

Rani Avanti Bai Sagar

Salient Features

1. Location of dam

- | | | | |
|------|-----------|---|----------------|
| i) | State | : | Madhya Pradesh |
| ii) | District | : | Jabalpur |
| iii) | Longitude | : | 79° 55'30 |
| iv) | Latitude | : | 22° 56'30 |

2. HYDROLOGY

- | | | | |
|---|--|---|------------------------|
| i) | Name of the River | : | Narmada |
| ii) | Catchment Area upto Dam site | : | 14.556 sq.km |
| iii) | Free catchment below | : | 9.150 sq.km |
| iv) | Average Annual Rainfall | : | 1.414 m.m |
| v) | Max. Rainfal | : | 2311 m.m |
| vi) | Minimum Rainfall | : | 664 m.m |
| vii) | 75% dependable yield | : | 5.4471 BM ³ |
| viii) | 90% dependable yield | : | 4.1001 BM ³ |
| ix) | Upstream reservation for minor . | : | 2.078 BM ³ |
| Medium& major projects (including
Future existing and ongoing) | | | |
| x) | Balance available for use at dam site | : | 3.3691 BM ³ |
| xi) | Probable regeneration at 10% utilization | : | 0.2078 BM ³ |
| xii) | Total yield for planning | : | 3.5769 BM ³ |

IRRIGATION UTILISATION

- i) 75% dependable year (final phase)

A. Irrigation

i) LBC

: 1008 Mm³

ii) RBC

: 1930Mm³

B. Domestic Water supply

iii) LBC

: 54 Mm³

iv) RBC

: 116Mm³

C.	Annual Evaporation	:	295 Mm ³
	Total Utilization	:	3403 Mm ³

D.	Power utilization (Total) at 90% Dependability (initial phase)	:	3115 Mm ³
E.	Ground water utilization	:	345 Mm ³

3. Storage planning

i)	Gross storage at FRL	:	3920 Mm ³
ii)	Live storage	:	3180 Mm ³
iii)	Dead storage	:	740 Mm ³

Control Elevations

i)	T.B.L	:	426.90 M
ii)	M.W.L	:	425.70 M
iii)	F.R.L	:	422.70 M
iv)	Crest of spillway	:	407.50 M
v)	M.D.D.L	:	403.55 M
vi)	Outlet sill level at the headwork's	:	
a.	High level outlet (RBC)	:	405.98 M
b.	Low level outlet (LBC)	:	399.50 M

4. Submergence details

i)	Area under submergence at FRL	:	27696.5 Ha
ii)	Submergence ratio with respective Total C.C.A of 4.37.211 Ha (including 2,80,211 Ha for BDP)	:	6.33%
iii)	Land under submergence		
a.	Private Land	:	15771.5 Ha
b.	Revenue Land	:	3447.0 Ha
c.	Forest Land	:	8478.0 Ha
	Total	:	27696.5 Ha

- | | | |
|----|-------------------------|-------------------|
| a. | Total Villages affected | |
| b. | Full affected | : 22 Nos. |
| c. | Partially affected | : 140 Nos. |
| | Total | : 162 Nos. |

5. Dam Particulars

- | | | |
|------|----------------------|-----------------------------------|
| i) | Type of Dam | : Composite earth and masonry dam |
| ii) | Length including key | : 827 M |
| | Masonry Dam | : 4530 M |
| | Earth Dam | : |
| iii) | Max. Height | : 69.80 M |
| iv) | Free Board | : 1.20 M |
| | Above MWL | : 4.14 M |
| | Above FRL | |

6. SPILLWAY

- | | | |
|-------|--|---------------------------------------|
| | | : |
| i) | Type of spillway | : Central gravity type gated spillway |
| ii) | Length of spillway | : 385.72 M |
| iii) | Max. Height | : 69.80 M |
| iv) | Crest Level | : 407.51 M |
| v) | Designed Flood | : 51510 cumecs |
| vi) | Flood routing at MWL | : 43000 cumecs (PMF) |
| vii) | No. of Gates
(19 operative and 2 stand Bye) | : 21 Nos. radial gates |
| viii) | Size of Gate | : 13.716 M x 15.25 M |

7. OUYLET

i)	Discharge at Head	:	124.60 Cumecs
ii)	Outlet still level	:	399.50 M
iii)	Size & Nos.	:	2 Nos. 3 M x 4 M

8. CANALS

i)	Type of canal (Left Bank Canal)	:	Lined Canal
ii)	Bed width	:	11.80 M at Head
iii)	FSD	:	4.57 M
iv)	Side slopes	:	1:1
v)	Bed gradient	:	1 in 6000
vi)	Discharge	:	124.60 cumecs
vii)	Length	:	135 km

9. COMMAND AREA

i)	GCA	:	2.574 Lac Ha
ii)	CCA	:	1.570 Lac Ha
iii)	Annual irrigation	:	2.198 Lac Ha

10. HYDRO POWER DETAILS

i)	Location of Power House	:	Right Bank Toe of Dam
ii)	Total installed capacity	:	90 MW
iii)	Draw down level	:	403.55 M
iv)	Discharge	:	98.40 cumecs
v)	No. of Turbines	:	2 Nos. Francis Turbines
vi)	Max. Head	:	56.40 M
vii)	Minimum Head	:	35.67 M
viii)	Designed Head	:	47.85 M
ix)	Max. T.W.L	:	370.88 M
x)	Minimum T.W.L	:	369.05 M
xi)	Allocation of power in the estimate.	:	Rs. 9874 Lacs.
xii)	Cost per KW of installed capacity	:	Rs. 9403
xiii)	Power benefits	:	1909.00 Lakhs

11. FINANCIAL ASPECTS

i) Total estimated Cost	:	568.31 crores
Unit-I	:	191.37crores
Unit-ii	:	309.31 crores
Unit-iii	:	<u>66.22 crores</u>
TOTAL	:	<u>566.34 crores</u>

Cost allocation (based on facilities method): Rs. Crores

Chargeable			
	Estimated Cost	Cost of Dam	Total
Irrigation:			
Left Bank Canal	309.81	55.77	365.58
Right Bank Canal	-----	93.61	93.61
Power :			
Civil works			
Electrical works	32.72	33.52	98.74
	31.50		
Water Supply		8.41	8.41
Total	375.03	191.31	566.34

iii)Financial return at 5.5% at the : 0.386%

	End of 10 years		
iv)	Cost per Ha. Of annual irrigation	:	Rs. 16693/Ha
i)	Cost/B.C.Ratio	:	1.87
ii)	I.R.R	:	19.18%
iii)	Mm ³ of storage	:	
a.	For gross storage	:	9.32 Lac/Mm ³
b.	Live storage	:	11.50 Lac/Mm ³
