2.86	3.10	0.46	0.49	0.46	0.40	2.66	2.88	6.56	6.56	16.32	17.68	27.69	27.69	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	14.72	15.32	6.10	6.00	7.53	7.53	14.88	15.28	44.43	44.43	0.00	0.00	60.76	64.80	61.51	50.32	79.99	85.28	83.89	83.89	63.75	67.72	39.15	34.97	952.26
	Field Irrigation Requirement = FIR = NIR/0.65	22.65	23.57	9.39	9.23	11.59	11.59	22.89	23.50	68.35	68.35	0.00	0.00	93.47	99.69	94.63	77.42	123.06	131.20	129.07	129.07	98.07	104.19	60.23	53.80	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	30.196	31.425	12.522	12.302	15.451	15.451	30.526	31.335	91.130	91.130	0.000	0.000	124.633	132.927	126.169	103.228	164.085	174.933	172.088	172.088	130.762	138.921	80.306	71.737	1953.34
14	Area (Ha)													30												
15	Water Requirement in MCM	0.009	0.009	0.004	0.004	0.005	0.005	0.009	0.009	0.027	0.027	0.000	0.000	0.037	0.040	0.038	0.031	0.049	0.052	0.052	0.052	0.039	0.042	0.024	0.022	**0.59**
16	Discharge in m3/sec	**0.007**	**0.007**	**0.003**	**0.003**	**0.004**	**0.004**	**0.007**	**0.007**	**0.021**	**0.021**	**0.000**	**0.000**	**0.029**	**0.029**	**0.029**	**0.028**	**0.038**	**0.038**	**0.040**	**0.040**	**0.030**	**0.030**	**0.019**	**0.017**	
Note : Irrigation cut days = 15 days before harvest																										

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Peak Discharge Table for Shivpura canal

No	Particulars	January		February		March		April		May		June		July		August		September		October		November		December		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
For Khariff Season																										
	Paddy											0.000	0.273	0.505	0.216	0.206	0.196	0.147	0.147	0.205						
	Light											0.043	0.013	0.054	0.101	0.115	0.113	0.058	0.000	0.004						
For Rabi Season																										
	Paddy	0.003	0.200	0.362	0.185	0.206	0.206	0.183	0.183																	
	Light	0.126	0.118	0.172	0.219	0.256	0.256	0.210	0.149																	
Perrinial																										
	Sugarcane	0.001	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001			
	Garden	0.029	0.029	0.029	0.028	0.038	0.038	0.040	0.040	0.030	0.030	0.019	0.017	0.007	0.007	0.003	0.003	0.004	0.004	0.007	0.007	0.021	0.021	0.000	0.000	
Total		0.16	0.35	0.57	0.43	0.50	0.50	0.44	0.37	0.03	0.03	0.06	0.30	0.57	0.32	0.32	0.31	0.21	0.15	0.22	0.01	0.02	0.02	0.00	0.00	**0.57**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Name of the Canal: Anegundi Canal									Unit: MCM		Cropped Area :		1359 ha
No	Khariff				Rabi				Perennial				Total WR in MCM
	Paddy	WR in MCM	Jowar	WR in MCM	Paddy	WR in MCM	Groundnut	WR in MCM	Sugarcane	WR in MCM	Garden (Banana)	WR in MCM	
Jun	234	0.44	417	0.173					6	0.01	124	0.189	0.81
Jul	234	1.17	417	0.496					6	0.01	124	0.076	1.75
Aug	234	0.66	417	0.722					6	0.00	124	0.031	1.42
Sep	234	0.47	417	0.177					6	0.00	124	0.038	0.68
Oct	234	0.33	417	0.012					6	0.01	124	0.077	0.42
Nov									6	0.01	124	0.226	0.24
Dec											124	0.000	0.00
Jan					128	0.31	450	0.73	6	0.01	124	0.319	1.37
Feb					128	0.74	450	1.05	6	0.02	124	0.284	2.09
Mar					128	0.60	450	1.53	6	0.02	124	0.420	2.57
Apr					128	0.52	450	1.04	6	0.02	124	0.427	2.00
May										0.02	124	0.334	0.36
Total in MCM		**3.07**		**1.58**		**2.17**		**4.33**		**0.14**		**2.42**	**13.71**
Total in TMC		**0.11**		**0.06**		**0.08**		**0.15**		**0.00**		**0.09**	**0.48**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

IMD Station : Bellary **Agro climatic zone : 3**

Canal : Anegundi **Duration: 107 days** **Crop : Paddy = 234 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc			1.1	1.1	1.1	1.05	1.05	1.05	1.05	
4	ETc (mm)			82.83	88.35	81.35	82.82	72.61	72.61	62.69	
5	Nursery (mm)	28.00	16.00								
6	Land preparation (mm)		150								
7	Transplantation (mm)			125							
8	Percolation @ 3mm/day (mm)			45.00	48.00	45.00	48.00	45.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	252.83	136.35	126.35	130.82	117.61	117.61	107.69	1183.25
10	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	466.13
11	Eff RF (mm) from table		64.82		71.78		79.01		110.78	37.80	
		32.41	32.41	34.45	37.33	37.92	41.09	55.39	55.39	18.90	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	31.44	31.44	33.42	36.21	36.79	39.85	53.73	53.73	18.33	
13	NIR for Nursery (mm)	0.00	0.00								
14	NIR for other period (mm)		118.56	219.41	100.15	89.56	90.97	63.88	63.88	89.35	835.76
15	Field Irrigation requirement FIR = NIR/0.85		139.49	258.13	117.82	105.36	107.03	75.15	75.15	105.12	
16	GIR for nursery (mm) = GIR=FIR/0.75	0.00	0.00								
17	GIR for other period (mm) = GIR=FIR/0.75		185.98	344.17	157.09	140.48	142.70	100.20	100.20	140.16	1310.99
18	Area (Ha) for nursery	23.40	23.40								
19	Area (Ha) for other period					234					
20	Water Requirement for nursery in MCM	0.000	0.000								
21	WR for other period in MCM		0.435	0.805	0.368	0.329	0.334	0.234	0.234	0.328	
22	Total Water requirement in MCM	0.000	0.435	0.805	0.368	0.329	0.334	0.234	0.234	0.328	**3.07**
23	Discharge in m^3/sec	**0.000**	**0.336**	**0.621**	**0.266**	**0.254**	**0.242**	**0.181**	**0.181**	**0.253**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Anegundi **Duration: 120 days** **Crop : Jowar = 417 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc		0.35	0.58	0.81	1.05	1.05	1.05	0.70	0.53	
4	ETc (mm)		29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	
5	Pre sowing requirement (mm)	40.00									
6	Gross Water Requirement (mm)	40.00	29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	491.10
7	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	409.83
8	Monthy Eff RF (mm) from table		50.57		52.34		78.40		107.14	31.21	
9	Eff RF (mm) from table	25.29	25.29	25.12	27.21	37.63	40.77	53.57	53.57	31.21	
10	(0.97 * Effective Rainfall) mm at 50% chance of occurance	24.53	24.53	24.37	26.40	36.50	39.55	51.97	51.97	30.27	
11	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 10)	15.47	4.71	19.31	38.66	41.14	43.28	20.64	0.00	1.37	184.59
12	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	23.80	7.25	29.70	59.48	63.30	66.58	31.76	0.00	2.11	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	31.74	9.67	39.60	79.31	84.40	88.77	42.34	0.00	2.81	378.64
14	Area (Ha)	417									
15	Water Requirement in MCM	0.132	0.040	0.165	0.331	0.352	0.370	0.177	0.000	0.012	**1.58**
16	Discharge in m3/sec	**0.102**	**0.031**	**0.127**	**0.239**	**0.272**	**0.268**	**0.136**	**0.000**	**0.009**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Agro climatic zone : 3

Canal : Anegundi **Duration: 120 days** **Crop : Paddy = 128 ha**

Season : Rabi **Sowing time: Jan-01** **IMD Station : Bellary**

No.	Particulars	Jan		Feb		March		April		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc			1.25	1.25	1.25	1.25	1.00	1.00	
4	ETc (mm)			86.06	74.59	103.31	110.20	90.45	90.45	
5	Nursery (mm)	28.00	16.00							
6	Land preparation		150							
7	Transplantation			125						
8	Percolation @ 3 mm/day(mm)			45.00	39.00	45.00	48.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	256.06	113.59	148.31	158.20	135.45	135.45	1141.06
10	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
11	Eff RF (mm) from table		1.19		1.05		6.03		13.52	
		0.5712	0.62	0.56	0.49	2.89	3.14	6.76	6.76	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.55	0.60	0.54	0.47	2.81	3.04	6.56	6.56	
13	NIR for nusery (mm)	27.45	15.40							
14	NIR for other period (mm) (6 - 12)		149.40	255.52	113.11	145.50	155.16	128.89	128.89	1076.48
15	Field Irrigation Requirement FIR (mm) = NIR/0.85		175.76	300.61	133.08	171.18	182.54	151.64	151.64	
16	GIR for nursery	36.59	20.53							
17	Gross Irrigation Requirement GIR (mm) = FIR/0.75		234.35	400.81	177.44	228.24	243.39	202.18	202.18	1688.60
18	Area (Ha) for nursery	12.80	12.80							
19	Area (Ha) for other period					128				
20	Water Requirement for nursery	0.005	0.003							
21	Water Requirement in MCM		0.300	0.513	0.227	0.292	0.312	0.259	0.259	
22	Total water requirement in MCM	0.005	0.303	0.513	0.227	0.292	0.312	0.259	0.259	**2.17**
23	Discharge in m3/sec	**0.004**	**0.219**	**0.396**	**0.202**	**0.225**	**0.225**	**0.200**	**0.200**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Anegundi **Crop : Groundnut = 450 ha**

Season : Rabi **Duration: 120 days**

No.	Particulars	Jan		Feb		Mar		Apr		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc		0.67	0.79	1	1	1.00	0.79	0.58	
4	ETc (mm)		39.77	54.39	59.67	82.65	88.16	71.46	52.46	
5	Pre sowing requirement (mm)	40.00								
6	Gross Water Requirement (mm)	40.00	39.77	54.39	59.67	82.65	88.16	71.46	52.46	488.56
7	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
8	Eff RF (mm) from table		0.99		0.88		5.71		12.07	
		0.48	0.51	0.47	0.41	2.74	2.97	6.04	6.04	
9	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.46	0.50	0.46	0.40	2.66	2.88	5.85	5.85	
10	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 9)	39.54	39.27	53.93	59.27	79.99	85.28	65.60	46.61	469.50
11	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	60.83	60.42	82.98	91.19	123.06	131.20	100.93	71.70	
12	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.11	80.56	110.64	121.59	164.08	174.93	134.57	95.60	963.08
13	Area (Ha)	450								
14	Water Requirement in MCM	0.365	0.363	0.498	0.547	0.738	0.787	0.606	0.430	**4.33**
15	Discharge in m^3/sec	**0.282**	**0.262**	**0.384**	**0.487**	**0.570**	**0.569**	**0.467**	**0.332**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Anegundi **Crop : Sugarcane = 6 ha** **Duration : 304 days**

Season : Perennial **Sowing time: Jan-01**

No	Particulars	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II			
1	No of Days	15	16	15	13	15	16	15	15	15	16	15	15	15	16	15	16	15	15	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	
3	Crop Factor, Kc		1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	0.88	0.88	0.70	0.70	0.48	0.48	0.78	0.78	0.93	1.05	1.05	1.05	
4	ETc (mm)		68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	
5	Plant use (Pre-sowing) mm	40.00																						
7	Gross Water Requirement (mm)	40.00	68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	1554.26
8	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	20.66	22.39	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	54.04	58.55	15.04	15.04	620.87
9	Monthy Eff RF (mm) from table		1.00		0.95		5.99		14.01		41.44		58.50		52.35		65.21		101.50		80.53		22.06	
10	Eff RF (mm) from table	0.48	0.52	0.51	0.44	2.88	3.29	7.01	7.01	19.89	21.55	29.25	29.25	25.13	27.22	31.30	33.91	50.75	50.75	38.66	41.88	11.03	11.03	
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.47	0.50	0.49	0.43	2.79	3.20	6.79	6.79	19.29	20.90	28.37	28.37	24.37	26.41	30.36	32.89	49.23	49.23	37.50	40.62	10.70	10.70	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	39.53	67.76	78.68	68.19	92.26	98.19	97.22	97.22	89.04	94.65	45.15	45.15	28.34	29.82	5.13	4.97	4.71	4.71	18.02	26.24	44.43	44.43	1123.85
13	Field Irrigation Requirement = FIR = NIR/0.65	60.82	104.25	121.05	104.91	141.94	151.06	149.57	149.57	136.98	145.62	69.47	69.47	43.59	45.87	7.90	7.65	7.24	7.24	27.73	40.37	68.35	68.35	
14	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.10	138.99	161.40	139.88	189.25	201.41	199.43	199.43	182.64	194.15	92.62	92.62	58.12	61.17	10.53	10.19	9.66	9.66	36.97	53.83	91.13	91.13	2305.32
15	Area (Ha)	6																						
16	Water Requirement in MCM	0.005	0.008	0.010	0.008	0.011	0.012	0.012	0.012	0.011	0.012	0.006	0.006	0.003	0.004	0.001	0.001	0.001	0.001	0.002	0.003	0.005	0.005	**0.14**
17	Discharge in m3/sec	**0.004**	**0.006**	**0.007**	**0.007**	**0.009**	**0.009**	**0.009**	**0.009**	**0.008**	**0.008**	**0.004**	**0.004**	**0.003**	**0.003**	**0.000**	**0.000**	**0.000**	**0.000**	**0.002**	**0.002**	**0.004**	**0.004**	

Note : Irrigation cut days = 15 days before harvest

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Anegundi **Crop : Garden (Banana) = 124 ha** **Duration : 365 days**

Season : Perennial **Sowing time: Jul-01**

No	Particulars	Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	16	15	15	15	16	15	15	15	16	15	16	15	13	15	16	15	15	15	16	15	15	
2	ETo (mm)	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	50.25	53.60	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	
3	Crop Factor, Kc	0.50	0.50	0.50	0.50	0.85	0.85	0.85	0.85	1.05	1.05	1.05	1.05	1.10	1.10	0.90	0.85	1.00	1.00	1.00	1.00	0.85	0.85	0.80	0.75	
4	ETc (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	
7	Gross Water Requirement (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	1481.83
8	Rainfall (mm)	34.5	37.3	49.3	53.4	79.7	79.7	54.0	58.5	15.0	15.0	4.0	4.4	0.7	0.6	0.6	0.6	3.3	3.6	8.0	8.0	20.7	22.4	38.0	38.0	629.16
9	Monthy Eff RF (mm) from table		49.25		66.30		105.66		77.03		22.06		6.15		0.98		0.88		5.71		13.52		35.06		57.09	
10	Eff RF (mm) from table	23.64	25.61	31.83	34.48	52.83	52.83	36.97	40.05	11.03	11.03	2.95	3.20	0.47	0.51	0.47	0.41	2.74	2.97	6.76	6.76	16.83	18.23	28.55	28.55	363.94
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	22.93	24.84	30.87	33.44	51.24	51.24	35.86	38.85	10.70	10.70	2.86	3.10	0.46	0.49	0.46	0.40	2.66	2.88	6.56	6.56	16.32	17.68	27.69	27.69	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	14.72	15.32	6.10	6.00	7.53	7.53	14.88	15.28	44.43	44.43	0.00	0.00	60.76	64.80	61.51	50.32	79.99	85.28	83.89	83.89	63.75	67.72	39.15	34.97	952.26
	Field Irrigation Requirement = FIR = NIR/0.65	22.65	23.57	9.39	9.23	11.59	11.59	22.89	23.50	68.35	68.35	0.00	0.00	93.47	99.69	94.63	77.42	123.06	131.20	129.07	129.07	98.07	104.19	60.23	53.80	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	30.196	31.425	12.522	12.302	15.451	15.451	30.526	31.335	91.130	91.130	0.000	0.000	124.633	132.927	126.169	103.228	164.085	174.933	172.088	172.088	130.762	138.921	80.306	71.737	1953.34
14	Area (Ha)													124												
15	Water Requirement in MCM	0.037	0.039	0.016	0.015	0.019	0.019	0.038	0.039	0.113	0.113	0.000	0.000	0.155	0.165	0.156	0.128	0.203	0.217	0.213	0.213	0.162	0.172	0.100	0.089	**2.42**
16	Discharge in m3/sec	**0.029**	**0.028**	**0.012**	**0.011**	**0.015**	**0.015**	**0.029**	**0.028**	**0.087**	**0.087**	**0.000**	**0.000**	**0.119**	**0.119**	**0.121**	**0.114**	**0.157**	**0.157**	**0.165**	**0.165**	**0.125**	**0.125**	**0.077**	**0.069**	
Note : Irrigation cut days = 15 days before harvest																										

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Peak Discharge Table for Anegundi canal

No	Particulars	January		February		March		April		May		June		July		August		September		October		November		December		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
For Khariff Season																										
	Paddy											0.000	0.336	0.621	0.266	0.254	0.242	0.181	0.181	0.253						
	Light											0.102	0.031	0.127	0.239	0.272	0.268	0.136	0.000	0.009						
For Rabi Season																										
	Paddy	0.004	0.219	0.396	0.202	0.225	0.225	0.200	0.200																	
	Light	0.282	0.262	0.384	0.487	0.570	0.569	0.467	0.332																	
Perrinial																										
	Sugarcane	0.004	0.006	0.007	0.007	0.009	0.009	0.009	0.009	0.008	0.008	0.004	0.004	0.003	0.003	0.000	0.000	0.000	0.000	0.002	0.002	0.004	0.004			
	Garden	0.119	0.119	0.121	0.114	0.157	0.157	0.165	0.165	0.125	0.125	0.077	0.069	0.029	0.028	0.012	0.011	0.015	0.015	0.029	0.028	0.087	0.087	0.000	0.000	
Total		0.41	0.61	0.91	0.81	0.96	0.96	0.84	0.71	0.13	0.13	0.18	0.44	0.78	0.54	0.54	0.52	0.33	0.20	0.29	0.03	0.09	0.09	0.00	0.00	**0.96**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Name of the Canal: Upper Gangavathi Canal									Unit: MCM				Cropped Area : 1363 ha
No	Khariff				Rabi				Perennial				Total WR in MCM
	Paddy	WR in MCM	Jowar	WR in MCM	Paddy	WR in MCM	Groundnut	WR in MCM	Sugarcane	WR in MCM	Garden (Banana)	WR in MCM	
Jun	217	0.40	453	0.188					56	0.10	30	0.046	0.74
Jul	217	1.09	453	0.539					56	0.07	30	0.018	1.71
Aug	217	0.61	453	0.784					56	0.01	30	0.007	1.42
Sep	217	0.43	453	0.192					56	0.01	30	0.009	0.65
Oct	217	0.30	453	0.013					56	0.05	30	0.019	0.39
Nov									56	0.10	30	0.055	0.16
Dec											30	0.000	0.00
Jan					195	0.47	412	0.67	56	0.12	30	0.077	1.33
Feb					195	1.13	412	0.96	56	0.17	30	0.069	2.32
Mar					195	0.92	412	1.40	56	0.22	30	0.102	2.64
Apr					195	0.79	412	0.95	56	0.22	30	0.103	2.06
May										0.21	30	0.081	0.29
Total in MCM		**2.84**		**1.72**		**3.30**		**3.97**		**1.29**		**0.59**	**13.71**
Total in TMC		**0.10**		**0.06**		**0.12**		**0.14**		**0.05**		**0.02**	**0.48**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

IMD Station : Bellary **Agro climatic zone : 3**

Canal : Upper Gangavathi **Duration: 107 days** **Crop : Paddy = 217 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc			1.1	1.1	1.1	1.05	1.05	1.05	1.05	
4	ETc (mm)			82.83	88.35	81.35	82.82	72.61	72.61	62.69	
5	Nursery (mm)	28.00	16.00								
6	Land preparation (mm)		150								
7	Transplantation (mm)			125							
8	Percolation @ 3mm/day (mm)			45.00	48.00	45.00	48.00	45.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	252.83	136.35	126.35	130.82	117.61	117.61	107.69	1183.25
10	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	466.13
11	Eff RF (mm) from table		64.82		71.78		79.01		110.78	37.80	
		32.41	32.41	34.45	37.33	37.92	41.09	55.39	55.39	18.90	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	31.44	31.44	33.42	36.21	36.79	39.85	53.73	53.73	18.33	
13	NIR for Nursery (mm)	0.00	0.00								
14	NIR for other period (mm)		118.56	219.41	100.15	89.56	90.97	63.88	63.88	89.35	835.76
15	Field Irrigation requirement FIR = NIR/0.85		139.49	258.13	117.82	105.36	107.03	75.15	75.15	105.12	
16	GIR for nursery (mm) = GIR=FIR/0.75	0.00	0.00								
17	GIR for other period (mm) = GIR=FIR/0.75		185.98	344.17	157.09	140.48	142.70	100.20	100.20	140.16	1310.99
18	Area (Ha) for nursery	21.70	21.70								
19	Area (Ha) for other period					217					
20	Water Requirement for nursery in MCM	0.000	0.000								
21	WR for other period in MCM		0.404	0.747	0.341	0.305	0.310	0.217	0.217	0.304	
22	Total Water requirement in MCM	0.000	0.404	0.747	0.341	0.305	0.310	0.217	0.217	0.304	**2.84**
23	Discharge in m^3/sec	**0.000**	**0.311**	**0.576**	**0.247**	**0.235**	**0.224**	**0.168**	**0.168**	**0.235**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Upper Gangavathi **Duration: 120 days** **Crop : Jowar = 453 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc		0.35	0.58	0.81	1.05	1.05	1.05	0.70	0.53	
4	ETc (mm)		29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	
5	Pre sowing requirement (mm)	40.00									
6	Gross Water Requirement (mm)	40.00	29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	491.10
7	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	409.83
8	Monthy Eff RF (mm) from table		50.57		52.34		78.40		107.14	31.21	
9	Eff RF (mm) from table	25.29	25.29	25.12	27.21	37.63	40.77	53.57	53.57	31.21	
10	(0.97 * Effective Rainfall) mm at 50% chance of occurance	24.53	24.53	24.37	26.40	36.50	39.55	51.97	51.97	30.27	
11	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 10)	15.47	4.71	19.31	38.66	41.14	43.28	20.64	0.00	1.37	184.59
12	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	23.80	7.25	29.70	59.48	63.30	66.58	31.76	0.00	2.11	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	31.74	9.67	39.60	79.31	84.40	88.77	42.34	0.00	2.81	378.64
14	Area (Ha)	453									
15	Water Requirement in MCM	0.144	0.044	0.179	0.359	0.382	0.402	0.192	0.000	0.013	**1.72**
16	Discharge in m3/sec	**0.111**	**0.034**	**0.138**	**0.260**	**0.295**	**0.291**	**0.148**	**0.000**	**0.010**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Agro climatic zone : 3

Canal : Upper Gangavathi **Duration: 120 days** **Crop : Paddy = 195 ha**

Season : Rabi **Sowing time: Jan-01** **IMD Station : Bellary**

No.	Particulars	Jan		Feb		March		April		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc			1.25	1.25	1.25	1.25	1.00	1.00	
4	ETc (mm)			86.06	74.59	103.31	110.20	90.45	90.45	
5	Nursery (mm)	28.00	16.00							
6	Land preparation		150							
7	Transplantation			125						
8	Percolation @ 3 mm/day(mm)			45.00	39.00	45.00	48.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	256.06	113.59	148.31	158.20	135.45	135.45	1141.06
10	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
11	Eff RF (mm) from table		1.19		1.05		6.03		13.52	
		0.5712	0.62	0.56	0.49	2.89	3.14	6.76	6.76	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.55	0.60	0.54	0.47	2.81	3.04	6.56	6.56	
13	NIR for nusery (mm)	27.45	15.40							
14	NIR for other period (mm) (6 - 12)		149.40	255.52	113.11	145.50	155.16	128.89	128.89	1076.48
15	Field Irrigation Requirement FIR (mm) = NIR/0.85		175.76	300.61	133.08	171.18	182.54	151.64	151.64	
16	GIR for nursery	36.59	20.53							
17	Gross Irrigation Requirement GIR (mm) = FIR/0.75		234.35	400.81	177.44	228.24	243.39	202.18	202.18	1688.60
18	Area (Ha) for nursery	19.50	19.50							
19	Area (Ha) for other period					195				
20	Water Requirement for nursery	0.007	0.004							
21	Water Requirement in MCM		0.457	0.782	0.346	0.445	0.475	0.394	0.394	
22	Total water requirement in MCM	0.007	0.461	0.782	0.346	0.445	0.475	0.394	0.394	**3.30**
23	Discharge in m3/sec	**0.006**	**0.333**	**0.603**	**0.308**	**0.343**	**0.343**	**0.304**	**0.304**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Upper Gangavathi **Crop : Groundnut = 412 ha**

Season : Rabi **Duration: 120 days**

No.	Particulars	Jan		Feb		Mar		Apr		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc		0.67	0.79	1	1	1.00	0.79	0.58	
4	ETc (mm)		39.77	54.39	59.67	82.65	88.16	71.46	52.46	
5	Pre sowing requirement (mm)	40.00								
6	Gross Water Requirement (mm)	40.00	39.77	54.39	59.67	82.65	88.16	71.46	52.46	488.56
7	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
8	Eff RF (mm) from table		0.99		0.88		5.71		12.07	
		0.48	0.51	0.47	0.41	2.74	2.97	6.04	6.04	
9	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.46	0.50	0.46	0.40	2.66	2.88	5.85	5.85	
10	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 9)	39.54	39.27	53.93	59.27	79.99	85.28	65.60	46.61	469.50
11	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	60.83	60.42	82.98	91.19	123.06	131.20	100.93	71.70	
12	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.11	80.56	110.64	121.59	164.08	174.93	134.57	95.60	963.08
13	Area (Ha)	412								
14	Water Requirement in MCM	0.334	0.332	0.456	0.501	0.676	0.721	0.554	0.394	**3.97**
15	Discharge in m^3/sec	**0.258**	**0.240**	**0.352**	**0.446**	**0.522**	**0.521**	**0.428**	**0.304**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Upper Gangavathi **Crop : Sugarcane= 56 ha** **Duration : 304 days**

Season : Perennial **Sowing time: Jan-01**

No	Particulars	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II			
1	No of Days	15	16	15	13	15	16	15	15	15	16	15	15	15	16	15	16	15	15	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	
3	Crop Factor, Kc		1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	0.88	0.88	0.70	0.70	0.48	0.48	0.78	0.78	0.93	1.05	1.05	1.05	
4	ETc (mm)		68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	
5	Plant use (Pre-sowing) mm	40.00																						
7	Gross Water Requirement (mm)	40.00	68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	1554.26
8	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	20.66	22.39	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	54.04	58.55	15.04	15.04	620.87
9	Monthy Eff RF (mm) from table		1.00		0.95		5.99		14.01		41.44		58.50		52.35		65.21		101.50		80.53		22.06	
10	Eff RF (mm) from table	0.48	0.52	0.51	0.44	2.88	3.29	7.01	7.01	19.89	21.55	29.25	29.25	25.13	27.22	31.30	33.91	50.75	50.75	38.66	41.88	11.03	11.03	
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.47	0.50	0.49	0.43	2.79	3.20	6.79	6.79	19.29	20.90	28.37	28.37	24.37	26.41	30.36	32.89	49.23	49.23	37.50	40.62	10.70	10.70	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	39.53	67.76	78.68	68.19	92.26	98.19	97.22	97.22	89.04	94.65	45.15	45.15	28.34	29.82	5.13	4.97	4.71	4.71	18.02	26.24	44.43	44.43	1123.85
13	Field Irrigation Requirement = FIR = NIR/0.65	60.82	104.25	121.05	104.91	141.94	151.06	149.57	149.57	136.98	145.62	69.47	69.47	43.59	45.87	7.90	7.65	7.24	7.24	27.73	40.37	68.35	68.35	
14	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.10	138.99	161.40	139.88	189.25	201.41	199.43	199.43	182.64	194.15	92.62	92.62	58.12	61.17	10.53	10.19	9.66	9.66	36.97	53.83	91.13	91.13	2305.32
15	Area (Ha)	56																						
16	Water Requirement in MCM	0.045	0.078	0.090	0.078	0.106	0.113	0.112	0.112	0.102	0.109	0.052	0.052	0.033	0.034	0.006	0.006	0.005	0.005	0.021	0.030	0.051	0.051	**1.29**
17	Discharge in m3/sec	**0.035**	**0.056**	**0.070**	**0.070**	**0.082**	**0.082**	**0.086**	**0.086**	**0.079**	**0.079**	**0.040**	**0.040**	**0.025**	**0.025**	**0.005**	**0.004**	**0.004**	**0.004**	**0.016**	**0.022**	**0.039**	**0.039**	

Note : Irrigation cut days = 15 days before harvest

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Upper Gangavathi **Crop : Garden (Banana)= 30 ha** **Duration : 365 days**

Season : Perennial **Sowing time: Jul-01**

No	Particulars	Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	16	15	15	15	16	15	15	15	16	15	16	15	13	15	16	15	15	15	16	15	15	
2	ETo (mm)	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	50.25	53.60	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	
3	Crop Factor, Kc	0.50	0.50	0.50	0.50	0.85	0.85	0.85	0.85	1.05	1.05	1.05	1.05	1.10	1.10	0.90	0.85	1.00	1.00	1.00	1.00	0.85	0.85	0.80	0.75	
4	ETc (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	
7	Gross Water Requirement (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	1481.83
8	Rainfall (mm)	34.5	37.3	49.3	53.4	79.7	79.7	54.0	58.5	15.0	15.0	4.0	4.4	0.7	0.6	0.6	0.6	3.3	3.6	8.0	8.0	20.7	22.4	38.0	38.0	629.16
9	Monthy Eff RF (mm) from table		49.25		66.30		105.66		77.03		22.06		6.15		0.98		0.88		5.71		13.52		35.06		57.09	
10	Eff RF (mm) from table	23.64	25.61	31.83	34.48	52.83	52.83	36.97	40.05	11.03	11.03	2.95	3.20	0.47	0.51	0.47	0.41	2.74	2.97	6.76	6.76	16.83	18.23	28.55	28.55	363.94
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	22.93	24.84	30.87	33.44	51.24	51.24	35.86	38.85	10.70	10.70	2.86	3.10	0.46	0.49	0.46	0.40	2.66	2.88	6.56	6.56	16.32	17.68	27.69	27.69	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	14.72	15.32	6.10	6.00	7.53	7.53	14.88	15.28	44.43	44.43	0.00	0.00	60.76	64.80	61.51	50.32	79.99	85.28	83.89	83.89	63.75	67.72	39.15	34.97	952.26
	Field Irrigation Requirement = FIR = NIR/0.65	22.65	23.57	9.39	9.23	11.59	11.59	22.89	23.50	68.35	68.35	0.00	0.00	93.47	99.69	94.63	77.42	123.06	131.20	129.07	129.07	98.07	104.19	60.23	53.80	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	30.196	31.425	12.522	12.302	15.451	15.451	30.526	31.335	91.130	91.130	0.000	0.000	124.633	132.927	126.169	103.228	164.085	174.933	172.088	172.088	130.762	138.921	80.306	71.737	1953.34
14	Area (Ha)	30																								
15	Water Requirement in MCM	0.009	0.009	0.004	0.004	0.005	0.005	0.009	0.009	0.027	0.027	0.000	0.000	0.037	0.040	0.038	0.031	0.049	0.052	0.052	0.052	0.039	0.042	0.024	0.022	**0.59**
16	Discharge in m3/sec	**0.007**	**0.007**	**0.003**	**0.003**	**0.004**	**0.004**	**0.007**	**0.007**	**0.021**	**0.021**	**0.000**	**0.000**	**0.029**	**0.029**	**0.029**	**0.028**	**0.038**	**0.038**	**0.040**	**0.040**	**0.030**	**0.030**	**0.019**	**0.017**	
Note : Irrigation cut days = 15 days before harvest																										

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Peak Discharge Table for Upper Gangavathi canal

No	Particulars	January		February		March		April		May		June		July		August		September		October		November		December		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
For Khariff Season																										
	Paddy											0.000	0.311	0.576	0.247	0.235	0.224	0.168	0.168	0.235						
	Light											0.111	0.034	0.138	0.260	0.295	0.291	0.148	0.000	0.010						
For Rabi Season																										
	Paddy	0.006	0.333	0.603	0.308	0.343	0.343	0.304	0.304																	
	Light	0.258	0.240	0.352	0.446	0.522	0.521	0.428	0.304																	
Perrinial																										
	Sugarcane	0.035	0.056	0.070	0.070	0.082	0.082	0.086	0.086	0.079	0.079	0.040	0.040	0.025	0.025	0.005	0.004	0.004	0.004	0.016	0.022	0.039	0.039			
	Garden	0.029	0.029	0.029	0.028	0.038	0.038	0.040	0.040	0.030	0.030	0.019	0.017	0.007	0.007	0.003	0.003	0.004	0.004	0.007	0.007	0.021	0.021	0.000	0.000	
Total		0.33	0.66	1.05	0.85	0.98	0.98	0.86	0.73	0.11	0.11	0.17	0.40	0.75	0.54	0.54	0.52	0.32	0.18	0.27	0.03	0.06	0.06	0.00	0.00	**1.05**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Name of the Canal: Lower Gangavathi Canal									Unit: MCM		Cropped Area :		1141 ha
No	Khariff				Rabi				Perennial				Total WR in MCM
	Paddy	WR in MCM	Jowar	WR in MCM	Paddy	WR in MCM	Groundnut	WR in MCM	Sugarcane	WR in MCM	Garden (Banana)	WR in MCM	
Jun	164	0.31	404	0.167					48	0.09	38	0.058	0.62
Jul	164	0.82	404	0.480					48	0.06	38	0.023	1.38
Aug	164	0.46	404	0.700					48	0.01	38	0.009	1.18
Sep	164	0.33	404	0.171					48	0.01	38	0.012	0.52
Oct	164	0.23	404	0.011					48	0.04	38	0.024	0.31
Nov									48	0.09	38	0.069	0.16
Dec											38	0.000	0.00
Jan					170	0.41	317	0.51	48	0.11	38	0.098	1.12
Feb					170	0.98	317	0.74	48	0.14	38	0.087	1.95
Mar					170	0.80	317	1.07	48	0.19	38	0.129	2.19
Apr					170	0.69	317	0.73	48	0.19	38	0.131	1.74
May										0.18	38	0.102	0.28
Total in MCM		**2.15**		**1.53**		**2.88**		**3.05**		**1.11**		**0.74**	**11.46**
Total in TMC		**0.08**		**0.05**		**0.10**		**0.11**		**0.04**		**0.03**	**0.40**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

IMD Station : Bellary **Agro climatic zone : 3**

Canal : Lower Gangavathi **Duration: 107 days** **Crop : Paddy = 164 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc			1.1	1.1	1.1	1.05	1.05	1.05	1.05	
4	ETc (mm)			82.83	88.35	81.35	82.82	72.61	72.61	62.69	
5	Nursery (mm)	28.00	16.00								
6	Land preparation (mm)		150								
7	Transplantation (mm)			125							
8	Percolation @ 3mm/day (mm)			45.00	48.00	45.00	48.00	45.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	252.83	136.35	126.35	130.82	117.61	117.61	107.69	1183.25
10	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	466.13
11	Eff RF (mm) from table		64.82		71.78		79.01		110.78	37.80	
		32.41	32.41	34.45	37.33	37.92	41.09	55.39	55.39	18.90	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	31.44	31.44	33.42	36.21	36.79	39.85	53.73	53.73	18.33	
13	NIR for Nursery (mm)	0.00	0.00								
14	NIR for other period (mm)		118.56	219.41	100.15	89.56	90.97	63.88	63.88	89.35	835.76
15	Field Irrigation requirement FIR = NIR/0.85		139.49	258.13	117.82	105.36	107.03	75.15	75.15	105.12	
16	GIR for nursery (mm) = GIR=FIR/0.75	0.00	0.00								
17	GIR for other period (mm) = GIR=FIR/0.75		185.98	344.17	157.09	140.48	142.70	100.20	100.20	140.16	1310.99
18	Area (Ha) for nursery	16.40	16.40								
19	Area (Ha) for other period	164									
20	Water Requirement for nursery in MCM	0.000	0.000								
21	WR for other period in MCM		0.305	0.564	0.258	0.230	0.234	0.164	0.164	0.230	
22	Total Water requirement in MCM	0.000	0.305	0.564	0.258	0.230	0.234	0.164	0.164	0.230	**2.15**
23	Discharge in m^3/sec	**0.000**	**0.235**	**0.436**	**0.186**	**0.178**	**0.169**	**0.127**	**0.127**	**0.177**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Lower Gangavathi **Duration: 120 days** **Crop : Jowar = 404 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc		0.35	0.58	0.81	1.05	1.05	1.05	0.70	0.53	
4	ETc (mm)		29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	
5	Pre sowing requirement (mm)	40.00									
6	Gross Water Requirement (mm)	40.00	29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	491.10
7	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	409.83
8	Monthy Eff RF (mm) from table		50.57		52.34		78.40		107.14	31.21	
9	Eff RF (mm) from table	25.29	25.29	25.12	27.21	37.63	40.77	53.57	53.57	31.21	
10	(0.97 * Effective Rainfall) mm at 50% chance of occurance	24.53	24.53	24.37	26.40	36.50	39.55	51.97	51.97	30.27	
11	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 10)	15.47	4.71	19.31	38.66	41.14	43.28	20.64	0.00	1.37	184.59
12	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	23.80	7.25	29.70	59.48	63.30	66.58	31.76	0.00	2.11	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	31.74	9.67	39.60	79.31	84.40	88.77	42.34	0.00	2.81	378.64
14	Area (Ha)	404									
15	Water Requirement in MCM	0.128	0.039	0.160	0.320	0.341	0.359	0.171	0.000	0.011	**1.53**
16	Discharge in m3/sec	**0.099**	**0.030**	**0.123**	**0.232**	**0.263**	**0.259**	**0.132**	**0.000**	**0.009**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Agro climatic zone : 3

Canal : Lower Gangavathi **Duration: 120 days** **Crop : Paddy = 170 ha**

Season : Rabi **Sowing time: Jan-01** **IMD Station : Bellary**

No.	Particulars	Jan		Feb		March		April		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc			1.25	1.25	1.25	1.25	1.00	1.00	
4	ETc (mm)			86.06	74.59	103.31	110.20	90.45	90.45	
5	Nursery (mm)	28.00	16.00							
6	Land preparation		150							
7	Transplantation			125						
8	Percolation @ 3 mm/day(mm)			45.00	39.00	45.00	48.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	256.06	113.59	148.31	158.20	135.45	135.45	1141.06
10	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
11	Eff RF (mm) from table		1.19		1.05		6.03		13.52	
		0.5712	0.62	0.56	0.49	2.89	3.14	6.76	6.76	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.55	0.60	0.54	0.47	2.81	3.04	6.56	6.56	
13	NIR for nusery (mm)	27.45	15.40							
14	NIR for other period (mm) (6 - 12)		149.40	255.52	113.11	145.50	155.16	128.89	128.89	1076.48
15	Field Irrigation Requirement FIR (mm) = NIR/0.85		175.76	300.61	133.08	171.18	182.54	151.64	151.64	
16	GIR for nursery	36.59	20.53							
17	Gross Irrigation Requirement GIR (mm) = FIR/0.75		234.35	400.81	177.44	228.24	243.39	202.18	202.18	1688.60
18	Area (Ha) for nursery	17.00	17.00							
19	Area (Ha) for other period					170				
20	Water Requirement for nursery	0.006	0.003							
21	Water Requirement in MCM		0.398	0.681	0.302	0.388	0.414	0.344	0.344	
22	Total water requirement in MCM	0.006	0.402	0.681	0.302	0.388	0.414	0.344	0.344	**2.88**
23	Discharge in m3/sec	**0.005**	**0.291**	**0.526**	**0.269**	**0.299**	**0.299**	**0.265**	**0.265**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Lower Gangavathi **Crop : Groundnut = 317 ha**

Season : Rabi **Duration: 120 days**

No.	Particulars	Jan		Feb		Mar		Apr		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc		0.67	0.79	1	1	1.00	0.79	0.58	
4	ETc (mm)		39.77	54.39	59.67	82.65	88.16	71.46	52.46	
5	Pre sowing requirement (mm)	40.00								
6	Gross Water Requirement (mm)	40.00	39.77	54.39	59.67	82.65	88.16	71.46	52.46	488.56
7	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
8	Eff RF (mm) from table		0.99		0.88		5.71		12.07	
		0.48	0.51	0.47	0.41	2.74	2.97	6.04	6.04	
9	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.46	0.50	0.46	0.40	2.66	2.88	5.85	5.85	
10	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 9)	39.54	39.27	53.93	59.27	79.99	85.28	65.60	46.61	469.50
11	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	60.83	60.42	82.98	91.19	123.06	131.20	100.93	71.70	
12	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.11	80.56	110.64	121.59	164.08	174.93	134.57	95.60	963.08
13	Area (Ha)	317								
14	Water Requirement in MCM	0.257	0.255	0.351	0.385	0.520	0.555	0.427	0.303	**3.05**
15	Discharge in m^3/sec	**0.198**	**0.185**	**0.271**	**0.343**	**0.401**	**0.401**	**0.329**	**0.234**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Lower Gangavathi **Crop : Sugarcane = 48 ha** **Duration : 304 days**

Season : Perennial **Sowing time: Jan-01**

No	Particulars	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II			
1	No of Days	15	16	15	13	15	16	15	15	15	16	15	15	15	16	15	16	15	15	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	
3	Crop Factor, Kc		1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	0.88	0.88	0.70	0.70	0.48	0.48	0.78	0.78	0.93	1.05	1.05	1.05	
4	ETc (mm)		68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	
5	Plant use (Pre-sowing) mm	40.00																						
7	Gross Water Requirement (mm)	40.00	68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	1554.26
8	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	20.66	22.39	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	54.04	58.55	15.04	15.04	620.87
9	Monthy Eff RF (mm) from table		1.00		0.95		5.99		14.01		41.44		58.50		52.35		65.21		101.50		80.53		22.06	
10	Eff RF (mm) from table	0.48	0.52	0.51	0.44	2.88	3.29	7.01	7.01	19.89	21.55	29.25	29.25	25.13	27.22	31.30	33.91	50.75	50.75	38.66	41.88	11.03	11.03	
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.47	0.50	0.49	0.43	2.79	3.20	6.79	6.79	19.29	20.90	28.37	28.37	24.37	26.41	30.36	32.89	49.23	49.23	37.50	40.62	10.70	10.70	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	39.53	67.76	78.68	68.19	92.26	98.19	97.22	97.22	89.04	94.65	45.15	45.15	28.34	29.82	5.13	4.97	4.71	4.71	18.02	26.24	44.43	44.43	1123.85
13	Field Irrigation Requirement = FIR = NIR/0.65	60.82	104.25	121.05	104.91	141.94	151.06	149.57	149.57	136.98	145.62	69.47	69.47	43.59	45.87	7.90	7.65	7.24	7.24	27.73	40.37	68.35	68.35	
14	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.10	138.99	161.40	139.88	189.25	201.41	199.43	199.43	182.64	194.15	92.62	92.62	58.12	61.17	10.53	10.19	9.66	9.66	36.97	53.83	91.13	91.13	2305.32
15	Area (Ha)	48																						
16	Water Requirement in MCM	0.039	0.067	0.077	0.067	0.091	0.097	0.096	0.096	0.088	0.093	0.044	0.044	0.028	0.029	0.005	0.005	0.005	0.005	0.018	0.026	0.044	0.044	**1.11**
17	Discharge in m3/sec	**0.030**	**0.048**	**0.060**	**0.060**	**0.070**	**0.070**	**0.074**	**0.074**	**0.068**	**0.067**	**0.034**	**0.034**	**0.022**	**0.021**	**0.004**	**0.004**	**0.004**	**0.004**	**0.014**	**0.019**	**0.034**	**0.034**	

Note : Irrigation cut days = 15 days before harvest

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Lower Gangavathi **Crop : Garden (Banana) = 38 ha** **Duration : 365 days**

Season : Perennial **Sowing time: Jul-01**

No	Particulars	Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	16	15	15	15	16	15	15	15	16	15	16	15	13	15	16	15	15	15	16	15	15	
2	ETo (mm)	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	50.25	53.60	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	
3	Crop Factor, Kc	0.50	0.50	0.50	0.50	0.85	0.85	0.85	0.85	1.05	1.05	1.05	1.05	1.10	1.10	0.90	0.85	1.00	1.00	1.00	1.00	0.85	0.85	0.80	0.75	
4	ETc (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	
7	Gross Water Requirement (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	1481.83
8	Rainfall (mm)	34.5	37.3	49.3	53.4	79.7	79.7	54.0	58.5	15.0	15.0	4.0	4.4	0.7	0.6	0.6	0.6	3.3	3.6	8.0	8.0	20.7	22.4	38.0	38.0	629.16
9	Monthy Eff RF (mm) from table		49.25		66.30		105.66		77.03		22.06		6.15		0.98		0.88		5.71		13.52		35.06		57.09	
10	Eff RF (mm) from table	23.64	25.61	31.83	34.48	52.83	52.83	36.97	40.05	11.03	11.03	2.95	3.20	0.47	0.51	0.47	0.41	2.74	2.97	6.76	6.76	16.83	18.23	28.55	28.55	363.94
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	22.93	24.84	30.87	33.44	51.24	51.24	35.86	38.85	10.70	10.70	2.86	3.10	0.46	0.49	0.46	0.40	2.66	2.88	6.56	6.56	16.32	17.68	27.69	27.69	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	14.72	15.32	6.10	6.00	7.53	7.53	14.88	15.28	44.43	44.43	0.00	0.00	60.76	64.80	61.51	50.32	79.99	85.28	83.89	83.89	63.75	67.72	39.15	34.97	952.26
	Field Irrigation Requirement = FIR = NIR/0.65	22.65	23.57	9.39	9.23	11.59	11.59	22.89	23.50	68.35	68.35	0.00	0.00	93.47	99.69	94.63	77.42	123.06	131.20	129.07	129.07	98.07	104.19	60.23	53.80	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	30.196	31.425	12.522	12.302	15.451	15.451	30.526	31.335	91.130	91.130	0.000	0.000	124.633	132.927	126.169	103.228	164.085	174.933	172.088	172.088	130.762	138.921	80.306	71.737	1953.34
14	Area (Ha)													38												
15	Water Requirement in MCM	0.011	0.012	0.005	0.005	0.006	0.006	0.012	0.012	0.035	0.035	0.000	0.000	0.047	0.051	0.048	0.039	0.062	0.066	0.065	0.065	0.050	0.053	0.031	0.027	**0.74**
16	Discharge in m3/sec	**0.009**	**0.009**	**0.004**	**0.003**	**0.005**	**0.005**	**0.009**	**0.009**	**0.027**	**0.027**	**0.000**	**0.000**	**0.037**	**0.037**	**0.037**	**0.035**	**0.048**	**0.048**	**0.050**	**0.050**	**0.038**	**0.038**	**0.024**	**0.021**	
Note : Irrigation cut days = 15 days before harvest																										

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Peak Discharge Table for Lower Gangavathi canal

No	Particulars	January		February		March		April		May		June		July		August		September		October		November		December		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
For Khariff Season																										
	Paddy											0.000	0.235	0.436	0.186	0.178	0.169	0.127	0.127	0.177						
	Light											0.099	0.030	0.123	0.232	0.263	0.259	0.132	0.000	0.009						
For Rabi Season																										
	Paddy	0.005	0.291	0.526	0.269	0.299	0.299	0.265	0.265																	
	Light	0.198	0.185	0.271	0.343	0.401	0.401	0.329	0.234																	
Perrinial																										
	Sugarcane	0.030	0.048	0.060	0.060	0.070	0.070	0.074	0.074	0.068	0.067	0.034	0.034	0.022	0.021	0.004	0.004	0.004	0.004	0.014	0.019	0.034	0.034			
	Garden	0.037	0.037	0.037	0.035	0.048	0.048	0.050	0.050	0.038	0.038	0.024	0.021	0.009	0.009	0.004	0.003	0.005	0.005	0.009	0.009	0.027	0.027	0.000	0.000	
Total		0.27	0.56	0.89	0.71	0.82	0.82	0.72	0.62	0.11	0.11	0.16	0.32	0.59	0.45	0.45	0.44	0.27	0.13	0.21	0.03	0.06	0.06	0.00	0.00	**0.89**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Name of the Canal: Bichal Canal									Unit: MCM				Cropped Area : 276 ha
No	Khariff				Rabi				Perennial				Total WR in MCM
	Paddy	WR in MCM	Jowar	WR in MCM	Paddy	WR in MCM	Groundnut	WR in MCM	Sugarcane	WR in MCM	Garden (Banana)	WR in MCM	
Jun	13	0.02	140	0.058					60	0.11	50	0.076	0.27
Jul	13	0.07	140	0.166					60	0.07	50	0.031	0.33
Aug	13	0.04	140	0.242					60	0.01	50	0.012	0.30
Sep	13	0.03	140	0.059					60	0.01	50	0.015	0.11
Oct	13	0.02	140	0.004					60	0.05	50	0.031	0.11
Nov									60	0.11	50	0.091	0.20
Dec											50	0.000	0.00
Jan					9	0.02	4	0.01	60	0.13	50	0.129	0.29
Feb					9	0.05	4	0.01	60	0.18	50	0.115	0.36
Mar					9	0.04	4	0.01	60	0.23	50	0.170	0.46
Apr					9	0.04	4	0.01	60	0.24	50	0.172	0.46
May										0.23	50	0.135	0.36
Total in MCM		**0.17**		**0.53**		**0.15**		**0.04**		**1.38**		**0.98**	**3.25**
Total in TMC		**0.01**		**0.02**		**0.01**		**0.00**		**0.05**		**0.03**	**0.11**

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

IMD Station : Bellary **Agro climatic zone : 3**

Canal : Bichal **Duration: 107 days** **Crop : Paddy = 13 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc			1.1	1.1	1.1	1.05	1.05	1.05	1.05	
4	ETc (mm)			82.83	88.35	81.35	82.82	72.61	72.61	62.69	
5	Nursery (mm)	28.00	16.00								
6	Land preparation (mm)		150								
7	Transplantation (mm)			125							
8	Percolation @ 3mm/day (mm)			45.00	48.00	45.00	48.00	45.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	252.83	136.35	126.35	130.82	117.61	117.61	107.69	1183.25
10	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	466.13
11	Eff RF (mm) from table		64.82		71.78		79.01		110.78	37.80	
		32.41	32.41	34.45	37.33	37.92	41.09	55.39	55.39	18.90	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	31.44	31.44	33.42	36.21	36.79	39.85	53.73	53.73	18.33	
13	NIR for Nursery (mm)	0.00	0.00								
14	NIR for other period (mm)		118.56	219.41	100.15	89.56	90.97	63.88	63.88	89.35	835.76
15	Field Irrigation requirement FIR = NIR/0.85		139.49	258.13	117.82	105.36	107.03	75.15	75.15	105.12	
16	GIR for nursery (mm) = GIR=FIR/0.75	0.00	0.00								
17	GIR for other period (mm) = GIR=FIR/0.75		185.98	344.17	157.09	140.48	142.70	100.20	100.20	140.16	1310.99
18	Area (Ha) for nursery	1.30	1.30								
19	Area (Ha) for other period					13					
20	Water Requirement for nursery in MCM	0.000	0.000								
21	WR for other period in MCM		0.024	0.045	0.020	0.018	0.019	0.013	0.013	0.018	
22	Total Water requirement in MCM	0.000	0.024	0.045	0.020	0.018	0.019	0.013	0.013	0.018	**0.17**
23	Discharge in m^3/sec	**0.000**	**0.019**	**0.035**	**0.015**	**0.014**	**0.013**	**0.010**	**0.010**	**0.014**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Bichal **Duration: 120 days** **Crop : Jowar = 140 ha**

Season : Khariff **Sowing time: Jun-01**

No.	Particulars	June		July		August		September		October	Total
		I	II	I	II	I	II	I	II	I	
1	No of Days	15	15	15	16	15	16	15	15	15	
2	ETo (mm)	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	
3	Crop Factor, Kc		0.35	0.58	0.81	1.05	1.05	1.05	0.70	0.53	
4	ETc (mm)		29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	
5	Pre sowing requirement (mm)	40.00									
6	Gross Water Requirement (mm)	40.00	29.24	43.67	65.06	77.65	82.82	72.61	48.41	31.64	491.10
7	Rainfall (mm)	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	56.30	409.83
8	Monthy Eff RF (mm) from table		50.57		52.34		78.40		107.14	31.21	
9	Eff RF (mm) from table	25.29	25.29	25.12	27.21	37.63	40.77	53.57	53.57	31.21	
10	(0.97 * Effective Rainfall) mm at 50% chance of occurance	24.53	24.53	24.37	26.40	36.50	39.55	51.97	51.97	30.27	
11	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 10)	15.47	4.71	19.31	38.66	41.14	43.28	20.64	0.00	1.37	184.59
12	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	23.80	7.25	29.70	59.48	63.30	66.58	31.76	0.00	2.11	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	31.74	9.67	39.60	79.31	84.40	88.77	42.34	0.00	2.81	378.64
14	Area (Ha)	140									
15	Water Requirement in MCM	0.044	0.014	0.055	0.111	0.118	0.124	0.059	0.000	0.004	**0.53**
16	Discharge in m3/sec	**0.034**	**0.010**	**0.043**	**0.080**	**0.091**	**0.090**	**0.046**	**0.000**	**0.003**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Agro climatic zone : 3

Canal : Bichal **Duration: 120 days** **Crop : Paddy = 9 ha**

Season : Rabi **Sowing time: Jan-01** **IMD Station : Bellary**

No.	Particulars	Jan		Feb		March		April		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc			1.25	1.25	1.25	1.25	1.00	1.00	
4	ETc (mm)			86.06	74.59	103.31	110.20	90.45	90.45	
5	Nursery (mm)	28.00	16.00							
6	Land preparation		150							
7	Transplantation			125						
8	Percolation @ 3 mm/day(mm)			45.00	39.00	45.00	48.00	45.00	45.00	
9	Gross Water Requirement (mm)	28.00	166.00	256.06	113.59	148.31	158.20	135.45	135.45	1141.06
10	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
11	Eff RF (mm) from table		1.19		1.05		6.03		13.52	
		0.5712	0.62	0.56	0.49	2.89	3.14	6.76	6.76	
12	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.55	0.60	0.54	0.47	2.81	3.04	6.56	6.56	
13	NIR for nusery (mm)	27.45	15.40							
14	NIR for other period (mm) (6 - 12)		149.40	255.52	113.11	145.50	155.16	128.89	128.89	1076.48
15	Field Irrigation Requirement FIR (mm) = NIR/0.85		175.76	300.61	133.08	171.18	182.54	151.64	151.64	
16	GIR for nursery	36.59	20.53							
17	Gross Irrigation Requirement GIR (mm) = FIR/0.75		234.35	400.81	177.44	228.24	243.39	202.18	202.18	1688.60
18	Area (Ha) for nursery	0.90	0.90							
19	Area (Ha) for other period					9				
20	Water Requirement for nursery	0.000	0.000							
21	Water Requirement in MCM		0.021	0.036	0.016	0.021	0.022	0.018	0.018	
22	Total water requirement in MCM	0.000	0.021	0.036	0.016	0.021	0.022	0.018	0.018	**0.15**
23	Discharge in m3/sec	**0.000**	**0.015**	**0.028**	**0.014**	**0.016**	**0.016**	**0.014**	**0.014**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Bichal **Crop : Groundnut = 4 ha**

Season : Rabi **Duration: 120 days**

No.	Particulars	Jan		Feb		Mar		Apr		Total
		I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	13	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	
3	Crop Factor, Kc		0.67	0.79	1	1	1.00	0.79	0.58	
4	ETc (mm)		39.77	54.39	59.67	82.65	88.16	71.46	52.46	
5	Pre sowing requirement (mm)	40.00								
6	Gross Water Requirement (mm)	40.00	39.77	54.39	59.67	82.65	88.16	71.46	52.46	488.56
7	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	25.33
8	Eff RF (mm) from table		0.99		0.88		5.71		12.07	
		0.48	0.51	0.47	0.41	2.74	2.97	6.04	6.04	
9	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.46	0.50	0.46	0.40	2.66	2.88	5.85	5.85	
10	Net Irrigation Requirement (NIR) (mm) (Row 6 - Row 9)	39.54	39.27	53.93	59.27	79.99	85.28	65.60	46.61	469.50
11	Field Irrigation Requirement (FIR) = NIR/0.65 (mm)	60.83	60.42	82.98	91.19	123.06	131.20	100.93	71.70	
12	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.11	80.56	110.64	121.59	164.08	174.93	134.57	95.60	963.08
13	Area (Ha)	4								
14	Water Requirement in MCM	0.003	0.003	0.004	0.005	0.007	0.007	0.005	0.004	**0.04**
15	Discharge in m^3/sec	**0.003**	**0.002**	**0.003**	**0.004**	**0.005**	**0.005**	**0.004**	**0.003**	

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Bichal **Crop : Sugarcane = 60 ha** **Duration : 304 days**

Season : Perennial **Sowing time: Jan-01**

No	Particulars	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II			
1	No of Days	15	16	15	13	15	16	15	15	15	16	15	15	15	16	15	16	15	15	15	16	15	15	
2	ETo (mm)	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	
3	Crop Factor, Kc		1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	0.88	0.88	0.70	0.70	0.48	0.48	0.78	0.78	0.93	1.05	1.05	1.05	
4	ETc (mm)		68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	
5	Plant use (Pre-sowing) mm	40.00																						
7	Gross Water Requirement (mm)	40.00	68.26	79.18	68.62	95.05	101.38	104.02	104.02	108.33	115.55	73.52	73.52	52.71	56.22	35.50	37.86	53.94	53.94	55.52	66.86	55.13	55.13	1554.26
8	Rainfall (mm)	0.66	0.71	0.64	0.55	3.29	3.56	7.96	7.96	20.66	22.39	38.04	38.04	34.45	37.33	49.26	53.37	79.67	79.67	54.04	58.55	15.04	15.04	620.87
9	Monthy Eff RF (mm) from table		1.00		0.95		5.99		14.01		41.44		58.50		52.35		65.21		101.50		80.53		22.06	
10	Eff RF (mm) from table	0.48	0.52	0.51	0.44	2.88	3.29	7.01	7.01	19.89	21.55	29.25	29.25	25.13	27.22	31.30	33.91	50.75	50.75	38.66	41.88	11.03	11.03	
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	0.47	0.50	0.49	0.43	2.79	3.20	6.79	6.79	19.29	20.90	28.37	28.37	24.37	26.41	30.36	32.89	49.23	49.23	37.50	40.62	10.70	10.70	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	39.53	67.76	78.68	68.19	92.26	98.19	97.22	97.22	89.04	94.65	45.15	45.15	28.34	29.82	5.13	4.97	4.71	4.71	18.02	26.24	44.43	44.43	1123.85
13	Field Irrigation Requirement = FIR = NIR/0.65	60.82	104.25	121.05	104.91	141.94	151.06	149.57	149.57	136.98	145.62	69.47	69.47	43.59	45.87	7.90	7.65	7.24	7.24	27.73	40.37	68.35	68.35	
14	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	81.10	138.99	161.40	139.88	189.25	201.41	199.43	199.43	182.64	194.15	92.62	92.62	58.12	61.17	10.53	10.19	9.66	9.66	36.97	53.83	91.13	91.13	2305.32
15	Area (Ha)	60																						
16	Water Requirement in MCM	0.049	0.083	0.097	0.084	0.114	0.121	0.120	0.120	0.110	0.116	0.056	0.056	0.035	0.037	0.006	0.006	0.006	0.006	0.022	0.032	0.055	0.055	**1.38**
17	Discharge in m3/sec	**0.038**	**0.060**	**0.075**	**0.075**	**0.088**	**0.087**	**0.092**	**0.092**	**0.085**	**0.084**	**0.043**	**0.043**	**0.027**	**0.027**	**0.005**	**0.004**	**0.004**	**0.004**	**0.017**	**0.023**	**0.042**	**0.042**	

Note : Irrigation cut days = 15 days before harvest

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Canal : Bichal **Crop : Garden (Banana) = 50 ha** **Duration : 365 days**

Season : Perennial **Sowing time: Jul-01**

No	Particulars	Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
1	No of Days	15	16	15	16	15	15	15	16	15	15	15	16	15	16	15	13	15	16	15	15	15	16	15	15	
2	ETo (mm)	75.30	80.32	73.95	78.88	69.15	69.15	59.70	63.68	52.50	52.50	50.25	53.60	55.65	59.36	68.85	59.67	82.65	88.16	90.45	90.45	94.20	100.48	83.55	83.55	
3	Crop Factor, Kc	0.50	0.50	0.50	0.50	0.85	0.85	0.85	0.85	1.05	1.05	1.05	1.05	1.10	1.10	0.90	0.85	1.00	1.00	1.00	1.00	0.85	0.85	0.80	0.75	
4	ETc (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	
7	Gross Water Requirement (mm)	37.65	40.16	36.98	39.44	58.78	58.78	50.75	54.13	55.13	55.13	52.76	56.28	61.22	65.30	61.97	50.72	82.65	88.16	90.45	90.45	80.07	85.41	66.84	62.66	1481.83
8	Rainfall (mm)	34.5	37.3	49.3	53.4	79.7	79.7	54.0	58.5	15.0	15.0	4.0	4.4	0.7	0.6	0.6	0.6	3.3	3.6	8.0	8.0	20.7	22.4	38.0	38.0	629.16
9	Monthy Eff RF (mm) from table		49.25		66.30		105.66		77.03		22.06		6.15		0.98		0.88		5.71		13.52		35.06		57.09	
10	Eff RF (mm) from table	23.64	25.61	31.83	34.48	52.83	52.83	36.97	40.05	11.03	11.03	2.95	3.20	0.47	0.51	0.47	0.41	2.74	2.97	6.76	6.76	16.83	18.23	28.55	28.55	363.94
11	(0.97 * Effective Rainfall) mm at 50% chance of occurance	22.93	24.84	30.87	33.44	51.24	51.24	35.86	38.85	10.70	10.70	2.86	3.10	0.46	0.49	0.46	0.40	2.66	2.88	6.56	6.56	16.32	17.68	27.69	27.69	
12	Net Irrigation Requirement (NIR) (mm) (Row 7- Row 11)	14.72	15.32	6.10	6.00	7.53	7.53	14.88	15.28	44.43	44.43	0.00	0.00	60.76	64.80	61.51	50.32	79.99	85.28	83.89	83.89	63.75	67.72	39.15	34.97	952.26
	Field Irrigation Requirement = FIR = NIR/0.65	22.65	23.57	9.39	9.23	11.59	11.59	22.89	23.50	68.35	68.35	0.00	0.00	93.47	99.69	94.63	77.42	123.06	131.20	129.07	129.07	98.07	104.19	60.23	53.80	
13	Gross Irrigation Requirement (GIR) = FIR/0.75 (mm)	30.196	31.425	12.522	12.302	15.451	15.451	30.526	31.335	91.130	91.130	0.000	0.000	124.633	132.927	126.169	103.228	164.085	174.933	172.088	172.088	130.762	138.921	80.306	71.737	1953.34
14	Area (Ha)													50												
15	Water Requirement in MCM	0.015	0.016	0.006	0.006	0.008	0.008	0.015	0.016	0.046	0.046	0.000	0.000	0.062	0.066	0.063	0.052	0.082	0.087	0.086	0.086	0.065	0.069	0.040	0.036	**0.98**
16	Discharge in m3/sec	**0.012**	**0.011**	**0.005**	**0.004**	**0.006**	**0.006**	**0.012**	**0.011**	**0.035**	**0.035**	**0.000**	**0.000**	**0.048**	**0.048**	**0.049**	**0.046**	**0.063**	**0.063**	**0.066**	**0.066**	**0.050**	**0.050**	**0.031**	**0.028**	
Note : Irrigation cut days = 15 days before harvest																										

MODERNISATION OF VIJAYNAGAR CHANNELS IN TUNGABHADRA PROJECT

Peak Discharge Table for Bichal canal

No	Particulars	January		February		March		April		May		June		July		August		September		October		November		December		Total
		I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II	
For Khariff Season																										
	Paddy											0.000	0.019	0.035	0.015	0.014	0.013	0.010	0.010	0.014						
	Light											0.034	0.010	0.043	0.080	0.091	0.090	0.046	0.000	0.003						
For Rabi Season																										
	Paddy	0.000	0.015	0.028	0.014	0.016	0.016	0.014	0.014																	
	Light	0.003	0.002	0.003	0.004	0.005	0.005	0.004	0.003																	
Perrinial																										
	Sugarcane	0.038	0.060	0.075	0.075	0.088	0.087	0.092	0.092	0.085	0.084	0.043	0.043	0.027	0.027	0.005	0.004	0.004	0.004	0.017	0.023	0.042	0.042			
	Garden	0.048	0.048	0.049	0.046	0.063	0.063	0.066	0.066	0.050	0.050	0.031	0.028	0.012	0.011	0.005	0.004	0.006	0.006	0.012	0.011	0.035	0.035	0.000	0.000	
Total		0.09	0.13	0.15	0.14	0.17	0.17	0.18	0.18	0.14	0.13	0.11	0.10	0.12	0.13	0.11	0.11	0.07	0.02	0.05	0.03	0.08	0.08	0.00	0.00	**0.18**

MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT

DETAILED PROJECT REPORT

ANNEXURE 12.1

ALLOCATION OF WATER (KWDT I) – REVISED MASTER PLAN 2003

GOVERNMENT OF KARNATAKA

No: PWD 11 MTP 2002

Karnataka Government Secretariat
Vidhana Soudha
Bangalore, Dated 15th January 2002

From:

The Secretary,
Water Resources Department.

To:

The Chairman,
Central Water Commission,
New Delhi.

Sir,

Sub: Revised Master Plan of Krishna Waters for 734 TMC Under Scheme 'A' allocation-Reg.

Ref: 1) Government letter No.PWD/1/MMM/87 Dated 08.01.1987.
2) Government letter No.ID/23/MMS/93 Dated 24.09.1993.

* * *

In the Government letter cited at reference (1) above, (copy enclosed) project wise allocation in respect of different projects was communicated corresponding to the quantum of 757 TMC of water available to Karnataka in Krishna basin as detailed below.

a) 734 TMC comprising 700 TMC of surface flows and 34 TMC by way of regeneration flows, based on the Award of Krishna Water Dispute Tribunal.
b) 23 TMC by way of the Award of the Godavari Water Disputes Tribunal regarding diversion of Godavari Water to Krishna river including re-generation.

Subsequently, in the light of the allocation of 173 TMC to U.K.P. from out of 734 TMC itself and other connected issues, the projectwise allocation corresponding to the Krishna

Tribunal's Award was modified and the same was communicated to Central Water Commission in the Government letter cited at reference (2) above (copy enclosed).

Now the Government of Karnataka, after judgement of the Supreme Court dated 25.04.2000 in O.S-2 of 1997 that the allocations made by the K.W.D.T. are bulk allocations and not projectwise, have again reviewed the allocation of the projects along with utilization. Further, estimation of Municipal and domestic uses as well as Power and Industry requirements have been worked out as the recommendations of "the National Commission for integrated water Resources Development Plan-Volume-I."

In view of the above, the modified allocation as per the statement enclosed is got up and sent herewith for kind information.

Yours faithfully,
Sd/-
(S.J.CHANNABASAPPA)
Secretary to Government,
Water Resources Department.

REVISED MASTER PLAN UNDER SCHEME –A

Sl.No.	NAME OF PROJECT		SUB BASIN	Revised allocation in tmc
1	2	3	4	5
1	DUDHGANGA		K-1	4.00
	MINOR IRROGATION		K-1	0.50
		TOTAL	**K-1**	**4.50**
2	UPPER KRISHNA PROJECT		K-2	173.00
3	HIPPARGI		K-2	12.10
	MINOR IRRIGATION		K-2	7.70
		TOTAL	**K-2**	**192.80**
4	GOKAK CANAL		K-3	1.40
5	GHATAPRABHA (I, II & III)		K-3	87.70
6	MARKANDEYA		K-3	4.00
7	SRI RAMESHWARA Lift Irrigation Scheme		K-3	2.20
8	BELLARYNALA FLOW CUM LIFT		K-3	1.91
	MINOR IRRIGATION		K-3	4.54
		TOTAL	**K-3**	**101.75**
9	KOLCHI WEIR		K-4	0.70
10	MALAPRABHA		K-4	27.00
11	HARINALA		K-4	0.64
12	RAMTHAL LIFT		K-4	4.50
13	BENNIHALLA		K-4	1.80
14	KONNUR Lift Irrigation Scheme		K-4	0.39
	MINOR IRRIGATION		K-4	4.59
		TOTAL	**K-4**	**39.62**
	MINOR IRRIGATION		K-5	0.54
15	HATHIKONI		K-6	0.40
16	UPPER MULLAMARI		K-6	1.08
17	CHANDRAMPALLI		K-6	1.90
18	AMARJA		K-6	1.92
19	BENNITHORA		K-6	5.75
20	LOWER MULLAMARI		K-6	2.61
21	BHIMA LIFT		K-6	6.00
22	GANDHORINALA		K-6	2.16
23	BHIMA BARRAGES		K-6	5.00
24	KAGNA		K-6	2.00
25	SONTHI STAGE-I		K-6	4.00
	MINOR IRRIGATION		K-6	9.10
		TOTAL	**K-6**	**41.92**
	MINOR IRRIGATION	**TOTAL**	**K-7**	**1.47**

26	JAMBADAHALLA including diversion of Hodirayanahalla to jambadahalla		K-8	0.70
27	AMBLIGOLA		K-8	1.10
28	ANJANAPUR		K-8	2.50
29	DHARMA		K-8	1.10
30	HAGARIBOMMANAHALLI		K-8	2.00
31	RAJOLIBANDA		K-8	1.20
32	TUNGA ANICUT		K-8	11.50
33	BHADRA RESERVOIR		K-8	61.70
34	BHADRA ANICUT		K-8	3.10
35	TUNGABHADRA		K-8	132.00
36	VIJAYANAGAR CHANNEL		K-8	12.05
37	HIREHALLA		K-8	2.27
38	MASKINALA		K-8	0.78
39	SINGATALUR L.I.S.		K-8	18.55
40	UPPER TUNGA		K-8	12.24
41	GUDDDADA MALLAPUR L.I.S		K-8	1.00
42	UPPER BHADRA STAGE-I*		K-8	10.00
43	BASAPUR L.I.S.		K-8	0.60
	MINOR IRRIGATION		K-8	37.51
		TOTAL	K-8	311.90
44	GAYATHRI		K-9	0.45
45	VANIVILAS SAGAR		K-9	5.25
	MINOR IRRIGATION		K-9	26.80
		TOTAL	K-9	32.50
	CHENNAI WATER SUPPLY			5.00
	DOMESTIC & MUNICIPAL WATER SUPPLY			1.50
	INDUSTRIAL WATER SUPPLY			0.50
		TOTAL		734.00

Note: (1) * Upper Bhadra Stage 1 is planned for 23 tmc. Additional 13 tmc can be met out of saving after modernization of Tunga anicut system 6.25 tmc, Bhadra anicut system 0.5 tmc and Vijayanagar channels system 6.25 tmc.
(2) Details under Minor Irrigation allocation enclosed.

MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT

DETAILED PROJECT REPORT

ANNEXURE 13.1

PARTICULARS OF CANAL SYSTEM

Annexure 13.1

Particulars of the Canal System

No	Name of the Channel	Length of canal (Km)	Full Supply Level at canal head (m)	Full Supply discharge at canal head (m^3/sec)	Length of complete distribution system upto Minors		Area
					Distributaries	Minors	Culturable command area (CCA)
1	Raya	27.74			1.313	44.595	2226
2	Basavanna	16.5			4.36	9.286	1240
3	Bella	5.5	459.849	4.309	0.9	7.951	600
4	Kalaghatta	7.02	450.115	3.668		16.6	237
5	Turtha	18.69	431.6	3.353			931
6	Ramasagar	15.5	402.974	2.379	7.65	23.334	673
7	Kampli	23.55	393.629	1.444	1.5	18.69	620
8	Belagodahala	11.22	390.776	0.354		5.63	210
9	Sirguppa	10.85	354.618	1.582		3.931	764
10	Deshnur	9.03	351.55	1.057		3.624	478
	Sub total - Right side	**145.60**			**15.72**	**133.64**	**7979**
11	Hulugi	10.69	458.762	0.508		4.44	265
12	Shivapura	6.54	449.3	0.853	4.05	2.4	403
13	Anegundi	19.44	425.295	1.584		4.72	789
14	Upper Gangavathi	9.03	398.9	1.629	11.695	5.37	775
15	Lower Gangavathi	9.54	394.71	1.29	15.44	1.51	667
16	Bichal	14.52	326.432	0.341			276
	Sub total - Left side	**69.76**			**31.19**	**18.44**	**3175**
	Total	**215.36**			**46.91**	**152.08**	**11154**

MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT

DETAILED PROJECT REPORT

ANNEXURE 24.1

GENERAL ABSTRACT

ABSTRACT COST FOR MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT

No	Particulars	(Rs. In Lakhs)		
		UNIT I Headworks (Anecuts)	UNIT II Canal Works	Total
I	**Direct Charges of Works**			
1	A - Preliminaries		178.11	178.11
2	B - Land		-	-
3	C - Works	6153.29	-	6153.29
4	D - Regulator		3530.45	3530.45
5	E - Falls		104.67	104.67
6	F - Cross Drainage Works		937.63	937.63
7	G - Bridges		2066.90	2066.90
8	H - Escapes		731.05	731.05
9	I - Navigation works		-	-
10	J - Power plants and Civil Works		-	-
11	K - Buildings		329.00	329.00
12	L - Earthwork			
	L1 - Lining		21476.22	21476.22
	L2 - Service Road			
13	M - Plantation		67.95	67.95
14	N - Tank and Reservoirs		-	-
15	O - Miscellaneous		-	-
16	P - Maintenance (1% of cost of I - works except A,B,M,O,Q and X)	61.53	360.99	422.52
17	Q - Special Tools and plants		40.46	40.46
18	R - Communication		-	-
19	S - Power plant and Electrical systems		-	-
20	T - Watersupply works		-	-
21	U - Distributories and Minors		6696.03	6696.03
22	V - Water Courses and Field Channels		-	-
23	W - Drainage		226.73	226.73
24	X - Environment and Ecology		-	-
25	Y - Loss of stocks and unforeseen (0.25% of cost of I - works except A,B,M,O,Q and X)	15.38	90.25	105.63
26	Z- Provision for Power Generation		-	-
	Total of I - Works	**6230.21**	**36836.43**	**43066.63**

No	Particulars	(Rs. In Lakhs)		
		UNIT I Headworks (Anecuts)	UNIT II Canal Works	Total
II	Establishment charges		-	-
III	Tools & Plants		12.40	12.40
IV	Suspense		-	-
V	Receipts & Recoveries on capital account		-	-
	Total Direct charges	**6230.21**	**36848.83**	**43079.03**
VI	**INDIRECT CHARGES**			
	b)Audit and Account charges (1% of cost of I works)	62.30	368.36	430.67
	Total Indirect charges	**62.30**	**368.36**	**430.67**
	TOTAL DIRECT AND INDIRECT CHARGES	**6292.51**	**37217.19**	**43509.70**
VII	**SOFT COMPONENET REQUIREMENTS AS PER KARNATAKA INTEGRATED AND SUSTAINABLE WATER RESOURCES MANAGEMENT INVESTMENT PROGRAM (KISWRMIP), TRANCHE-2**			
i	Command Area Development			341.00
ii	Flow Measurement & Telemetry system			271.00
iii	Equipment and Supplies			12.00
iv	**Training & Consultancy Services**			
1	Training			188.00
2	Support Services Team for WUCs			36.00
3	Surveys and Studies			
a	Monitoring and Evaluation			77.00
b	Survey, Design and Studies			616.00
4	Support Consultants			
a	International Consultants			106.00
b	National Consultants			121.00
c	Consultancy Support			30.00
v	Staff Costs			634.00
vi	Physical Contingencies			173.00
vii	Price Contingencies			198.00
viii	Interest During Implementation			123.00
ix	Commitment Charges			7.00
				46442.70
	Grand Total			**46443.00**
				Say Rs 464.43 Crores

Chief Engineer
KNNL, Irrigation Central Zone
Munirabad

MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT

DETAILED PROJECT REPORT

ANNEXURE 24.2

LETTER FROM STATE GOVERNMENT FOR CLEARENCE OF DESIGNS

ANNEXURE - 24.2

CLEARANCE OF MAJOR/ MEDIUM IRRIGATION/ MULTIPURPOSE PROJECTS BY THE CDO OF THE STATE GOVERNMENT

To

The Chief Engineer,
Project Appraisal Organization,
Central Water Commission,
Sewa Bhavan, R.K.Puram,
New Delhi -110066.

Sir,

Sub: Clearance of **Modernization of Vijayanagar Channels in Tungabhadra Project.**

The Modernization of Vijayanagar Channels in Tungabhadra Project is taken up in Bellary, Koppal and Raichur Districts of Karnataka State.

i) There is an allocation of 12.05 TMC of Tungabhadra water of K8 basin.

ii) All necessary surveys and investigations for taking up the Modernization works and establishing its techno-economic feasibility have been carried out as per the CWC guidelines.

iii) As per the guidelines for Modernization, the command area of Vijayanagar Channels has been investigated as under:

- 100% of the Main and branch channels
- 25% of the distributaries and
- 10% of the laterals

The investigation comprised of identifying deficiencies in the channel system, its operation and Water management. The investigation included reconnaissance and detailed survey (using conventional Total stations) to identify reaches of the channel system where it is necessary to take up the repair and rehabilitation works including structures which require immediate attention to arrest the seepage / losses.

Detailed Hydrological review of designs of the canal system was carried out to assess its suitability to cater to the peak discharge.

The necessity of any new structures like CTC, Road bridges, Aqueducts, Super passages etc were taken into account and provided for.

The necessary designs are scrutinized by the Design branch under this office.

iv) The main idea of Modernization is to save water to an extent of 6.25 TMC which could be allocated to Upper Bhadra Project.

v) Detailed hydrological studies considering the up-to-date data and required investigations for all the other activities envisaged in the project have been carried out.

vi) The cropping pattern adopted is as per the register maintained by the Tungabhadra Project authority.

vii) Necessary designs for various components of the project have been done in accordance with the guidelines and relevant Indian Standards.

viii) Considering the low water use efficiency at present in the channel system, a detailed study was undertaken to identify the causes. In order to address the identified causes, necessary engineering have been adopted which in turn has helped in optimizing the usage of water in the canal system and thereby saving water.

ix) The cost estimates are prepared as per the guidelines issued by the Central Water Commission.

The project has also been examined by the State Level Project Appraisal committee comprising of experts in irrigation and other departments and techno-economic feasibility of the project has been established.

The project is recommended for Clearance by the Central Water Commission.

Chief Engineer
KNNL, Irrigation Central Zone
Munirabad

MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT

DETAILED PROJECT REPORT

ANNEXURE 24.3

PLACE OF QUARRIES CONSIDERED FOR DIFFERENT MATERIAL UNDER VIJAYANAGAR CHANNELS

ANNEXURE 24.3

Place of Quarry considered for different material of channels under Vijaynagar Channels

1) Quarries considered for Raya Channel

Sl.No.	Material	Place of Quarry
1	Stone/Metal	Bailoddigeri
2	Sand	MM Halli
3	Gravel	Basavanadurga
4	Cement/Steel	Hospet

2) Quarries considered for Basavanna Channel

Sl.No.	Material	Place of Quarry
1	Stone/Metal	Bailoddigeri
2	Sand	MM Halli
3	Gravel	Basavanadurga
4	Cement/Steel	Hospet

3) Quarries considered for Bella Channel

Sl.No.	Material	Place of Quarry
1	Stone/Metal	Bailoddigeri
2	Sand	MM Halli
3	Gravel	Basavanadurga
4	Cement/Steel	Hospet

4) Quarries considered for Kalghatta Channel

Sl.No.	Material	Place of Quarry
1	Stone/Metal	Bailoddigeri
2	Sand	MM Halli
3	Gravel	Basavanadurga
4	Cement/Steel	Hospet

5) Quarries considered for Turtha Channel

Sl.No.	Material	Place of Quarry
1	Stone/Metal	Bailoddigeri
2	Sand	Tlavarghatta
3	Gravel	Local Quarry
4	Cement/Steel	Hospet

6) Quarries considered for Ramasagar Channel

Sl.No.	Material	Place of Quarry
1	Stone/Metal	Metri
2	Sand	T.B.River
3	Gravel	Local Quarry
4	Cement/Steel	Kampli

7) Quarries considered for Kampli Channel

Sl.No.	Material	Place of Quarry
1	Stone/Metal	Local Quarry
2	Sand	T.B.River
3	Gravel	Local Quarry
4	Cement/Steel	Kampli

8) Quarries considered for Belgondhalla Channel

Sl.No.	Material	Place of Quarry
1	Stone/Metal	Metri
2	Sand	T.B.River
3	Gravel	Local Quarry
4	Cement/Steel	Kampli

9) Quarries considered for Upper Gangavathi Channel

Sl.No.	Material	Place of Quarry
1	Stone/Metal	Sangapur
2	Sand	Siddapur nala
3	Gravel	Chikkabenakal
4	Cement/Steel	Gangavati

10) Quarries considered for Hulugi Channel

Sl.No.	Material	Place of Quarry
1	Stone/Metal	Sangapur
2	Sand	Hire halla Nala
3	Gravel	Hire halla Nala
4	Cement/Steel	Hospet

11) Quarries considered for Shivapura Channel

Sl.No.	Material	Place of Quarry
1	Stone/Metal	Sangapur
2	Sand	Hire halla Nala
3	Gravel	Kerehalli
4	Cement/Steel	Gangavati

12) Quarries considered for Anegundi Channel

Sl.No.	Material	Place of Quarry
1	Stone/Metal	Sangapur
2	Sand	Siddapur nala
3	Gravel	Kerehalli
4	Cement/Steel	Gangavati

13) Quarries considered for Lower Gangavathi Channel

Sl.No.	Material	Place of Quarry
1	Stone/Metal	Sangapur
2	Sand	Siddapur nala
3	Gravel	Chikkabenakal
4	Cement/Steel	Gangavati

14) Quarries considered for Siruguppa Channel

Sl.No.	Material	Place of Quarry
1	Stone/Metal	Halekote
2	Sand	Dedasugur Bridge
3	Gravel	51.6km of Bellary Siruguppa Road
4	Cement/Steel	Siruguppa

15) Quarries considered for Deshnur Channel

Sl.No.	Material	Place of Quarry
1	Stone/Metal	Halekote
2	Sand	Dedasugur
3	Gravel	Deshnur Village
4	Cement/Steel	Siruguppa

16) Quarries considered for Bichal Channel

Sl.No.	Material	Place of Quarry
1	Stone/Metal	Gorkal
2	Gravel	Jukur
3	Cement/Steel	Raichur

Executive Engineer
QC Division

MODERNISATION OF VIJAYANAGARA CHANNELS IN TUNGABHADRA PROJECT

DETAILED PROJECT REPORT

ANNEXURE 28.1

BENEFIT COST RATIO

MODERNISATION OF VIJAYANAGAR CHANNELS IN TUNGABHADRA PROJECT											
ESTIMATED VALUE OF PRODUCE BEFORE MODERNISATION											
Crop	% Area	Area Ha	Produce (Qtls/Ha)	Rate per Qtl. (Rs)	Value of produce (Rs lakhs)	Input Seed			Manure (Input)		Hired Labour (Human & bullock)
						Quantity Kg/Ha	Rate Rs/Kg	Amount (Rs Lakhs)	Rate Rs/Ha	Amount (Rs Lakhs)	20% of total value of produce (Rs Lakhs)
1	2	3	4	5	6	7	8	9	10	11	12
Khariff											
Paddy	30.90	4056	50	1523.00	3088.36	60.00	24	58.40	40000	1622.25	617.67
Hy. Jowar	5.60	735	20	1356.00	199.33	60.00	24	10.58	23000	169.05	39.87
Rabi											
Paddy	13.90	1824	50	1540.00	1404.77	60.00	24	26.27	40000	729.75	280.95
Groundnut	14.50	1903	20	3000.00	1141.88	100.00	41	78.03	23000	437.72	228.38
Bi seasonal											
Sugarcane	24.20	3176	600	1200.00	22869.00	7500.00	3	714.66	39000	1238.74	4573.80
Garden (Banana)	10.90	1431	100	2000.00	2861.25	2250.00	5	160.95	68000	972.83	572.25
TOTAL	**100.00**	**13125**			**31564.58**			**1048.89**		**5170.33**	**6312.92**

MODERNISATION OF VIJAYANAGAR CHANNELS IN TUNGABHADRA PROJECT											
ESTIMATED VALUE OF PRODUCE AFTER MODERNISATION											
Crop	% Area	Area Ha	Produce (Qtls/Ha)	Rate per Qtl. (Rs)	Value of produce (Rs lakhs)	Input Seed			Manure (Input)		Hired Labour (Human & bullock)
						Quantity Kg/Ha	Rate Rs/Kg	Amount (Rs Lakhs)	Rate Rs/Ha	Amount (Rs Lakhs)	20% of total value of produce (Rs Lakhs)
1	2	3	4	5	6	7	8	9	10	11	12
Khariff											
Paddy	14.18	2304	65.0	2100.00	3144.96	60.00	24	33.18	40000	921.60	628.99
Hy. Jowar	38.95	6326	30.0	1800.00	3415.99	60.00	24	91.09	23000	1454.96	683.20
Rabi											
Paddy	10.19	1655	65.0	2350.00	2528.01	60.00	24	23.83	40000	662.00	505.60
Groundnut	23.12	3755	25.0	3600.00	3379.41	100.00	41	153.95	23000	863.63	675.88
Bi seasonal											
Sugarcane	7.57	1229	1200.0	1750.00	25804.80	7500.00	3	276.48	39000	479.23	5160.96
Garden (Banana)	6.00	974	120.0	2000.00	2337.12	2250.00	5	109.55	68000	662.18	467.42
TOTAL	**100.00**	**16243**			**40610.29**			**688.09**		**5043.60**	**8122.06**

MODERNISATION OF VIJAYANAGAR CHANNELS IN TUNGABHADRA PROJECT
CALCULATION OF BENEFIT COST RATIO (BCR)
AS ADOPTED BY THE TECHNICAL ADVISORY COMMITTEE

Figures are in Rs lakhs

A	Gross Receipts	Before Modernisation	After Modernisation
1	Gross value of farm produce	31564.58	40610.29
2	Dung receipts(at 30%of the fodder expenditure)	1420.41	1218.31
3	**Total A : Gross Receipts(1+2)**	**32984.99**	**41828.60**
B	**EXPENSES:**		
1	Expenditure on seeds	1048.89	688.09
2	Expenditure on manure etc.	5170.33	5043.60
3	Expenditure on hired labour(human and bullock)	6312.92	8122.06
4	Fodder expenses(as percentage of gross value of produce)		
	(15% ,10% of item A.1)	4734.69	4061.03
5	Depriciation on implements (2.7% of Item A.1)	852.24	1096.48
6	Share and cash rent (5% 3% of Item A.1)	1578.23	1218.31
7	Land Revenue (2% of Item A.1)	631.29	812.21
8	**Total B : Expenses (1 to 7)**	**20328.59**	**21041.76**
C	**NET VALUE OF PRODUCE**		
1	Total gross receipts(Total A.3)	32984.99	41828.60
2	Minus total expenses (Total B.8)	20328.59	21041.76
3	Net value of produc © : [1-2]	**12656.40**	**20786.83**
D	**ANNUAL BENEFITS:**		
1	Net value after irrigation (C:3)		20786.83
2	Minus Net value before irrigation (C:3)		12656.40
3	Net annual benefits (D):[1-2]		**8130.43**
	TOTAL NET ANNUAL BENEFITS (D3)		**8130.43**
E	**ANNUAL COSTS**		
1	Intrest on Capital @10% (Esimated total cost of the project including cost of land development @ Rs.1000/- per Ha) (Rs 46443.00 Lakhs + 16.24 Lakhs)		4660.54
2	Depreciation of the project at 1 % of the cost of the project for 100 years life excluding cost of Land, R&R cost.(46443.00 Lakhs x 1%)		464.43
3	Annual operation and maintenance charge at Rs. 1175/ ha		190.86
4	Maintainance of the Head works at 1% its cost (Improvements to anicuts)		61.53
5	Total (E):Annual costs (1 to 4)		**5377.36**
	BENEFITS COST RATIO = D 3 : Annual Benefits / E.5: Annual cost	**8130.43 / 5377.36**	**1.51**

DETAILS OF CROP YIELD, RATE OF PRODUCE AND COST OF CULTIVATION (BEFORE MODERNISATION)						
Crop	Produce (Qtls/Ha)	Rate per Qtl. (Rs)	Rate (Rs. per Ha)			Total cost of cultivation (Rs. per ha)
			Seed	Manure	Hired Labour (Human & bullock)	
1	2	3	4	8	10	11
Khariff						
Paddy	50	1523	1320	40000	17650	58970
Hy. Jowar	20	1356	1320	23000	6000	30320
Groundnut	20	4000	4100	23000	12000	39100
Rabi						
Paddy	50	1540	1320	40000	17650	58970
Jowar	20	1800	1320	23000	6000	30320
Groundnut	20	3000	4100	23000	12000	39100
Bi seasonal						
Sugarcane	600	1200	21000	39000	30000	90000
Garden (Banana)	100	2000	11200	68000	40000	119200
Cotton	12	5200	150	10000	12400	22550
TOTAL			**45830.00**	**289000.00**	**153700.00**	**488530.00**

Joint Director of Agriculture
Bellary