

BATTISHA NALLAH NINOR IRRIGATION PROJECT

TEHSIL ABU ROAD, DISTRICT SIROHI

JUSTIFICATION OF HEIGHT OF DAM AND 3 – D MODEL IMAGES INDICATING SUBMERGENCE AT VARIOUS LEVELS

It is to certify that the proposed site for construction of BATTISHA NALLAH NINOR IRRIGATION PROJECT has been finalized after detailed survey and investigations taking in to consideration availability of shortest gorge length, desired reservoir storage, suitability of foundation strata and other geo-techno parameters. Optimum command area (900 Ha) is available by gravity system with minimum canal length at proposed site.

It has been ascertained that minimum forest area comes under submergence, with optimum water storage required against minimum expenditure required for the construction to make the project viable, economically. The height of the Full tank Level (FTL) from the sill level (Live storage bottom level) is only 16.50 meter and dead storage is confined to nallah which is non-forest land.

In compliance to the FAC meeting dated 28.2.2017, 3 D – images for various reservoir levels has also been worked out. Table showing different reservoir levels (FTL) against which storage capacity, forest land coming under submergence, cost per mcft, CCA, % of reduction in forest area, % reduction in CCA and increase in cost per hectare has also been worked out and attached with images at various reservoir levels.


If height of Dam is reduced by 0.5 meter then corresponding reduction in forest area under submergence of 8.03 ha. Whereas reduction in CCA 9.56% and cost per ha will increase by 5.48%.

If further height of dam is reduced by 1.00 meter from proposed FTL (El. 331.00m) then corresponding reduction of forest area 11.37%, reduction of CCA 22.22% and cost per hectare will increased by 14.11% making the project non-viable.

Hence the proposed height of Dam i.e. 16.50 meter(El. 331.00 m) from sill level is optimum in storage capacity with minimum land coming under submergence and covers maximum command area which can be served very easily through gravity canal and with minimum cost per hectare. Therefore reduction in proposed FTL is neither economical nor beneficial to the submergence area.



Therefore it is requested that kindly allow the dam height at El. 331.00 meter (FTL) in the larger public interest. So that maximum storage of water can be achieved with minimum cost of construction and submergence area so that stored water can be made available to the drought affected villages for agriculture and drinking water at one hand and on other hand it will also flourish local flora and fauna of the nearby area. 3 D images and analysis report is attached.


12/7/17

(J.P. Sharma)

Executive Engineer

Water resource Division Sirohi




BATTISA NALLAH IRRIGATION PROJECT



DELDAR,SIROHI


S. No.	Tank Elevation	RL	Depth w.r.t. to Sill level(314.5)	Total Area of Submergence (Ha)	Forest Land (Ha)				Non - Forest Land (Ha)	Storage Capacity (Mcft)	CCA (Ha)	Project Cost (Lacs)	Cost per Mcft (Lacs)	Cost per Ha (Lacs)	Reduction in Forest % (w.r.t.331/330.5 and 331/330)	Reduction in CCA % (w.r.t.331/330.5 and 331/330)	Increase in Cost/Hac % (w.r.t.331/330.5 and 331/330)	No of Trees in Forest Area
					Submergence	Dam Alignment & offtake	Approach Road	Total										
1	FTL	331.00	16.50	158.02	74.700	9.800	6.702	91.202	66.818	577.57	900	22805	39.48	13.32				22256
2	FTL-0.5M	330.50	16.00	150.75	68.701	9.800	6.702	85.203	65.547	550.53	814	22258	40.43	14.05	8.03	9.56	5.48	20875
3	FTL-1M	330.00	15.50	148.08	66.207	9.800	6.702	82.709	65.371	523.54	700	21460	40.99	15.20	11.37	22.22	14.11	20181
4	FTL-1.5M	329.50	15.00	139.45	60.480	9.800	6.702	76.982	62.468	498.40	605	21003	42.14	16.83				18784
5	FTL - 2 M	329.00	14.50	136.78	58.325	9.800	6.702	74.827	61.953	473.26	506	20547	43.42	19.22				18108
6	FTL - 4 M	327.00	12.50	122.59	48.773	9.800	6.702	65.275	57.315	381.09	135	18515	48.59	57.00				15862
Note :- 269.96 Mcft water is reserved for drinking water supply for 2 towns and 31 villages of Sirohi district, which has been kept constant while working out CCA																		

Area of submergence

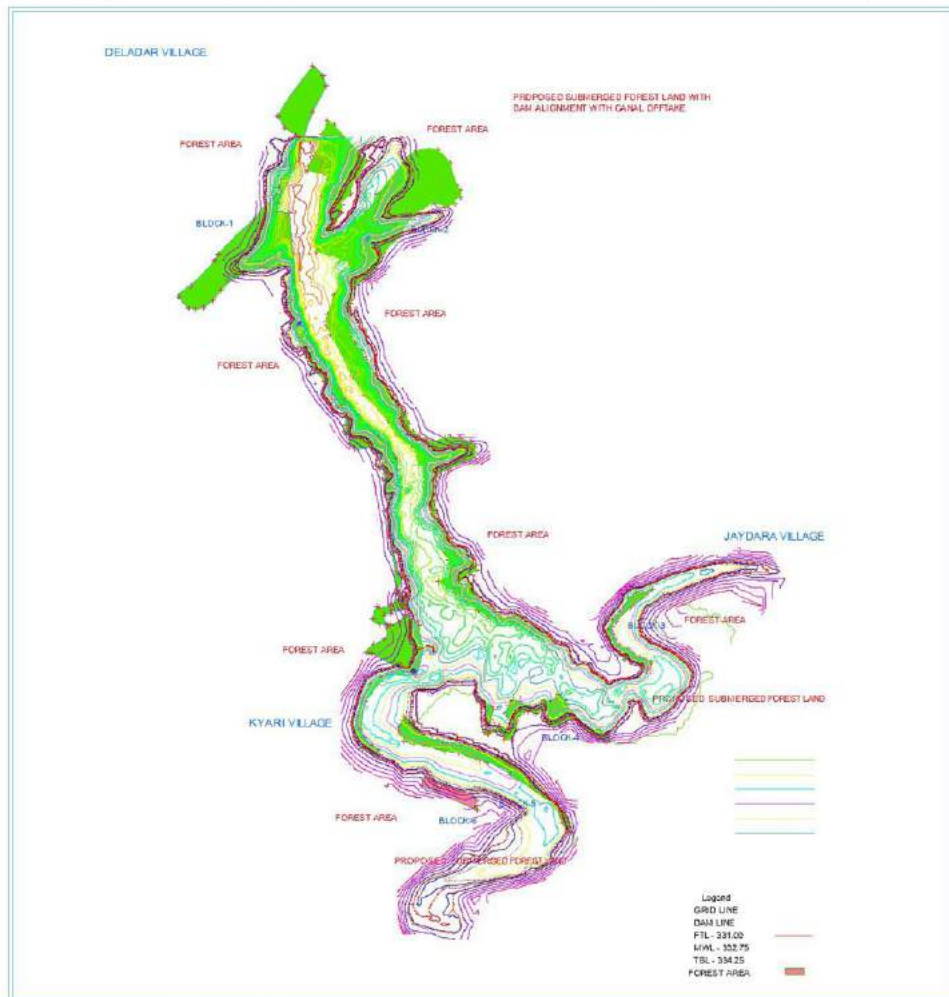
Index

FTL-331  RED.FTL 330.5  RED.FTL 329.0 

FOREST  RED.FTL 330.0  Sill Level 314.5

RED.FTL 329.5 

BATTISA NALLAH IRRIGATION PROJECT DELDAR,SIROHI



Area of submergence

Index

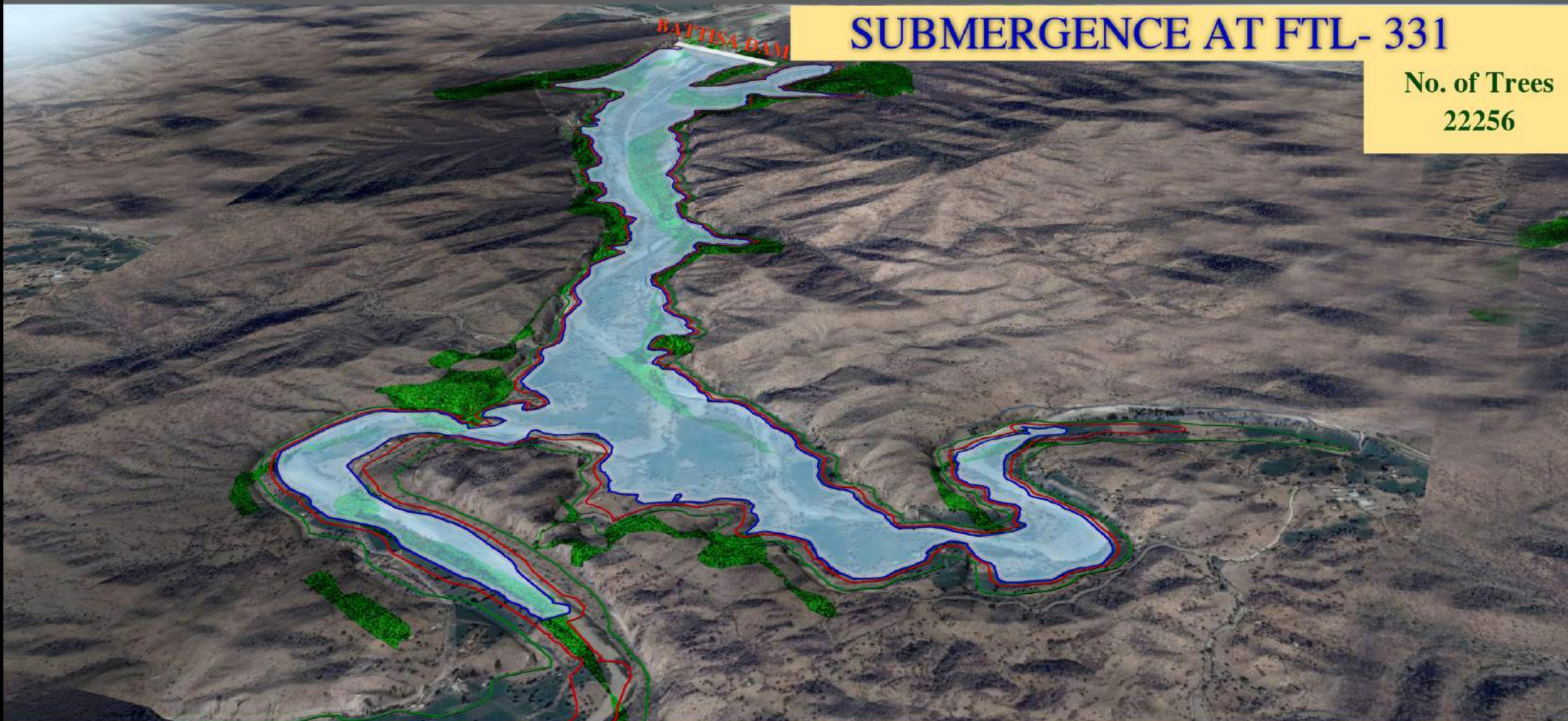
FTL-331	RED.FTL 330.5	RED.FTL 329.0
FOREST	RED.FTL 330.0	RED.FTL 329.5

BATTISA NALLAH IRRIGATION PROJECT

DELDAR,SIROHI

SUBMERGENCE AT FTL- 331

No. of Trees
22256



Area of submergence

Index

S. No.	Tank Elevation	RL	Depth w.r.t. to Silt level(320.2)	Total Area of Submergence (Ha)	Forest Land (Ha)				Non - Forest Land (Ha)	Storage Capacity (Mcft)	CCA (Ha)	Project Cost (Lacs)	Cost per Mcft (Lacs)	Cost per Ha (Lacs)	No of Trees in Forest Area
					Submergence	Dam Alignment & offtake	Approach Road	Total							
1	FTL	331.00	10.80	158.02	74.700	9.800	6.702	91.202	66.818	577.57	900	22805	39.48	13.32	22256
2	FTL-0.5M	330.50	10.30	150.75	68.701	9.800	6.702	85.203	65.547	550.53	814	22258	40.43	14.05	20875
3	FTL-1M	330.00	9.80	148.08	66.207	9.800	6.702	82.709	65.371	523.54	700	21460	40.99	15.20	20181
4	FTL-1.5M	329.50	9.30	139.45	60.480	9.800	6.702	76.982	62.468	498.40	605	21003	42.14	16.83	18784
5	FTL - 2 M	329.00	8.80	136.78	58.325	9.800	6.702	74.827	61.953	473.26	506	20547	43.42	19.22	18108
6	FTL - 4 M	327.00	6.80	122.59	48.773	9.800	6.702	65.275	57.315	381.09	135	18515	48.59	57.00	15862
Note: 269.06 M3 storage is provided for higher reservoir for 2 years and 21.28% of flood storage is provided for 2 years and 100% of flood storage is provided for 1 year.															

Note :- 269.96 Mcft water is reserved for drinking water supply for 2 towns and 31 villages of Sirohi district, which has been kept constant while working out CCA

FTL-331		RED.FTL 330.5		RED.FTL 329.0	
FOREST		RED.FTL 330.0		Sill Level 314.5	
TBL-334.25		RED.FTL 329.5		MWL-332.75	

BATTISA NALLAH IRRIGATION PROJECT

DELDAR,SIROHI

SUBMERGENCE AT FTL- 331

No. of Trees
22256

Area of submergence

Index

S. No.	Tank Elevation	RL	Depth w.r.t. to Sill level(314.5)	Total Area of Submergence (Ha)	Forest Land (Ha)				Non - Forest Land (Ha)	Storage Capacity (Mcft)	CCA (Ha)	Project Cost (Lacs)	Cost per Mcft (Lacs)	Cost per Ha (Lacs)	No of Trees in Forest Area
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Note: 269.96 Mcft water is reserved for drinking water supply for 7 towns and 31 villages of Sindh District which has been consented upon CCA.

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FTL-331		RED.FTL 330.5		RED.FTL 329.0	
FOREST		RED.FTL 330.0		Sill Level 314.5	
TBL-334.25		RED.FTL 329.5		MWL-332.75	

BATTISA NALLAH IRRIGATION PROJECT

DELDAR,SIROHI

SUBMERGENCE AT FTL- 331

No. of Trees
22256

Area of submergence

Index

S. No.	Tank Elevation	RL	Depth w.r.t. to Sill level(314.5)	Total Area of Submergence (Ha)	Forest Land (Ha)				Non - Forest Land (Ha)	Storage Capacity (Mcft)	CCA (Ha)	Project Cost (Lacs)	Cost per Mcft (Lacs)	Cost per Ha (Lacs)	No of Trees in Forest Area
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*Notes: *69.96 Mcft water is reserved for drinking water supply for 7 towns and 31 villages of Sindh District which has been consented by the Sindh Government.*

Note :- 269.96 Mcft water is reserved for drinking water supply for 2 towns and 31 villages of Sirohi district, which has been kept constant while working out CCA

FTL-331

FOREST

	RED.FTL 330.5		RED.FTL 329.0		
	RED.FTL 330.0		Sill Level 314.5		
	RED.FTL 329.5				

BATTISA NALLAH IRRIGATION PROJECT DELDAR,SIROHI

SUBMERGENCE AT FTL- 331

No. of Trees
22256

Area of submergence

Index

S. No.	Tank Elevation	RL	Depth w.r.t. to Sill level(314.5)	Total Area of Submergence (Ha)	Forest Land (Ha)				Non - Forest Land (Ha)	Storage Capacity (Mcft)	CCA (Ha)	Project Cost (Lacs)	Cost per Mcft (Lacs)	Cost per Ha (Lacs)	No of Trees in Forest Area
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FTL-331

FOREST

	RED.FTL 330.5		RED.FTL 329.0		
	RED.FTL 330.0		Sill Level 314.5		
	RED.FTL 329.5				

BATTISA NALLAH IRRIGATION PROJECT DELDAR,SIROHI

SUBMERGENCE AT FTL- 330.5

No. of Trees
20875

Area of submergence

Index

S. No.	Tank Elevation	RL	Depth w.r.t. to Sill level(314.5)	Total Area of Submergence (Ha)	Forest Land (Ha)				Non - Forest Land (Ha)	Storage Capacity (Mcft)	CCA (Ha)	Project Cost (Lacs)	Cost per Mcft (Lacs)	Cost per Ha (Lacs)	No of Trees in Forest Area
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FTL-331

FOREST

	RED.FTL 330.5		RED.FTL 329.0		
	RED.FTL 330.0		Sill Level 314.5		
	RED.FTL 329.5				

BATTISA NALLAH IRRIGATION PROJECT DELDAR,SIROHI

SUBMERGENCE AT FTL- 330.5

**No. of Trees
20875**

Area of submergence

Index

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FTL-331

FOREST



RED.FTL 330.5



RED.FTL 330.0

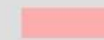
RED.FTL 329.5



RED.FTL 329.0



Sill Level 314.5



BATTISA NALLAH IRRIGATION PROJECT DELDAR,SIROHI

SUBMERGENCE AT FTL- 330.0

**No. of Trees
20181**

Area of submergence

Index

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FTL-331

FOREST

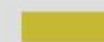


RED.FTL 330.5



RED.FTL 330.0

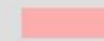
RED.FTL 329.5



RED.FTL 329.0



Sill Level 314.5



BATTISA NALLAH IRRIGATION PROJECT DELDAR,SIROHI

SUBMERGENCE AT FTL- 330.0

**No. of Trees
20181**

Area of submergence

Index

S. No.	Tank Elevation	RL	Depth w.r.t. to Sill level(314.5)	Total Area of Submergence (Ha)	Forest Land (Ha)				Non - Forest Land (Ha)	Storage Capacity (Mcf)	CCA (Ha)	Project Cost (Lacs)	Cost per Mcft (Lacs)	Cost per Ha (Lacs)	No of Trees in Forest Area
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FTL-331

FOREST



RED.FTL 330.5



RED.FTL 330.0

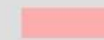
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RED.FTL 329.0



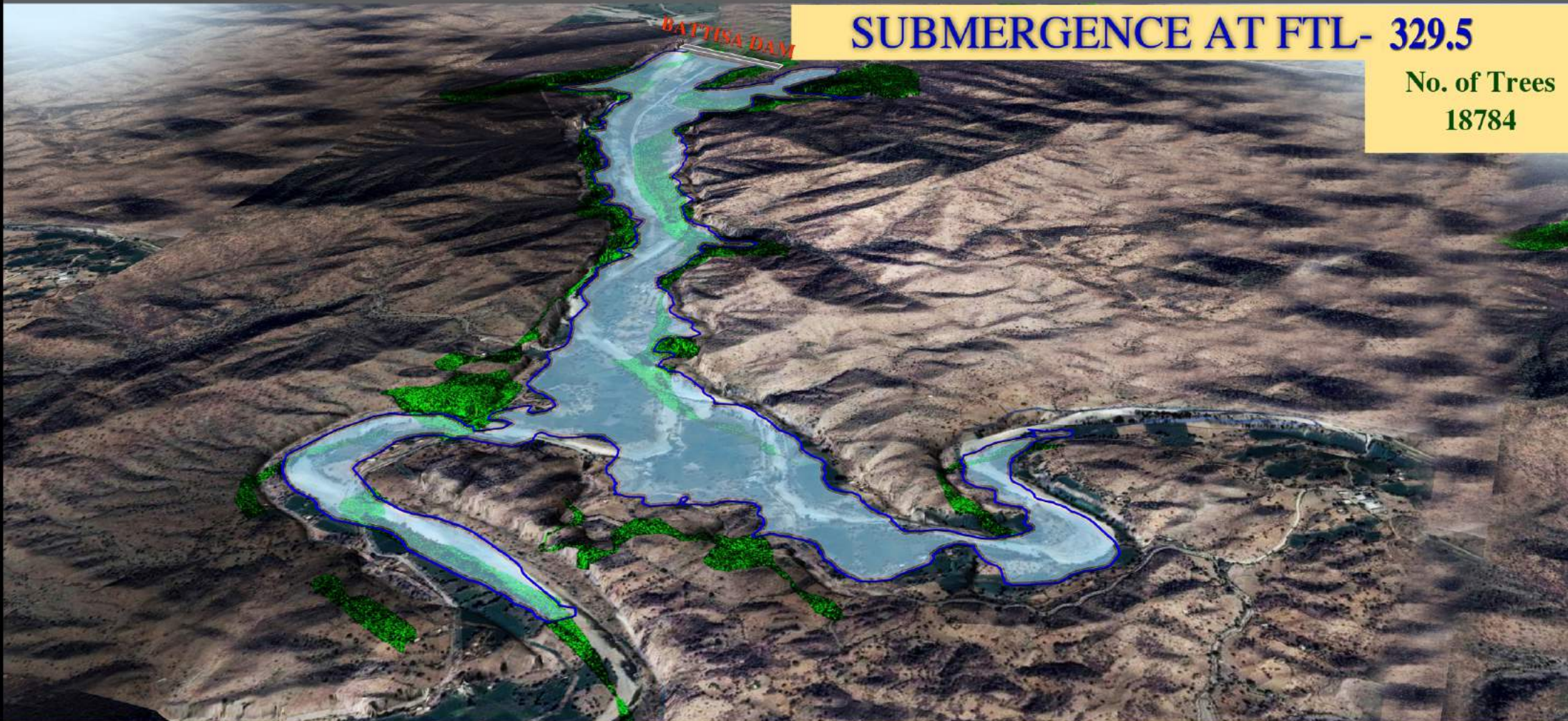
Sill Level 314.5



BATTISA NALLAH IRRIGATION PROJECT DELDAR,SIROHI

SUBMERGENCE AT FTL- 329.5

**No. of Trees
18784**



Area of submergence

Index

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6	FTL - 4 M	327.00	12.50	122.59	48.773	9.800	6.702	65.275	57.315	381.09	135	18515	48.59	57.00	15862
Note : ~69.96 Mcf water is reserved for drinking water supply for 7 towns and 31 villages of Sikkim district, which has been kept constant while making up CCA															

Note :- 269.96 Mcft water is reserved for drinking water supply for 2 towns and 31 villages of Sirohi district, which has been kept constant while working out CCA

FTL-331

FOREST

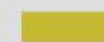


RED.FTL 330.5



RED.FTL 330.0

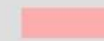
RED.FTL 329.5



RED.FTL 329.0



Sill Level 314.5



BATTISA NALLAH IRRIGATION PROJECT DELDAR,SIROHI

SUBMERGENCE AT FTL- 329.5

**No. of Trees
18784**

Area of submergence

Index

S. No.	Tank Elevation	RL	Depth w.r.t. to Sill level(314.5)	Total Area of Submergence (Ha)	Forest Land (Ha)				Non - Forest Land (Ha)	Storage Capacity (Mcf)	CCA (Ha)	Project Cost (Lacs)	Cost per Mcft (Lacs)	Cost per Ha (Lacs)	No of Trees in Forest Area
					Submergence	Dam Alignment & offtake	Approach Road	Total							
1	FTL	331.00	16.50	158.02	74.700	9.800	6.702	91.202	66.818	577.57	900	22805	39.48	13.32	22256
2	FTL-0.5M	330.50	16.00	150.75	68.701	9.800	6.702	85.203	65.547	550.53	814	22258	40.43	14.05	20875
3	FTL-1M	330.00	15.50	148.08	66.207	9.800	6.702	82.709	65.371	523.54	700	21460	40.99	15.20	20181
4	FTL-1.5M	329.50	15.00	139.45	60.480	9.800	6.702	76.982	62.468	498.40	605	21003	42.14	16.83	18784
5	FTL - 2 M	329.00	14.50	136.78	58.325	9.800	6.702	74.827	61.953	473.26	506	20547	43.42	19.22	18108
6	FTL - 4 M	327.00	12.50	122.59	48.773	9.800	6.702	65.275	57.315	381.09	135	18515	48.59	57.00	15862

*Notes: *68.96 Mcf water is reserved for drinking water supply for 7 towns and 31 villages of Sindh District which has been consented by the Sindh Government.*

Note :- 269.96 Mcft water is reserved for drinking water supply for 2 towns and 31 villages of Sirohi district, which has been kept constant while working out CCA

FTL-331

FOREST



RED.FTL 330.5



RED.FTL 330.0

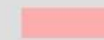
RED.FTL 329.5



RED.FTL 329.0



Sill Level 314.5



BATTISA NALLAH IRRIGATION PROJECT

DELDAR,SIROHI

SUBMERGENCE AT FTL- 329.0

**No. of Trees
18108**

Area of submergence

Index

S. No.	Tank Elevation	RL	Depth w.r.t. to Sill level(314.5)	Total Area of Submergence (Ha)	Forest Land (Ha)				Non - Forest Land (Ha)	Storage Capacity (Mcft)	CCA (Ha)	Project Cost (Lacs)	Cost per Mcft (Lacs)	Cost per Ha (Lacs)	No of Trees in Forest Area
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Note :- 269.96 Mcft water is reserved for drinking water supply for 2 towns and 31 villages of Sirohi district, which has been kept constant while working out CCA

FTL-331

FOREST

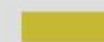


RED.FTL 330.5



RED.FTL 330.0

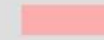
RED.FTL 329.5



RED.FTL 329.0



Sill Level 314.5



BATTISA NALLAH IRRIGATION PROJECT DELDAR,SIROHI

SUBMERGENCE AT FTL- 329.0

**No. of Trees
18108**

Area of submergence

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FTL-331

FOREST

	RED.FTL 330.5		RED.FTL 329.0	
	RED.FTL 330.0		Sill Level 314.5	
	RED.FTL 329.5			