TN – IAMWARM PROJECT

VEMBAR SUB BASIN

DETAILED PROJECT REPORT

WATER RESOURCE DEPARTMENT

1.1. INTRODUCTION

General:

Tamil Nadu being an agrarian State, its economy is based on agriculture. Agriculture production is depending upon availability of water resources. Tamil Nadu is supposed to be the next state to Rajastan in receiving average rain fall and depends largely on the surface water irrigation and as well as ground water irrigation .

Since the available surface water resources are fully harnessed, ground water is the only alternative resource for agricultural development. The area irrigated by wells constitute about 48% of the total area irrigated by different sources. It is estimated that about 78% of the available ground water resources is being utilized leaving a balance of only 22% which is mainly concentrated in command area of reservoirs and tanks and in coastal sedimentary belts. By and large, there is not much scope for the strategy for development of ground water in Tamil Nadu in future, especially for agriculture.

Therefore the future development and expansion depends only on the efficient and economical use of water potential and resources available.

The deficiencies in the infrastructures and functions of irrigation net work causes inefficient function of the sub basins and create much hardship to the farming community. In this contest, to achieve the water use efficiency, it is absolutely necessary to improve and upgrade the existing storage and conveyance system and also to introduce modern irrigation techniques.

With the above objectives, a comprehensive programme has been evolved with Multi Disciplinary Approach.

Description of the Vembar Sub Basin:

The Vember sub basin is one among the 9 Sub basin of Gundar River Basin. The Gundar river basin is one of the major river basins in Tamil Nadu with a drainage area of 5690Sqkm. The Gundar basin is sand witched between the Vaigai river basin in the North and Vaippar river basin in the South. The length of Gundar river is 150 km. This basin covers part of Madurai, Sivagangai, Ramanathapuram, Virudhungar and Thoothukudi Districts. This is a fairly elongated basin and elongated in Northwest to Southwest direction.

The main river of the Vembar namely, Gundar river originates near Chathuragiri Hills with tributaries namely Kamandala nadhi, Gandanadu and Varattar and flows toward South Southeast direction and near Pudupatti village the river Therkkar confluences with the main river. The Kanalodai Joins Gundar near Mandalamanikkam village.

The Vembar river is a ephemeral river which originate in the lower end of the Gundar basin and drain into sea. Vembar sub basin is located in the Southern side of Gundar Basin.

Vembar originates in the plain area at an elevation of 90M above MSL Southeast of Aruppukottai near Reddyiapatti village and runs South-Southeastern direction and confluences in the Gulf of Manner near Vembar village in Kadaladi taluk of Ramanathpuram District. Vember river basin is located between the geographical coordinates of 9°05' N.- 10°03'N latitude and 77°35'E-78°35'E longitude. The length of Vembar river from origination to confluence point is 50.00km,

The drainage area of the Vembar sub basin is 596.46 Sq.km and covered in the following 6 blocks under 3 districts.

Sl.No.	Name of Block	Name of District	Area (Sqkm)
1	Aruppukottai	Virudhunagar	20.933
2	Thiruchuli	Virudhungar	82.446
3	Vilathikulam	Thoothukudi	50.570
4	Pudur	Thoothukudi	261.978
5	Kamudhi	Ramanathpuram	39.424
6	Kadaladi	Ramanathapuram	141.109
	Total		**596.460**

Ayacut details

There are 18 PWD tanks and **18** Panchayat Union tanks under the Vembar sub basin. The total ayacut under the above 18 PWD Non system tanks is **1668.06ha** and that under **18** Punchayat Union tanks is **400.33** Ha. This list of tanks under the control of WRD /PWD and Panchayat Union are separately attached. In this Multi Disciplinary Programme the tanks under the control WRD having more than 40 ha ayacut are only considered.

Taluk wise ayacut details under the Vembar Sub Basin in respect of PWD tanks are as follows.

Sl.No.	Name of Taluk	Name of District	Ayacut in Ha
1	Aruppukottai	Virudhunagar	190.85.0
2	Vilathikulam	Thoothukudi	845.99.0
3	Kamudhi	Ramanathapuram	70.85.0
4	Kadaladi	Ramanathapuram	560.37.0
	Total		**1668.06.0**

List of tanks under WRD/PWD in Vembar Sub Basin are as follows

Sl. No	District	Taluk	Name of Village	Name of Tank	Type of Crops		Ayacut in Ha	Capacity in Mcum
					Wet Crops	Dry Crops		
1	Virudhunagar	Aruppukottai	Muthuramalingapuram	Muthuramalingapuram	--	42.74.0	42.74.0	0.1269
2			Kanjampatty	Kanjampatty	73.65.0	--	73.65.0	0.4295
3			Therkku natham	Therkkunatham	74.46.0	--	74.46.0	0.3786
4	Thoothukudi	Vilathikulam	Pudhuchinnaiyapuram	Pudhuchinnaiyapuram	150.54.0	--	150.54.0	0.9203
5			L.Venkateswarapuram	L.Venkateswarapuram	70.12.0	--	70.12.0	0.4304
6			Boothalapuram	Boothalapuram	--	121.24.0	121.24.0	0.3398
7			Mavilodai	Mavilodai	--	176.03.0	176.03.0	1.0336
8			Chinnur	Chinnur	--	97.12.0	97.12.0	0.2489
9			Ramachandrapuram	Ramachandra puram	--	176.84.0	176.84.0	1.0307
10			Muthaiyapuram	Muthaiyapuram	--	54.10.0	54.10.0	0.2285
11	Ramanathapuram	Kamuthi	Perunali	Perunali	70.85.0	--	70.85.0	0.5596
12		Kadaladi	T.M.Kottai	Senchadainathapuram	79.29.0	--	79.29.0	0.2310
13			T.M.kottai	T. M.kottai	87.97.0	--	87.97.0	0.3730
14			T.Veppankulam	T.Veppankulam	53.53.5	--	53.53.5	0.5360
15			Kokkadi	Kokkadi	43.70.0	--	43.70.0	0.2100
16			Kattalankulam	Kattalankulam	47.69.5	--	47.69.5	0.1600
17			Melauranankurichi	Melauranankurichi	47.17.0	--	41.17.0	0.1500
18			S. Tharaikudi	S. Tharaikudi	207.01.0	--	207.01.0	1.4628
				TOTAL	**999.99**	**668.07**	**1668.06**	

LIST OF TANKS MAINTAINED BY PANCHAYAT UNION IN VEMBAR SUB BASIN

S.No.	District	Taluk	Block	Name of Village	Name of Tank	Ayacut in Ha
1	Virudhunagar	Aruppukottai	Tiruchuli	Maravarperungudi	M.Meenatchipuram	39.24
2				Thirumalaipuram	Thirumalaipuram	26.00
3				Thirumalaipuram	Kallankulam	37.60
				Sub Total		**102.84**
4	Thoothukudi	Vilathikulam	Pudur	Subbaiyapuram	Subbaiyapuram	39.67
5	Thoothukudi	Vilathikulam	Pudur	Vadakkathi	Vadakkathi	8.40
6	Thoothukudi	Vilathikulam	Pudur	Kumarasittampatti	Vagaikulam	20.17
7	Thoothukudi	Vilathikulam	Pudur	Kolukkattamkurichi	Kolukkattamkurichi	14.33
8	Thoothukudi	Vilathikulam	Pudur	Pudhur	Periyakulam	24.03
				Sub Total		**106.60**
9	Ramanathapuram	Kadaladi	Kadaladi	Avathandai	Akkara tank	20.00
10	Ramanathapuram	Kadaladi	Kadaladi	A.Nedunkulam	Kondaiyanendal tank	14.32
11	Ramanathapuram	Kadaladi	Kadaladi	Avathandai	Kuruvadi	12.89
12	Ramanathapuram	Kadaladi	Kadaladi	T.Veppankulam	Makkuvan	15.55
13	Ramanathapuram	Kadaladi	Kadaladi	Nedunkulam	Nedunkulam	36.72
14	Ramanathapuram	Kadaladi	Kadaladi	T.Karisalkulam	T.Karisalkulam	19.61
15	Ramanathapuram	Kadaladi	Kadaladi	Iruveli	Pullandai	19.31
16	Ramanathapuram	Kadaladi	Kadaladi	Iruveli	Thattamalkiyan	19.16
17	Ramanathapuram	Kadaladi	Kadaladi	Nedunkulam	Vedaveknkurichi	19.04
18	Ramanathapuram	Kadaladi	Kadaladi	Senchadainathapuram	Vellaiyapuram	14.29
				Sub Total		**190.890**
				GRAND TOTAL		**400.330**

Cluster wise Tank details for Vembar Sub Basin

Cluster No.	District	Taluk	Block	Non System Tank		Cluster Village
				Name of Tank	Ayacut (Ha)	
1	2	3	4	5	6	7
1	Virudhunagar	Aruppukottai	Tiruchuli	1. Muthuramalingapuram	42.74	Kanjampatti
				2. Kanjampatti	73.65	
				3. Therkunatham	74.46	
				TOTAL	**190.85**	
2	Thoothukudi	Vilathikulam	Pudur	1.Pudhuchinanayapuram	150.54	Mavilodai
				2.L.Venkatesapuram	70.12	
				3. Boothalapuram	121.24	
				4. Mavilodai	176.03	
				5. Chinnur	97.12	
				TOTAL	**615.05**	
3	Thoothukudi	Vilathikulam	Pudur	1.Ramachandrapuram	176.84	Ramachandrapuram
				2.Muthaiapuram	54.10	
				TOTAL	**230.94**	
4	Ramanathapuram	Kamuthi	Kamuthi	1.Perunali	70.85	Perunali
			Kadaladi	**TOTAL**	**70.85**	
5				1.Senchadainathapuram	79.29	T.M.Kottai
				2.T.M.Kottai	87.97	
				TOTAL	**167.26**	
6				1.T.Veppankulam	53.535	Kokkadi
				2.Kokkadi	43.70	
				3.Kattalakulam	47.695	
				TOTAL	**144.93**	
7				1.Melauranankurichi	41.17	S.Tharakudi
				2.S.Tharakudi	207.01	
				TOTAL	**248.18**	
				GRAND TOTAL	**1668.06**	

CONVERGENT TABLE- ABSTRACT (FOR EACH CLUSTER)

S.No	Name of the cluster / Inftastructure / Village	Total Ayacut (Ha)			Total Area (Ha)			WRD		Agriculture		TNAU		Horticulture		Agri marketing		AED		Fisheries		Animal Husbandry	
		FI	PI	Gap	Wop	WP	Gap	Activities		Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha
1	**2**	3	4	5	6	7	8	9		10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	CLUSTER - I	18.39	47.59	124.89	65.98	190.85		Bund	6910m														
								Rep.Slu	3Nos														
								Rep.weir	3Nos														
2	CLUSTER - II	48.00	295.32	271.73	615.05			Bund	9130m														
								Rep.Slu	7Nos														
								Rep.weir	4Nos														
								R.W	320m														
								S.Cou	1500m														
								Sup.chl	2000m														
3	CLUSTER - III	-	115.20	115.74	230.94			Bund	7700m														
								Rep.Slu	2Nos														
								Rep.weir	1No														
								R.W	110m														
4	CLUSTER - IV	29.66	24.28	16.91	53.94	63.85		Bund	2300m														
								R.W	25m														
								Rep.Su	4Nos														
								Rep.weir	1No														
								S.Cou	8000m														
5	CLUSTER - V	67.41	55.16	44.69	122.57	145.21		Bund	5250m														
								Rec.Slu	2Nos														
								Rep.weir	1No														
								Rec.weir	1No														
								S.Cou	4000m														

S.No	Name of the cluster / Inftastructure / Village	Total Ayacut (Ha)			Total Area (Ha)			WRD		Agriculture		TNAU		Horticulture		Agri marketing		AED		Fisheries		Animal Husbandry	
		FI	PI	Gap	Wop	WP	Gap	Activities		Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha
1	**2**	3	4	5	6	7	8	9		10	11	12	13	14	15	16	17	18	19	20	21	22	23
6	CLUSTER - VI	73.30	61.78	9.85	135.08	144.93		Bund	7608m														
								Rec.Slu	3Nos														
								Rep. weir	1No														
								S.Cou	1650m														
7	CLUSTER - VII	128 .36	112.94	6.88	241.30	248.18		Bund	1600m														
								Rep.Slu	1No														
								R.W	40m														
								Sup.chl	6500m														

CLUSTER WISE / INFRASTRUCTURE WISE / VILLAGE WISE CONVERGENT TABLE

Sl. No.	Infrastructure / Tank / Anicut	Total Ayacut (Ha)			Total Area (Ha)			WRD		Agriculture		TNAU		Horticulture		Agri marketing		AED		Fisheries		Animal Husbandry	
		FI	PI	Gap	Wop	WP	Gap	Activities		Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha
1	2	3	4	5	6	7	8	9		10	11	12	13	14	15	16	17	18	19	20	21	22	23
	VIRUDHUNAGAR DIST	**CLUSTER - I**																					
1	Muthurama lingapuram	9.78	11.60	21.36	42.74			Bund	2100 m														
								Rep.Slu	1No														
2	Kanjampatty	2.41	2.53	45.94	73.65			Bund	3000 m														
								Rep.weir	2No														
3	Therkkunatham	6.20	10.67	57.59	74.46			Bund	1810 m														
								Rep.Slu	2Nos														
								Rep.weir	1No														
	THOOTHUKUDI DIST CLUSTER - II	-																					
4	Pudhu chinnaiya puram	5.44	54.64	90.46	150.54			Bund	2500 m														
								R.W	50m														
								Rep.Slu	4Nos														
								Rep.weir	1No														
5	L. Venkates warapuram	42.56	21.99	5.57	70.12			Bund	1920 m														
								R.W	60m														
								Rep.Slu	2Nos														
								Rep.weir	1No														
6	Boothala pura	-	56.22	65.02	121.24			R.W	50m														
								Rep.weir	1No														
								S.Cou	1500 m														
7	Mavilodai	-	100.83	75.20	176.03			Bund	3110 m														
								R.W	100m														

									Sup.chl	2000 m													

Sl. No.	Infrastructure / Tank / Anicut	Total Ayacut (Ha)			Total Area (Ha)			WRD		Agriculture		TNAU		Horticulture		Agri marketing		AED		Fisheries		Animal Husbandry	
		FI	PI	Gap	Wop	WP	Gap	Activities		Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha	Act	No./ Ha
1	**2**	3	4	5	6	7	8	9		10	11	12	13	14	15	16	17	18	19	20	21	22	23
8	Chinnur	-	61.69	35.48	97.12	-	-	Bund	1600m														
								R.W	60m														
								Rep.Slu	1No														
								Rep.weir	1No														
	CLUSTER - III																						
9	Ramachandrapuram	-	84.52	92.32	176.84	-	-	Bund	3300m														
								R.W	60m														
								Rep.weir	1No														
10	Muthaiyapuram	-	30.68	23.42	54.10			Bund	4400m			+											
								R.W	50m														
								Rep.Slu	3Nos														
	RAMANATHAPURAM DIST																						
	CLUSTER - IV																						
11	Perunali	29.66	24.28	16.91	53.94	63.85		Bund	2300m														
								R.W	25m														
								Rep.Su	4Nos														
								Rep.weir	1No														
								S.Cou	8000m														

	CLUSTER - V																			
12	Senchadai natha - puram	39.48	32.30	7.51	71.78	79.29		Bund	1500m											
								Rec.Slu	1No											
								Rep.weir	1No											
13	T. M. kottai	27.93	22.86	37.18	50.79	65.92		Bund	3750m											
								Rec.Slu	1No											
								Rec.weir	1No											
								S.Cou	4000m											
		67.41,55.16,44.69,122.57,145.21																		
	CLUSTER - VI																			
14	T.Veppankul am	226.38	23.40	3.76	48.78	53.54		Bund	3048m											
								Rec.Slu	1No											
								Rep.weir	1No											
15	Kokkadi	21.17	17.32	5.21	38.49	43.70		Bund	2560m											
								Rec.Slu	1No											
								S.Cou	1650m											
16	Kattalankula m	25.75	21.06	0.88	46.81	47.69		Bund	2000m											
								Rec.Slu	1No											
		73.30,61.78,9.85,135.08,144.93																		
	CLUSTER - VII																			
17	Melauranan kurichi	21.86	17.88	1.43	39.74	41.17		Bund	1600m											
								Rep.Slu	1No											
18	S.Tharaikudi	106.50	95.06	5.45	201.56	207.01		R.W	40m											
								Sup.chl	6500m											

128.36,112.94,6.88,241.30,248.18

1.2. HYDROLOGY

2.1 CATCHMENT AREA:

The catchment area of the sub basin is 596.46 sq.km. This sub basin receives rain fall from North – East monsoon. During summer, the rain fall received is nearly half to that of South – West monsoon and there is no rainfall in the winter or it is very meagre. There are 18 Non system tanks under the control of WRD, with a total registered ayacut of 1668.06ha. But at present only 1077.37ha is being cultivated during the 1st crop.

2.2. HYDRO METROLOGY:

The weather data observed at Kavalur water shed, maintained by the PWD, WRD, State Ground Water and Surface Water Resources Data Centre, Chennai is used for analysis, since long term data is available.

2.3.RAIN FALL

There are18 Non recording rain gauge stations in the Gundar Basin under the following maintenance agencies

1. WRD – 8 Nos
2. Revenue Department – 8 Nos.
3. Agricultural University –1 No.
4. Southern Railway – 1No.

In addition to the above, there are 4 self recording rain gauges, maintained by the PWD.

There are five influencing rain gauges station in the Vembar Basin namely Aruppukottai, Kamudhi, Mudhukulathur, Thiruchuli and Vilathikulam. The details of the rain gauge station such as their location, geographical co ordinates, annual average of rainfall etc are as given below.

Sl. No.	Sub Basin	Rain gauge station	Latitude	Longitude	Rain gauge station area	Sub basin area in Sq.Km.	Weight in %	Annual average rainfall in MM	Annual average weighted rain fall for the sub basin in mm
1	Vembar	Aruppukottai	9'30'50"	78°06'30"	82.08		0.14	774	12.03
		Kamudhi	9'25'30"	78°22'60"	52.70		0.09	681	311.40
		Mudhukulathur	9'21'30"	78°15'50"	46.20	596.46	0.08	711	286.20
		Thiruchuli	9'32'00"	78°12'00"	19.79		0.03	701	70.10
		Vilathikulam	9'09'00"	77°52'00"	395.69		0.66	607	12.10

Rainfall data @ 75% dependable rain fall

Sl. No.	Sub Basin	Rain gauge station	South West	North East	Winter	Summer	Annual Dependable Rain fall
1	Vembar	Aruppukottai	144	245	0	88	600
		Kamudhi	85	223	0	47	512
		Mudhukulathur	103	293	0	49	543
		Thiruchuli	112	234	0	61	478
		Vilathikulam	62	248	5	46	455

2.4.CLIMATE:

The annual temperature varies from 23.94^{o}C to 34.86^{o}C and the average mean temperature is 29.33^{o}C

Relative Humidity;

The monthly average relative humidity varies from 55.69% to 72.64% and the average relative humidity is 62.47%.

Wind Speed:

The average monthly wind velocity varies from 3.31km/hour to 6.56km/hour and the average wind speed is 4.75 km/hour . Increase in wind speed occurs during the cyclone which occurs mostly in November.

Sun Shine:

The monthly average sunlight hours varies from 6.07km/ day to 9.17km/day and the average sun shine hours is 7.29 hours per day.

2.5.SOIL CLASSIFICATION:

Soils classification maps have been prepared in 1996 by the National Bureau of Soil Survey and Land Use Planning, Bangalore (NBSS) in Co operation with the department of Agriculture of Tamilnadu. Based on this, the predominant soil order found in this sub basin, are Inceptisol, Alfisol, Entisol and Vetisol

2.6.LAND HOLDINGS:

More than …**95**.% of the land holdings are below 1ha followed by …**4**..% of land holding with 1 to 2 ha size, medium farmers having 2 to 5ha are …**1**…% and big farmers contributes to .**Nil...%**only.The total nos of land holdings is **2710** Nos.

Category	Size of Holdings	Numbers	% to total
Marginal	Below 1.00 ha	2571	95%
Small	1.00 – 2.00 ha	81	4%
Medium	2.00 – 5.00 ha	26	1%
Big	5.00 ha & above	--	-
		2710	100%

2.7.DEMOGRAPHY:

There are 6 blocks lying partially in this sub basin. They are Aruppukottai, Thiruchuli blocks of Virudhungar District, Pudur & Vilathikulam blocks of Thoothukudi District and Kamudhi & Kadaladi of Ramanathapuram District. The Population details were obtained from the Director of Statistics, Chennai are used for calculation of domestic water requirement.

Name of sub basin	Total number of blocks	Total number of villages	Population				
			2000 in Million	2005 in Million	2010 in Million	2020 in Million	2045 in Million
Vembar Sub Basin	6	94	0.071	0.075	0.080	0.091	0.125

2.8. WATER POTENTIAL:

a. Surface water potential

75% Dependable surface water potential in Vember Sub basin is as follows.

During Monsoon

a) South west 9.08 Mcum

b) North East 14.83 Mcum

Total : 23.91 Mcum

During Non Monsoon 11.87 Mcum

Total **35.78 Mcum**

b. Ground Water Potential:

Due to increased use of ground water in Tamil Nadu the following problems are identified.

1. Depletion of ground water table below the economic programme level and excess increasing of the available ground water resource above the optimum level.
2. Increasing trends in critical and over exploited block
3. Sea water intrusion in the coastal region.

Since ground water has become a major source for irrigation the ground water scenario of the basin should be watched and timely action has to be taken for ground water regulation management , conservation and augmentation of this natural resource

Ground water potential

Sl.No.	Name of Sub asin	Name of block	Total Block Area sqkm	Block area falls in sub basin	Block Net potential in sub basin Mcum	Total sub basin net potential Mcum	Level of Exploitation
1	Vembar	Aruppukottai	336.50	20.933	1.6381	23.80	Safe
		Thiruchuli	426.00	82.446	9.1635		Safe
		Vilathakulam	623.41	50.570	0.3369		Over exploited
		Pudur	489.50	261.978	4.0590		Critical
		Kamudhi	578.47	39.424	2.2232		Safe
		Kadaladi	696.85	141.109	6.3778		Safe
		TOTAL		**596.46**			

Surface Water Potential - 35.78 Mcum

Ground Water Potential - 23.80 Mcum

Total Potential - 59.58 Mcum

2.9. WATER DEMAND

A. Domestic Water Demand:

Sl. No	Name of sub Basin	2001	2005		2010		2020		2045	
		Total Population (in Million)	Total Population (in Million)	Total Water demand in Mcum	Total Population (in Million)	Total Water demand in Mcum	Total Population (in Million)	Total Water demand in Mcum	Total Population (in Million)	Total Water demand in Mcum
1	Vembar Sub Basin	0.071	0.075	0.523	0.080	**1.85**	0.091	2.319	0.125	3.202

The Rural population under this sub basin, as per census 2001 is 0.071 Million and population density is 119 person/sqkm. Sex wise distribution of population in the districts covered by this sub basin are as follows.

District		Male	%	Female	%
Ramanathapuram	Rural	433290	74	451980	75
	Urban	150086	26	152308	25
	Total	583376	100	100	100
Thoothukud	Rural	439254	57	468246	58
	Urban	327569	43	337204	42
	Total	766823	100	805450	100
Virudhunagar	Rural	482626	55	491330	56
	Urban	387750	45	389595	44
	Total	870376	100	880925	100

Domestic water demand (as on 2010) : 1.85Mm^3

B. Live Stock Population in water demand

Sl.No	Table (b)	Population Nos	Water Demand Mcum
1	Cattle	27786	1.116
2	Buffalos	4160	0.228
3	Brines	31946	1.283
4	Sheep	28790	0.210
5	Coat	22733	0.166
6	Cvines	51524	2.069
7	Horses & Ponies	23	0.001
8	Mules & Donkeys	249	0.004
9	Pigs	1018	0.015
10	Dogs	7763	0.043
11	Rabbite	26	0.000
12	Fowls	55947	0.005
13	Ducks	199	0.001
14	Other	16	0.00
	Total		**5.140**

Live Stock Demand (as on 2010) : 5.140Mm^3

D. Industrial Water Demand:

Sl. No.	Name of Sub Basin	Annual Water Demand in Mcum			
		2004	2010	2020	2045
1	Vembar Sub Basin	14.78	15.67	31.41	60.90

Industrial Water Demand(as on 2010): 15.67Mm^3

1.2.11 CROPPING PATTERN OF VEMBAR SUB BASIN :(Combined Statement of 3 Districts)

SEASON	Crop	WITH OUT PROJECT				WITH PROJECT			
		FI	PI	RF/GAP	TOTAL	FI	Gap	TOTAL	(+) or (-)
Perennial									
	Coconut(SFI)	--	--	--	--	--	--	--	
	Total	--	--	--	--	--	--	--	
Annual crop (Jan-Dec)									
	Sugarcane	--	--	--	--	--	--	--	
	Banana	--	--	--	--	--	--	--	
	Total	--	--	--	--	--	--	--	
I Crop (Sep-Jan)									
	Paddy	226.82	118.80	--	345.62	290.00	--	290.00	
	Cholam	--	30.67	--	30.67	11.30	--	11.30	
	Cumbu	--	9.13	--	9.13	9.13	--	9.13	
	Maize	--	46.45	--	46.45	195.85	--	195.85	
	Pulses	--	48.43	--	48.43	113.00	--	113.00	
	Cotton	0.30	8.32	--	8.62	0.30	--	0.30	
	Chillies	137.72	355.56	--	493.28	545.00	--	545.00	
	Coriander	--	5.60	--	5.60	5.60	--	5.60	
	Fodder	--	--	--	--	19.00	--	19.00	
	Minor Millets	--	70.52	--	70.52	32.52	--	32.52	
	Ragi	--	11.56	--	11.56	11.56	--	11.56	
	Onion	0.28	--	--	0.28	0.28	--	0.28	
	Black Gram	--	2.21	--	2.21	50.00	--	50.00	
	Sunflower	--	5.00	--	5.00	20.00	--	20.00	
	Prosopis	--	--	364.52	364.52	--	364.52	364.52	
	Gap Area	--	--	226.17	226.17	--	--	--	
	Total	**365.12**	**712.25**	**590.69**	**1668.06**	**1303.54**	**364.52**	**1668.06**	
II Crop									
	Cholam	--	--	--	--	--	--	--	
	Cumbu	--	--	--	--	--	--	--	
	Maize	--	--	--	--	50.00	--	50.00	
	Pulses	--	--	--	--	100.00	--	100.00	
	Sunflower	--	--	--	--	10.00	--	10.00	
	Total	--	--	--	--	**160.00**	**--**	**160.00**	
	Grand total	**365.12**	**712.25**	**590.69**	**1668.06**	**1463.54**	**364.52**	**1828.06**	
	CROPPING INTENSITY				**64.59%**			**87.74%**	

ABSTRACT	**without project**	**with project**
Fully Irrigated	**365.12 Ha**	**1463.54 Ha**
Partially Irrigated	**712.25 Ha**	**0 Ha**
Prosophis	**364.52 Ha**	**364.52 Ha**
Gap	**226.17 Ha**	**0 Ha**
Total	**1668.06 Ha**	**1828.06 Ha**

1.2.14 CROP WATER REQUIREMENT WITHOUT PROJECT :

S.No.	Name of Crop	Area in Ha	Crop water requirement mm	Total water requirement in Mcum	Irrigation Water requirement at source n =0.43	Total in Mcum
1	Paddy	345.62	601	2.08	4.84	4.84
2	Cholam	30.67	348	0.11	0.26	0.26
3	Cotton	8.62	636	0.05	0.12	0.12
4	Ragi	11.56	368	0.04	0.09	0.09
5	Cumbu	9.13	337	0.03	0.07	0.07
6	Black Gram	2.21	292	0.06	0.01	0.01
7	Chillies	493.28	842	4.15	9.65	9.65
8	Onion	0.28	473	0.00	0.00	0.00
9	Coriander	5.60	292	0.02	0.05	0.05
10	Maize	46.45	348	0.16	0.37	0.37
11	Pulses	48.43	292	0.14	0.32	0.32
12	Sunflower	5.00	511	0.03	0.07	0.07
13	Minor Millets	70.52	292	0.21	0.49	0.49
14	Prosopis	364.52	---	---	---	---
15	Gap	226.17	---	---	---	---
	TOTAL	**1668.06**			**16.35**	**16.35**

Total requirement of water without project : 13.270 Mcum (for WRO tanks)

Total requirement of water without project for ayacut under

Panchayat Union tank: $\frac{16.35}{1668.06} \times 400.33$

: 3.92 Mcum

1.2.15 CROP WATER REQUIREMENT WITH PROJECT :

Name of Crop		Extent in Ha	Field Water Requirement		Water requirement in Mm3			
			mm	Mcum	Surface water 0.53	Drip Eff 0.80	sprinkler Eff 0.70	Total Mcum
Perennial								
	Coconut	--	--	--	--	--	--	--
Annual crop(Jan-Dec)								
	Banana (Drip)	--	--	--	--	--	--	--
	Banana (Sur)	--	--	--	--	--	--	--
	Total	--	--	--	--	--	--	--
I st crop(Sep - Jan)								
	Paddy	290.00	601	1.74	3.28	--	--	3.28
	Cholam	11.30	348	0.04	0.08	--	--	0.08
	Cumbu	9.13	337	0.03	0.06	--	--	0.06
	Maize	195.85	348	0.68	1.28	--	--	1.28
	Pulses	113.00	292	0.33	0.62	--	--	0.62
	Cotton	0.30	636	0.02	0.04	--	--	0.04
	Chillies	545.00	842	4.59	8.66	--	--	8.66
	Coriander	5.60	292	0.02	0.04	--	--	0.04
	Fodder	19.00	348	0.07	0.13	--	--	0.13
	Minior Milltes	32.52	292	0.09	0.17	--	--	0.17
	Ragi	11.56	368	0.04	0.08	--	--	0.08
	Black Gram	50.00	292	0.15	0.28	--	--	0.28
	Onion	0.28	473	0.01	0.02	--	--	0.02
	Sunflower	20.00	511	0.10	0.19	--	--	0.19
	Total	**1303.54**	--	--	--	--	--	**14.93**
II Crop								
	Cholam	--	--	--	--	--	--	--
	Sunflower	10.00	511	0.05	0.09	--	--	0.09
	Maize	50.00	348	0.17	0.32	--	--	0.32
	Pulses	100.00	292	0.29	0.55	--	--	0.55
	Bhendi (SI)	--	--	--	--	--	--	--
	Bhendi (Spr)	--	--	--	--	--	--	--
	Total	**160.00**	--	--	--	--	--	**0.96**
	Grand total	**1463.54**			**15.89**			**15.89**

Total requirement of water with project : 15.836 Mcum (for WRO tanks)

Total requirement of water without project for ayacut under

Panchayat Union tank: $\frac{15.89}{1668.06}$ x 400.33

: 3.81 Mcum

Irrigation Water Demand:

WATER DEMAND (without Project)

a.	Irrigation Demand (for WRO tanks ayacut	-	16.35 Mcum
	Irrigation Demand (for Panchayat Union tanks ayacut)	-	3.92Mcum
b.	Domestic Demand	-	1.85 Mcum
c.	Live Stock Demand	-	5.14 Mcum
d.	Industrial Demand	-	15.67 Mcum
	Total Water Demand	**-**	**42.93 Mcum**

Water Potential available: (without Project)

Surface Water Potential	:	35.78 Mm^3
Ground Water Potential	:	23.80 Mm^3
Total Water Potential	**:**	**59.58 Mm^3**
Total Water Demand :		42.93 Mm^3
Surplus	**:**	**16.65 Mm^3**

WATER DEMAND (with Project)

a.	Irrigation Demand (for WRO tanks ayacut	-	15.89 Mcum
	Irrigation Demand (for Panchayat Union tanks ayacut)	-	3.81 Mcum
b.	Domestic Demand	-	1.85 Mcum
c.	Live Stock Demand	-	5.14 Mcum
d.	Industrial Demand	-	15.67 Mcum
	Total Water Demand	**-**	**42.30 Mcum**

Water Potential available: (with Project)

Surface Water Potential	:	35.78 Mm^3
Ground Water Potential	:	23.80 Mm^3
Total Water Potential	**:**	**59.58 Mm^3**
Total Water Demand :		42.30 Mm^3
Surplus	**:**	**17.28 Mm^3**

1.3. HYDRAULICS OF THE COMPONENT

HYDRAULIC PARTICULARS
VEMBAR – SUB BASIN

A) ANICUT

Sl.No	Name of Anicut	Village	Ayacut	Length of Anicut (M)	Crest level of Anicut (M)	Front (M)	Free Sq.km	Combined Sq.km	Maximum flood discharge Cumecs / Cusecs	Head sluice Loca tion	Vent (M)	Sill Level sluice (M)	Dis charge cumecs	Supply Channel					Remarks
														Length (m)	Bed width (M)	FSD (M)	Bed slope	Sluice	
	THOOTHUKUDI DISTRICT																		
1	Mavilodai Anicut	Mavilodai	NIL	54.00m	32.40	0.90	21.62	21.62	4700 Cusecs	'O'm	1.20x0.45	31.50	40/C/s	2000m	5.60m	0.60m	1/7000	3 No	
	RAMANATHAPURAM DISTRICT																		
2	T.M Kotai Anicut	T.M Kotai	NIL	27.0	10.00	8.40	3.802	3.802	2300 Cusecs	0 M	H.S-1.25*1.3 Scour Vent-1.90*1.90	Head Sluice-8.400 Scour Vent-8.10	H.S-2.39 S.V-2300	6500m	11	1.0	1 in 730	--	

B) **TANKS (Separate statement for Non System Tanks) VEMBAR – SUB BASIN**

Sl. No	District	Taluk	Name of Tank	Ayacut in Ha	Capacity in Mcft	Number of Fillings	Free catchment in SqKm	Combined Catchment in Sq.Km	Water spread area (Sq.Km)	FTL in M	MWL in M	No.of Sluices	Nos and Length of weir (m)		Discharge in Cusecs	Length of bund (M)	Length of Supply Channel (M)	Upper Tank	Lower Tank
													Nos	Length in m					
1	Virudhunagar	Aruppukottai	Muthuramalingapuram	42.74.0	4.48	2	3.547	3.547	0.233	86.400	87.000	1	1	11.00	442.05	2100	2000	…….	Kanjampatty Odai
2			kanjampatty	73.65.0	15.167	1	61.07	61.07	0.464	50.000	50.600	3	2	80.50 , 18	3296.80 528.08	3000	3000	M. Meena tchi puram	Therkku natham Tank
													Head Sluice -1	10.00	189		--	--	Goes to Paralachi tank
3			Therkku natham	74.46.0	13.37	2	38.29	97.89	0.545	100.100	101.000	2	1	58.00	4351	1810	7000	Kanjam pattyTank	Pudhuchinnai yapuram Tank
4	Thoothukudi District	Vilathikulam	Pudhuchinnaya puram	150.54.0	32.50	2	50.59	112.00	1.04	30.100	30.700	4	1	133.00	4696	2500	-	Therkkunatham	Chinnur
5			L.Venkateswarapuram	70.12.0	15.20	2	47.92	47.92	0.40	32.500	33.100	2	1	77.70	3150	1920	-	Nil	Boothala puram
6			Boothalapuram	121.24.0	12.00	2	21.62	21.62	0.34	99.500	100.100	2	1	177.00	7214	1200	1500	L.Venkates warapuram	Mavilodai Anicut
7			Mavilodai	176.03.0	36.50	2	10.28	10.28	0.86	30.500	31.200	2	1	34.150	998	3110	2000	Mavilodai Anicut	Chinnur
8			Chinnur	97.12.0	10.06	2	7.68	195.84	3.27	99.800	100.400	1	1	125.00	4744	1600	-	Mavilodai Tank	Gulf of Mannar
9			Ramachandrapuram	176.84.0	36.40	2	54.12	58.75	1.00	100.050	100.660	3	1	86.00	3500	3300	-	----	Gulf of Mannar
10			Muthaiyapuram	54.10.0	8.07	2	20.89	20.89	0.73	5.300	5.900	3	1	105.00	4052	4400	-	----	Gulf of Mannar
11	Ramanathapuram	Kamuthi	Perunali	70.85.0	19.76.0	2	12.945	32.751	7.82	29.56	30.16	4	1	67.60	2090	3550	8000	Kanjampatti Odai	T.M.Kottai tank
12			Senchadainatha puram	79.29.0	8.16	2	6.32	6.321	0.550	15.190	15.790	2	1	21.00	0.64	2350	--	----	Tharakudi
13			T. M. kottai	87.97.0	0.373	2	15.18	23.155	0.925	15.400	16.000	4	2	30.50 &30.50	0.68	3750	4000	Kanjampatti Odai, Perunali	T.Veppan kulam
14			T.Veppan kulam	53.53.5	0.536	0.89	5.439	5.439	0.754	30.800	31.400	3	1	23.75	059	3048	250	T.M.Kottai	Kokkadi
15			Kokkadi	43.70.0	0.21	1.81	3.26	8.81	0.465	30.300	30.900	2	1	28.50	0.70	2560	1650	T.Veppankulam	Kurvadi
16			Kattalankulam	47.69.5	0.16	1.80	3.24	3.24	0.454	13.400	14.000	3	1	19.00	0.88	2560	---	Nedunkulam	Melauranan kurichi
17			Melauranan kurichi	41.17.0	0.15	2	3.89	3.89	0.35	15.100	15.700	4	1	19.20	0.48	1920	---	Kattalakulam	-----
18			S. Tharaikudi	207.01.0	51.66	2	3.02	7.42	20.89	15.400	16.000	6	1	30.50	0.33	3290	8000	T .Karisal kulam	Gulf of Mannar

C) SUPPLY CHANNELS HAVING DIRECT AYACUT
VEMBAR – SUB BASIN

Sl. No.	Name of supply channel	Start Point		End Point		Length in metres	Bed width	Bed slope	Side slope	MFD	Depth of flow	Remarks
		Location	Sill level	Location	Sill level							
..... NIL												

1.4. PARTICIPATORY IRRIGATION MANAGEMENT (PIM)

1.4.Participatory Irrigation Management (PIM) Under IAM WARM Project in

VEMBAR Sub basin

1. **The Sub-Basin :** This is one of the Nine sub-basins of the Gundar River Basin. Totally 18 irrigation tanks are under the control of Water Resources Department (WRD) in this sub-basin. The list of Tanks covered with more details are furnished in the Annexure-1. These 18 tanks are located within the sub-basin's hydraulic boundary spreading over 17 villages of Aruppukottai Taluk in Virudhunagar District, Vilathikulam Taluk in Thoothukudi District, Kamudi and Kadaladi Taluks in Ramnad District. The total Command area under these 18 tanks works out to 1668.06 Ha. (Annexure 1)

2. **Command Area :**

   i) Under system tanks : Nil

   ii) Under Non-system tanks (18 tanks) : 1668.06 Ha

   Total (18 Tanks): 1668.06 Ha

3. **An assessment of number of WUAs**

i)	Associations already formed under WRCP	Nil
ii)	Associations proposed to be formed under IAMWARM Project covering 18 tanks	16 Nos.
iii)	The total command area covered	1668.06 Ha

4. **An account of "Awareness creation" among the farming community: Activities undertaken and "Walkthrough Surveys" carried out:**

   i) There are 18 tanks in the sub-basin spread over 17 villages, as detailed out in Annexure – 01. All these villages were visited by the WRD officials and awareness about various activities, contemplated under IAMWARM project has been created.

   ii) Details of villages covered, walkthrough surveys conducted, farmers attended, and list of works suggested by the farmers, list of works analysed and finalized by WRD officials, are all furnished in the Annexure – 02 and Annexure – 03.

5. **Schedule for completion of delineation and preparation for WUA documents, comprising of:**

   i) Form – I : Details to be notified by District Collectors (End of March – 09)

   ii) Form – II : WUA document to be notified by District Collectors (End of April – 09)

   iii) Completion of preparatory works for the conduct of Elections for WUAs (End of May – 09)

6. **Schedule for Conduct of Elections** in the sub-basin for forming Management Committees **(End of July 2009)**

7. **Support Organisations (SOs) :**

   i) Initiating and completing the process of publishing EOI to hire Support Organisation at Sub-basin level (End of Feb 2009)

   ii) Short listing and providing Request for Proposals (RFPs) to all the short listed agencies and obtaining Technical and Cost Proposals (Middle of April, 2009)

   iii) Selection and deployment of Support Organisation to the sub-basin (End of May, 2009)

8. **Appointment and the Role of Competent Authorities :**

   i) Section 26 of the Tamil Nadu Farmer's Management of Irrigation Systems (TNFMIS) Act provides for the appointment of "Competent Authorities" to assist the respective farmers organizations (WUA, Distributory Committee and Project Committee), in the Implementation and execution of all decisions taken by such farmers organization. Similarly, every farmer's organization shall extend such co-operation or assistance, as may be required by the Competent Authority, for carrying out all the tasks related to implementation of TNFMIS Act.

   ii) Appointment of Competent Authorities for the WUAs proposed to be formed under IAMWARM project is based on the "WRD Section officer wise" distribution as indicated below.

Name of the WRD Sub Divisional Officers working in the Vembar Sub Basin

Virudhunagar District

1. Er.R. Sornakumar, B.E.
   Assistant Executive Engineer, WRD.,
   Vaippar Basin Sub Division, Aruppukkottai.

Thoothukudi District

2. Er..P.RAJENDRAN, B.E.
   Assistant Executive Engineer, WRD.,
   Vaippar Basin Sub Division, Vilathikulam.

Ramnad District

3. Er. S. Venkatakrishnan,B.E.,
   Assistant Executive Engineer,WRD.(i/c)
   Gundar Basin Sub Division, Kamudi.

4. Er. Venkatraman, B.E.,
   Assistant Executive Engineer,WRD.(i/c)
   Gundar Basin Sub Division, Mudhukulathur.

List of Competent Authorities :

a.	A.Visuvamithiran, Assistant Engineer, WRD, Vaippar Basin Section, Reddiapatti	WUAs 1, 2, 3,
b.	S.Anthonyraj, Junior Engineer, WRD, Vaippar Basin Section, Pudur	WUAs 4,5,6 & 7
C.	M.Manimaran, Junior Engineer, WRD, Vaippar Basin Section, Vilathikulam	WUAs– 8 & 9
d.	S.Kalyanasundaram, Junior Engineer, WRD, Gundar Basin Section, Kamudi	WUAs - 10
e.	K.B.Kumar, Assistant Engineer, WRD, Gundar Basin Section, Mudukulathur	WUAs – 11,12,13,14,15,16, &17

9. Involvement of farmers in the preparation "Scheme Modernisation Plans".

i) Based on the outcome of the "Awareness Creation Programme" and Walkthrough survey carried out with the involvement of farmers, a list of tasks proposed to be taken up for "Modernisation" under IAMWARM project was discussed with 191 Nos of farmers from 17 villages. The final list of tasks was also prepared and exhibited in the Notice Board of the Village Administrative Officers Office and Panchayat Office. These

details were also discussed with the farmers and the tasks to be taken up under scheme modernization scheme finalized.

ii) During the meeting, the farmers presented were also informed that soon after finalization of contract for carrying out “Modernization of Irrigation Systems” a ‘Notice Board’ with the details about the nature of works, its cost, period of contract and Name of the contractor will all be fixed at the site of the work, as well as in the Panchayat Office of the Villages concerned for information of the farmers. They have also been informed that they are free to supervise the work by the contractor and any lapse in the quality of work may be reported to the field officers of WRD, as well as the Executive Engineer of WRD, who has been designated as the Nodal Officer for the sub-basin concerned.

iii) The field officers of WRD are all aware of the problems in handing over the operation and maintenance responsibilities to the farmers concerned, if the tasks as desired by the farmers in the command area are not included in the modernization of the system and also in case, some of the tasks already included and planned are not implemented due to some reasons or other.

iv) The WRD officers were also informed that they are personally responsible for handing over the irrigation systems after completing the tasks related to modernization of Irrigation systems, under IAMWARM Project.

10. Current status of Recovery of water charges :

i) An enquiry conducted with the ‘Village Administrative Officers’ (VAOs) of randomly selected villages (4 numbers out of 17 villages) located with in the sub-basin the normal water charges recovery as informed by the VAO, works out to 50-60% only, about the expected percentage of 80-90%.

ii) With the proposal to form new WUAs under IAMWARM in ‘Vembar sub-basin’, the Managing Committee will be trained to take up the responsibility of improving the Water charges recovery percentage. These will be followed up, after completing the modernization tasks and handing over of the O & M responsibilities to WUAs.

11. “Capacity Building” of the WUA farmers:

i) The “Support Organisation Group” will prepare “Training Modules” required for building the capacity of the WUA farmers, based on a “Training Needs” Analysis. They will also organize various “Capacity building” programmes at suitable locations within the sub-basin command area, to benefit the farmers of the WUAs in the sub-basin.

ii) The “Support Organisation” will also arrange for organizing the “Study Tours” both within and outside the state to enhance their knowledge and experiences which will help them to improve the crop productivity and there by the farmer’s income.

iii) The support organisation will also conduct necessary “awareness programme” and impart training to educate the farmers of the WUAs in all aspects of the TNFMIS Act, TNFMIS Rules and Election procedures for constituting the “Managing Committees” of the WUAs.

12. The “Competent Authorities” appointed for the sub-basin will also be trained to effectively to interact with WUA farmers and maintain good report and relationship with the farming community in the sub-basin.

Annexure – 1

An Assessment of Command Area and WUAs under the control of WRD of PWD in Senkottaiyar Sub-basin

Sl. No	Name of Irrigation System and Tanks	Command area in (ha)	Location of the Command Area			Coverage of Command Area under different projects (ha)		Status of Formation of WUAs in the sub-basin	
			Village	Taluk	District	WRCP and others	IAMWARM	Formed under WRCP (Code)	To be formed under IAMWARM (Code)
1	2	3	4	5	6	7	8	9	10
	Rain Fed Tanks								
1	Muthuramalingapuram	42.74.0	Muthuramalingapuram	Aruppukottai	Virudhunagar	Nil	42.74.0	Nil	VEM – VNR 1
2	Kanjampatti	73.65.0	Kanjampatti			Nil	73.65.0	Nil	VEM – VNR 2
3	Therkunatham	74.46.0	Therkunatham			Nil	74.46.0	Nil	VEM – VNR 3
4	Puduchinnayapuram	150.54.0	Puduchinnayapuram	Vilathikulam	Thoothukudi	Nil	150.54.0	Nil	VEM – TTK 4
5	L.Venkateswarapuram	70.12.0	L.Venkateswarapuram			Nil	70.12.0	Nil	VEM – TTK 5
6	Boothalapuram	121.24.0	Boothalapuram			Nil	121.24.0	Nil	VEM – TTK 6
7	Mavilodai	176.03.0	Mavilodai			Nil	176.03	Nil	VEM – TTK 7
8	Chinnur	97.12.0	Chinnur			Nil	97.12.0	Nil	
9	Ramachandrapuram	176.84.0	Ramachandrapuram			Nil	176.84.0	Nil	VEM – TTK8
10	Muthaiahpuram	54.10.0	Muthaiahpuram			Nil	54.10.0	Nil	VEM – TTK 9

Sl. No	Name of Irrigation System and Tanks	Command area in (ha)	Location of the Command Area			Coverage of Command Area under different projects (ha)		Status of Formation of WUAs in the sub-basin	
			Village	Taluk	District	WRCP and others	IAMWARM	Formed under WRCP (Code)	To be formed under IAMWARM (Code)
1	2	3	4	5	6	7	8	9	10
11	Perunali	70.85.0	Perunali	Kamudi	Ramanathapuram	Nil	70.85.0	Nil	VEM – RMD10
12	Shenchadainathapuram	79.29.0	T.M.Kottai	Kadaladi		Nil	79.29.0	Nil	VEM – RMD 11
13	T.M.Kottai	87.97.0	T.M.Kottai			Nil	87.97.0	Nil	VEM – RMD 12
14	T.Veppankulam	53.53.5	T.Veppankulam			Nil	53.53.5	Nil	VEM – RMD 13
15	Kokkadi	43.70.0	Kokkadi			Nil	43.70.0	Nil	VEM – RMD 14
16	Kattalangulam	47.69.5	Kattalangulam			Nil	47.69.5	Nil	VEM – RMD 15
17	Melauranankurichi	41.17.0	Melauranankurichi			Nil	41.17.0	Nil	VEM – RMD 16
18	S.Tharaikudi	207.01.0	S.Tharaikudi			Nil	207.01.0	Nil	VEM – RMD 17
	TOTAL	**1668.06**	--	--	--	--	**1668.06**	--	--

ABSTRACT

1. Command Area already covered under WRCP and other projects / schemes. : Nil
2. Command Area Proposed to be covered under IAMWARM project (Grand total of Column-8) : 1668.06 Ha
3. Total Command area controlled by WRD PWD in the sub basin (Sl.No 1+2 as above) : 1668.06 Ha
4. Total No. of WUAs already formed under WRCP : Nil
5. Total No. of WUAs proposed to be formed under IAMWARM : 16 Nos

   Total No. of WUAs that will cover the entire sub-basin : 16 Nos

Annexure – 2

Details of "Awareness Creation Activities and Walk-through Surveys".

Sl. No	Date of Visit	Name of the Villages Visited	Awareness Programme (No. of farmers attended)	Walk-Through Survey (No. of farmers Participated)	Remarks
1	26.12.08	Muthuramalingapuram	----	9	--
2	16.12.08	Kanjampatti	----	12	--
3	16.12.08	Therkunatham	----	18	--
4	15.12.08	Puduchinnayapuram	----	6	--
5	15.12.08	L.Venkateswarapuram	----	10	--
	26.01.09	L.Venkateswarapuram	30	---	Grama Sabha meeting
6	15.12.08	Boothalapuram	----	6	--
7	15.12.08	Mavilodai	----	10	--
8	16.12.08	Chinnur	----	6	--
9	16.12.08	Muthaiahpuram	----	12	--
10	16.12.08	Ramachandrapuram	----	14	--
11	20.11.08	Perunali	----	10	--
12	22.01.09	Chenchadainathapuram	----	3	--
13	08.12.08	T.M.Kottai	----	7	--
14	08.12.08	T.Veppankulam	----	8	--
15	11.12.08	Kokkadi	----	6	--
16	08.12.08	Kattalangulam	----	10	--
17	11.12.08	Melauranankurichi	----	6	--
18	11.12.08	S.Tharaikudi	----	8	--
		TOTAL	30 Nos	161 Nos	--

ANNEXURE – 03

Details of Modernisation works as suggested by the Farmers and as finalized by the officials of WRD

SlNo	Date of visit	Name of the villages visited	Out come of walk through survey and discussions with farmers	
			Works suggested by the farmers	Works finalized by WRD Officials
1	26.12.08	Muthuramalingapuram	1.Strengthening tank bund 2.Sluice repairs 3.Desilting of Supply channel	1.Strengthening tank bund 2.Sluice repairs
2	16.12.08	Kanjampatti	1.Strengthening tank bund 2. Weir repairs 3.Head sluice repair 4.Desilting of Supply channel 5.Construction of Retaining wall	1.Strengthening tank bund 2. Weir repairs(Head Sluice 1No) 3.Construction of Retaining wall
3	16.12.08	Therukunatham	1.Strengthening tank bund 2.Sluice repairs 3.Weir repair 4.Construction of Retaining wall where inflowing odai hit the bund 5.Excavation of field channel 6.Construction of Thrasing floor	1.Strengthening tank bund 2.Sluice repairs 3.Weir repair 4. Construction of Retaining wall where inflowing odai hit the bund
4	15.12.08	Puduchinnaiyapuram	1.Desilting waterspread area 2.Arrest leakage in sluice and weir 3.To provide sand vent in weir 4.Bund strengthening	1.Standardisation of the tank bund for entire length 2500m 2.Repairs to sluices and weir. Providing S.G.plug and plug rod to sluices 1,2,3,&4 3.Provision of skin wall in weir
5	15.12.08	L.Venkateswarapuram	1.Desilting water spread area and bund strengthening 2.To arrest leakages in sluices, weir	1.Standardisation of the tank bund for entire length 1920m 2.Repairs to sluices 1 & 2 3.Repairs to weir providing skinwall
6	15.12.08	Boothalapuram	1.Desilting water spread area & Supply channel 2.To arrest the leakage in weir	1.Desilting the supply channel 2. Repairs to weir providing skinwall
7	15.12.08	Mavilodai	1.Desilting water spread area and supply channel	1. Standardisation of the tank bund for the entire length of 3110m and desilting supply channel entire length 2000m
8	16.12.08	Chinnur	1.To desilt the water spread area 2.Providing retaining wall	1.Standardisation of tank bund for entire length of 1600m 2.Retaining wall construction

Sl.No	Date of visit	Name of the villages visited	Out come of walk through survey and discussions with farmers	
			Works suggested by the farmers	Works finalized by WRD Officials
9	16.12.08	Muthaiapuram	1.To desilt the water spread area 2.Repairs to sluice	1.Standardisation of tank bund for entire length of 4400m 2.Repairs to sluice 1,2 & 3
10	16.12.08	Ramachandrapuram	1.To desilt the water spread area 2.To arrest the leakage of weir	1.Standardisation of tank bund for entire length of 3300m 2.Repairs to sluice 1,2 & 3
11	20.11.08	Perunali	1.Strengthening tank bund 2.Desilting of supply channel 3.Sluice repair 4.Weir repair	1.Strengthening tank bund for the length of 2300m out of 3550m 2.Desilting of supply channel for the length of 8000m 3.Sluice repair 4Nos 4.Weir repair 1No
12	22.01.09	Senchadainatha-puram	1.Strengthening tank bund 2.Reconstruction of sluice 3.Weir repair	1.Strengthening tank bund for the length of 1500m out of 2350m 2. Reconstruction of sluice 1No 3.Weir repair 1No
13	08.12.08	T.M.Kottai	1.Strengthening tank bund 2.Desilting of supply channel 3.Sluice repair 4. Weir repair	1.Strengthening tank bund for the entire length of 3750m 2.Desilting of supply channel for the length of 4000m 3.Sluice repair 1Nos 4. Repair to Weir 1No
14	08.12.08	T.Veppankulam	1.Strengthening tank bund 2.Reconstruction of sluice 3.Weir repair	1.Strengthening tank bund for the entire length of 3048m 2. Reconstruction of sluice 1No 3.Weir repair 1No
15	11.12.08	Kokkadi	1.Strengthening tank bund 2.Desilting of supply channel 3.Reconstruction of Sluice	1.Strengthening tank bund for the entire length of 2560m 2.Desilting of supply channel for the length of 1650m 3. Reconstruction of Sluice 1No
16	08.12.08	Kattalangulam	1.Strengthening tank bund 2.Reconstruction of Sluice	1.Strengthening tank bund for the length of 2000m out of 2560m 2. Reconstruction of Sluice 1No
17	11.12.08	Melauranankurichi	1.Strengthening tank bund 2.Repairs to Sluice	1.Strengthening tank bund for the length of 1600m out of 1920m 2. Repairs to Sluice 1No
18	11.12.08	S.Tharaikudi	1.Construction of Retaining Wall 2.Desilting of Supply channel	1. Construction of Retaining wall 40m 2.Desilting of Supply channel for the length of 6500m

DETAILS OF WUAS PROPOSED IN VEMBAR SUB BASIN.

Sl.No	WUA No.	Name of Tank	Name of Villages	Name of WUA	Ayacut in Ha
VIRUDHUNAGAR DISTRICT					
1.	**I**	Muthuramalingapuram	Muthuramalingapuram	Muthuramalingapuram Tank Water User's Association	**42.74.0**
2.	**II**	Kanjampatti	Kanjampatti	Kanjampatti Tank Water User's Association	**73.65.0**
3.	**III**	Therukkunatham	Therukkunatham	Therukunatham Tank Water User's Association	**74.46.0**
THOOTHUKUDI DISTRICT					
4	**IV**	Puduchinnaiyapuram	Puduchinnaiyapuram	Puduchinnaiyapuram Tank Water User's Association	**150.54.0**
5	**V**	L.Venkateswarapuram	L.Venkateswarapuram	L.Venkateswarapuram Tank Water User's Association	**70.12.0**
6	**VI**	Boothalapuram	Boothalapuram	Boothalapuram Tank Water User's Association	**121.24.0**
7	**VII**	Mavilodai	Mavilodai	Maviloadi & Chinnur Tanks Water User's Association	**176.03.0**
8		Chinnur	Chinnur		**97.12.0**
9	**VIII**	Ramachandrapuram	Ramachandrapuram	Ramachandrapuram Tank Water User's Association	**176.84.0**
10	**IX**	Muthaiyapuram	Muthaiahpuram	Muthaiahpuram Tank Water User's Association	**54.10.0**
RAMANATHAPURAM DISTRICT					
11	**X**	Perunali	Perunali	Perunali Tank Water User's Association	**70.85.0**
12	**XI**	Shenchadainathapuram	T.M.Kottai	Chenchadainathapuram Tank Water User's Association	**79.29.0**
13	**XII**	T.M.Kottai	T.M.Kottai	T.M.Kottai Tank Water User's Association	**87.97.0**
14	**XIII**	T.Veppankulam	T.Veppankulam	T.Veppankulam Tank Water User's Association	**53.53.5**
15	**XIV**	Kokkadi	Kokkadi	Kokkadi Tank Water User's Association	**43.70.0**
16	**XV**	Kattalangulam	Kattalangulam	Kattalangulam Tank Water User's Association	**47.69.5**

Sl. No	WUA No.	Name of Tank	Name of Villages	Name of WUA	Ayacut in Ha
17	**XVI**	Melaurananankurichi	Melaurananankurichi	Melaurananankurichi Tank Water User's Association	**41.17.0**
18	**XVII**	S.Tharaikudi	S.Tharaikudi	S.Tharaikudi Tank Water User's Association	**207.01.0**

WALK THROUGH SURVEY (VEMBAR SUB BASIN)

Sl No	WalkThrough Survey		Taluk	Former Request	Technical Siolution	Proposal in plan
	Date	Location			WRO	WRO
1	26.12.08	Muthuramaling apuram	Aruppukottai	Former requested strengthen of tank bund, removal of jungle in bund as well as in water spread area, screw gearing plug and plug rod in sluice, excavation of earthern field channel below sluice and Desilting of supply channel.	Yes,the problems mentioned by the farmers are genujne. All works are essential and to be carried out .	The work of removal Repairs to sluice and fixing S.G. Plug & plug rod of skin wall to arrest leakages in weir,Repairs to weir apron and abutment jungle in bund as well as in water spread area, strengthen of tank bund ,provision of screw gearing plug and plug rod in sluice, excavation of earthern field channel below sluice and Desilting of supply channel are proposed
2	16.12.08	kanjam patty		Former requested strengthen of tank bund, construction of retaining wall on both sides of head sluice which are liable to breach frequently and Desilting of supply channel.	Yes,the problems mentioned by the farmers are genujne. All works are essential and to be carried out .	The work of strengthen of tank bund, construction of retaining wall on both sides of head sluice which are liable to breach frequently and Desilting of supply channel are proposed
3	16.12.08	Therkku natham		Former requested strengthen of tank bund, repairs to right side portion of surplus weir and provision screw gearing shutter in scour vent , replacement of screw gearing plug and plug rod in two sluices and construction of front leading channel in two sluices, construction of retaining wall in right side of surplus weir where the inflowing odai hits the bund , excavation of field channel under both sluices, construction of thrashing floor and Desilting of supply channel.	Yes,the problems mentioned by the farmers are genujne. All works are essential and to be carried out .	The work of strengthen of tank bund, repairs to right side portion of surplus weir and provision screw gearing shutter in scour vent , replacement of screw gearing plug and plug rod in two sluices andconstruction of front leading channel in two sluices, construction of retaining wall in right side of surplus weir where the inflowing odai hits the bund , excavation of field channel under both sluices, construction of thrashing floor and Desilting of supply channel are proposed
4	15.12.08	Pudhuchinnaya puram	Vilathikulam	1) To desilt the water spread area. 2) To arrest leakage in weir and sluice. 3) To provide sand vent to avoid further silt deposition. 4) To clear the jungle inside the water spread area and bund and strengthen the bund	Strengthening of the tank bund Repairs to sluice and fixing S.G. Plug & plug rod of skin wall to arrest leakages in weir Repairs to weir apron and abutment	Strengthening of the tank bund Repairs to sluice and fixing S.G. Plug & plug rod of skin wall to arrest leakages in weir,Repairs to weir apron and abutment
5	15.12.08	L.Venkateswar apuram		1) To desilt the water spread area. 2) To arrest leakage in weir and sluice. 3) To clear the jungle inside the water spread area and bund and strengthen the bund	Strengthening of the tank bund Repairs to sluice and fixing S.G. Plug & plug rod of skin wall to arrest leakages in weir Repairs to weir apron and abutment	Strengthening of the tank bund Repairs to sluice and fixing S.G. Plug & plug rod of skin wall to arrest leakages in weir
6	15.12.08	Boothala puram		1) To desilt the water spread area and supply channel 2) To arrest the leakage in weir. 3) To clear the jungle inside the water spread area and bund and strengthen the bund	Strengthening of the tank bund and Desilting of supply schannel ,providing skin wall to arrest leakages in weir	Strengthening of the tank bund and Desilting of supply schannel ,providing skin wall to arrest leakages in weir
7	15.12.08	Mavilodai		1) To desilt the water spread area and supply channel 2) To clear the jungle inside the water spread area and bund and strengthen the bund	Strengthening of the tank bund and Desilting of supply schannel ,	Strengthening of the tank bund and Desilting of supply schannel

Sl No	WalkThrough Survey		Taluk	Former Request	Technical Siolution	Proposal in plan
	Date	Location			WRO	WRO
8	16.12.08	Chinnur	Vilathikulam	1) To desilt the water spread area. 2)Providing retaining wall near by weir .	Strengthening of the tank bund ,Providing retaining wall near by weir to avoid the erosion.	Strengthening of the tank bund ,Providing retaining wall near by weir to avoid the erosion.
9	16.12.08	Ramachandra puram		1) To desilt the water spread area. 2) To arrest the leakage in weir	Strengthening of the tank bund,Providing skin wall to arrest leakages in weir ,repairs to weir apron and abutment	Strengthening of the tank bund,Providing skin wall to arrest leakages in weir ,repairs to weir apron and abutment
10	16.12.08	Muthaiya puram		To desilt the water spread area. 2) Repairs to sluice .	Strengthening of tank bund and Providing leading channel infront of sluice for easy drawl of water .	Strengthening of tank bund and Providing leading channel infront of sluice for easy drawl of water
11	20.11.08	Perunali	Kamuthi	Former requested to strengthening tank bund, sluice repairs and reconstruction and weir repair, construction of retaining wall and desilting of supply channel	Strengthening tank bund, sluice repairs and reconstruction and weir repair, construction of retaining wall and desilting of supply channel	Strengthening tank bund, sluice repairs and reconstruction and weir repair, construction of retaining wall and desilting of supply channel
12	08.12.08	T. m. kottai	Kadaladi	Farmers requested the repair of sluice ,reconstruction of weir , desilting the tank and supply channel .	Yes , the problems mentioned by the farmers are genuine . The work of repairs to one sluice , repairs to one weir and desilting the tank and supply channel are to be carriedout .	The work of repairs to one sluice , repairs to one weir and desilting the tank and supply channel are proposed .
13	22.01.09	Senchadainatha puram		Formers requested to reconstruction of sluice, repairs of sluice, repairs of weir and desilt the tank so that they was use water at the end of entire crop period without any deficit.	Reconstruction of sluice, repairs of sluice, repairs of weir and desilting the tank so that they was use water at the end of entire crop period without any deficit.	Reconstruction of sluice, repairs of sluice, repairs of weir and desilting the tank so that they was use water at the end of entire crop period without any deficit.
14	08.12.08	T.Veppankulam		Farmers requested the repair of weir ,reconstruction of sluice and desilting the tank.	Yes , the problems mentioned by the farmers are genuine . The work of repair of weir ,reconstruction of two sluices and desilting the tank are to be carried out	The work of repair of weir ,reconstruction of two sluices and desilting the tank are proposed
15	11.12.08	Kokkadi		Farmers requested the repair of sluices ,reconstruction of sluices desilting the tank andsupply channel .	Yes , the problems mentioned by the farmers are genuine . The work of repair to sluice ,reconstruction of one sluice , desilting the tank and supply channel are to be carried out.	The work of repair to sluice ,reconstruction of one sluice , desilting the tank and supply channel are proposed
16	08.12.08	Kattalankulam		Farmers requested the repair work of front and rear cistern for sluices and desilting the tank .	Yes , the problems mentioned by the farmers are genuine. The work of repair to two sluices (front and rear cistern) and desilting the tank are to be carried out.	The work of repair to two sluices (front and rear cistern) and desilting the tank are proposed .
17	11.12.08	Melauranan kurichi		Farmers requested the repair of sluices and desilting the tank .	Yes , the problems mentioned by the farmers are genuine. The work of the repair of sluices and desilting the tank are proposed .	The work of the repair of sluices and desilting the tank are proposed .
18	11.12.08	S. Tharaikudi		Formers requested to construct retaining wall near weir and to desilt the tank so that they was use water at the end of entire crop period without any deficit.	Construct retaining wall near weir and to desilt the tank so that they was use water at the end of entire crop period without any deficit.	Construct retaining wall near weir and to desilt the tank so that they was use water at the end of entire crop period without any deficit.

1.5. IRRIGATION INFRASTRUCTURE

LIST OF ANICUTS

VEMBAR – SUB BASIN

Sl. No	Anicuts	Village	Block	Taluk	District	Direct Ayacut Area in Ha	Capacity
1	Maviloadi	Mavilodai	Pudur	Vilathikulam	Thoothukudi	Nil	--
2	T.M.Kottai	T.M.Kottai	Kadaladi	Kadaladi	Ramanathapuram	Nil	--

LIST OF TANKS (Separate statement for Non System tanks)
VEMBAR SUB BASIN

Sl. No	Tank	Village	Block	Taluk	District	Direct Ayacut Area in Ha	Capacity in Mcft
1	Muthuramalingapuram	Muthuramalingapuram	Thiruchuli	Aruppukottai	Virudhunagar	42.74	4.18
2	kanjampatty	kanjampatty	Thiruchuli	Aruppukottai	Virudhunagar	73.65	15.167
3	Therkku natham	Therkku natham	Thiruchuli	Aruppukottai	Virudhunagar	74.46	13.37
4	Pudhuchinnayapuram	Pudhuchinnayapuram	Pudur	Vilathikulam	Thoothukudi	150.54	32.50
5	L.Venkateswarapuram	L.Venkateswarapuram	Pudur	Vilathikulam	Thoothukudi	70.12	15.20
6	Boothalapuram	Boothalapuram	Pudur	Vilathikulam	Thoothukudi	121.24	12.00
7	Mavilodai	Mavilodai	Pudur	Vilathikulam	Thoothukudi	176.03	36.50
8	Chinnur	Chinnur	Pudur	Vilathikulam	Thoothukudi	97.12	10.06
9	Ramachandrapuram	Ramachandrapuram	Pudur	Vilathikulam	Thoothukudi	176.84	36.40
10	Muthaiapuram	Muthaiapuram	Pudur	Vilathikulam	Thoothukudi	54.10	8.07
11	Perunali	Perunali	Kamuthi	Kamuthi	Ramanathapuram	70.85	19.76
12	Senchadaiyanathapuram	T. M. kottai	Kadaladi	Kadaladi	Ramanathapuram	79.29	0.15
13	T. M. kottai	T. M. kottai	Kadaladi	Kadaladi	Ramanathapuram	87.97	0.373
14	T.Veppankulam	T.Veppankulam	Kadaladi	Kadaladi	Ramanathapuram	53.53.5	8.16
15	Kokkadi	Kokkadi	Kadaladi	Kadaladi	Ramanathapuram	43.70	0.21
16	Kattalankulam	Kattalankulam	Kadaladi	Kadaladi	Ramanathapuram	47.69.5	0.16
17	Melauranan kurichi	Melauranankurichi	Kadaladi	Kadaladi	Ramanathapuram	41.17	0.536
18	S. Tharaikudi	S. Tharaikudi	Kadaladi	Kadaladi	Ramanathapuram	207.01	51.66

List of Supply Channel

Sl.No.	Name of Supply Channel	Off take point	Length in Km	Village	Block	Taluk	District	Direct Ayacut in Ha
- - - - - - N I L - - - - - - -								

List of tanks / Anicuts executed under various schemes
(Viz, Part II Scheme, NABARD, WRCP I etc.,) since 2000.

Sl.No	Name of Anicut / Tank	Ayacut	Scheme in which executed	Amount In Lakhs	Details of components executed	Details of works to be carried out under IAMWARM
1	Kanjampatty	73.65	NABARD RIDF X	18.42	Field channel lining, Construction of retaining wall near sluice, weir repair	Strengthening of bund, construction of retaining wall -100m on both side of head sluice, shutter provision in weir,and shutter repairs to the Head Sluice.
2	Boothalapuram	121.24	Parti II Scheme	25.00	Tank bund strengthening, repairs to sluice I, II and field channel lining	Surplus course channel to be desilted, construction of retaining wall, repairs to weir
3	Mavilodai	176.03	NABARD RIDF X	34.00	Repairs to Sluice I, II and weir, Field channel lining	Tank bund strengthening, retaining wall construction, supply channel desilting.
4	Ramachandra puram	176.84	NABARD RIDF X	30.70	Repairs to sluice and Field channel lining.	Strengthening of bund for the entire length of 3300m, construction of retaining wall 60m, repairs to weir
5	Muthaiapuram	54.10	Two Tanks in each Assembly Constituency under NABARD Assistance	10.00	Strengthening tank bund for the portion of bund and weir repair	Strengthening of the remaining portion of the bund, construction of retaining wall, repairs to sluice I & II
6	S. Tharaikudi	207.01.0	IWRM Phase II	45.00	Strengthening the tank bund, Reconstruction of Sluice No I, II, IV, V, Field Channel for 6 sluices, repair of weir	Construction of retaining wall and desilting the supply channel

VEMBAR SUB BASIN

ABSTRACT ON THE DETAILS OF IRRIGATION INFRASTRUCTURE AVAILABLE AND WORKS TAKEUP UNDER IAMWARM PROJECT

SL.NO.	DETAILS	ANICUT			SYSTEM TANK			NON- SYSTEM TANK			ANY OTHER SUPPLY CHANNEL		**REMARKS**
		NOS	SUPPLY CHANNEL IN KM	DIRECT AYA-CUT	NOS	SUPPLY CHANNEL IN KM	AYA-CUT	NOS	SUPPLY CHANNEL KM	AYACUT HEC	LENGTH	DIRECT AYACUT	
1	Available Infrastructure in sub basin	--	--	--	--	--	--	3	--	190.85.0	--	--	VNR DIST
		2	10.250 KM	--	--	--	--	7	NIL	845.99.0	--	--	TTK DIST
		--	--	--	--	--	--	8	5.650	631.22.0	--	--	RMD DIST
2	Infrastructure excluded in iamwarm project since works carried out under various schemes from 2000	--	--	--	--	--	--	6	--	808.87	--	--	--
		--	--	--	--	--	--	--	--	--	--	--	--
		--	--	--	--	--	--	--	--	--	--	--	--
3	Infrastructures that does not require any rehabilitation works	2	2.00	--	--	--	--	--	--	--	--	--	--
4	Works taken up in iamwarm project a)Works takenup in other schemes but also takenup in IAMWARM b) Works taken up in iamwarm project	-	8.250	--	--	--	--	6 12	-- 5.650	808.87 1668.06	--	--	COMPONENTS THAT ARE NOT EXECUTED UNDER OTHER SCHEME ONLY PROPOSED IN IAMWARM PROJECT FOR 6 TANKS

1. **Certified that the Panchayat Union Tanks are not considered in this project.**
2. **Certified that the component of work in tanks executed under various schemes (Viz, WRCP I, NABARD, PART II schemes etc.,) since 2000 are not proposed in this project.**

1.6. REHABILITATION OF IRRIGATION INFRASTRUCTURE

A. REHABILITATION OF IRRIGATION INFRASTRUCTURE OF THE SUB BASIN

STRUCTURAL STATUS & DEFICIENIES IN THE SYSTEM :

Necessary walk through surveys in these tanks and its ayacut were performed with line departments on 20.11.08, 08.12.08, 11.12.08,16.12.08 and 22.01.09. Based on the observations made, the following are the present structural condition of the Vembar Sub Basin system.

- This system is a good old system existing for more than 100 Years as such requires Rehabilitation.
- No scheme works were done fully during the Past years resulting in non effective Irrigation systems.
- The damaged or dilapidated condition of the infrastructures and supply channels causes poor standard of the entire conveyor system.
- This Vembar sub basin totally consists of Non system tanks and no reservoir in the sub basin area. Hence the sub basin requires restoration.

In order to improve the conveyance and Operational Efficiency it is proposed to improve and modernise the Irrigation Infrastructures in Vembar Sub Basin with following components of works.

- Providing revetments and Retaining walls in selective locations of tanks.
- Providing model sections to maintain the top of the bund, front and rear slopes of the tank bund.
- Providing steps in the tank bund for easy approach to the Sluice operationsuch as plug r shutter arrangements by the farmers wherever necessary.
- Restoring the capacity of the tanks, supply channels by desilting .
- Strengthening the bunds of the tanks and channels wherever necessary for effective storing of water and conveying it to the entire command area and also for conveying agricultural inputs to the field.
- Repairs to the damaged weirs.
- Reconstruction of Collapsed Sluices.
- Repairs to the damaged Sluices.
- Providing S.G. Shutter / Plug arrangements to Sluices, Head sluices, Scour vents of weir etc.,
- Removing, Repairing and refixing in position of the existing S.G. shuttering arrangements and providing locking arrangements etc.,

Out come of the Project :

1. Increase in conveyance efficiency by 0.43 to 0.53 %

2. The present Gap area of 226.17 Ha is to be converted as a fully irrigated area.

The following irrigation infrastructure development works are proposed in the sub basin.

Rehabilitation works for 18 tanks.

Rehabilitation of Supply channels length is 5.650 Km & Surplus course 8.250 Km = 13.900 Km.

PACKAGE DETAILS

Sl.No.	Package No	Name of Work	Total Civil Works	Amount in Lakhs
1	IAMWARM / WRD VEMBAR – I (2009 - 2010)	Rehabilitation and Modernisation of Non System tanks in Vembar Sub Basin in Aruppukottai Taluk of Virudhunagar District.	71.14	71.14
2	IAMWARM / WRD VEMBAR - II (2009 - 2010)	Rehabilitation and Modernisation of Non System tanks in Vembar Sub Basin in Vilathikulam Taluk of Thoothukudi District.	142.27	142.27
3	IAMWARM / WRD VEMBAR - III (2009 - 2010)	Rehabilitation and Modernisation of Non System tanks in Vembar Sub Basin in Kamudhi and Kadaladi Taluks of Ramanathapuram District.	151.39	151.39
		Total Amount	**364.80**	**364.80**

Details of tanks infrastructures

S.No	District	Taluk	Name of Tank	Ayacut in Ha	Tank Bund				Sluices				Weir			Scour vent	Construction of Bed Bar	Supply Channel Retainingn Wall	Surplus Course
					L	Std	M.S	St	No of Sluices	Measuringh Devices	Repair	Reconstruction	No.of weir	Repair	Reconstruction				
1	Virudhunagar	Aruppukottai	Muthuramalingapuram	42.74.0	2100	2100	2	1	1	1	1	--	1	--	--	--	--	--	--
2			Kanjampatty	73.65.0	3000	3000	5	3	3	3	2	--	3 Nos (Head Sliuice 1No)	3	--	5	--	--	--
3			Therkkunatham	74.46.0	1810	1810	3	2	2	2	2	--	1	1	--	2	--	--	--
4	Thoothukudi	Vilathikulam	Pudhuchinnaiyapuram	150.54.0	2500	2500	4	4	4	4	4	--	1	1	--	--	--	--	--
5			L.Venkateswarapuram	70.12.0	1920	1920	3	2	2	2	2	--	1	1	--	--	--	--	--
6			Boothalapuram	121.24.0	1200	--	....	...	2	2	--	--	1	1	--	--	..	--	Retaining Wall 100m
7			Mavilodai	176.03.0	3110	3110	6	2	2	2	--	--	1	1	--	--	..	Retaining Wall 100m	--
8			Chinnur	97.12.0	1600	1600	3	1	1	1	1	--	1	..	--	--	--	--	--
9			Ramachandrapuram	176.84.0	3300	3300	6	3	3	3	--	--	1	1	--	--	--	--	--
10			Muthaiyapuram	54.10.0	4400	4400	8	3	3	2	...	--	1	--	--	--	--	--	--
11	Ramanathapuram	Kamuthi	Perunali	70.85.0	3550	2300	4	..	4	3	4	--	1	..	--	--	....	--	.....
12		Kadaladi	Senchadainathapuram	79.29.0	2350	1500	2	--	2	2	--	1	1	1	--	--	--	--	--
13			T. M. kottai	87.97.0	3750	3750	5	--	4	3	--	1	2	...	1	--	20	--	4000
14			T.Veppankulam	53.53.5	3048	3048	4	--	3	2	--	1	1	1	--	--	--	--	--
15			Kokkadi	43.70.0	2560	2560	3	--	2	1	--	1	1	--	--	--	8	--	1650
16			Kattalankulam	47.69.5	2560	2000	3	--	3	2	--	1	1	--	--	--	--	--	--
17			Melauranankurichi	41.17.0	1920	1600	2	--	4	2	...	--	1	--	--	--	--	--	--
18			S.Tharaikudi	207.01.0	3290	--	--	--	6	3	--	--	1	--	--	--	40	8250	--
			Total	**1668.06**		**40498**	**63**	**21**	**51**	**40**	**16**	**5**	**20**	**11**	**1**	**7**	**68**	**8250 & 100 m RW**	5650m & 100m RW

Details of proposals in each Infrastructure of the sub basin

Sl. No	Name of tank/ Anicut/ Reservoir	Bund		Sluice Repair		Measuring Device		Sluice Reconstruction		Weir Repair		Weir Reconstruction		Anicut Supply Channel		Tank Supply Channel		Amoun Lakhs t in
		Length	Amt	No	Amt	No	Amt	No	Amt	No	Amt	No	Amt	No	Amt	Length	Amt	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
I	**Virudhunagar District**																	
1	Muthurama lingapuram	2100	12.31	1	2.00	1	0.34	--	--	-	--	--	--	--	--	--	--	14.65
2	Kanjampatty	3000	22.22	2	3.10	3	1.03	--	--	3	4.01	--	--	--	--	--	--	30.36
3	Therkku natham	1810	12.11	2	3.39	2	0.69	--	--	1	9.94	--	--	--	--	--	--	26.13
	TOTAL	**6910**	**46.64**	**5**	**8.49**	6	2.06	--	--	**4**	**13.95**	--	--	--	--	--	--	**71.14**
II	**Thoothukudi District**																	
4	Pudhuchinnayapuram	2500	18.33	4	9.66	4	1.35	--	--	1	1.15	--	--	--	--	--	--	30.49
5	L.Venkateswarapuram	1920	15.16	2	4.84	2	0.67	--	--	1	8.93	--	--	--	--	--	--	29.60
6	Boothalapuram	--	--	--	--	2	0.67	--	--	1	1.50	--	--	--	--	RW 100	3.75	5.92
7	Mavilodai	3110	22.40	--	--	2	0.67	--	--	1	0.20	--	--	100m RW	3.47	--	--	26.74
8	Chinnur	1600	7.95	1	2.41	1	0.34	--	--	....	....	--	--	--	--	--	--	10.70

9	Ramachandrapuram	3300	15.46	--	--	3	1.03	--	--	1	8.30	--	--	--	--	--	--	24.79
10	Muthiahpuram	4400	13.35	...	....	2	0.68	--	--	--	--	--	--	--	--	--	--	14.03
	TOTAL	**16830**	**92.65**	**7**	**16.91**	**16**	**5.41**	**--**	**--**	**5**	**20.08**	**--**	**--**	**100 m**	**3.47**	**100m**	**3.75**	**142.27**

Sl No	**Name of tank/ Anicut/ Reservoir**	**Bund**		**Sluice Repair**		**Measuring Devise**		**Sluice Recons truction**		**Weir Repair**		**Weir Reconstruct ion**		**Aniut Supply channel**		**Tank Supply Channel**		Amount in Lakhs
		Length	**Amt**	**No**	**Amt**	**No**	**Amt**	**No**	**Amt**	**No**	**Amt**	**No**	**Amt**	**No**	**Amt**	**Length**	**Amt**	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**
III	**Ramanathapuaram District**																	
11	Perunali	2300	10.78	4	1.00	3	0.60	--	--	....	....	--	--	---	---	...	...	12.38
12	Senchadaiyanatha-puram	1500	9.54	--	--	2	0.41	1	2.10	1	1.21	--	--	--	--	--	--	13.26
13	T.M.Kottai	3750	23.70	--	--	3	0.61	1	2.90	...	....	1	9.42	--	--	4000	3.76	40.39
14	T.Veppankulam	3048	19.20	--	--	2	0.41	1	2.78	1	1.00	--	--	--	--	--	--	23.39
15	Kokkadi	2560	15.90	--	--	1	0.20	1	2.47	--	--	--	--	--	--	1650	2.06	20.63

16	Kattalankulam	2000	12.97	--	--	2	0.41	1	2.45	--	--	--	--	--	--	--	--	15.83
17	Melauranankurichi	1600	9.90	...	...	2	0.41	--	--	--	--	--	--	--	--	--	--	10.31
18	S. Tharaikudi	--	....	--	--	3	0.60	--	--	--	--	--	--	8250	14.60			15.20
	Total	**16758**	**101.99**	**4**	**1.00**	**18**	**3.65**	**5**	**12.70**	**2**	**2.21**	**1**	**9.42**	**8250**	**14.60**	**5.650**	**5.82**	**151.39**
	Grant Total	**40498 m**	**241.28**	**16**	**26. 40**	**40**	11.12	**5**	12.70	**11**	36.24	**1**	9.42	**8250 & RW 100 m**	**18.07**	**5.650m &RW 100 m**	**9.57**	**364.80**

TANK DETAILS WITH FREE BOARD PROVIDED

VEMBAR – SUB BASIN

I

Sl. No.	Name of the Tank	Maximum Height of Bund In Metre	Free Board		Length of Bund
			Provided Previously in Metre	Provided now in Metre	
1	Muthurama lingapuram	3.00	1.00	1.25	2100
2	Kanjampatty	2.40	0.90	1.25	3000
3	Therkku natham	3.50	1.00	1.50	1810
4	Pudhuchinnayapuram	3.90	1.20	1.50	2500
5	L.Venkateswarapuram	4.00	0.90	1.50	1920
6	Mavilodai	3.85	0.95	1.50	3110
7	Chinnur	2.90	1.00	1.25	1600
8	Ramachandrapuram	3.56	0.90	1.50	3300
9	Muthaiyapuram	2.60	1.00	1.25	4400
10	Perunali	3.91	1.00	1.50	3550

Sl. No.	Name of the Tank	Maximum Height of Bund In Metre	Free Board		Length of Bund
			Provided Previously in Metre	Provided now in Metre	
11	T.M.Kottai	3.36	1.00	1.50	3750
12	Senchadaiyanathapuram	2.75	1.00	1.25	2350
13	T.Veppankulam	3.23	1.00	1.50	3048
14	Kokkadi	3.62	1.00	1.50	2560
15	Kattalankulam	2.62	1.00	1.25	2560
16	Melaurananku richi	3.03	1.00	1.50	1920

Note:-

1) For height of bund up to 3.0 m – Free board is 1.25m

2) For height of bund more than 3.0m – Free board is 1.50 m

PACKAGE - I

Sl. No.	Description of work	Quantity	Amount in Lakhs	Remarks
	VIRUDHUNAGAR DISTRICT			
I. Tank Component				
	Tank Bund : Strengthening the tank bund 6910M	81034 M^3	46.64	
	Sluice : Repairs	5 Nos	8.49	
	Reconstruction	--	--	
	Weir : Repairs	4 Nos	13.95	
	Measuring Devise	6	2.06	
	Supply channel :	--	--	
	SUB TOTAL	--	**71.14**	
	Total	**--**	**71.14**	
II. Non Tank Component				
..... N I L				
	Total	**--**	**71.14**	

1). Tank component = 71.14 lakhs
2). Non-Tank component = 0.00 lakhs
Total = 71.14 lakhs

PACKAGE - II

Sl. No.	Description of work	Quantity	Amount in Lakhs	Remarks
	THOOTHUKUDI DISTRICT			
I. Tank Component				
	Tank Bund : Strengthening the tank bund 16830M	114290 M^3	92.65	
	Sluice : Repairs	7 Nos	16.91	
	Reconstruction	--	--	
	Weir : Repairs	5 Nos	20.08	
	Measuring Device s	16	5.41	
	Surplus Course : Retaining Wall in supply channel & Surplus Course = 200m	--	7.22	
	SUB TOTAL	--	**142.27**	
II. Non Tank Component Supply channel :		Nil	--	
	Total	**--**	**142.27**	

1). Tank component = 142.27 lakhs
2). Non-Tank component = -- lakhs
Total = 142.27 lakhs

PACKAGE - III

Sl. No.	Description of work	Quantity	Amount in Lakhs	Remarks
	RAMANATHAPURAM DISTRICT			
I. Tank Component				
	Tank Bund : Strengthening the tank bund 16758M	205665	101.99	
	Sluice : Repairs	4 Nos	1.00	
	Reconstruction	5 Nos	12.70	
	Weir : Repairs	2 Nos	2.21	
	Reconstruction	1 No	9.42	
	Measuring Devices	18 Nos	3.65	
	Surplus Course : Desilting theTank supply channel 5650m	--	5.82	
	Desilting theAnicut supply channel 8250m		14.60	
	SUB TOTAL	--	**151.39**	
II. Non Tank Component Supply channel :				
	Total	**--**	**151.39**	

1). Tank component = 151.39 lakhs
2). Non-Tank component = -- lakhs
Total = 151.39 lakhs

ABSTRACT FOR PACKAGE

B. WRO COST TABLE

Sl. No.	Description of work	Quantity	Amount in Lakhs	Remarks
	ABSTRACT			
I. Tank Component				
	Tank Bund Strengthening the tank bund 40498m	400989	241.28	
	Sluice : Repairs	16 Nos	26.40	
	Reconstruction	5 Nos	12.70	
	Weir : Repairs	11 Nos	36.24	
	Reconstruction	1	9.42	
	Measuring Devices	40 Nos	11.12	
	Surplus Course : : Desilting the Tank supply channel 5650m Desilting the Anicut supply channel 8250m Retaining Wall In Supply Channel & Surplus Course	 21960 55570 200m	 5.82 14.60 7.22	
	SUB TOTAL	--	364.80	
II. Non Tank Component Supply channel				
	Environmental cell	--	3.00	
	Total	--	367.80	

1). Tank component = 364.8 lakhs
2). Non-Tank component = --

Total = 364.8 lakhs

Envitronmental cell = 3.00 Lakhs

Total Rs = 367.80 Lakhs

Package wise Tank details for Vembar Sub Basin

Package No.	District	Taluk	Block	Non System Tank		Cluster Village
				Name of Tank	Ayacut (Ha)	
1	2	3	4	5	6	7
1	Virudhunagar	Aruppukottai	Tiruchuli	1. Muthuramalingapuram	42.74	Kanjampatti
				2. Kanjampatti	73.65	
				3. Therkunatham	74.46	
				TOTAL	**190.85**	
2	Thoothukudi	Vilathikulam	Pudur	1.Pudhuchinanayapuram	150.54	Mavilodai
				2.L.Venkatesapuram	70.12	
				3. Boothalapuram	121.24	
				4. Mavilodai	176.03	
				5. Chinnur	97.12	
				6.Ramachandrapuram	176.84	Ramachandrapuram
				7.Muthaiapuram	54.10	
				TOTAL	**845.99**	
3	Ramanathapuram	Kamuthi	Kamuthi	1.Perunali	70.85	Perunali
		Kadaladi	Kadaladi	2.Senchadainathapuram	79.29	T.M.Kottai
				3.T.M.Kottai	87.97	
				4.T.Veppankulam	53.535	Kokkadi
				5.Kokkadi	43.70	
				6.Kattalakulam	47.695	
				7.Melauranankurichi	41.17	S.Tharakudi
				8.S.Tharakudi	207.01	
				TOTAL	**631.22**	
				GRAND TOTAL	**1668.06**	

PACKAGE I C. (PHYSICAL AND FINANCIAL PROGRAM)

Sl. No	Description	I Year		II Year		Total	
		Quantity	Amount in Lakhs	Quantity	Amount in Lakhs	Quantity	Amount in Lakhs
1	Improvements to tank Bund	48000 m3	27.98	33034 m3	18.66	81034m3	46.64
2	Improvements to Supply Channels	--	--	--	--	--	Nil
3	Sluice Repairs	3	5.10	2	3.39	5	8.49
4	Sluice Reconstruction	--					
5	Weir Repairs	1	9.94	3	4.01	4	13.95
6	Weir Reconstruction	--					
7	Measuring Devices	3	1.03	3	1.03	6	2.06
7	L. S. Provisions		--		--		--
							71.14
	ENVIRONMENT CELL		0.18		0.12		0.30
	Total		44.23		27.21		71.44

PACKAGE II C. (PHYSICAL AND FINANCIAL PROGRAM)

Sl. No	Description	I Year		II Year		Total	
		Quantity	Amount in Lakhs	Quantity	Amount in Lakhs	Quantity	Amount in Lakhs
1	Improvements to tank Bund	68000	55.10	46290	37.55	114290	92.65
2	Improvements to Supply Channels	100	3.75	100	3.47	200	7.22
3	Sluice Repairs	4	9.67	3	7.24	7	16.91
4	Sluice Reconstruction						---
5	Weir Repairs	3	11.58	2	8.50	5	20.08
6	Weir Reconstruction						----
7	Measuring Devices	8	2.69	8	2.72	16Nos	5.41
8	L. S. Provisions		--		--		--
	ENVIRONMENT CELL		0.93		0.62		1.55
	Total		**83.72**		**60.1**		**143.82**

PACKAGE III C. (PHYSICAL AND FINANCIAL PROGRAM)

Sl. No	Description	I Year		II Year		Total	
		Quantity	Amount in Lakhs	Quantity	Amount in Lakhs	Quantity	Amount in Lakhs
1	Improvements to tank Bund	123000	61.19	82665	40.80	205665 M3	101.99
2	Improvements to Supply Channels	46500	12.25	310330	8.17	77530	20.42
3	Sluice Repairs	2	0.5	2	0.50	4	1.00
4	Sluice Reconstruction	3	7.60	2	5.10	5	12.70
5	Weir Repairs	1	1.21	1	1.00	2	2.21
6	Weir Reconstruction	1	9.42	-	-	1	9.42
7	Measuring Devices	11	2.19	7	1.46	18	3.65
8	L. S. Provisions		--		--		--
	ENVIRONMENT CELL		0.69		0.46		1.15
	Total		**95.05**		**57.49**		**152.54**

ABSTERACT C. (PHYSICAL AND FINANCIAL PROGRAM)

Sl. No	Description	I Year		II Year		Total	
		Quantity	Amount in Lakhs	Quantity	Amount in Lakhs	Quantity	Amount in Lakhs
1	Improvements to tank Bund	239000	144.27	161989	97.01	400989	241.28
2 a	Improvements to Supply Channels	46500	12.25	31030	8.17	77530	20.42
b	Retaining wall	100	3.75	100	3.47	200	7.22
3	Sluice Repairs	9	15.27	7	11.13	18	26.40
4	Sluice Reconstruction	3	7.60	2	5.10	5	12.70
5	Weir Repairs	5	22.73	6	13.51	11	36.24
6	Weir Reconstruction	1	9.42	--	--	1	9.42
7	Measuring Device	22 Nos	5.91	18 Nos	5.21	40 Nos	11.12
8	L. S. Provisions		--		--		--
	ENVIRONMENT CELL		1.80		1.20		3.00
	Total		**223.0**		**144.80**		**367.80**

PACKAGE 1

Calculation of machineries Requirement

Hydraulic excavator & 8 Tippers / Lorries	6 Hours / Day	
(8 No x 2 loads/ hour x 6 Hr x 4 m^3/ trip)		384 m^3 /Day
For 1 month (20 Working days)	20 x 384 m^3	7680 m^3/ month
Total quantity of earth work	61850 m^3 (7monthsx7680m3+2monthsx 4045m3)	
Working period for earth work	9 months + 3 Months rainy season	

Machineries required for earth work:

1. Hydraulic excavator - 3 nos
2. Tippers / Lorries - 8 nos
3. Power roller - 2 nos
4. Vibrated compactor - 2 nos
5. Water lorries - 2 nos

Mixer machine	2 m^3 / hour	For 6 hours / day	12 m^3 / day
Total quantity of concrete		2507 m^3	
Mixer machine required		**2 Nos** for 10 days / month -- 9 months	
Material conveyence		**Tippers / Lorries**	
Cement	10 mt / Trip	1 trip / day	10 mt / day
Sand	5.66 m^3 / Trip	2 trips / day	11.32m^3 /day
Metal / stone	5.60 m^3 / Trip	3 trips / day	16.80 m^3 /day
Total quantity of cement		250 mt	
Lorry required for conveyence		250/10	25 Lorries
Total quantity of sand		695m^3	
Lorry required for conveyence		695/11.20	63 Lorries
Total quantity of metal		955 m^3	
Lorry required for conveyence		1075 /16.80	57 Lorries
Total quantity of stone		120 m^3	
Lorry required for conveyence		120 /16.80	7 Lorries

Tipper / Lorries for conveyance of materials — **1 Nos** for 20 days for 9 months

PACKAGE 2

Calculation of machineries Requirement

Hydraulic excavator & 18 Tippers / Lorries	6 Hours / Day	
(18 No x 2 loads/ hour x 6 Hr x 4 m^3/ trip)		960 m^3 /Day
For 1 month (20 Working days)	20 x 960 m^3	17280 m^3/ month
Total quantity of earth work	160000 m^3 (7monthsx17280m3+2monthsx 19520m3)	
Working period for earth work	9months + 3 Months rainy season	

Machineries required for earth work:

1. Hydraulic excavator - 5 nos
2. Tippers / Lorries - 18 nos
3. Power roller - 3 nos
4. Vibrated compactor - 3 nos
5. Water lorries - 3 nos

Mixer machine	2 m^3 / hour	For 6 hours / day	12 m^3 / day
Total quantity of concrete		5720 m^3	
Mixer machine required		**2 Nos** for 10 days / month -- 9 months	
Material conveyence		**Tippers / Lorries**	
Cement	10 mt / Trip	1 trip / day	10 mt / day
Sand	5.66 m^3 / Trip	2 trips / day	11.32m^3 /day
Metal / stone	5.60 m^3 / Trip	3 trips / day	16.80 m^3 /day
Total quantity of cement		1000 mt	
Lorry required for conveyence		1000/10	100 Lorries
Total quantity of sand		2425 m^3	
Lorry required for conveyence		2425/11.20	217 Lorries
Total quantity of metal		3295 m^3	
Lorry required for conveyence		3295/16.80	197 Lorries
Total quantity of stone		380 m^3	
Lorry required for conveyence		380 /16.80	22 Lorries

Tipper / Lorries for conveyance of materials	**3 Nos** for 20 days for 9 months

PACKAGE 3

Calculation of machineries Requirement

Hydraulic excavator & 18 Tippers / Lorries		6 Hours / Day	
	(4 No x 2 loads/ hour x 6 Hr x 4 m^3/ trip)		960 m^3 /Day
For 1 month (20 Working days)		20 x 960 m^3	17280m^3/ month
Total quantity of earth work		16000 m^3(7monthsx17280m3+2monthsx 19520m3	
Working period for earth work		6 months + 3 Months rainy season	

Machineries required for earth work:

1. Hydraulic excavator - 5 nos
2. Tippers / Lorries - 18nos
3. Power roller - 3 nos
4. Vibrated compactor - 3 nos
5. Water lorries - 3 nos

Mixer machine	2 m^3 / hour	For 6 hours / day	12 m^3 / day
Total quantity of concrete		2393 m^3	
Mixer machine required		**2 Nos** for 10 days / month -- 9 months	
Material conveyence		**Tippers / Lorries**	
Cement	10 mt / Trip	1 trip / day	10 mt / day
Sand	5.66 m^3 / Trip	2 trips / day	11.32m^3 /day
Metal / stone	5.60 m^3 / Trip	3 trips / day	16.80 m^3 /day
Total quantity of cement		312 mt	
Lorry required for conveyence		312/10	31 Lorries
Total quantity of sand		1017 m^3	
Lorry required for conveyence		1017/11.20	91 Lorries
Total quantity of metal		1376 m^3	
Lorry required for conveyence		1376 /16.80	82 Lorries
Total quantity of stone		200 m^3	
Lorry required for conveyence		200 /16.80	12 Lorries
Tipper / Lorries for conveyance of materials		**1 Nos** for 20 days for 9 months	

ABSTRACT

Calculation of machineries Requirement

Hydraulic excavator & 4 4Tippers / Lorries	6 Hours / Day	
(4 No x 2 loads/ hour x 6 Hr x 4 m^3/ trip)		2304 m^3 /Day
For 1 month (20 Working days)	20 x 2304 m^3	46080 m^3/ month
Total quantity of earth work	381850 m^3	(7monthsx46080m3+ 2monthsx 29645m3
Working period for earth work	6 months + 3 Months rainy season	

Machineries required for earth work:

1. Hydraulic excavator - 13 nos
2. Tippers / Lorries - 44 nos
3. Power roller - 8 nos
4. Vibrated compactor - 8 nos
5. Water lorries - 8 nos

Mixer machine	2 m^3 / hour	For 6 hours / day	12 m^3 / day
Total quantity of concrete		10620 m^3	
Mixer machine required		**2 Nos** for 10 days / month -- 9 months	
Material conveyence		**Tippers / Lorries**	
Cement	10 mt / Trip	1 trip / day	10 mt / day
Sand	5.66 m^3 / Trip	2 trips / day	11.32m^3 /day
Metal / stone	5.60 m^3 / Trip	3 trips / day	16.80 m^3 /day
Total quantity of cement		1562 mt	
Lorry required for conveyence		1562 /10	156 Lorries
Total quantity of sand		4132 m^3	
Lorry required for conveyence		4132 /11.20	413 Lorries
Total quantity of metal		5626 m^3	
Lorry required for conveyence		5626 /16.80	335 Lorries
Total quantity of stone		700m^3	
Lorry required for conveyence		700 /16.80	42 Lorries

Tipper / Lorries for conveyance of materials	**5 Nos** for 20 days for 9 months

PACKAGE NO 1

REQUIREMENT OF EQUIPMENTS AND MATERIALS														
PACKAGE NUMBER	EQUIPMENTS REQUIRED IN NUMBERS							MATERIAL REQUIRED						
	HYDRAULIC EXCAVATOR	POWER ROLLER	VIBRATED COMPACTOR	TIPPER / LORRY	WATER LORRY	CONCRETE MIXER MACHINE	CONCRETE VIBRATOR	CEMENT IN M.T.	SAND IN m^3	STEEL IN M.T.	METAL 40MM IN m^3	METAL 20MM IN m^3	RR IN m^3	FUEL
PACKAGE **1**	3	2	2	8	2	2	2	250	695	3.5	195	640	120	9000 lit

PACKAGE NO 2

REQUIREMENT OF EQUIPMENTS AND MATERIALS														
PACKAGE NUMBER	EQUIPMENTS REQUIRED IN NUMBERS							MATERIAL REQUIRED						
	HYDRAULIC EXCAVATOR	POWER ROLLER	VIBRATED COMPACTOR	TIPPER / LORRY	WATER LORRY	CONCRETE MIXER MACHINE	CONCRETE VIBRATOR	CEMENT IN M.T.	SAND IN m^3	STEEL IN M.T.	METAL 40MM IN m^3	METAL 20MM IN m^3	RR IN m^3	FUEL
PACKAGE **2**	5	3	3	18	3	4	4	1000	2425	28	360	2935	380	20000 lit

PACKAGE NO 3

REQUIREMENT OF EQUIPMENTS AND MATERIALS

PACKAGE NUMBER	EQUIPMENTS REQUIRED IN NUMBERS							MATERIAL REQUIRED						
	HYDR AULIC EXCAVATOR	POWER ROLLER	VIBRATED COMPACTOR	TIPPER / LORRY	WATER LORRY	CONCRETE MIXER MACHINE	CONCRETE VIBRATOR	CEMENT IN M.T.	SAND IN m^3	STEEL IN M.T.	METAL 40MM IN m^3	METAL 20MM IN m^3	RR IN m^3	FUEL
Total	5	3	3	18	3	4	4	312	1017	1.5	503	873	200	25000 lit

ABSTRACT

REQUIREMENT OF EQUIPMENTS AND MATERIALS

PACKAGE NUMBER	EQUIPMENTS REQUIRED IN NUMBERS							MATERIAL REQUIRED						
	HYDR AULIC EXCAVATOR	POWER ROLLER	VIBRATED COMPACTOR	TIPPER / LORRY	WATER LORRY	CONCRETE MIXER MACHINE	CONCRETE VIBRATOR	CEMENT IN M.T.	SAND IN m^3	STEEL IN M.T.	METAL 40MM IN m^3	METAL 20MM IN m^3	RR IN m^3	FUEL
PACKAGE **3**	13	8	8	44	10	10	10	1562	4137	33.50	1058	4448	700	54000 lit

Construction Methodology
PACKAGE NO I

Sl No	Description of Item	Working Months									Rainy season			Total
		1	2	3	4	5	6	7	8	9	10	11	12	
		10/09	11/09	12/09	01/10	02/10	03/10	04/10	05/10	06/10	07/10	08/10	09/10	
1	Earth work excavation	Rainy Season	Rainy Season	Rainy Season	7650	7650	7650	7650	7650	7650	7650	4045	4045	61850m3
2	Channel	Rainy Season	Rainy Season	Rainy Season	Nil									Nil
3	Foundation	Rainy Season	Rainy Season	Rainy Season	125	125	120	120	120	120	120	120	120	1450m3
	Concrete													
4	M 7.5 grade	Rainy Season	Rainy Season	Rainy Season	20	20	25	25	25	25	25	25	25	215
5	M 10 grade	Rainy Season	Rainy Season	Rainy Season	82	90	90	75	75	75	75	75	75	712
6	M 15 grade	Rainy Season	Rainy Season	Rainy Season	14	14	14	15	15	15	15	15	13	130
7	M 20 grade	Rainy Season	Rainy Season	Rainy Season										
8	Random rubble masonry	Rainy Season	Rainy Season	Rainy Season	14	14	14	15	15	15	15	15	13	130
9	Plastering	Rainy Season	Rainy Season	Rainy Season	30	30	30	25	25	25	25	25	26	241

Construction Methodology
PACKAGE NO II

Sl No	Description of Item	Working Months									Rainy season			Total
		1	2	3	4	5	6	7	8	9	10	11	12	
		10/09	11/09	12/09	01/10	02/10	03/10	04/10	05/10	06/10	07/10	08/10	09/10	
1	Earth work excavation	Rainy Season	Rainy Season	Rainy Season	18000	18000	18000	18000	18000	17500	17500	17500	17500	160000 m3
2	Channel	Rainy Season	Rainy Season	Rainy Season	3000	3000	2000	2000	2000	2000	2000	2000	2000	20000
3	Foundation	Rainy Season	Rainy Season	Rainy Season	125	125	120	120	120	120	120	120	120	1450
	Concrete													
4	M 7.5 grade	Rainy Season	Rainy Season	Rainy Season	80	80	80	80	80	80	80	80	80	720
5	M 10 grade	Rainy Season	Rainy Season	Rainy Season	245	245	235	235	235	235	235	235	235	2135
6	M 15 grade	Rainy Season	Rainy Season	Rainy Season	125	125	125	125	125	125	125	125	125	1125
7	M 20 grade	Rainy Season	Rainy Season	Rainy Season										
8	Random rubble masonry	Rainy Season	Rainy Season	Rainy Season	50	50	50	40	40	40	40	40	40	390
9	Plastering	Rainy Season	Rainy Season	Rainy Season	80	80	80	80	80	80	80	80	60	700

Construction Methodology
PACKAGE NO III

Sl No	Description of Item	Working Months									Rainy season			Total
		1	2	3	4	5	6	7	8	9	10	11	12	
		10/09	11/09	12/09	01/10	02/10	03/10	04/10	05/10	06/10	07/10	08/10	09/10	
1	Earth work excavation	Rainy Season	Rainy Season	Rainy Season	18000	18000	18000	18000	18000	17500	17500	17500	17500	160000 m3
2	Channel	Rainy Season	Rainy Season	Rainy Season	11175	11175	11200	11200	11200	11200	11200	11200	11200	100750
3	Foundation	Rainy Season	Rainy Season	Rainy Season	125	125	120	120	120	120	120	120	120	1450
	Concrete													
4	M 7.5 grade	Rainy Season	Rainy Season	Rainy Season	100	100	110	110	110	110	110	110	110	970
5	M 10 grade	Rainy Season	Rainy Season	Rainy Season	60	60	60	60	60	60	60	60	63	543
6	M 15 grade	Rainy Season	Rainy Season	Rainy Season		3	3	3	3	3				15
7	M 20 grade	Rainy Season	Rainy Season	Rainy Season										
8	Random rubble masonry	Rainy Season	Rainy Season	Rainy Season	25	25	20	20	20	20	20	20	19	209
9	Plastering				55	55	55	55	60	60	60	60	51	511

Construction Methodology
ABSTRACT

Sl No	Description of Item	Working Months									Rainy season			Total
		1	2	3	4	5	6	7	8	9	16	17	18	
		10/09	11/09	12/09	01/10	02/10	03/10	04/10	05/10	06/10	07/10	08/10	09/10	
1	Earth work excavation	Rainy Season	Rainy Season	Rainy Season	43650	43650	43650	43650	43650	43650	43650	38150	38150	381850 m3
2	Channel	Rainy Season	Rainy Season	Rainy Season	14175	14175	13200	13200	13200	13200	13200	13200	13200	120750
3	Foundation	Rainy Season	Rainy Season	Rainy Season	375	375	360	360	360	360	360	360	360	4350
	Concrete													
4	M 7.5 grade	Rainy Season	Rainy Season	Rainy Season	200	200	215	215	215	215	215	215	215	1905
5	M 10 grade	Rainy Season	Rainy Season	Rainy Season	387	395	385	370	370	370	370	370	373	3390
6	M 15 grade	Rainy Season	Rainy Season	Rainy Season	139	142	142	143	143	143	140	140	138	1270
7	M 20 grade	Rainy Season	Rainy Season	Rainy Season	--	--	--	--	--	--	--	--	--	--
8	Random rubble masonry	Rainy Season	Rainy Season	Rainy Season	89	89	84	85	85	85	85	85	72	729
9	Plastering	Rainy Season	Rainy Season	Rainy Season	165	165	165	160	165	165	165	165	137	1452

1.7. ENVIRONMENTAL COMPONENT

ENVIRONMENTAL MONITORING ON WATER AND SOIL QUALITY AND CREATING AWARENESS & UPDATING OF "ENVIRONMENTAL AND SOCIAL ASSESSMENT REPORT" FOR VEMBAR SUB-BASIN IN GUNDAR BASIN.

INDEX

IAMWARM PROJECT

(ENVIRONMENT COMPONENT IN SUB BASINS)

Name of River Basin:	GUNDAR BASIN
Name of Sub Basin:	VEMBAR SUB BASIN
Name of WUA:	Yet to be Formed
Name of Division:	**Vaippar Basin Division, Virdhunagar**
Name of Sub Division:	**1) Vaippar Basin Sub Division, Aruppukottai.** **2) Gundar Basin Sub Division Mudhukulattur**
District:	**1) Ramanathapuram** **2) Virdhunagar** **3) Thoothukudi**
Taluk:	**1) Aruppukottai 2) Kamudhi** **3) Vilathikulam 4) Kadaladi**
Block:	**1) Kadaladi. 2) Kamudhi 3) Pudur** **4) Thiruchili.**
I. Name of the Tank Severly affected by Aquatic weeds	Annexure- I
II. Domestic Sewage:	Annexure -II
III.Municipal Solid Waste:	Annexure -III
III. Industreies:	Annexure -IV
IV. Water Quality Status	
i. Surface water	Annexure -V
II. Ground water	Annexure -VI

ANNEXURE- I

TANKS AFFECTED BY WATER WEEDS

VEMBAR SUB BASIN

Sl No	Name of Tank	Name of Village	Block	Taluk	District	Ayacut in Ha.	Water weeds
							ProsopisJuliflora/Ipomeacarnea/water Hyacinth
1	Muthurama-lingapuram	Muthurama-lingapuram	Thiruchili	Aruppukottai	Virudhunagar	42.74	Prosopis Juliflora
2	Kanjampatti	Kanjampatti				73.65	Prosopis Juliflora
3	Therkunatham	Therkunatham				74.46	Prosopis Juliflora
4	Muthaiapuram	Muthaiapuram	Pudur	Vilathikulam	Thoothukudi	54.10	Prosopis Juliflora
5	Rama-chandrapuram	Rama-chandrapuram				176.84	Prosopis Juliflora
6	L.Venkatesapuram	L.Venkatesapuram				70.12	Prosopis Juliflora
7	Pudhu-chinnayapuram	Pudhu-chinnayapuram				150.54	Prosopis Juliflora
8	Boothalapuram	Boothalapuram				121.24	Prosopis Juliflora

9	Mavilodai	Mavilodai				176.03	Prosopis Juliflora
10	Chinnur	Chinnur				97.12	Prosopis Juliflora
Sl No	Name of Tank	Name of Village	Block	Taluk	District	Ayacut in Ha.	Water weeds ProsopisJuliflora/Ipomeacarnea/water Hyacinth
11	Kattalankulam	Kattalankulam	Kadaladi	Kadaladi	Ramanathapuram	47.72	Prosopis Juliflora
12	Kokkadi	Kokkadi				56.61	Prosopis Juliflora
13	Melauramankurichi	Melauramankurichi				41.10	Prosopis Juliflora
14	S.tharakudi	S.tharakudi				249.42	Prosopis Juliflora
15	T.Veppankulam	T.Veppankulam				46.91	Prosopis Juliflora
16	T.M.Kottai	T.M.Kottai				88.00	Prosopis Juliflora
17	Chenchadainatha-puram	Chenchadainatha-puram				44.21	Prosopis Juliflora
18	Perunali	Perunali	Kamudhi	Kamudhi	Ramanathapuram	70.85	Prosopis Juliflora

ANNEXURE-I I

VEMBAR SUB BASIN

DOMESTIC SEWAGE

Sl. No.	Name of Town	Sewage Discharged into
1	Sayalkudi	Land
2	Kamudhi	Gundar River
3	Kadaldi	Land
4	Aruppukottai	1) Aruppukottai Big Tank 2) Thumbaikulam Tank
5	Vilathikulam	Land
6	Perunali	Perunali Tank

ANNEXURE- III

VEMBAR SUB BASIN

SOLID WASTE

Sl No.	Name of place	Solid Waste Qty. in MT	Disposed into
1	Kamudhi	2.5	Oorani near Bus stand
2	Thiruchili	1.5	Compost yard
3	Kadaladi	2.5	Compost yard
4	Sayalkudi	1.5	Compost yard and finally into Mookaiyur Tank
5	Aruppukottai	2.5	Partly in to composed yard
6	Perunali	1.0	Nearby Perunali Tank

ANNEXURE-IV

INDUSTRIES IN THIRUMANGALAM TALUK					
Sl.No	**Name and address of the Factory**		**Major Cronic activity**	**Type**	**SSI/NON SSI**
1	Coolmax Radiatiors (P) Ltd.,	Kappalur	Automobile	OS	SSI
2	Tamilnadu State Transport Corporation Ltd.,	Usilampatti Road	Automobile	OS	NON SSI
3	Tnstc – Tirumangalam Usilai Road, Tirumangalam.	Kappalur	Automobile	OS	NON SSI
4	Assian Bags (P) Ltd.,	Kappalur	Bags	GM	SSI
5	Delite Print Bags (P) Ltd.,	Kappalur	Bags	GM	SSI
6	Poly Bags (P) Ltd.,	Kappalur	Bags	GM	SSI
7	Kalidoss Brush Company]	Maravankulam	Brushes	OS	NON SSI
8	Muthu Brush Company	Kappalur	Brushes	OS	NON SSI
9	Fine Cable Industries	Kappalur	Cables	OS	SSI
10	Paramount Canvas Processors (P) Ltd.,	Kappalur	Canvas	OS	SSI
11	Balaji Chemical 165, Sidco , Kappalur.	Kappalur	Chemical	RS	
12	Balaraman Tafe Sidco Industriala Estate, Kappalur.	Kappalur	Chemical	RS	
13	Carbose India Melakottai, Tirumangalam.	Thirumangalam	Chemical	RS	
14	Century Chemical & Oil Mills Vehappatti, Tirumangalam Taluk.	Thirumangalam	Chemical	RS	
15	Chear chlorites Private Limited Melakottai, Tirumangalam Taluk.	Thirumangalam	Chemical	RS	
16	Dhanasekara Pandian & Sons Dharmattupatti Village, Tirumangalam.	Thirumangalam	Chemical	RS	
17	Jeya Ambika Metals K. Vellankulam Villagae Tirumangalam.	Thirumangalam	Chemical	RS	
18	Jeyanthi Chemical Sidco Indl.Estate, Kappalur.	Kappalur	Chemical	RS	
19	Kapsons Industries Sidco Industrial Estate, Kappalur.	Kappalur	Chemical	RS	
20	KPS Textile Gum 170/1A, Kilavanari Village Tirumangalam, Taluk.	Thirumangalam	Chemical	RS	
21	Lakshmi Industries Sidco Industrial Estate, Kappalur.	Kappalur	Chemical	RS	
22	Madurai Latex Products Sidco Industrial Estate, Kappalur.	Kappalur	Chemical	RS	
23	Marine Bye Products Sidco Industrial Estate, Kappalur.	Kappalur	Chemical	RS	

24	Om Sakthi Chemicals, Indl. Estate, Kappalur, Madurai.	Kappalur	Chemical	RS	
25	Rajaganapathy Chemicals Sidco Indl. Estate,Kappalur.	Kappalur	Chemical	RS	
26	Rajaganapathy Industries Melakkottai.	Thirumangalam	Chemical	RS	
27	RVS & Company Uchapatti, Tirumangalam Taluk.	Thirumangalam	Chemical	RS	
28	Sri Meenakshi Chem Industries D-37, Sidco, Kappalur.	Kappalur	Chemical	RS	
29	Sri Ram Calcium Carbonate Sidco Industrial Estate, Kappalur.	Kappalur	Chemical	RS	
30	Srinivasa Marine & Chemicals Melakkottai, Tirumangalam Taluk.	Thirumangalam	Chemical	RS	
31	Thai – Hi Tech Chemical D – 30 Sidco, Kappalur.	Kappalur	Chemical	RS	
32	Meenakshi Match Industries	Aavalsuranpatti Panchayat	Fire works	RS	NON SSI
33	Meenu Chemicals Sidco, Kappalur.	Kappalur	Chemicals	RS	
34	Priyanga Chemicals]	Kappalur	Chemicals	RS	NON SSI
35	Suiya Chemicals	Kappalur	Chemicals	RS	SSI
36	Surya Chemicals Sidco Indl. Estate, Kappalur.	Kappalur	Chemicals	RS	
37	Rayal Seema Concrete Sleeper (P) Ltd.,	Railway Yard	Concrete	RS	NON SSI
38	Assefa Milk 55 – 56, Vehapatti, Tirumangalam.	Thirumangalam	Dairy	OS	
39	ASSAFA Diary Development Fedaration	Kappalur	Diary	OS	SSI
40	Madurai District Central Co-Operative Milk	Kappalur	Diary	OS	SSI
41	Raja Ayurvedha Marunthagam	Kappalur	Drugs	OS	SSI
42	Raja Sidha Marunthagam	Kappalur	Drugs	OS	SSI
43	Kalyani Yarn Processors	Kappalur	Dying	RS	NON SSI
44	Sri Sakthi Processors	Kappalur	Dying	RS	SSI
45	Monold Electricl Equipments Ltd.,	Kappalur	Electrical equipts	OS	SSI
46	Excel Containers P Ltd Sidco, Kappalur.	Kappalur	Engineering	OS	
47	SM Industries Sidco, Kappalur.	Kappalur	Engineering	OS	
48	Amman Match Works	Puliankualm Village	Fire works	RS	NON SSI
49	Ayyanar Match Unit	Thadagam Road	Fire works	RS	NON SSI
50	Balaji Match Works	Lalapuram	Fire works	RS	NON SSI
51	Balan Match Works	Kallikudi(Post)	Fire works	RS	NON SSI
52	Chettiar Match Works	P.T.Rajan Road	Fire works	RS	NON SSI
53	Chidambaram Match Industries	Thirumangalam	Fire works	RS	

54	Dhanalakshmi Match Industries	M. Puliangulam	Fire works	RS	NON SSI
55	Krishna Match Works	Kallikudi Village	Fire works	RS	NON SSI
56	Lakshmi Match Works	M.Sengulam	Fire works	RS	NON SSI
57	Murugan Maatch Works	Railway Feeder Road	Fire works	RS	NON SSI
58	Murugan Maatch Works A Unit	Vilathikulam Road	Fire works	RS	NON SSI
59	Pretham Match Company	Villur Village	Fire works	RS	NON SSI
60	Ram Match Works	Melatheru	Fire works	RS	NON SSI
61	Sakthi Match Works	Thadagam Road	Fire works	RS	NON SSI
62	Sekar Match Industries	East Pallivsal Street	Fire works	RS	NON SSI
63	Sivakumar Match Works	Mahimshapuram II Street	Fire works	RS	NON SSI
64	Suganya Match Industries	Virudhunagar Road	Fire works	RS	NON SSI
65	Surya Match Industries	Sivarakkottai	Fire works	RS	NON SSI
66	The Vanithamani Match Works	Rajan Street	Fire works	RS	NON SSI
67	The Ventahmarai Match works	Sengulam East Street	Fire works	RS	NON SSI
68	Kayathiri Matches	Kallikude	Fireworks	RS	NON SSI
69	Avamariya Fish Nets	Kappalur	Fish nets	OS	NON SSI
70	Fajaram Flour Mills	Kappalur	Flour mill	OM	NON SSI
71	Jeyakrishna Flour Mills	Kappalur	Flour mill	OM	NON SSI
72	Aavin Cattle Feed Unit ll Sidco Estate, Kappalur, Madurai – 8.	Kappalur	Food – Beverages	OM	
73	Indian Food Products 24,Sidco Indl.Estate, Kappalur, Madurai – 8.	Kappalur	Food – Beverages	OM	
74	Jayakrishna Flour Mill Unit ll A 2 /3 , Sidco , Kappalur, Madurai.	Kappalur	Food – Beverages	OM	
75	Rajaram Flour Mill Melakottai, Thirumangalalm.	Thirumangalam	Food – Beverages	OM	
76	Bargava Products Sidco, Kappalur.	Kappalur	Food & Beverages	OS	
77	Cellulose Products of India Limited Sidco , Kappalur.	Kappalur	Food & Beverages	OS	
78	Guru Flour Mill Mamsapuram, Tirumangalam.	Thirumangalam	Food &	OS	

			Beverages		
79	Madras Flour Mill Kappalur, Tirumangalam.	Thirumangalam	Food & Beverages	OS	
80	Bharani Foot Wear	Karisalpatti	Foot wears	OS	SSI
81	The Metal Powder Company Limited Maravankulam, Thirumangalam.	Thirumangalam	Foundary	RI	
82	TV Plastics	Kappalur	Foundary	RI	
83	Tansi Furniture	Kappalur	Furniture	OS	NON SSI
84	Peacock Garments (P) Ltd Sidco Indl. Estate, Kappalur, Madurai.	Kappalur	Garments (Dry)	GM	
85	Penguin Apparels p Ltd Sidco Indl. Estate, Kappalur, Madurai.	Kappalur	Garments (Dry)	GM	
86	Penguin Garments(P) Ltd Sidco Indl.Estate,Kappalur, Madurai.	Kappalur	Garments (Dry)	GM	
87	K Ragupathiammal Ginning Factory	Melakkottai	Ginning	OS	SSI
88	Kananan Siva Industries 2 / 2 , Palakkkapudupatti Village, Kappalur.	Kappalur	Ginning	OS	
89	M.M Ginning Factory Kallikudi, Tirumangalam Taluk.	Thirumangalam	Ginning	OS	
90	Ragupathi Ammal Ginning Factory Melakottai, Tirumangalam.	Thirumangalam	Ginning	OS	
91	Sri Thiurpathi Ginning Factory	Melakkottai	Ginning	OS	SSI
92	SriLaxmi Diamond Works	Kappalur	Ginning	OS	NON SSI
93	Thiruppathi Ginning Factory Melakkottai, Tirumangalam.	Thirumangalam	Ginning	OS	
94	Valaguru Ginning Factory Kallikudi, Tirumangalam.	Kappalur	Ginning	OS	sSI
95	Vanithamani Mathch Works P.T. Rajan Street, Tirumangalam.	Thirumangalam	Ginning	OS	
96	Govt. Hospital Tirumangalam.	Thirumangalam	Hospital-Govt	RS	
97	Manickammal Rice Mill 20, Thiruvalluvar Street, Tirumangalam.	Thirumangalam	Hulling	OS	
98	PP Natarajan & Sons 142, Virudhunagar Road, Thi;rumangalam.	Thirumangalam	Hulling	OS	
99	Sathyas Modern Rice Mill	Maruthangaudi	Hulling	OS	SSI
100	Sivananda Rice & Oil Mill	Virudhunagar Road	Hulling	OS	SSI

101	Sri Chithanathan Rice & Oil Mill	Arumugam Road	Hulling	OS	SSI
102	A.B.M. Corporation	Kappalur		OS	SSI
103	Dhanalakshmi Industries	Kappalur		RS	SSI
104	Ganesh Saravana Industries	Vilathikulam Road		RS	SSI
105	M/s Pearl Mineral Products	Kappalur		OS	NON SSI
106	Madurai West Sarvodays Sangam	Sasthripuram		OS	NON SSI
107	Ramu Incorporated	Kappalur		OS	SSI
108	Saraswathi Crown Cark Industries	Kappalur		OS	NON SSI
109	Southern Rhims (P) Ltd.,	Kappalur		OS	SSI
110	Swarna Agencies	Kappalur		OS	SSI
111	Thirumangalam Co-Op Marketing Society	Vilathikulam Road		OS	SSI
112	Vinayaga Industries BS-18 Sidco Indl. Estate Kappalur, Madurai – 8	Kappalur		RS	NON SSI
113	Yagappa Industries 79 / 3, Chetti Pillayarnatham, Tirumangalam.	Kappalur		RS	NON SSI
114	Balaji Mineral Enterprises	Kappalur		OS	SSI
115	Standard Enterprises	Kappalur		OS	SSI
116	Ganapathi Industries	Koothiyarkundu Post		RS	SSI
117	Lakshmi Industries	Kappalur		RS	SSI
118	Super Run Products (P) Ltd.,	Kappalur		OS	SSI
119	Balaji Mineral Enterprises Dharmathupatti, Tirumangalam.	Thirumangalam	Limestone	OS	
120	Baskar Lime Industries D-40 Sidco, Kappalur.	Kappalur	Limestone	OS	
121	Nandhini Enterprises 42, Alampatti-- Sedapatti Road, Tirumangalam.	Thirumangalam	Limestone	OS	
122	Nylon Industries D-45, Sidco, Kappalur.	Kappalur	Limestone	OS	
123	Pearl Minerals 66, Sidco, Kappalur.	Kappalur	Limestone	OS	
124	Sreethi Enterprises D-2, Sidco, Kappalur.	Kappalur	Limestone	OS	
125	Hpcl – Lpg 171 - -172, Sidco Industrial Esdate, Kappalur, Madurai.	Kappalur	Lpg Bott	RI	
126	Amman Match Works M..Puliankulam Village, Tirumangalam.	Thirumangalam	Match Works	RS	
127	Vasu Crushers 9. Ulagani, Tirumangalam Taluk.	Thirumangalam	Match Works	RS	

128	Aluminum Powder Company Ltd	Melakkottai	Metal powder	RS	NON SSI
129	The Aluminium Powder Company Limited Melakottai, Thirumangalam.	Thirumangalam	Non – Ferr Metal	RI	
130	Ravi Industries 180, Sidco, Kapplur.	Kappalur	Oil Reclaimation	RS	
131	Sun Reclaimery 25,Mdu Automobile Co-Op, Industries Estate,Kappalur.	Kappalur	Oil Reclaimation	RS	
132	Team Organics Ltd Kallikudi Village, Tirumangalam Taluk.	Thirumangalam	Oil Reclaimation	RS	
133	Hcl Oil Storage Sidco Industrial Esdate Kapppalur, Madurai .	Kappalur	Oil Storage	RI	
134	Hpcl Oil Storage Sidco Industrial Esdate Kappalur, Madurai.	Kappalur	Oil Storage	RI	
135	P.S.N. Spinners	Kappalur	Spinning Mill	OS	SSI
136	T.M.S. Ginning & Oil Mills	Madurai Road	Ginning	OS	SSI
137	Gunamalai Packaging Industries (P) Ltd.,	Kappalur	Packaging	OL	SSI
138	Meena Packaging	Kappalur	Packaging	OL	NON SSI
139	Naga Packaging	Kappalur	Packaging	OL	
140	Pioneer Packaging Products	Kappalur	Packaging	OL	SSI
141	Sara Packaging	Kappalur	Packaging	OL	NON SSI
142	Shree Packs Industries	Kappalur	Packaging	OL	SSI
143	Muthu Paint Industries D-9 Sidco, Kappalur.	Kappalur	Paint	RS	
144	Chandra Paper Products	Kappalur	Paper products	OS	SSI
145	Jaycee Paper Boards	Melakkottai	Paper products	OS	SSI
146	Micro Chemical Sidco Indusatrial Estatem, Kappalur.	Kappalur	Pesticide	RS	
147	Hindustan Petrroleum Corporation Ltd.,	Kappalur	Petrolium products	RS	NON SSI
148	A.D.R. Plastics	Kappalur	Plastics	OS	SSI
149	Anantha Ploy Products (P) Ltd.,	Kappalur	Plastics	OS	NON SSI
150	Standard Poly Plastics (P) Ltd.,	Kappalur	Plastics	OS	NON SSI
151	Pandian Print Packs Sidco Indl .Estate, Kappalur, Madurai.	Kappalur	Poly Bags	GS	
152	ATR Ploymers	Kappalur	Polymers	OS	NON SSI
153	Ratna Press	Virudhunagar Road	Printing	OS	SSI

154	Jayee Paper Board 3 /81 A, Melakkottai, Thirumangalam.	Thirumangalam	Pulp & Paper	OS	
155	Pioneer Paper Board 6 /1 ,Thenkasi Road, Karisalpatti, Tirumangalam.	Thirumangalam	Pulp & Paper	OS	
156	Srinivasa Paper & Board 26 /1 A, Thenkasi Road, Karisal patti, .	Thirumangalam	Pulp & Paper	OS	
157	Pecock Apparels (P) Ltd.,	Kappalur	Readymade garments	GM	NON SSI
158	Penquin Apparels (P) Ltd.,	Kappalur	Readymade garments	GM	SSI
159	Penquin Apparels (P) Ltd., UnitII	Kappalur	Readymade garments	GM	NON SSI
160	Penquin Apparels (P) Ltd., UnitIII	Kappalur	Readymade garments	GM	NON SSI
161	Penquin Garments (P) Ltd.,	Kappalur	Readymade garments	GM	SSI
162	Aravind Products 63, Sidco, Kappalur.	Kappalur	Rubber	RS	
163	Christwin Industries 52, Sidco, Kappalur.	Kappalur	Rubber	RS	
164	Hi-Tech Aray Ltd 30, Sidco , Kappalur.	Kappalur	Rubber	RS	
165	Hi-Tech Aray Ltd Shed No.60, Sidco, Kappalur.	Kappalur	Rubber	RS	
166	Kamala Rubber Company 60,Sidco, Kappalur.	Kappalur	Rubber	RS	
167	Madurai Rubber Company B5,14(P) Sidco, Kappalur.	Kappalur	Rubber	RS	
168	Sahay Rubber Products 7, Sidco Kappalur.	Kappalur	Rubber	RS	
169	Sri Meenakshi Rubber Co. 43, Sidco, Kappalur.	Kappalur	Rubber	RS	
170	Super Run Products 78, Sidco, Kappalur.	Kappalur	Rubber	RS	
171	Vikash Threads	Kappalur	Rubber	RS	
172	Vinoth Rubber Factory	Kappalur	Rubber	RS	
173	Chitra Cones & Tubes	Kappalur	Rubber products	RS	SSI
174	Efgy Rubberr Kap	Kappalur	Rubber products	RS	NON SSI
175	Padmalakshni Rubber Products(P) Ltd.,	Kappalur	Rubber products	RS	SSI
176	Saghay Rubber Products	Kappalur	Rubber products	RS	SSI
177	Sri Vishnu Rubber Products (P) Ltd.,	Kappalur	Rubber products	RS	NON SSI
178	Vijay Rubber Industries	Arumugam Road	Rubber products	RS	NON SSI
179	Vijay Rubber Industries Sidco, Kappalur.	Kappalur	Rubber products	RS	SSI

180	National Seeds Corporation	Kappalur	Seeds	OS	NON SSI
181	PVM Selva Jothi Saw Mill .Vellkulam, Kallikudi, Tirumangalam.	Thirumangalam	Service Staion	OS	
182	Ottakam soap Company	Kappalur	Soap	RS	NON SSI
183	Chakra Circular Socks Sidco Indl.Estate, Kappalur, Madurai.	Kappalur	Socks	GS	
184	Ayyanar Spinning Mills	Kallikudi Via	Spinning Mill	OS	NON SSI
185	Babu Spinning Mills Kappalur Indl. Estate, Madurai – 8	Kappalur	Spinning Mill	OM	
186	Colour Yarns Ltd.,	Alampatti	Spinning Mill	OS	NON SSI
187	Dhanalakshmi Mills	Kappalur	Spinning Mill	OS	SSI
188	Kanagadurga Clothes Sidco Indl. Estate, Kappalur, Madurai-8.	Kappalur	Spinning Mill	OM	
189	Madrura Spinners	Kappalur	Spinning Mill	OS	SSI
190	Malaiyarasi Threads	Kappalur	Spinning Mill	OS	SSI
191	Menaka cotton Mill D-32,38 Sidco, Kappalur.	Kappalur	Spinning Mill	OS	
192	N.S.K. Ginning & Oil Mills	Vilathikulam Road	Spinning Mill	OS	NON SSI
193	Padmavathy Spinners Plot No.42 Part, Sidco Kappalur, Madurai – 8.	Kappalur	Spinning Mill	OM	
194	Paramount Mills (P) Ltd.,	Katrampatti Village	Spinning Mill	OS	NON SSI
195	Ply Yarns	Kappalur	Spinning Mill	OS	SSI
196	PSN Spinners 31,Sidco, Kappalur, Madurai.	Kappalur	Spinning Mill	OS	
197	Seetharam Mills	Kappalur	Spinning Mill	OS	SSI
198	Seetharaman Mills BS-15, Sidco Indl. Estate, Kappalur, Madurai – 8	Kappalur	Spinning Mill	OM	
199	Sir Padmalakshmi Mills	Kappalur	Spinning Mill	OS	SSI
200	Sree Thanigai Spinning Mills	Kappalur	Spinning Mill	OS	NON SSI
201	Sri Arumuga Vilas Ginning Factory	Arumugam Road	Spinning Mill	OM	SSI
202	Sri Ayyanar Spinning & Weaving Mill Unit ll Illupakulam, Thirumangalam Tk	Thirumangalam	Spinning Mill	OS	
203	Sri Elumalayan Spinners (P) Ltd.,	Kappalur	Spinning Mill	OS	NON SSI
204	Sri Kalyani Threads	Kappalur	Spinning Mill	OS	NON SSI
205	Sri Kannika Parameswari Mills (P) Ltd Sidco, Kappalur.	Kappalur	Spinning Mill	OS	
206	Sri Pandiyan Print Packs And Textiles Mills Ltd T. Pudupatti 625 704.	Thirumangalam	Spinning Mill	OM	

207	Sri Reghupathi Spinners	Melakkottai	Spinning Mill	OS	NON SSI
208	Sri Senchadai Nathar Karunakadakshi Spinners (P) Ltd.,	Kappalur	Spinning Mill	OS	SSI
209	Sumangala Spinning Mills Shed No.23 & 24 ,Sidco Kappalur, Madurai – 8.	Kappalur	Spinning Mill	OM	
210	Surabi Spinners	Kappalur	Spinning Mill	OS	NON SSI
211	Thiagarajar Mills Ltd.,	Kappalur	Spinning Mill	OS	NON SSI
212	Thiruvethi Ayyanar Spinning Mill Sidco Indl.Estate, Kappalur, Madurai.	Kappalur	Spinning Mill	OS	NON SSI
213	Thiyagarajar Mills Kappalur, Madurai – 8.	Kappalur	Spinning Mill	OM	
214	Thiyagrajar Knitters	Kappalur	Spinning Mill	OM	
215	Vikesh Threads Sidco ,Kappalur.	Kappalur	Spinning Mill	OS	NON SSI
216	Tower Steels Limited Sidco Industrial Limited, Kappalur, Madurai	Kappalur	Steels	RS	NON SSI
217	Agam Blue Metal Tirumangalam.	Thirumangalam	Stone Crusher	OS	
218	Amman Blue Metal Nedungulam Village, Tirumangalam.	Thirumangalam	Stone Crusher	OS	
219	Annai Blue Metal Sengapadai, Tirumangalam.	Thirumangalam	Stone Crusher	OS	
220	CK Devi Blue Metal Vadakarai, Melakottai, Tirumangalam.	Thirumangalam	Stone Crusher	OS	
221	Dhanalakshmi Blue Metal 70 1E, Karpaga Nagar, Tirumangalam.	Thirumangalam	Stone Crusher	OS	
222	JE PS Granite Products T. Pudupatti Village, Thirumangalam.	Thirumangalam	Stone Crusher	OS	
223	Kandasamy Blue Metal 23, Main Street, T. Pudupatti Post, Madurai.	Thirumangalam	Stone Crusher	OS	
224	KP Blue Metals Karisalapatti, Tirumangalam.	Thirumangalam	Stone Crusher	OS	
225	Lord Venkateswara Blue Metal Tirumangalam.	Thirumangalam	Stone Crusher	OS	
226	Mohana Blue Metal Tirumangalam.	Thirumangalam	Stone Crusher	OS	
227	Palanikumaresan Blue Metal Chekkanurani, Madurai.	Thirumangalam	Stone Crusher	OS	
228	RG Blue Metal Vadakarai, Tirumangalam.	Thirumangalam	Stone Crusher	OS	
229	Royalaseema crusher & Concrete Sleepers P Ltd, Thiurmangalam.	Thirumangalam	Stone Crusher	OS	
230	Sairam Stone Metal 57 / 11, Chinna Ulagani,	Thirumangalam	Stone Crusher	OS	

	Thirumangalam.				
231	Sriram Metal Works Kunnanam patti, Thirumangalam.	Thirumangalam	Stone Crusher	OS	
232	V. Nathan Soap Sidco Indl. Estate, Kappalur.	Thirumangalam	Stone Crusher	OS	
233	Vedial Textiles	Thirumangalam	Stone Crusher	OS	
234	Velpandy Blue Metals Thengai Patti, Tirumangalam.	Thirumangalam	Stone Crusher	OS	
235	Venkateswara Textiles Mills	Thirumangalam	Stone Crusher	OS	
236	Vijay Match Industries	Thirumangalam	Stone Crusher	OS	
237	Vinayaga Body Building Industries Unit I	Thirumangalam	Stone Crusher	OS	
238	Vinoth Rubber 124,Sidco, Kappalur.	Thirumangalam	Stone Crusher	OS	
239	Yegam Threads Sidco, Kappalur.	Thirumangalam	Stone Crusher	OS	
240	Annai Blue Metal Industries	Melakkottai	Stone Crusher	OS	SSI
241	Saravnan Blue Metals	k.Puliankulam	Stone Crusher	OS	SSI
242	Uppukamatchi Blue Metal Tirumangalam , Madurai.	Kappalur	Stone Crusher	OS	SSI
243	Vignesh Blue Metasl Karadikkal, Tirumangalam.	Kappalur	Stone Crusher	OS	NON SSI
244	Hari Granites Sidco, Kappalur.	Kappalur	Stone Polishing	OS	
245	G.D. Textiles (Mdu) P.Ltd 82. Sidco Indl. Estate, Kappalur, Madurai.	Kappalur	Tex.Proc	OM	
246	Lilly Cotton Products Alampatti, Tirumangalam.	Thirumangalam	Text Processing	OS	
247	Sundarraja Spinning Mill Sidco , Kappalur, Madurai.	Kappalur	Text Processing	OS	
248	Super Quality Mills Sidco, Kappalur.	Kappalur	Text Processing	OS	
249	Alagammai Mercerising D-33, Sidco , Kappalur, Madurai – 8	Kappalur	Textile Processing	RS	
250	Mona Textiles Melakottai, Tirumangalam.	Thirumangalam	Textile Processing	RM	
251	Vinod Blue Metal K. Puliankulam, Tirumangalam.	Kappalur	Textile Processing	OM	
252	Selvaraj Fabrics (P) Ltd.,	Kappalur	Textiles	OS	NON SSI
253	A.T. Weaving	Sidco	Textiles	OS	NON SSI
254	Aanjaneya Weavings (P) Ltd.,	Kappalur	Textiles	OS	NON SSI
255	Abirami Textiles (P) Ltd.,	Kappalur	Textiles	OS	NON SSI
256	B.L. Textiles	Kappalur	Textiles	OS	NON SSI
257	Balaji Textile Mills	Kappalur	Textiles	OS	SSI
258	Cappteev Textiles (P) Ltd.,	Kappalur	Textiles	OS	SSI
259	Clasic Weaving	Kappalur	Textiles	OS	NON SSI

260	Gowri Yarn Fabrics	Kappalur	Textiles	OS	SSI
261	Hanuman Weaving Co (P) Ltd.,	Kappalur	Textiles	OS	NON SSI
262	J.K. Textiles Mills	Kappalur	Textiles	OS	NON SSI
263	Jagrit Polymers (P) Ltd.,	Kappalur	Textiles	OS	SSI
264	Keerthana Weaving	Kappalur	Textiles	OS	NON SSI
265	Kumaran Textiles	Kappalur	Textiles	OS	NON SSI
266	Lakshmi Durga Super Fabrics	Kappalur	Textiles	OS	NON SSI
267	Lakshmi Weaves	Kappalur	Textiles	OS	NON SSI
268	M.A.C.S. Textiles (P) Ltd.,	Kappalur	Textiles	OS	NON SSI
269	M/s Sathaiya Fabrics	Kappalur	Textiles	OS	NON SSI
270	Meenakshi Textile Mills	Kappalur	Textiles	OS	NON SSI
271	Niranchana Weaving	Kappalur	Textiles	OS	SSI
272	Oxforo Textiles	Kappalur	Textiles	OS	SSI
273	Priya Weavers	Kappalur	Textiles	OS	NON SSI
274	Punnagai Textiles	Kappalur	Textiles	OS	NON SSI
275	Rajkumar Textiles	Kappalur	Textiles	OS	SSI
276	Santhosh Weaves	Kappalur	Textiles	OS	NON SSI
277	Sathyas Fabrics	Kappalur	Textiles	OS	NON SSI
278	Senthil Fabrics	Kappalur	Textiles	OS	NON SSI
279	Shiny Textiles (P) Ltd.,	Kappalur	Textiles	OS	NON SSI
280	Sivakami Textiles	Kappalur	Textiles	OS	NON SSI
281	Sri Ahilandeswari Textiles	Kappalur	Textiles	OS	NON SSI
282	Sri Karpaga Vinayagar Textiles	Kappalur	Textiles	OS	NON SSI
283	Sri Maruthi Textiles	Kappalur	Textiles	OS	NON SSI
284	Sri Nagalakshmi Textile Mills (Madurai)Ltd.,	T.Kallupatti	Textiles	OS	NON SSI
285	Sri Neelambika Textiles (P) Ltd.,	Kappalur	Textiles	OS	NON SSI
286	Sri Padamavathy Srinivasa	Kappalur	Textiles	OS	NON SSI
287	Sri Vairam Textiles	Kappalur	Textiles	OS	SSI
288	Sri Venkatalakshmi Textiles	Kappalur	Textiles	OS	NON SSI
289	Subalakshmi Weaving	Kappalur	Textiles	OS	SSI
290	Sundaraja Sizing Mills	Kappalur	Textiles	OS	SSI
291	Suruthi Fabrics	Kappalur	Textiles	OS	NON SSI
292	Swathi Textiles	Kappalur	Textiles	OS	SSI
293	The Mona Textiles Ltd.,	Melakkottai	Textiles	OS	NON SSI

294	Thirumalai Textiles & Company	Kappalur	Textiles	OS	NON SSI
295	Visalakshi Power Looma (P) Ltd.,	Kappalur	Textiles	OS	SSI
296	ARC Retreading Company Thirumangalam, Sidco, Kappalur.	Kappalur	Tyre Retreading.	OS	
297	Chakra Retreads, Kappalur 94 –4 , Madurai Road, Thirumangalam.	Thirumangalam	Tyre Retreading.	OS	
298	Velankanni Waste Cotton Mill Alampatti Tirumangalam.	Kappalur	Waste cotton	OS	NON SSI
299	Chamundi Weavers Sidco, Kappalur.	Kappalur	Weaving	OS	
300	Vinayaga Blue Metal K. Vellakulam, Tirumangalam.	Kappalur	Weaving	OS	
301	Kuriya Brothers Thirumangalam.	Thirumangalam	Willow	OS	
302	Seethalakshmi Traders Sidco, Kappalur.	Kappalur	Willow	OS	
303	Velmurugan Blue Metals Thengai Patti, Tirumangalam.	Thirumangalam	Willow	OS	
304	Happy Wood (P) Ltd.,	Alampatti (Post)	Woods	OS	NON SSI
305	Jeyam Threads Sidco, Kappalur	Kappalur	Yarn Doubling	OS	
306	Teddy Exports Alampatti, Tirumangalam.	Thirumangalam	Yarn Doubling	OS	
307	Akmi Farms (P) Ltd.,	T.Kunnathur		OS	SSI
308	Cone Agencies	Kappalur		OS	NON SSI
309	EgamTraders	Kappalur		OS	NON SSI
310	Elim Exports (P) Ltd.,	Pudipatti		OS	NON SSI
311	Instilite (Machinary Divison) S.No.9/1A, Ramnad Road, Manalur.	Thirumangalam		RS	
312	Jebro Industries	Kappalur		RS	NON SSI
313	Karthic Enterprises	Kappalur		OS	NON SSI
314	Kumar Rice Mill	Chekkanoorani	Hulling	OS	SSI
315	KVP Exports (P) Ltd.,	Kappalur		OS	NON SSI
316	M.G. Industries	Kappalur		OS	NON SSI
317	Mrubi Productrs	Kappalur		RS	NON SSI
318	N.S.Farms (P) Ltd.,	Kappalur		RS	NON SSI
319	Nav amani Flexo	Kappalur		RS	NON SSI
320	Neyon Industries	Kappalur		RS	NON SSI
321	Punitha Industries	Kappalur		RS	SSI
322	S.K.S Industries	Kappalur		RS	SSI
323	SAR Company	Kappalur		OS	SSI
324	Seethakadai Teasing Factory Sidco, Kappalur.	Kappalur		OS	

325	Sri Lakshmi Diamond Die Works	Kappalur		RS	NON SSI
326	Sri Skthi engineering	Kappalur		RS	SSI
327	Sri Thee Enterprises	Kappalur		OS	NON SSI
328	Sri Venkateshwara Industries Thiumangalam.	Thirumangalam		OS	
329	Sun Shine Industries	Kappalur		RS	
330	Tekno Pack Inida Industries	Kappalur	Packing	OS	NON SSI
331	Vinayaga Industries	Kappalur		RS	NON SSI
	NOTE:				
	DO - DANGROUS OPERATIONS				
	G - GREEN	S - SMALL			
	O - ORANGE	M - MEDIUM			
	R - RED	L - LARGE			

MADURAI DISTRICT- USILAMPATTI TALUK

Name and Address of the Factory			Major Cronomic Activity	Type	SSI/NON SSI
Tamilnadu State Transport Corporation Ltd.,	Sakkampatti	Usilampatti TK	Automobile	OS	NON SSI
Tamilnadu Chamber Bricks	Chettiapatti	Usilampatti TK	Brick manufacturing	OS	SSI
Jeyarani Curling & Coir Mills	Peraiyur Road	Usilampatti TK	Coir products	OS	NON SSI
Athilakshmi Oil Mill Thummakkundu, Usilampatti Taluk,	Usilampatti		Food Products	OM	
Deivam Bisuits Confectionery	Theni Road	Usilampatti TK	Food products	OM	SSI
Jeyabarathy Foods (P) Ltd.,	Periyar Road	Usilampatti TK	Food products	OM	SSI
Kan Mark Pickels Company	Theni Road	Usilampatti TK	Food products	OM	SSI
Leo Biscuits Confectionery	Periyar Road	Usilampatti TK	Food products	OM	SSI
Sri Pandian Bakes	Vinayagar Koil Street	Usilampatti TK	Food products	OM	SSI
V.K. Samy Confectionery & Biscults Manufacturers	Periyar Road	Usilampatti TK	Food products	OM	SSI
Virco Food Products	Aavudaithaga Nadar Street	Usilampatti TK	Food products	OM	NON SSI
A T Duraisamy Nadar- Krishna Rice Mill	11 Street	Usilampatti TK	Hulling	OS	SSI
Arumuga rice & Oil Mill 4 / 356, Karukkattan Pattim , Usilampatti Taluk.	Usilampatti		Hulling	OS	
K.P.M. Kuppan Chettiar Rice mill	Melapudur	Usilampatti TK	Hulling	OS	SSI
K.P.Meenakshi Rice Mill	Madurai Road	Usilampatti TK	Hulling	OS	SSI
Nallathambi Modern Rice Mill	Periyar Road	Usilampatti TK	Hulling	OS	SSI
Seenithever sons Modern Rice Mill	Kavundanpatti	Usilampatti TK	Hulling	OS	SSI
Selvi Modern Rice Mill	Madurai Road	Usilampatti TK	Hulling	OS	SSI
Sree Sivasakthi Rice Mill	Periyar Road	Usilampatti TK	Hulling	OS	SSI
Sri Arumuga Rice mill	Karukkattampatti Road	Usilampatti TK	Hulling	OS	SSI
.,	Usilampatti		Hulling	OS	
T.R.M.S. Rice Mill	Periyar Road	Usilampatti TK	Hulling	OS	SSI
Veerammal Flour Mill Karukkattanpatti Road, Usilampatti.	Usilampatti		Hulling	OS	
Selvi Ice Company Post Office Street, Usilampatti.	Usilampatti		Ice	OS	
T.R Swaminathaiya nadar & Co	Periyar Road	Usilampatti TK	III	OS	SSI
Balagi Minerals Nadupatti village, Usilampatti Taluk.	Usilampatti		Mines	RS	
Rajasuganya Oils (P) Ltd.,	Kavanadanpatti Road	Usilampatti TK	Oil mill	OS	SSI

Goodwill Team Paper Team Garden Uthappannaickanur Usilampatti Taluk,	Usilampatti		Pulp & Paper	OM	
Sri Mappillai Vinayagar Spinning Mills Ltd.,	Perumalpatti	Usilampatti TK	Spinning	OM	NON SSI
Thottapannayakanoor Power Lomm Co-op Production &Sales Society Ltd.,	Thottapanayakanoor	Usilampatti TK	Spinning	OM	NON SSI
Usiali Thiru Karpaga Vinayagar Cotton Spinning Mills (P) Ltd.,	Thottapanayakanoor	Usilampatti TK	Spinning	OM	SSI
Mappillai Vinayagar Spinnning Mill, Perumalpatti Village, Usilampatti Taluk,	Usilampatti		Spinning Mill	OM	
Baskara Pandian Blue Metal Chellampatti Post, Usilampatti Taluk.	Usilampatti		Stone Crusher	OS	
Sahaya Blue Metal Unit ll Karumathur, Usilampatti.	Usilampatti		Stone Crusher	OS	
Sathish Sasi Blue Metal 21 / 16, Sivan Kalai Street, Kilaputhur, Usilampatti.	Usilampatti		Stone Crusher	OS	
Senthilmurugan Enterprises Chokkanathapuram, Chekkanoorani, Usilampatti.	Usilampatti		Stone Crusher	OS	
Sakthi Bricks And Tile Works E. Nedupatti, Usilampatti.	Usilampatti		Tiles	OS	
Asian Bricks & Tiles Company	Vadunganpatti Post	Usilampatti TK	Tiles manufacturing	OS	SSI

ANNEXURE -I V				
LIST OF INDUSTRIES IN VEMBAR SUB BASIN				
Sl. No	**Name of Industry & Address**		**Category**	**Type**
INDUSTRIES IN VIRUDHUNAGAR DISTRICT				
ARUPPUKOTTAI TALUK				
1	Aruppukottai Sri Jaya Vilas Ltd, Melakadambankulam	Aruppukkottai	Spinning	OL
2	Sri Ayyanar Spinning And Weaving Mills Ltd, Mallanginar.	Aruppukkottai	Spinning	OL
3	Sri Ramalinga Mills Ltd Textile Division 212 Ramasamy nagar	Aruppukkottai	Spinning	OL
4	Aruppukottai Sri Ramalinga Roller Flour Mills, Melakandamangalam	Aruppukkottai	Food & Beverage	OM
5	Sri Ramalinga Food Products, Melamangalam	Aruppukkottai	Food & Beverage	OM
6	Aruppukottai Sri Jeyakrishna Spinning Mills Aruppukottai	Aruppukkottai	Spinning	OM
7	Aruppukottai Sri Ramalinga Spinning Mills	Aruppukkottai	Spinning	OM
8	Govindaraja Mills Limited 258,Tiruchuli Road,	Aruppukkottai	Spinning	OM
9	Karthikeya Spinning Mills	Aruppukkottai	Spinning	OM
10	Naganandana Mills Limited Vakkanangundu	Aruppukkottai	Spinning	OM
11	Sri Venkatesa Mercerisers Thonugal, Vakkanangundu post	Aruppukkottai	Bleaching	OS
12	V.V.R.Products Valukkalotti village	Aruppukkottai	Lime stone	OS
13	Sri Ramana Textiles Products Private Limited Mallanginar,	Aruppukkottai	Spinning	OS
14	Amman Blue Metal Aviyoor, Aruppukkottai.	Aruppukkottai	Stone crusher	OS
15	Aruppukottai Jeyavilas Spinning Mills Ltd, Aruppukkottai	Aruppukkottai	Power plant	RL
16	Kannan Oil Mill 252, Thiruchuli road , Aruppukottai	Aruppukkottai	Food & Beverages	RS
17	Sri Murugan & Co Thiruchuli road Aruppukottai	Aruppukkottai	Food & Beverages	RS
18	Amar Nursing Home 189 Thiruchuli road Aruppukottai, .	Aruppukkottai	Hospital	RS
19	Hindu Matches F Unit Mallanginar, Aruppukottai .	Aruppukkottai	Matches	RS
20	Suriya Match & co, B unit Kalkurichi P.O.	Aruppukkottai	Matches	RS
21	The Globe Match Works Madurai Tuticorin Road Kalkurichi post. Aruppukottai .	Aruppukkottai	Matches	RS
22	V.V. Ramasamy and sons Valukkalotti Palavanatham post,Aruppukkottai .	Aruppukkottai	Matches	RS
INDUSTRIES IN THOOTHUKUDI DISTRICT				

VILATHIKULAM TALUK				
1	G.Doss & Company,Salt Pan	Vilathikulam	Saltpan	OM
2	Arulmozhi Spinners	Vilathikulam	Spinning Mills	OM
3	TNSTC Limited,Engineering	Vilathikulam	Automobiles	OS
4	Sri Ram Industries	Vilathikulam	Bone Crusher	RS
5	Karthick Chemicals	Vilathikulam	Chemicals	RS
6	Keystal Chemicals	Vilathikulam	Chemicals	RS
7	PeralChlorites (P)	Vilathikulam	Chemicals	RS
8	Anthony Match Industries	Vilathikulam	Fire Works	RS
9	The Hindu Matches	Vilathikulam	Fire works	RS
5	Tamilnadu Salt Corporation,Mariyur,Valinokam,Sikkal(via)	Kadaladi	Salt	OS
6	Paravathi Salt Industries,Thanichiam Village, Valinokkam	Kadaladi	Salt Pan	OS
7	Tamilnadu Magnesium & Marine Chemicals Ltd,Valinokam	Kadaladi	Chemicals	RS
INDUSTRIES IN RAMANATHAPURAM DISTRICT				
KAMUTHI TALUK				
1	A1 Acgua Pipes (india)Ld., Achankulam,	Kamuthi	Acgua Pipes	OS
2	Jeya Vinayagar Chamber Bricks, Aruppukottai, Neeravi	Kamuthi	Bricks	OS
3	Murugeswari Chember Bricks,	Kamuthi	Bricks	OS
4	Siva Palani Chamber Bricks , Partibanur-Kamuthi Roadf,Muthiapuram	Kamuthi	Bricks	OS
5	Suganya Brick Works, Abiramam	Kamuthi	Bricks	OS
6	Eswari Flour Mills , Neeravi.	Kamuthi	Flour Mill	OS
7	Gopi Modern Rice Mill,Mudukulathur road	Kamuthi	Hulling	OS
8	Sree Vinayaga Modern rice Mill , Thiruchuli Road	Kamuthi	Hulling	OS
9	Emess Rubber India,Thavashikurichi.	Kamuthi	Lining	OS
10	Rexien Sea India,Kottaimedu.	Kamuthi	Lining	OS
11	Ayesha Cottan Mills Ltd, Kamuthi-Parthibanur, Kandankarai Villages Achankulam	Kamuthi	Spinning Mill	OS
12	Jai bairavan Mills, Vilathikulam Salai, Perunali,	Kamuthi	Spinning Mill	OS
13	Mannan Cottan Mills Ltd, Abiramam.	Kamuthi	Spinning Mill	OS
14	Ramnad Dist.,Co-op,Spinning Mill Ltd, Achenkulam	Kamuthi	Spinning Mill	OS
15	Ramasamy Match Works,South mudukulathur Road,	Kamuthi	Fire works	RS
16	TNSTCLtd, (div III)	Kamuthi	Automobiles	OS
	KADALADI TALUK	Kadaladi		
1	Muthusamy Engg .Works ,V.V.R. Nagar , K.K.Nagar, Sayalkudi	Kadaladi	Engg Works	OS
2	Indian Rice & fiower Mill , manirajapuram,	Kadaladi	Flour Mill	OS

	Sayalkudi			
3	Sri Grihar Foods Ltd,MelaMuthal,Valinokam	Kadaladi	Foods	OS
4	Sethupathi Modern Rice Mill, Mudukulathur Road,	Kadaladi	Hulling	OS
5	Tamilnadu Salt Corporation,Mariyur,Valinokam,Sikkal(via)	Kadaladi	Salt	OS
6	Paravathi Salt Industries,Thanichiam Village, Valinokkam	Kadaladi	Salt Pan	OS
7	Tamilnadu Magnesium & Marine Chemicals Ltd,Valinokam	Kadaladi	Chemicals	RS

ANNEXURE- V
SURFACE WATER SAMPLE TEST RESULTS

Parameter		00 2	00 2	v.. 20 03
		G4	G4	G4
GENERAL	Ph	8.1	7.6	7.4
	EC	210	270	490
	TDS mg/l	129	145	283
	TSS/l	3	4.5	5.5
Nutrients	NO2+NO3 mg/L	2		4
Org.matter	BOD mg/l	2.2	2	0.8
	COD mg/l	14	4	15
Alkalinity	Total CaCo3	75	110	180
Hardness in mg/L	Total CaCo4	55	130	110
	Ca ++ Caco3	50	100	30
Major ions	Ca++ mg/L	20	40	12
	mg++	1	7	19
	Na++	28	5	82
	K++	4	0	5
	Cl++	18	14	32
	SO4++	5	11	24
	HCo3++	92	134	220
Other In-Organic	Si mg/L			17.1
	F mg/L			0.3
	B mg/L			0.07
Coliforms	Total			2800
	Feacal			1100
SAR				3.64

G4- AT KAMUDHI REGULATOR.

Annexure VI

Ground water Quality Test Results of Samples Collected in Vembar River Sub Basin.

		General			Nutrients	Alka-linity		Hardness		Major Ions									Biol.
Station code	Date of collection	PH	EC, Umho/cm	TDS,mg/L	NO3+NO2asN.mg/L.	Phen, mg CACO3/L	Total, mgCACO3/L	Total,mg/CACO3/L	Ca++mgCaCO3/L	Ca++mg/L	Mg++ mg/L	Na++mg/L	K++ mg/L	Cl mg/L	SO4 mg/L	CO3 MG/l	HCO3mg/L	F.mg/L	SAR
83120B	11.07.2007	7.5	2100	1231	3	0	315	350	200	80	30	327	6	425	151	0	384	0.23	10.7
83290A	11.07.2007	7.5	5350	3357	91	0	430	1250	500	200	182	598	168	1241	302	0	525	0.29	10.4
83291	10.07.2007	8.2	8100	4812	10	0	270	1600	600	240	243	1196	70	2482	374	0	329	0.50	18.4
83299	10.07.2007	8.2	1260	791.2	31	0	275	250	125	50	30	120	90	124	74	0	336	0.50	4.7
83301	10.07.2007	8.2	1230	719.1	4	0	200	220	135	54	21	184	8	234	80	0	244	0.58	7.6
83121B	10.07.2007	8.2	630	343.7	4	0	240	160	80	32	19	69	7	32	19	0	293	0.65	3.4
83302A	10.07.2007	8.2	4250	2515	27	0	400	1000	400	160	146	474	129	1035	209	0	488	0.32	9.2
93112	03.07.2007	8.2	980	543	5	0	290	285	150	60	33	97	1	64	90	0	354	0.36	3.5
93113	03.07.2007	7.8	1460	871	29	0	300	400	270	108	32	212	38	227	204	0	299	0.32	4.6

Ground water Quality Test Results of Samples Collected in VEMBAR Sub Basin.

		General				Alka-linity		Hardness		Major Ions									Biol.
Station code	Date of collection	PH	EC, Umho/cm	TDS,mg/L	NO3+NO2asN.mg/L.	Phen, mg CACO3/L	Total, mgCACO3/L	Total,mg/CACO3/L	Ca++mgCaCO3/L	Ca++mg/L	Mg++ mg/L	Na++mg/L	K++ mg/L	Cl mg/L	SO4 mg/L	CO3 MG/l	HCO3mg/L	F.mg/L	SAR
83120B	08.01.2008	8.2	1040	586	1	0	230	170	100	40	17	166	7	149	60	0	281	0.31	7.8
83290A	08.01.2008	8.2	8400	5072	61	0	355	1300	350	140	230	1403	29	2304	480	0	433	1.30	23.9
83299	02.01.2008	8.4	2100	1291	26	10	340	320	120	48	49	299	90	298	187	12	390	0.30	10.3
83301A	02.01.2008	8.3	1500	853	1	5	260	310	110	44	49	205	10	262	120	6	305	0.39	7.1
83302A	02.01.2008	8.2	670	386	4	0	145	115	60	24	13	92	23	92	36	0	177	0.19	5.3
93112	08.01.2008	8.1	2610	1714	25	0	355	210	80	32	32	529	4	284	504	0	433	0.33	22.4
93113	08.01.2008	8.2	1650	974	44	0	215	450	160	64	70	163	10	312	29	0	262	0.51	4.7

Annexure VII

LOCATION OF GROUND WATER SAMPLING POINTS

Sl.N0	Station code no.	Location
VILATHIKULAM TALUK		
1	93112	T.Duraiswamipuram
2	93113	Nagalapuram
KADALADI TALUK		
1	83120B	Sikkal
2	83289	Idambadal
3	83290A	Ervadi
4	83291	Therkumookkaiyur
5	83299	Vadakunarippaiyur
6	83300	Sevalpatti
7	83301A	T.M.Kottai

REPORT TO ACCOMPANY THE WORK OF "ENVIRONMENTAL MONITORING ON WATER AND SOIL QUALITY AND CREATING AWARENESS & UPDATING OF "ENVIRONMENTAL AND SOCIAL ASSESSMENT REPORT" FOR VEMBAR SUB-BASIN IN GUNDAR BASIN".

Estimate Cost Rs 3.00 Lakhs

INTRODUCTION

Under TNWRCP, with World Bank assistance, special emphasis was given for the first time in WRO, to assess the environmental status and degradation caused for all River basins in Tamilnadu.Environmental and Soil Assessment Study has been conducted by "Environment Protection Training and Research Institute (EPTRI), Hyderabad" in all river basins. The institute has identified the Environmental issues, social issues; mitigate measures for Gundar Basin and given the recommendations as below:

i)	Environmental Issues:	a)	Excess fluoride and Nitrate in ground Water.
		b)	ProsopisJuliflora Growth
		c)	Sand mining
ii)	Social Issues:	a)	Encroachment In catchments area
		b)	Dry land Agriculture
		c)	Reduction in Live stock
iii)	Mitigate Measures:	a)	Aquatic weed management
		b)	Solid waste management
iv)	Agency:	a)	The above measures can be improved by combined Working of Environmental cell and Water Resources organization

The Environmental Cell of WRD assessed soil and water samples in this Gundar river basin. The assessment include Environmental impact on the quality of surface ,Ground water and soil by collecting water & soil Samples and testing them. Moreover, Micro Level

Environmental Status Reports for all the River Basins have also prepared. These works have been carried out with the World Bank Assistance up to March 2004.

Also few Awareness programs & Workshops were conducted to create awareness on the Environmental issues & remedies among the public, farmers, Govt. officials and NGOs. Seminars were conducted to find out new techniques and methods developed recently to solve Environmental problems.

Now, under IAMWARM project, focus is at each sub basin level to identify and prioritize the requirements for improvements to storage structures, rehabilitation, new schemes for water harvest, and diversification of crops. Any new schemes or rehabilitation of existing one, consideration of the environment issues pertaining to that area and remedial action to overcome the problems is must.

DESCRIPTION OF SUB BASIN

Gundar river basin is one of the major river basins of Tamilnadu with a drainage area of 5912 sq.km. Total length of the River from the origin is 150 km. The basin covers part of Madurai, Sivagangai, and Virudhunagar, part of Dindugul, Ramanathapuram and Thoothukudi Districts.

Vembar starts from the surplus of Muthuramalingapuram tank in Muthuramalingapuram Village in Thiruchuli block of Aruppukottai Taluk of Virudhunagar District. Another odai formed in the jungle and traverses to L. Venkateswarapuram Tank and joins with Vembar at Boothapuram Village. There is one Anicut constructed at the junction of these two arms namely Mavilodai Anicut. The surplus of Paralachi tank in Lowe Gundar sub basin forms into another stream with more number of local odais at Perunali Tank and flows parallel to the existing river from Mavilodai Anicut. These two arms of Vembar River join at Sevalpatti. There are two Anicuts across Vembar namely 1) Mavilodai Anicut, 2) T.M.Kottai Anicut.

Vembar flows through Aruppukottai Taluk of Virudhunagar District, Kamudhi Taluk of Ramanathapuram District and Vilathikulam Taluk of Thoothukudi District.

ENVIRONMENTAL PROBLEMS IN THIS SUB BASIN

SAND MINING

In Vembar near Therhunatham village, once, Public Works Department was mining sand from river bed. But, now at this location no mining operations were performed.

At various places wherever sand is available mining is being carried out in small quantities for local use.

INDUSTRIAL POLLUTION

There are no major industries situated in this sub basin. The Brick Kilns, Fire works, chemicals, flour mills, salt pan and spinning Industries located within Aruppukottai, Vilathikulam and Kadaladi Taluks. The Pollution of these Industries is meager.

The details of Industries are given in Annexure-IV.

CATCHMENT DEGRADATION

Forest cover in the basin is only 3.25% of the Gundar Basin area which is quite inadequate. Most of forest is deciduous. The Plantation area is only 1350 ha.

SOLID WASTE DISPOSAL

SOLID WASTE DISPOSAL IN MUNICIPALITIES AND TOWN PANCHYATS

Within this sub basin most of the panchayats have no systematic collection and disposal of solid waste. The local people used to throw the solid waste into the nearby open channels or drains choking them and thereby polluting the water resources.

Scheme for Solid waste Management plan is under implementation by Rural Development Department. Under this scheme, collection tank for disposable and undisputable garbage have been constructed. But in most of the panchayats, recycling the waste and converting the solid waste into manure and production of energy is yet to come up

SOLID WASTE DISPOSAL IN VILLAGES

Dumping of solid wastes by the villagers is very limited. Usually they are being dumped near the toe of the tank bunds. Major portion of the wastes are mainly animal droppings and leftover animal feeds collected from cattle sheds. These wastes are converted into manure and used in their lands.

Only in urban areas solid wastes are dumped near the roadside drains, nearby irrigation channels and low – lying areas. Even the civic bodies are recklessly dumping the solid waste into water bodies.

Sold waste if allowed to accumulate is health hazard and there is a correlation between improper disposal of solid waste and incidence of vector- borne diseases.

Hence motivating the local bodies for proper implementation of solid waste management in IAMWARM project is must, to protect the water bodies from the accumulation of wastes.

SEWAGE DISPOSAL LET INTO WATER BODIES

In Gundar Basin no other town or village is provided with under ground drainage system except Madurai Corporation and Harvipatti Town Panchayat.

SEWAGE DISPOSAL IN MUNICIPALITY, TOWN PANCHYATS AND VILLAGES.

Vilathikulam, Kamudhi, Kadaladi and Aruppukottai are the standing examples of civic body those who are let the sewage into the water bodies. In most of the Villages no safe disposal arrangements of sewage are exist.

WATER WEEDS

"Prosopis Juliflora" plants are multi-stemmed shrubby bushes growing from 3m to 15m tall. *"Prosopis Juliflora"* has been known to send its roots 10, 20 or even 30m to catch water. The roots lift water much higher than it can be lifted by capillary action of the soil. The draft on water supply is greatest during a long, hot growing season, with scanty precipitation and low humidity.

"Prosopis Juliflora" has invaded the cultivable lands in Vembar sub basin, in the beds of almost all the tanks. Hence, these plants need to be eliminated totally for the conserving precious water resources. But on the contrary, in some villages local people desire to grow this plant in the water spread area of the tanks. Once in 4 or 5 years they get cutting order from the revenue authorities, sale the ***"Prosopis Juliflora"*** or coal produced from it and keep the money for the common expenses like court case for the litigation with the nearby villages, temple repair and Local festivals etc. This is on account of lack of guidance and ignorance of its ill effects. Hence, this problem has to be addressed in all forms, wherever possible Bio gas plant has to be promoted.

GROUND WATER QUALITY

From the chemical composition data for the observation wells, the ground water in the lower reaches of sedimentary formation is of moderate quality. Except a few patches in major portion of Kamudhi, Mudukulattur, Kadaladi Taluks of this sub basin the quality of Ground Water is poor with total dissolved solids above 2000 mg/L.

In rural areas most wide spread contamination of water is from disease bearing human wastes, usually detected by measuring Faecal coli form levels. In these areas human wastes pose great health risks for many people who are compelled to drink and wash in untreated water from tanks, ponds and rivers.

Nearly 75 percent population lives in rural areas “go to the Fields” for defecation and thereby pollutes the environment with human excretement. Even in Urban areas the situation is the same. The people who do not have access to sanitation are subjected to health hazards.

Tuberculosis is the predominant disease within the Gundar Basin. Poverty economic recession and malnutrition make population more vulnerable to tuberculosis. It is a social disease with medical aspects. The social factors include poor quality of life, poor housing and over crowding, under nutrition, lack of education, large families, and lack of awareness cause illnesses.

ACTIVITIES PROPOSED

I.WATER & SOIL QUALITY MONITORING, PROJECT WORKS MONITORING

Water samples were collected from six locations and tested in Gundar river basin from December 2002. Continuance of collection and testing of water samples is essential as good and long - range data will enable to understand the problems more precisely. Hence, now it is proposed to collect and test water samples at the following locations for the period of three years to assess the environmental Impact on the quality of surface water of this sub basin more precisely. Water samples will be collected at the following locations once in 3 months, when flow occurs.

1. **V1- Kanjampatti Tank.**
2. **V2- U/S of Mavilodai Anicut at Boothalapuram**
3. **V3- Bridge @ Perunali-Vilathikulam @ Perunali Village.**
4. **V4 - Bridge @ Perunali – Uchinatham road at Ammayanaickenpatti Village**

5. V5 - Bridge at Sayalkudi Road – Surangudi road at Sevalpatti.

Water Samples in these above locations will be collected and tested once in six months, when flow occurs for physical, chemical and biological characteristics.

II. CREATION OF ENVIRONMENTAL AND SOCIAL KNOWLEDGE BASE FOR LOWER GUNDAR SUB BASIN

Micro Level Environmental Status Report has been prepared for the entire Gundar River Basin. To prepare an Environmental Action Plan of a River basin data regarding environmental issues in sub basin wise is necessary. Hence, provision for collecting the environmental and social issues in village wise and analyzing the same and preparing development report has also made in this proposal.

IV. ENVIRONMENTAL & SOCIAL AWARENESS CREATION

Awareness Programs are necessary to create awareness among the public about Environmental aspects and the action to be taken by them to remove or reduce the impacts due to the Environmental problems. So far two, awareness Programs were conducted in this basin.

Hence, to create and motivate the people, awareness programmes are to be conducted in the villages. It is proposed to conduct 2 of awareness programs for public during the study period of three years covering the following subjects in addition to Placing Stickers, Tin sheets, Pham lets and Placing banner containing messages about, the Environmental Awareness.

- **Sanitation.**
- **Solid waste treatment.**
- **Sewage treatment and converting the same into gas**
- **Organic farming.**
- **Conversion of aquatic weeds into manure etc**

As per the instructions of the environmental specialist Mr. Anupham Joshi, the following alterations are made in the proposal,

In addition to the above, pesticides test for water quality is added and test will be carried out for five locations for once in a year.

Moreover, it is proposed to conduct field visits for environmental monitoring of project activities with respect to environmental safe guards.

It is proposed to study the impact due to project investments and hence, provisions for data collection and development reports have now been added.

Provision for preparing environmental atlas is now inserted in the context of marking all environmental and social issues with consultations of stake holders, line departments and NGOS.

MODE OF EXECUTION

All the works proposed are to be carried out by outsourcing through an Educational Institutions and NGOS.

TOTAL COST.

The total cost works out to Rs: **3.00 Lakhs (Rupees Three Lakhs only)**

Environmental Monitoring on water and soil quality and creating awareness , updating of " Environmental & Social assessment report" for VEMBAR SUB BASIN in GUNDAR BASIN.

DETAILED ESTIMATE

Sl no	Description of work	No	Measurement			Contents
			L	B	D	
I.Water & Soil Quality Monitoring, Project Works Monitoring						
a)	Water Samples from rivers in 5 locations collected once in six months for a period of three years 5x2x3 = 30 Nos.	30 Nos				30 Nos
b)	Water Samples from rivers in 2 locations collected once in a year for a period of three years 2x1x3 = 6 Nos. (pesticides)	6 Nos				6 Nos
c)	Conveyance, Purchases like Ccans,Bottles,Chemicals, engaging labour for collecting water and soil samples etc and Documentation of Water and Soil quality data and engaging labour	3 years				3 years.
d)	Provisions for field visits form environmental monitoring or project activities with respect to environmental safe guards.	3 years				3 years.
II Environmetal, Social Knowledge base						
a)	Village Level Data collection on Environmental And social state regarding other impacts	10 Man months				10 Man months
b)	Expert Analysis and Development Reporting on other impacts	LS				LS
c)	Impact studies due to project investments.	5 Man months				5 Man months

d)	Expert Analysis and Development Reporting due to project investments (after project)	LS	LS
III. Environmental Social Awareness Creation			
a)	Awareness Programs for Public	1 No	1 No
b)	Preparing and publishing Environmental Atlas for the sub Basin for the use of line departments/ Institutions for better Management of sub basin.	LS	LS
c)	Documentation of the entire activities, hire purchase of LCD and Up gradation of Computer and Accessories, Video films and Web site development and engaging computer operator	LS	LS
III.	**Variation in Rates and unforeseen items**	LS	LS

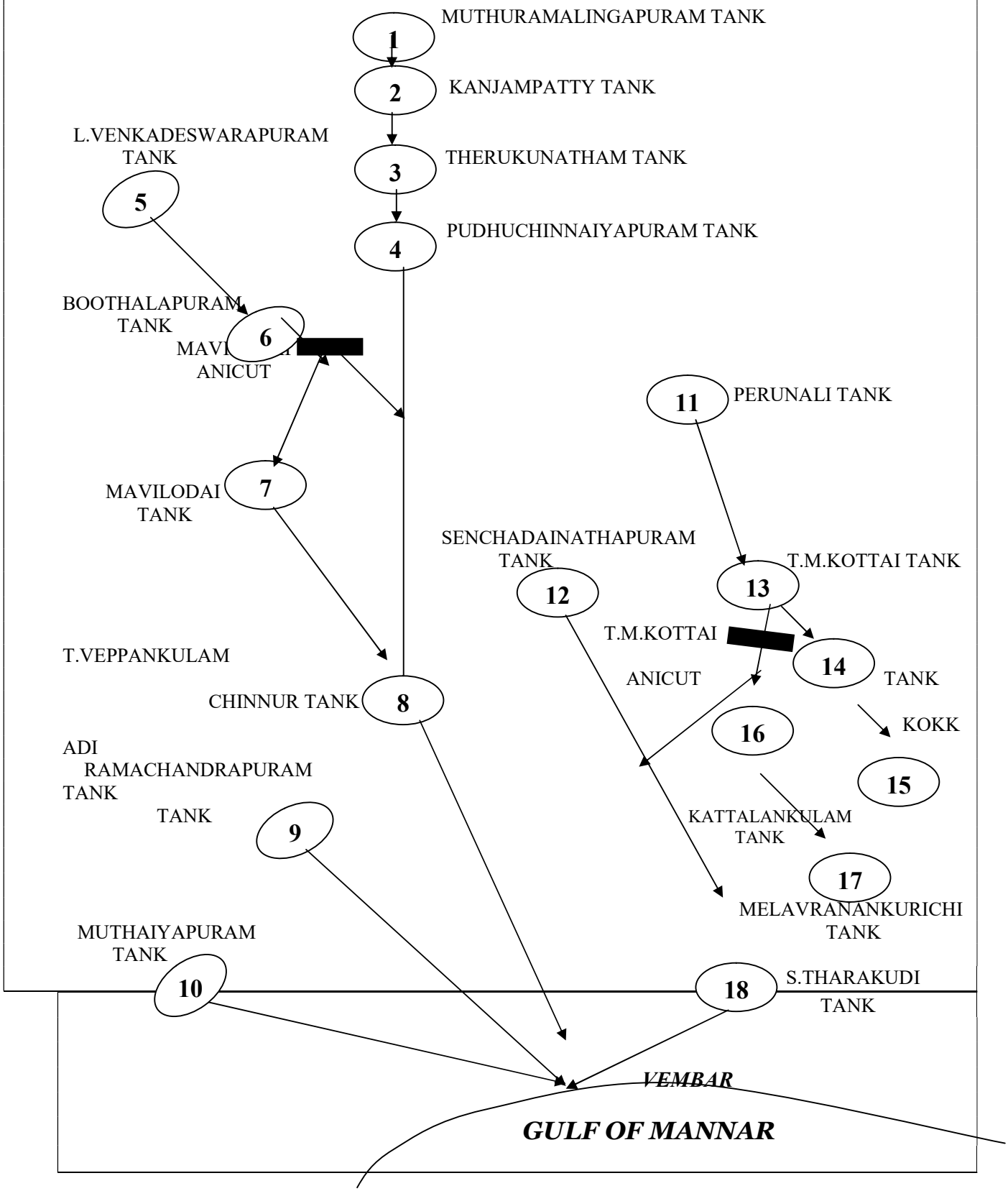
Environmental Monitoring on water and soil quality and Creating awareness, updating of " Environmental and Social Assessment report" for VEMBAR SUB-BASIN in Gundar Basin.

ABSTRACT ESTIMATE

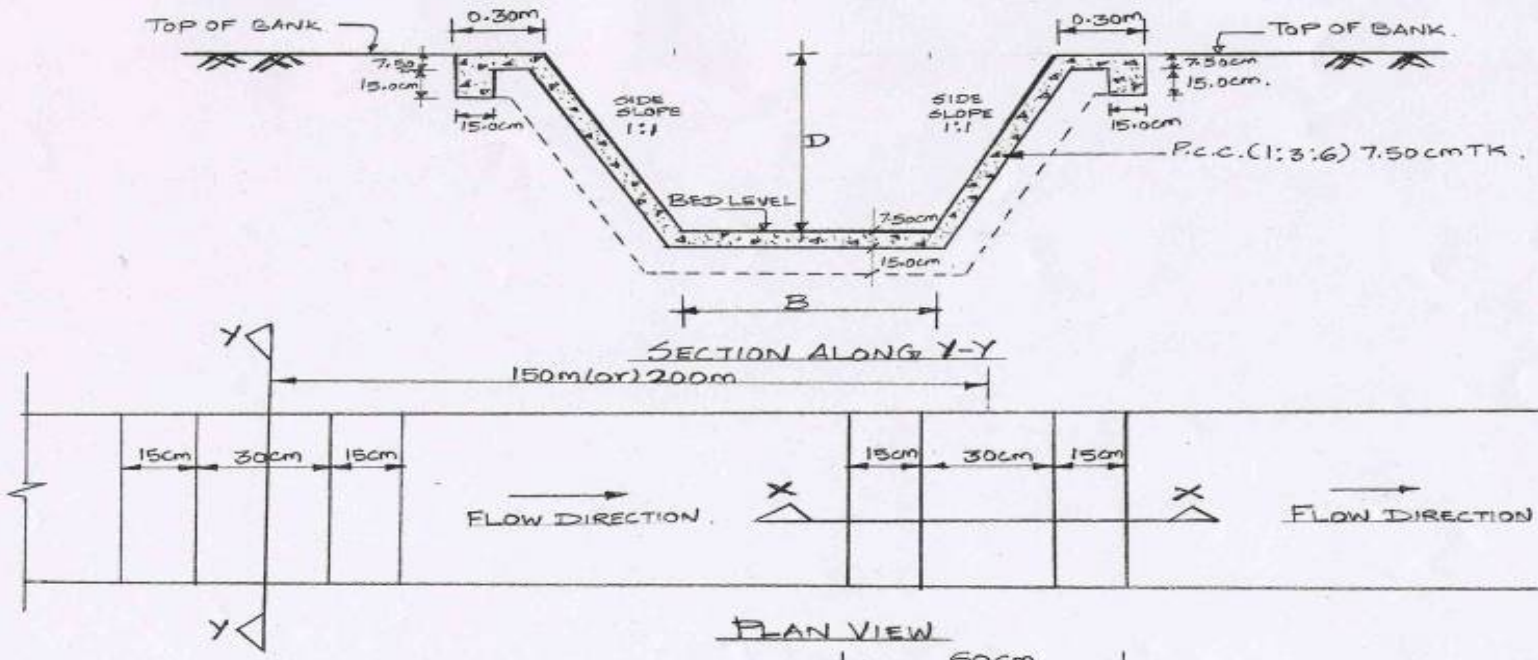
Sl.No.	Qty.	Description of Work	Rate	Per	Amount
I.Water & Soil Quality Monitoring, Project Works Monitoring					
a)	30 Nos	Water Sample Testing	1400	each	42,000
b)	6 Nos	Water Sample Testing (pesticides)	12000	each	72,000
d)	3 years	Conveyance, Purchases like Cans,Bottles,Chemicals, engaging labour for collecting water and soil samples etc and Documentation of Water and Soil quality data	2700	per year	8,100
d)	3 years	Provisions for field visits form environmental monitoring or project activities with respect to environmental safe guards.	2000	1 year	6,000
II.Environmental, Social Knowledge Base, Analysis and Development base					
a)	10 Man months	Village Level Data collection on Environmental And social state regarding other impacts	5000	month	50,000
b)	L.S	Expert Analysis and Development Reporting on other impacts	L.S		10,000
c)	5 Man months	Impact studies due to project investments.	5000	month	25,000

d)	L.S	Expert Analysis and Development Reporting due to project investments	L.S		15,000
III. Environmental Social Awareness Creation					
a)	1 No	Awareness Program for Public	15000	each	15000
b)	L.S	Preparing and publishing Environmental Atlas for the sub Basin for the use of line departments/ Institutions for better Management of sub basin.	L.S		50,000
c)	LS	Documentation of the entire activities, hire purchase of LCD and Up gradation of Computer and Accessories, Video films and Web site development and engaging computer operator	L.S		6,500
III.Variation in rates and unforeseen items.					**400**
Total					**300,000**
Rupees Three Lakhs only					

EMBAR SUB BASIN
FLOW DIAGRAM

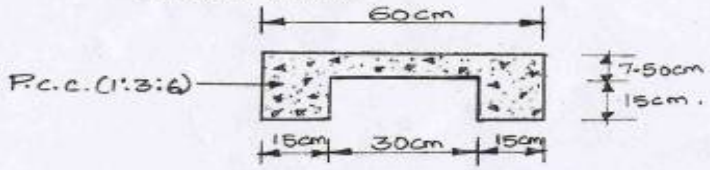


DESIGN AND DRAWING



SECTION ALONG Y-Y

PLAN VIEW



SECTION ALONG X-X

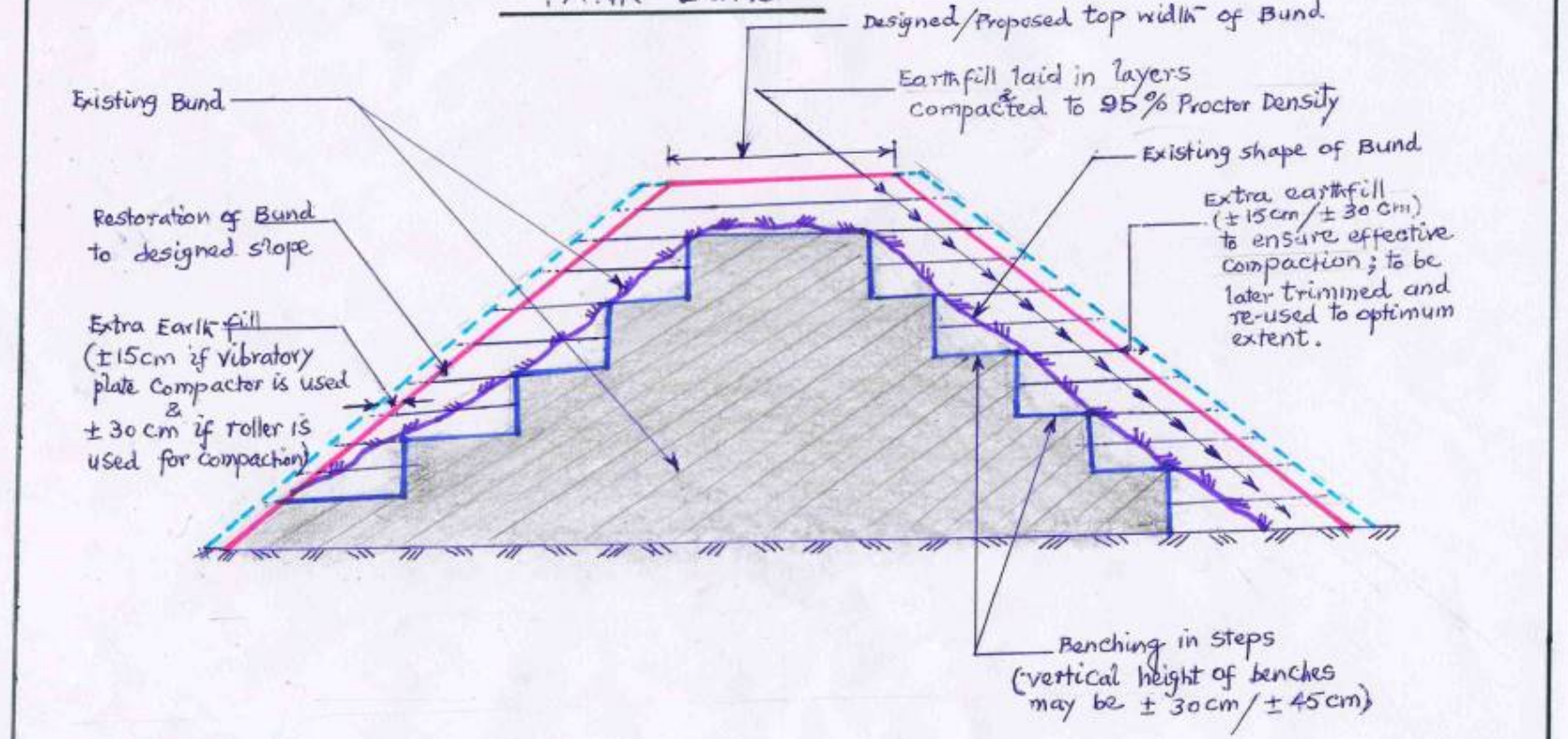
TYPICAL SECTION OF BEDBAR/MODEL SECTION FOR SUPPLY CHANNEL.

DIMENSIONS TO SUIT SITE CONDITION.

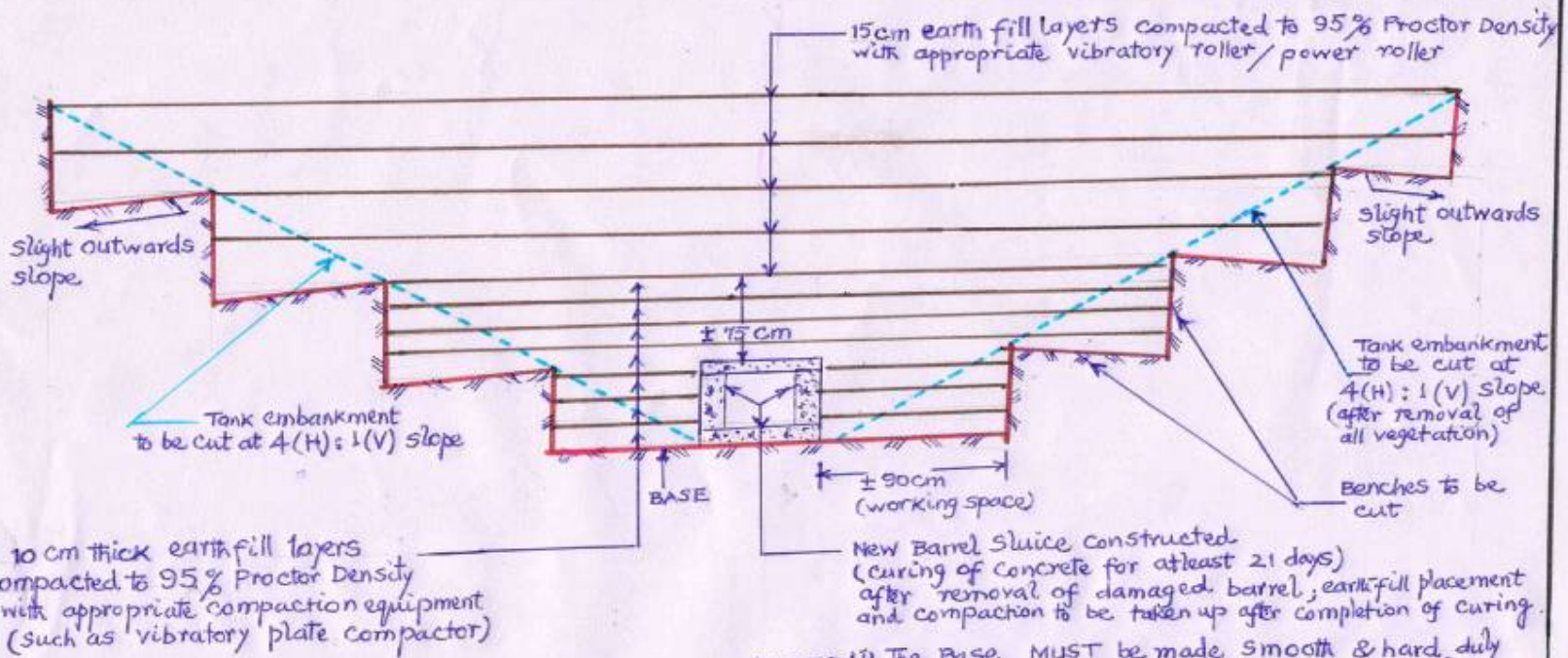
DRAWING NOT TO SCALE

TYPICAL SKETCH

RAISING & STRENGTHENING OF TANK BUND



TYPICAL SKETCH



RECONSTRUCTION OF SLUICES

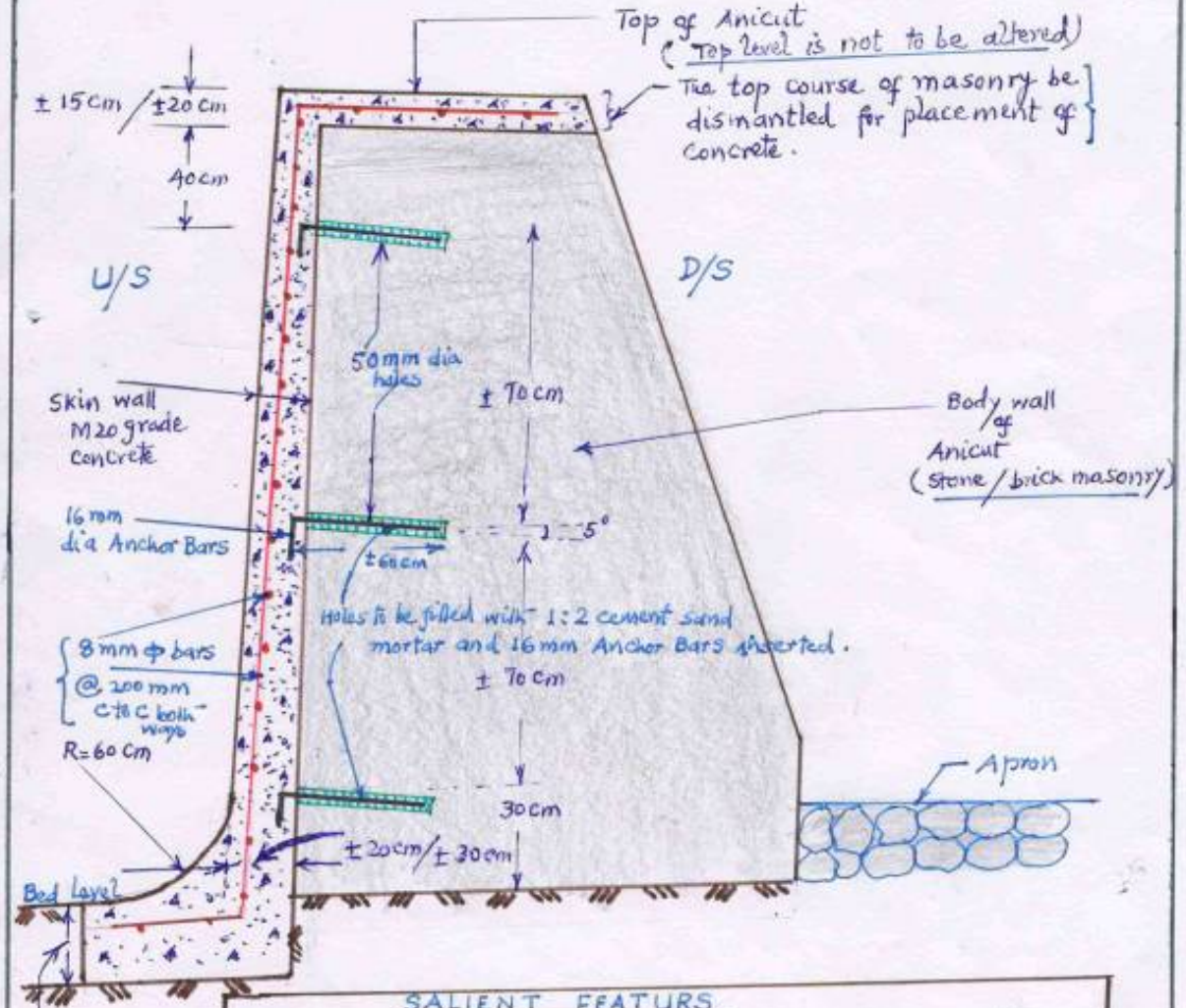
NOTES (i) The Base MUST be made smooth & hard, duly compacted with compactors / pneumatic tampers.

(ii) Earth fill compaction adjoining the Barrel and Benches should be compacted by mechanical / pneumatic tampers to ensure effective compaction.

(iii) Earth obtained from "benching" be reused (after removal of clods (bigger than 7.5 cm), vegetation etc) in earth fill layers.

TYPICAL SKETCH

Rehabilitation of Anicut through SKIN WALL Concrete



SALIENT FEATURES

- Joints on u/s surface to be raked to 25 mm depth & surface roughened by chipping.
- Drill holes of 50 mm to be filled with 1:2 mortar and 16 mm Anchor Bars to be pushed in.
- The roughened surface to be kept wet for 72 hours and cement slurry (1:2·5) of 0·70 water-cement ratio be applied over the surface prior to placement of skin concrete.
- Concrete of M20 Grade is to be used with 20 mm maximum aggregate size.
- Curing is to be done for 21 days.
- Thickness of skin concrete: 15 cm at top & 20 cm at bottom for Anicuts of height upto ± 1·50 m and 20 cm at top & 30 cm at bottom for Anicuts of height more than ± 1·5 m.