TN IAMWARM PROJECT

UPPODAI SUB BASIN

WATER RESOURCES DEPARTMENT

DETAILED PROJECT REPORT

1.1 INTRODUCTION

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.

1.2 DESCRIPTION OF THE TAMIRABARANI BASIN:

The Tamirabarani river Basin is one of the Major river basins in Tamil Nadu. It is bounded by Vaippar basin in the northern side and western ghats on the western side, Kothaiyar river basin on southern side. The basin area is covered in 2 districts namely Tirunelveli 35.07% ,Thoothukudi 64.93%. The length of the Tamirabarani river is 120 kms finally it debouches in to Gulf of Mannar.

This basin has been divided into 7 sub-basins namely as follows;

1. Tambirabarani
2. Chittar.
3. Upppdai.
4. Karumanieyar
5. Gadana
6. Ramanadhi
7. Manimuthar

1.3 DESCRIPTION OF UPPODAI SUB BASIN:

Uppodai is one of the tributary of the river Chithar. This stream originates from the Kalugumalai hills area. This stream starts from the plain terrain and there is no hilly catchment

area. The drainage area of the sub basin is 1243.30sq km and covered in the following 10 Blocks under 2 Districts.

Sl.No.	Name of Block	Name of District	Area (Sq.km)
1.	Vasudevanallur	Tirunelveli	9.20
2.	Sankarankovil	Tirunelveli	119.40
3.	Melaneelithanallur	Tirunelveli	86.50
4.	Kuruvikulam	Tirunelveli	212.90
5.	Manur	Tirunelveli	3.00
6.	Palayamkottai	Tirunelveli	2.50
7.	Tirunelveli	Tirunelveli	2.50
8.	Kovilpatti	Thoothukudy	40.50
9.	Kayathar	Thoothukudy	676.80
10.	Ottapidaram	Thoothukudy	90.00
	Total		1243.30

The Uppodai sub basin is located between the latitude 8^0 00 ' 00 " N and 9^0 10 ' 00 " N and the longitude 77^0 40 ' 00" E and 77^0 55' 00 " E. The command area of this sub basin comes under the Kovilpatti Taluk, Ottapidaram Taluk in Thoothukudy District and part of Palayamkottai Taluk, Sankarankovil Taluk and Part of Tirunelveli Taluk in Tirunelveli District.

1.4.Ayacut Details

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

Sl.No.	Name of Taluk	Name of District	Ayacut in Ha
1	Kovilpatti	Thoothukudy	739.80
2	Ottapidaram	Thoothukudy	33.52
3	Palayamkottai	Tirunelveli	262.03
4	Tirunelveli	Tirunelveli	253.89
5	Sankarankovil	Tirunelveli	900.63
	Total		**2189.87**

Cluster wise Tank details for Uppodai 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	Thoothukudy	Kovilpatti.	Kayathar	Kalangaraipatti New Tank	64.78	Chettikurichi and Rajapudukudy
				Kalangaraipatti Old Tank	52.63	
				Alagappapuram Tank	55.87	
				Kalampatti Tank	62.75	
				Saravanapuram Tank	53.12	
				Avudaiammalpuram Tank	59.92	
				Chithambarampatti Tank	89.88	
				Vadakkuperiakulam Tank	52.63	
				Thirumangalakurichi Tank	103.16	
				Sayarpadaithangi Tank	52.72	
				Ayanaroothu Tank	45.95	
				Rajapudukudy Tank	46.39	
				Total	**739.80**	
2	Thoothukudy & Tirunelveli	Palayamkottai & Tirunelveli & Ottapidaram	Palayamkottai & Tirunelveli & Ottapidaram	Parakkiramapandian kulam	295.55	Parakiramapandian and Savalaperi
				Seevalaperi	253.89	
				Total	**549.44**	
3	Tirunelveli	Sankarankovil	Melaneel-ithanallur	Naduvakurichi	98.34	Sankarankovil
				Melaneelithanallur	83.37	
			Sankarankovil	Ramaneri	43.86	
				Pattakulam	69.08	
				Thaniyuranendhal	47.10	
				Periyakovilankulam	43.83	

				Singakonendhal	50.74	Sankarankovil
				Zamin Elanthaikulam	54.67	
				Total	**309.28**	
4	Tirunelveli	Sankarankovil	Kurivikulam	Maruthankinaru	45.93	Vellappaneri
				Mahendravadi Tank	47.79	
				Avani konendhal	44.06	
				Sayamalai Big Tank	106.34	
				Poolankulam I & II	44.67	
				Vellappaneri	64.99	
				Karisalkulam	55.86	
				Total	**409.64**	
				Grand Total	**2189.87**	

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	379.05	87.00	273.75	466.05	739.80	-	Bund	63000 M^3														
								Rep.Slu	10Nos														
								Rep.weir	5Nos														
								Slu RC	5Nos														
								R.W	550M														
								DSC	34435 M^3														
								Ani Rep	1No														
2	CLUSTER - II	330.52	61.46	157.46	391.98	549.44	-	Bund	113000 M^3														
								Rep.Slu	2Nos														
								Rep.weir	2Nos														
								R.W	565M														
								Slu RC	4Nos														
								Cons Culvert	2Nos														
3	CLUSTER - III	285.88	113.76	91.35	399.64	490.99	-	Bund	94940 M^3														
								SluiceRep	6Nos.														

								SluiceRec	2Nos.																						
								W R	6Nos.																						
4	CLUSTER IV	257.53	74.59	77.52	332.12	409.64	-	Bund	68985 M^3																						
								WR	6Nos																						
								Sluice Rep	9Nos																						

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
	CLUSTER - I																						
1	Kalangaraipatti New Tank	26.32	4.94	33.52	31.26	64.78	-	Bund	30000 m^3														
								Rep.Slu	2Nos														
								W R	1No														
								RW	50M														
								M.Device	2Nos														
2	Kalangaraipatti Old Tank	.0	8.	22	.3	5	30	.2	8	2	.6	2	-	Slu Rep	1No																

								Slu Rec	1No															
								SCRW	10M															
								DSC	8310 M^3															
								Ani Rep	1No															
								M.device	2Nos															
3	Alagappapuram Tank	28.66	4.85	22.36	33.51	55.87	-	WR	2Nos															
4	Kalampatti Tank	44.00	16.39	2.36	60.39	62.75	-	W R	1No															
								Slu Rep	2Nos															
								Slu RC	1No															
								WR	1No															
6	Avudaiammalpuram Tank	20.60	6.80	32.52	27.40	59.92	-	W R	1No															
								RW	330 M															
								Slu.Rep	2Nos															
7	Chithambarampatti Tank	66.00	8.31	15.57	74.31	89.88	-	Slu Rep	2Nos															
								R.W	150 M															
								WR	1No															
								WS	1No															
8	Vadakkuperiakulam	39.25	2.57	10.81	41.82	52.63	-	W R	2Nos															
								Slu RC	3Nos															
								RW	10M															
9	Thirumangalakurichi	.7	.5	29.9	43.2	3.16	-	Slu Rep	1No															

								W R	2Nos															
10	Sayarpadaithangi	23.00	2.17	27.55	25.17	52.72	-	WR	1No															
								Slu.Rep	1No															
								DSC	16500M^3															
11	Ayyanaroothu	22.50	7.13	16.32	29.63	45.95	-	Slu.Rep	1No															
								RW	10M															
12	Rajapudukudy	25.00	5.89	15.50	30.89	46.39	-	Bund	33000M^3															
								Slu Rep	3Nos															
								DSC	9625 M^3															
	Total	**379.05**	**87.00**	**273.75**	**466.05**	**739.80**	-																	

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
	CLUSTER - II																						
1	Parakirapandian Tank	175.55	25.70	94.30	201.25	295.55	-	Bund	50000M^3														
								Slu Rep	1No														
								WR	1No														
								Slu RC	3Nos														
								RW	250 M														
2	Seevalaperi Big Tank	154.97	35.76	63.16	190.73	253.89	-	Bund	63000M^3														
								Slu Rep	1No														
								WR	1No														
								RW	315 M														
								Slu RC	1No														
								Const Culvert	2Nos														
	Total	330.52	61.46	157.46	391.98	549.44	-																

S.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
	CLUESTER III																						
1	Naduva-kurichi	57.22	24.12	17.00	81.34	98.34	-	-	-														
2	Ramaneri	28.12	5.91	9.83	34.03	43.86	-	Bund	26550 M^3														
								SluiceRep	1No.														
								Sluice Rec	1No.														
								W R	1No														
								Steps	1 No														
3	Pattakulam	42.35	15.08	11.65	57.43	69.08	-	RW	80RM														
								WR	1No.														
4	Thanaiyuranendhal	29.43	7.61	10.06	37.04	47.10	-	RW	80 RM														
								SluiceRep	1No.														
								W R	1No.														
5	Periyakovilankulam	27.55	6.85	9.43	34.40	43.83	-	Bund	27750 M^3														
								SluiceR	1No.														

								ep																			
								W R	1No.																		
								RW	40 RM																		
								Steps	1No																		
6	Singakon endhal	31.52	9.69	9.53	41.21	50.74	-	Bund	40640 M^3																		
								SluiceRep	1No.																		
								W R	1No.																		
								RW	40 RM																		
								Steps	1 No																		
7	Melaneeli thanallur	40.23	27.85	15.29	68.08	83.37	-	-	-																		
8	Zamin Elanthai kulam	29.46	16.65	8.56	46.11	54.67	-	RW	40 RM																		
								SluiceRep	1No.																		
								SluiceRec	1No.																		
								W R	1No.																		
	Total	285.88	113.76	91.35	399.64	490.99																					
	CLUSTER IV																										
1	Maruthan kinaru	28.93	8.12	8.88	37.05	45.93	-	Revet	45 RM																		
								SluiceRep	1No.																		
2	Mahendra vadi Tank	29.14	9.42	9.23	38.56	47.79	-	Revet	25 RM																		
								SluiceRep	1No																		
								W R	1No.																		
3	Avani	27.2	8.09	8.75	35.3	44.0	-	RW	40 RM																		

	konendhal	2			1	6		SluiceRep	2Nos.																
								WR	1No																
4	Sayamalai Big Tank	74.11	13.52	18.71	87.63	105.34	-	-	-																
5	Poolankulam I & II	24.83	11.21	8.63	36.04	44.67	-	RW	80 RM																
								SluiceRep	1No.																
6	Vellappaneri	41.44	11.12	12.43	52.56	64.99	-	Bund	47145 M^3																
								SluiceRep	1No.																
								RW	40 RM																
								Steps	1No.																
7	Karisalkulam	31.86	13.11	10.89	44.97	55.86	-	Bund	21840 M^3																
								SluiceRep	1No.																
								W R	1No.																
								Steps	1No																
	TOTAL	257.53	74.59	77.52	332.12	409.64																			
	GRAND TOTAL	543.41	188.35	168.87	731.76	900.63																			

1.2 HYDROLOGY

UPPODAI SUB BASIN

2.0. Hydrology:

2.1 CATCHMENT AREA :

The catchment area of this Sub Basin is 1243.30 SqKm. This Sub Basin receives rain fall from North – East monsoon . During summer, the rain fall received is more or less equal to that of South – West monsoon. There are 29 non – system tanks under the control of WRO, PWD with a total registered ayacut of 2189.87 Ha.

2.2 HYDROMETROLOGY:

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

1.2.3 RAIN FALL:

There are four influencing rain fall station in this Sub Basin namely Kalugumalai, Kovilpatti, Kayathar and Sankarankovil. The mean arial annual rainfall of this sub basin is 826.50 mm. The South -West monsoon rainfall is 169.84 mm and that of North- East monsoon rainfall is 465.83 mm. Remaining 190.83 mm of rainfall is in winter and summer seasons.

1.2.4 CLIMATE:

The annual temperature varies from 24.07^0C to 33.83^0C . The average mean temperature is 28.95^0C.

RELATIVE HUMIDITY:

The average relative humidity is 77.73%.

WIND SPEED:

The average wind speed is 14.19 Km / hour. Increase in wind speed occurs during the cyclone which occurs mostly in November.

SUN SHINE:

The average sun shine hours is 7.44 hours per day.

1.2.5: 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 .

1.2.6 LAND HOLDINGS:

More than 94.15% of the land holdings are below 1 Ha followed by 4.99 % of land holding with 1 to 2 Ha size medium farmers having 2 to 5 ha are 0.84 % and big farmers contributes to 0.02 % only. The total Nos of land holdings is 4068.

Category	Size of Holdings	Numbers	% to total

Marginal	Below 1.00 ha	5830	94.15
Small	1.00 – 2.00 ha	950	4.99
Medium	2.00 – 5.00 ha	140	0.84
Big	5.00 ha & above	5	0.02
	TOTAL	6925	100

1.2.7.DEMOGRAPHY:

There are Ten blocks lying in this Sub Basin. They are Kayathar, Kovilpatti and Ottapidaram blocks in Thoothkudy District and Palayamkottai, Tirunelveli, Vasudevanallur, Sankarankovil, Melaneelithanallur, Kurivikulam, Mannur blocks in Tirunelveli 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		
			2004	2010	2025
Uppodai Sub Basin	10	29	4.35 Lakhs	6.50 Lakhs	15.00 Lakhs

1.2.8 WATER POTENTIAL:

Surface Water Potential : 149.68 M Cum
Ground Water Potential : 67.35 M Cum
Total : 217.03 M Cum

CROPPING PATTERN

Name of the sub Basin : **Uppodai**

Nodal District : Tirunelveli

Registered Ayacut Area 2189.87 Ha.

Fully Irrigated	1537.07	Ha
Partially Irrigated	215.52	Ha
Gap	437.28	Ha
Total Ayacut Area	**2189.87**	Ha

S. No.	Crop	Without Project				With Project				Increas-ing
		FI	PI	RF/G	TOTAL	FI	PI	RF/G	TOTAL	
I	**Perennial crop**									
	Coconut	28.00	0	0	**28.00**	28.00	0	0	28.00	**0.00**
	Jasmine	41.00	0	0	**41.00**	41.00	0	0	41.00	**0.00**
	Amla	7.00	0	0	**7.00**	7.00	0	0	7.00	**0.00**
	Guava	2.00	0	0	**2.00**	2.00	0	0	2.00	**0.00**
	Cashew	5.00	0	0	**5.00**	5.00	0	0	5.00	**0.00**
	Sub Total	**83.00**	**0.00**	**0.00**	**83.00**	**83.00**	**0.00**	**0.00**	**83.00**	**0.00**
II	**Annual crop**									
	Banana	79.50	0	0	**79.50**	181.50	0	0	181.50	**102.00**
	Sugarcane	15.00	0	0	**15.00**	15.00	0	0	15.00	**0.00**
	Sub Total	**94.50**	**0.00**	**0.00**	**94.50**	**196.50**	**0.00**	**0.00**	**196.50**	**102.00**
III	**1st crop**									
1. a	Paddy	1319.49	0	0	**1319.49**	0	0	0	0.00	**-1319.49**
b	Paddy - SRI	0	0	0	**0.00**	1190.00	0	0	1190.00	**1190.00**
2	Cotton	27.00	25.00	0	**52.00**	32.00	0	0	32.00	**-20.00**
3	Maize	11.00	92.52	0	**103.52**	282.05	0	0	282.05	**178.53**
4	Cumbu	0	0	0	**0.00**	0	0	0	0.00	**0.00**
5	Gingelly	0	0	0	**0.00**	0	0	0	0.00	**0.00**
6	Pulses	0	63.00	0	**63.00**	167.02	0	0	167.02	**104.02**
7	Sunflower	0	32.00	0	**32.00**	65.00	0	0	65.00	**33.00**
8	Chillie	1.00	3.00	0	**4.00**	21.30	0	0	21.30	**17.30**
9	Brinjal	0	0	0	**0.00**	40.50	0	0	40.50	**40.50**
10	Bhendi	1.05	0	0	**1.05**	27.00	0	0	27.00	**25.95**
11	Gourds	0.03	0	0	**0.03**	5.00	0	0	5.00	**4.97**
12	Tomato	0	0	0	**0.00**	30.00	0	0	30.00	**30.00**
13	Fodder Cholam	0	0	0	**0.00**	30.00	0	0	30.00	**30.00**
14	Prosophis	0	0	20.50	**20.50**	0	0	20.50	20.50	**0.00**
15	Fallows	0	0	416.78	**416.78**	0	0	0	0.00	**-416.78**
	Sub Total	**1359.57**	**215.52**	**437.28**	**2012.37**	**1889.87**	**0.00**	**20.50**	**1910.37**	**-102.00**
	Grand Total (I+II+III)	**1537.07**	**215.52**	**437.28**	**2189.87**	**2169.37**	**0.00**	**20.50**	**2189.87**	**0.00**
IV	**2 nd Crop**									
1	Cholam	60.00	15.00	0	**75.00**	100.00	0	0	100.00	**25.00**
2	Maize	0	65.00	0	**65.00**	165.00	0	0	165.00	**100.00**
3	Cumbu	45.00	11.00	0	**56.00**	70.00	0	0	70.00	**14.00**
4	Cotton	42.00	0	0	**42.00**	42.00	0	0	42.00	**0.00**
5	Pulses	0.00	66.00	0	**66.00**	180.00	0	0	180.00	**114.00**
6	Groundnut	52.00	0	0	**52.00**	52.00	0	0	52.00	**0.00**
7	Sunflower	0.00	15.00	0	**15.00**	85.00	0	0	85.00	**70.00**
8	Gingelly	14.00	0	0	**14.00**	15.00	0	0	15.00	**1.00**
9	Tomato	10.00	0	0	**10.00**	13.00	0	0	13.00	**3.00**
10	Bhendi	12.00	4.00	0	**16.00**	25.00	0	0	25.00	**9.00**
11	Chillie	12.00	3.00	0	**15.00**	30.00	0	0	30.00	**15.00**
12	Fodder	0	27.00	0	**27.00**	27.00	0	0	27.00	**0.00**
	Sub Total	**247.00**	**206.00**	**0.00**	**453.00**	**804.00**	**0.00**	**0.00**	**804.00**	**351.00**
V	**3 rd Crop**									
	Total									
	Great Grand Total	**1784.07**	**421.52**	**437.28**	**2642.87**	**2973.37**	**0.00**	**20.50**	**2993.87**	**351.00**
	Cropping Intensity				**100.72%**				**135.78%**	

BLOCK WISE AYACUT DETAILS FOR UPPODAI SUB BASIN

Sl.No	Name of Block	Ayacut	Without Project					With Project		
			F I	P I	Gap	WOP	Total	F I	Gap	Total
1.	Kovilpatti	739.80	379.05	87.00	273.75	466.05	739.80	739.80	-	739.80
2.	Palayamkottai	295.55	175.55	25.70	94.30	201.25	295.55	295.55	-	295.55
3.	Tirunelveli	253.89	154.97	35.76	63.16	190.73	253.89	253.89	-	253.89
4.	Melaneelitha nallur	181.71	97.45	51.97	32.29	149.42	181.71	181.71	-	181.71
5.	Sankarankovil	309.28	188.43	61.79	59.06	250.22	309.28	309.28	-	309.28
6.	Kuruvikulam	409.64	257.53	74.59	77.52	332.12	409.64	409.64	-	409.64
	Total	**2189.87**	**1252.98**	**336.81**	**600.08**	**1589.79**	**2189.87**	**2189.87**	**-**	**2189.87**

Uppodai Sub Basin – Thambaraparani Basin

Water Potential

Surface Water Potential	-	149.68	Mcm
Ground Water Potential	-	67.35	Mcm
Total	**-**	**217.03**	**Mcm**

Water Demand

1)	Domestic	-	4.83	Mcm
2)	Irrigation			
	Surface Water	-	51.99	Mcm
	Ground Water	-	2.75	Mcm
3)	Industries	-	4.67	Mcm
4)	Livestock	-	1.59	Mcm
	Total	**-**	**65.84**	**Mcm**

Water Balance without Project

Surface Water	-	96.10	Mcm
Ground Water	-	55.10	Mcm

CROP WATER REQUIREMENT WITHOUT PROJECT

UPPODAI SUB BASIN - THOOTHUKUDY DISTRICT

Crops	Field Water Requirement			Irrigation water requirement at source n=0.53
	Extent in Ha	MM	Mcm	
1. Perennial Crop				
Coconut	3.00	1547.00	0.046	0.088
Sapotta	4.00	1149.00	0.00	0.087
Mango	4.00	1149.00	0.00	0.087
Total	11.00			0.261
2. Annual Crop				
Sugarcane (SFI)	7.00	1547.00	0.108	0.204
Banana	10.00	1312.00	0.131	0.248
Turmeric	5.00	459.00	0.023	0.043
Green Fodder	2.00	243.00	0.005	0.009
Total	24.00			0.504
3. First Crop				
Paddy	267.00	1140.00	3.716	5.743
Ground nut	24.00	144.00	0.056	0.065
Black gram	45.00	254.00	0.114	0.216
Onion	8.00	371.00	0.037	0.056
Sunflower	22.00	202.00	0.065	0.084
Chilly	19.00	993.00	0.179	0.356
Vegetables	15.00	459.00	0.060	0.130
Maize	10.00	243.00	0.032	0.046
Fodder cholam	21.05	243.00	0.060	0.097
Total	431.05			6.792
Gap area	273.75			
Total	739.80			
4. Second Crop				
Paddy	5.00			
Black gram	208.00	143.00	0.233	0.561
Onion	4.00	371.00	0.026	0.028
Brinjal	8.00	590.00	0.047	0.089
Chilly	17.00	935.00	0.103	0.300
Vegetables	20.00	595.00	0.119	0.225
Total	**262.00**			**1.203**
Grand Total	**1001.80**			**8.760**

Total requirement of water without Project - =8.760 Mcm (for WRO Tanks

Total requirement of water without Project under Panchayat Union Tanks =8.760/739.80x2168.35 =25.68Mcm.

CROP WATER REQUIREMENT WITHOUT PROJECT
UPPODAI SUB BASIN - TIRUNELVELI DISTRICT

Crops		Field Water Requirement		Irrigation water requirement at source n=0.53
	Extent in Ha	MM	Mcm	
1. Perennial Crop				
Coconut	25.00	1547.00	0.046	0.730
Sapotta	4.00	1149.00	0.00	0.087
Mango	30.00	1149.00	0.00	0.650
Total	59.00			1.467
2. Annual Crop				
Sugarcane (SFI)	10.00	1547.00	0.108	0.292
Banana	10.00	1312.00	0.131	0.248
Turmeric	40.00	459.00	0.023	0.346
Green Fodder	30.00	243.00	0.005	0.138
Total	90.00			1.023
3. First Crop				
Paddy	717.00	1140.00	3.716	15.422
Ground nut	75.00	144.00	0.056	0.204
Black gram	25.81	254.00	0.114	0.124
Onion	13.00	371.00	0.037	0.091
Sunflower	7.00	202.00	0.065	0.027
Chilly	24.00	993.00	0.179	0.450
Vegetables	90.00	459.00	0.060	0.779
Maize	12.00	243.00	0.032	0.055
Fodder cholam	10.93	243.00	0.060	0.050
Total	974.74			17.202
Gap area	326.33			
Total	1450.07			
4. Second Crop				
Paddy	315.00			
Black gram	62.00	143.00	0.233	0.167
Onion	20.00	371.00	0.026	0.140
Brinjal	8.00	590.00	0.047	0.089
Chilly	35.00	935.00	0.103	0.617
Vegetables	85.00	595.00	0.119	0.954
Total	525.00			1.968
Grand Total	1975.07			21.660

Total requirement of water without Project - =21.660 Mcm (for WRO Tanks)

Total requirement of water without Project under Panchayat Union Tanks - 21660/1450.07x1544.26 =23.07Mcm.

CROP WATER REQUIREMENT WITHOUT PROJECT - ABSTRACT

UPPODAI SUB BASIN

Crops	Field Water Requirement			Irrigation water requirement at source n=0.53
	Extent in Ha	MM	Mcm	
1. Perennial Crop				
Coconut	28	1547	0.433	0.817
Sapotta	8	1149	0.092	0.173
Mango	34	1149	0.391	0.737
Total	70			1.728
2. Annual Crop				
Sugarcane (SFI)	17	1547	0.263	0.496
Banana	20	1312	0.262	0.495
Turmeric	45	459	0.207	0.390
Green Fodder	32	243	0.078	0.147
Total	114			1.528
3. First Crop				
Paddy	984	1140	11.218	21.165
Ground nut	99	144	0.143	0.269
Black gram	70.81	254	0.180	0.339
Onion	21	371	0.078	0.147
Sunflower	29	202	0.059	0.111
Chilly	43	993	0.427	0.806
Vegetables	105	459	0.482	0.909
Maize	22	243	0.053	0.101
Fodder cholam	31.98	243	0.078	0.147
Total	1405.79			23.994
Gap area	600.08			
Total	2189.87			27.249
4. Second Crop				
Paddy	320			
Black gram	270	143	0.386	0.728
Onion	24	371	0.089	0.168
Brinjal	16	590	0.094	0.178
Chilly	52	935	0.486	0.917
Vegetables	105	595	0.625	1.179
Total	**787**			**3.171**
Grand Total	**2976.87**			**30.420**

Total requirement of water without Project - =30.42 Mcm (for WRO Tanks)

Total requirement of water without Project under Panchayat Union Tanks - 30.42/2189.87x3712.61 =48.75Mcm.

Irrigation Water Demand

WATER DEMAND (without project)

a). Irrigation Demand (for WRO Tanks Ayacut)	30.420	Mcum
Irrigation Demand (for Panchayat Union Tanks)	48.750	Mcum
b). Domestic Demand	4.83	Mcum
c). Live stock Demand	1.59	Mcum
d). Industrial Demand	4.671	Mcum
Total Water Demand	90.261	Mcum

WATER POTENTIAL AVAILABLE (without project)

Surface Water Potential	149.68	Mcum
Ground Water Potential	67.35	Mcum
Total Water Potential	217.03	Mcum

Water Balance

Surplus 217.03 – 90.261 =126.76Mcum

CROP WATER REQUIREMENT WITH PROJECT

UPPODAI SUB BASIN - THOOTHUKUDY DISTRICT

Crops		Field Water Requirement		Irrigation water requirement at source n=0.53
	Extent in Ha	MM	Mcm	
1. Perennial Crop				
Coconut	4.00	1547.00	0.062	0.117
Sapotta	8.00	1149.00	0.092	0.173
Mango	10.00	1149.00	0.115	0.217
Total	22.00			0.507
2. Annual Crop				
Sugarcane (SFI)	12.00	1547.00	0.186	0.350
Banana	52.00	1312.00	0.682	1.287
Turmeric	13.00	459.00	0.060	0.113
Green Fodder	7.00	243.00	0.017	0.032
Total	84.00			1.782
3. First Crop				
Paddy	300.00	1140.00	5.358	6.382
Ground nut	40.00	144.00	0.082	0.109
Black gram	65.00	254.00	0.198	0.312
Onion	20.00	371.00	0.063	0.140
Sunflower	53.00	202.00	0.166	0.202
Chilly	40.00	993.00	0.377	0.749
Vegetables	35.00	459.00	0.151	0.303
Maize	40.00	243.00	0.090	0.183
Fodder cholam	40.80	243.00	0.028	0.187
Total	633.80			8.567
Gap area				
Total	739.80			
4. Second Crop				
Paddy	5.00			
Black gram	210.00	143.00	0.036	0.567
Onion	10.00	371.00	0.019	0.070
Brinjal	10.00	590.00	0.047	0.111
Chilly	30.00	935.00	0.159	0.529
Vegetables	40.00	595.00	0.119	0.449
Total	305.00			1.726
Grand Total	**1044.80**			**12.582**

Total requirement of water with Project - =12.582 Mcm (for WRO Tanks)

Total requirement of water with Project under Panchayat Union Tanks - 12.582/839.80x2168.35 =32.486Mcm.

CROP WATER REQUIREMENT WITH PROJECT
UPPODAI SUB BASIN - TIRUNELVELI DISTRICT

Crops		Field Water Requirement		Irrigation water requirement at source n=0.53
	Extent in Ha	MM	Mcm	
1. Perennial Crop				
Coconut	50.00	1547.00	0.062	1.459
Sapotta	7.00	1149.00	0.092	0.152
Mango	60.00	1149.00	0.115	1.301
Total	117.00			2.912
2. Annual Crop				
Sugarcane (SFI)	12.00	1547.00	0.186	0.350
Banana	22.00	1312.00	0.682	0.545
Turmeric	45.00	459.00	0.060	0.390
Green Fodder	37.00	243.00	0.017	0.170
Total	116.00			1.454
3. First Crop				
Paddy	1100.00	1140.00	5.358	23.660
Ground nut	125.00	144.00	0.082	0.340
Black gram	31.00	254.00	0.198	0.149
Onion	18.00	371.00	0.063	0.126
Sunflower	15.00	202.00	0.166	0.057
Chilly	40.00	993.00	0.377	0.749
Vegetables	115.00	459.00	0.151	0.996
Maize	20.00	243.00	0.090	0.092
Fodder cholam	20.00	243.00	0.028	0.092
Total	1484.00			26.261
Gap area	0.00			
Total	1717.00			
4. Second Crop				
Paddy	320.00			
Black gram	75.00	143.00	0.036	0.202
Onion	30.00	371.00	0.019	0.210
Brinjal	20.00	590.00	0.047	0.223
Chilly	45.00	935.00	0.159	0.794
Vegetables	100.00	595.00	0.119	1.123
Total	590.00			2.552
Grand Total	2307.00			33.178

Total requirement of water with Project - =33.178 Mcm (for WRO Tanks)

Total requirement of water with Project under Panchayat Union Tanks - 33.178/1717x1544.26 =29.84Mcm.

CROP WATER REQUIREMENT WITH PROJECT-ABSTRACT

UPPODAI SUB BASIN - THOOTHUKUDY DISTRICT

Crops	Extent in Ha	Field Water Requirement		Irrigation water requirement at source n=0.53
		MM	Mcm	
1. Perennial Crop				
Coconut	54	1547	0.835	1.576
Sapotta	15	1149	0.172	0.325
Mango	70	1149	0.804	1.518
Total	**139**			**3.419**
2. Annual Crop				
Sugarcane (SFI)	24	1547	0.371	0.701
Banana	74	1312	0.971	1.832
Turmeric	58	459	0.266	0.502
Green Fodder	44	243	0.107	0.202
Total	**200**			**3.236**
3. First Crop				
Paddy	1400	1140	15.960	30.113
Ground nut	165	144	0.238	0.448
Black gram	96	254	0.244	0.460
Onion	38	371	0.141	0.266
Sunflower	68	202	0.137	0.259
Chilly	80	993	0.794	1.499
Vegetables	150	459	0.689	1.299
Maize	60	243	0.146	0.275
Fodder cholam	60.8	243	0.148	0.279
Total	**2117.8**			**34.899**
Gap area				
Total	**2456.8**			
4. Second Crop				
Paddy	325			
Black gram	285	143	0.408	0.769
Onion	40	371	0.148	0.280
Brinjal	30	590	0.177	0.334
Chilly	75	935	0.701	1.323
Vegetables	140	595	0.833	1.572
Total	895			**4.278**
Grand Total	**3351.8**			**45.760**

Total requirement of water with Project - =45.760 Mcm (for WRO Tanks)

Total requirement of water with Project under Panchayat Union Tanks - 45.760/2189.8x3712.61 =66.718Mcm.

Irrigation Water Demand

WATER DEMAND (with project)

a). Irrigation Demand (for WRO Tanks Ayacut)	45.760	Mcum
Irrigation Demand (for Panchayat Union Tanks)	66.718	Mcum
b). Domestic Demand	4.83	Mcum
c). Live stock Demand	1.59	Mcum
d). Industrial Demand	4.671	Mcum
Total Water Demand	123.569	Mcum

WATER POTENTIAL AVAILABLE (with project)

Surface Water Potential	149.68	Mcum
Ground Water Potential	67.35	Mcum
Total Water Potential	217.03	Mcum

Water Balance

Surplus = 217.03 - 123.569=93.461Mcum

1.3 HYDRAULICS OF THE COMPONENTS

HYDRAULIC PARTICULARS

a) ANICUT

Sl.No	Name of Anicut	Village	Ayacut (Ha)	Length of Anicut(M)	Crest level of Anicut (M)	Front (M)	Free Sq.km	Combined Sq.km	Maximum flood discharge Cusecs	Head sluice Location	Vent(M)	Sill Level sluice (M)	Discharge cumecs	Supply Channel					Remarks
														Length (m)	Bed width (M)	FSD (M)	Bed slope	Sluice	
1.	Kalangara-ipatti	Venkatachalapuram	-	33.39	32.500	32.07	0.175	0.175	1359C/s	L/S	1.25 x 0.55 – 1No	32.00	0.32	2770	3.05	0.30	1 in 2700		
2.	Akilandap-uram	Akilandapuram	-	63.93	65.03	63.93	0.77	0.80	76.72C/s	Open off take	-	-	4.02	2750	6.00	0.60	1 in 2000		
3.	Appasamy	Rajapudu-kudy	-	197.35	-	-	0.28	0.35	394.70C/s	Open off take	-	-	11.18	2760	6.00	0.60	1 in 2200		

b) TANKS (Separate statement for Non System Tanks)

NON SYSTEM TANKS

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.	Thoothukudy	Kovilpatti	Kalangarai patti New Tank	64.78	1.07	0.546	17.97	11.97	0.88	29.000	29.600	2	1	60.00	69.50	2000	-	Kalangarai patti Anicut	Saravanapuram
2.			Kalangarai patti Old Tank	52.63	1.68	0.50	7.59	7.59	0.63	108.260	108.560	3	1	13.40	73.63	1560	2770	Kalangarai patti Anicut	Saravanapuram
3.			Alagappa puram Tank	55.87	1.03	1.90	13.25	13.25	1.15	101.590	102.190	2	2	56.00	105.28	1950	3000	-	Saravanapuram
4.			Kalampatti Tank	62.75	0.40	2	13.25	13.25	0.85	94.305	94.755	2	1	27.50	47.98	2360	4000	-	Avudaiammal puram
5.			Saravana puram Tank	53.12	0.88	2	6.98	51.19	0.81	45.500	46.100	2	1	95.00	263.98	1600	-	Alagappa puram	Chidambaram patti

6.			Avudai ammalpuram Tank	59.92	0.99	2	12.13	31.54	1.18	101.600	102.200	2	1	73.00	194.20	1350	-	Kalampatti	Uppodai
7.			Chitham barampatti Tank	89.88	1.48	2	29.79	98.85	0.57	98.900	99.500	2	1	103.60	309.10	1920	-	Saravana puram	Uppodai
8.			Vadakku periakulam Tank	52.63	1.47	1.59	5.59	109.27	1.07	99.815	100.265	3	2	25.25	691.60	2410	3000	-	Uppodai
9.			Thirumangalakurichi Tank	103.16	2.55	2.49	11.417	183.50	2.75	92.815	93.265	2	4	57.70	978.92	4140	-	-	Uppodai
10.			Sayarpadaithangi Tank	52.72	1.40	1.20	1.75	1.75	1.02	62.730	63.030	3	2	39.55	246.20	1850	2750	Akilanda puram Anicut	Uppodai
11.			Ayanaroothu Tank	45.95	0.76	2.70	10.47	12.74	1.11	24.800	25.400	2	1	44.00	115.83	1040	3000	-	Uppodai
12.			Rajapudukudy Tank	46.39	1.23	2.00	3.60	10.63	1.34	51.495	57.795	4	2	73.00	167.60	2250	-	Appasamy Anicut	Parakkirama pandiankulam
13.			Parakkiramapandiakulam	295.55		0.82	699.03	699.03	8.58	43.600	44.200	5	3	407.50	15941	4600	3000	Rajapudukudy	Seevalaperi Big Tank

14.			Seevalaperi Big Tank	253.89		0.59	58.30	58.30	9.36	100.000	100.750	3	1	190.00	3290	3600	-	Parakkiramapandiankulam	Chittar
15			Ramaneri	43.86	13.72	1.32	4.361	17.705	0.442	151.300	151.600	3	1	7.56	5.20	1750	-	Attkondarkulam	Thaniyuranthal
16			Naduvakurichi	98.34	40.50	1.00	7.696	41.493	0.847	160.080	160.680	3	-	-	-	2900	-		-
17			Pattakulam	69.08	36.99	0.77	4.433	67.344	0.591	146.695	146.995	4	1	10.80	2.843	2896	-	Maruthankinaru	Thaniyuranthal
18			Thaniyuranenthal	47.10	31.23	0.62	5.382	29.097	0.308	162.730	163.030	3	I II III	14.50 9.00 43.30	44.38	2500	-	Pattakulam	-
19			Periyakovilankulam	43.83	17.10	1.06	4.661	8.615	0.315	152.105	152.405	1	1	59.60	30.31	1830	-		
20			Singakonenthal	50.74	29.71	0.70	4.880	24.460	0.308	136.390	136.690	2	1	4.90	54.64	2680	-		
21			Mela Neelithanallur	83.37	43.20	0.79	5.701	96.308	0.987	125.905	126.205	3	-	-	-	2270	-		
22			Zamin Elanthaikulam	54.67	20.51	1.10	2.230	18.730	-	30.000	30.600	3	I II	17.70 9.80	-	3650	-		

23			Maruthan kinaru	45.93	22.46	0.84	5.362	14.982	0.569	118.780	119.080	2	1	56.75	15.49	1500	-	Sankiliyatthan kulam	Pattakulam
24			Mahendra vadi	47.79	18.53	1.06	4.208	126.037	0.782	120.115	120.715	2	1	13.50	23.28	2990	-		
25			Avani konenthal	44.06	13.25	1.37	2.008	30.754	0.472	122.505	132.835	3	1	20.70	35.08	2300	-	Chetti kulam	Kallathi kulam
26			Sayamalai big tank	106.34	37.14	1.18	25.440	198.180	1.381	109.510	110.410	3	-	-	-	5160	-	Karantha neri	Mahendra vadi
27			Poolan kulam I & II	44.67	8.12	2.26	-	-	-	100.000	103.600	2	1	7.25	2.80	2670	-		Vellappaneri
28			Vellappa neri	64.99	51.20	0.52	3.802	17.044	1.705	104.460	104.760	2	1	12.20	3.166	3510	-	Poolan kulam	Karisal kulam
29			Karisal kulam	55.86	25.10	0.92	-	-	-	100.000	100.600	1	1	27.00	3.726	1440	-	Vellapa neri	

C) SUPPLY CHANNELS HAVING DIRECT AYACUT

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) in UPPODAI Sub basin

1. **The Sub-Basin :** This is one of the sub-basins of the Tamirabarani River Basin. Totally 29 irrigation tanks are under the control of Water Resources Organisation (WRO) of Public Works Department (PWD) in this sub-basin. The list of Tanks covered with more details are furnished in the Annexure-1. These 29 tanks are located within the sub-basin's hydraulic boundary spread over 29 villages of Kovilpatti Taluk, Ottapidaram Taluk in Thoothukudy District and Palayamkottai, Sankarankovil and Tirunelveli Taluks in Tirunelveli District. The total Command area under these 29 tanks works out to 2189.87 Ha. (Annexure 1)

2. **Command Area :**

i) Under system tanks	:	Nil
ii) Under Non-system tanks (29 tanks)	:	2189.87 Ha
Total (29 Tanks)		**2189.87 Ha**

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

i)	Associations already formed under WRCP	4 (541.94Ha)
ii)	Associations proposed to be formed under IAMWARM Project covering 25 tanks	18 Nos. (1647.93 Ha)
iii)	The total command area covered	2189.87 Ha

4. **An account of "Awareness creation" among the farming community:**

Activities undertaken and "Walkthrough Surveys" carried out:

i) There are 29 tanks in the sub-basin spread over 29 villages, as detailed out in Annexure – 01. All these villages were visited by the WRO 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 WRO 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 July – 09)

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

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

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

7. Support Organisations (SOs) :

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

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

iii) Selection and deployment of Support Organisation to the sub-basin (End of August 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 "WRO Section officer wise" distribution as indicated below.

Name of the WRO Sub Divisional Officers working in the UPPODAI Sub Basin

Thoothukudy District.

Er.N.SELVARAJ.M.E.
Assistant Executive Engineer, WRO., PWD.,
Korampallam Aru Basin Sub-Division, Kovilpatti.

Tirunelveli District

1). Er.S.KAMARAJ.B.E.
Assistant Executive Engineer, WRO., PWD.,

Nambiyar Basin Sub Division, Nanguneri.

2).Er.S.K.SUBRAMANIAN.B.E.
Assistant Executive Engineer, WRO, PWD,
Chithar Basin Sub Division, Tenkasi.

List of Competent Authorities :

a.	Section Officer, WRO, Irrigation Section, Kovilpatti.	WUAs 1 to 7
b.	Section Officer, WRO, Irrigation Section, Ettayapuram	WUAs 8 to 12
C.	Section Officer, WRO, Irrigation Section, Palayamkottai	WUA – 13 & WUA –TNV 148
d.	Section Officer, WRO, Chittar Basin Section, Kadayanallur.	WUA – 14 to 18 & TNV 149,150,151

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 234 Nos of farmers from 29 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 modernisation finalized on 24.04.2009.

ii) During the meeting, the farmers present 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 WRO, as well as the Executive Engineer of WRO, who has been designated as the Nodal Officer for the sub-basin concerned.

iii) The field officers of WRO 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 WRO 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 (8 numbers out of 29 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 'Uppodai 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, TNFMS 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 – 01

AN ASSESSMENT OF COMMAND AREA AND WUAs UNDER THE CONTROL OF WRO OF PWD IN UPPODAI SUB BASIN

WUA 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	To be formed under IAMWARM
WUA-1	Kalangaraipatti New Tank	64.78	Kalangaraipatti	Kovilpatti	Thoothukudy	-	64.78	-	Yes
WUA-2	Kalangaraipatti Old Tank	52.63	Kalangaraipatti	Kovilpatti	Thoothukudy	-	52.63	-	Yes
WUA-3	Alagappapuram Tank	55.87	Alagappapuram	Kovilpatti	Thoothukudy	-	55.87	-	Yes
WUA-4	Kalampatti Tank	62.75	Kalampatti	Kovilpatti	Thoothukudy	-	62.75	-	Yes
WUA-5	Saravanapuram Tank	53.12	Saravanapuram	Kovilpatti	Thoothukudy	-	53.12	-	Yes
WUA-6	Avudaiammalpuram Tank	59.92	Avudaiammalpuram	Kovilpatti	Thoothukudy	-	59.92	-	Yes
WUA-7	Chidambarampatti Tank	89.88	Chidambarampatti Chettikurichi	Kovilpatti	Thoothukudy	-	89.88	-	Yes
WUA-8	Chettikurichi Tank	52.63	Chettikurichi	Kovilpatti	Thoothukudy	-	52.63	-	Yes
WUA-9	Thirumangalakurichi Tank	103.16	Thirumangalakurichi	Kovilpatti	Thoothukudy	-	103.16	-	Yes
WUA-10	Sayarpadaithangi Tank	52.72	Sayarpadaithangi	Kovilpatti	Thoothukudy	-	52.72	-	Yes
WUA-11	Ayyanaroothu Tank	45.95	Ayyanaroothu	Kovilpatti	Thoothukudy	-	45.95	-	Yes

WUA-12	Rajapudukudy Tank	46.39	Rajapudukudy	Kovilpatti	Thoothukudy	-	46.39	-	Yes
WUA-148	Parakkiramapandian kulam Tank	295.55	Gangaikondan	Tirunelveli	Tirunelveli		295.55	WUA No148	-
WUA-13	Seevalaperi Big Tank	253.89	Seevalaperi	Palayam kottai			253.89	-	Yes
TNV 150	Naduvakurichi Tank	98.34	Naduvakurichi	Sankarankovil		NABARD	NIL	TNV 150	-
TNV 149	Mela Neelithanallur Tank	83.37	Mela Neelithanallur			NABARD	NIL	TNV 149	-
TNV 151	Sayamalai big Tank	106.34	Sayamalai			NABARD	NIL	TNV 151	-
WUA-14	Vellappaneri, Karisalkulam, Poolankulam WUA	165.52	Vellappaneri, Karisal kulam			NIL	NIL	-	Yes
WUA-15	Mahendravadi, Maruthankinaru, Avanikonenthal WUA	137.78	Maruthankinaru, Mahendravadi, Palamkottai			NIL	NIL	-	Yes
WUA-16	Periyakovilan kulam WUA	43.63	Periyakovilan kulam			NIL	NIL	-	Yes
WUA-17	Pattakulam, Ramaneri, Thaniyuranenthal WUA	160.04	Sankarankovil, South Sankaran kovil			NIL	NIL	-	Yes
WUA-18	Zamin Elanthai kulam, Singakonenthal WUA	105.41	Ko- Maruthappa puram, Zamin Elanthai kulam			NIL	NIL	-	Yes
	Total	2189.87							

ABSTRACT

1.	Command Area already covered under WRCP and other Project / Schemes.	541.94 Ha.
2.	Command Area proposed to be covered under IAMWARM Project	1647.93 Ha.
3.	Total Command Area controlled by WRO of PWD in the Sub Basin.	2189.87 Ha.
4.	Total No.of WUAs already formed under WRCP	4 Nos.
5.	Total No.of WUAs proposed to be formed under IAMWARM	18 Nos.
6.	Total No.of WUAs that will cover the entire Sub Basin	22 Nos.

ANNEXURE – 02

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) (Prepared the list of farmers with acknowledgement separately and attach)	Walk – Through survey (No.of farmers participated) (Prepared the list of farmers with acknowledgement separately and attach)	Remarks
1	29.9.08	Kalangaraipatti New Tank. Kalangaraipatti Old Tank.	16	16	
2	29.9.08	Alagappapuram	9	9	
3	29.9.08	Rajapudukudy, Kayathar	28	28	
4	10.12.08	Kalampatti	6	6	
5	10.12.08	Chidambarampatti	3	3	
6	10.12.08	Chettikurichi	2	2	
7	10.12.08	Thirumangalakurichi	10	10	
8	10.12.08	Ayyanaroothu	6	6	
9	11.12.08	Avudaiammalpuram	2	2	
10	11.11.08	Saravanapuram	3	3	
11	12.11.08	Parakiramapandiankulam Seevalaperi	23 20	23 20	
12	21.4.2009	South Sankarankovil	14	5	
13	21.4.2009	Sankarankovil	12	4	
14	21.4.2009	Periya kovilankulam	18	5	
15	22.4.2009	Ko Maruthappapuram	16	6	
16	22.4.2009	Zamin Elanthai kulam	12	4	
17	23.4.2009	Maruthan kinaru	15	3	
18	23.4.2009	Mahendravadi	10	5	
19	23.4.2009	Palamkottai	12	4	
20	24.4.2009	Vellappaneri	30	7	
21	24.4.2009	Karisal kulam	12	4	

ANNEXURE – 03

Details of Modernisation works as suggested by the Farmers and as finalised by the officials of WRO

Sl.No.	Date of Visit	Names of the Villages visited	Outcome of walk through survey and discussions with farmers	
			Works suggested by Farmers	Works finalised by WRO Officials
1	29.09.08	Kalangaraipatti New Tank	Bund strengthening Plug & Plug Rod to sluices. Skin wall to surplus weir Lining of field channel Flood Protection wall	Bund strengthening Plug & Plug Rod to sluices. Repairs to sluice 1 & 2. Skin wall to surplus weir Flood Protection wall for a length of 50M.
2	29.09.08	Kalangaraipatti Old Tank	Sluice Repair Plug & Plug Rod to sluices. Weir Repair Desilting of the supply channel Field Channel for Sluices. Desilting the tank	Reconstruction of Sluice No.3 and Repairs to Sluice No.1 & 2. Plug & Plug Rod to sluices. Desilting of the supply channel from Anicut.
3	29.09.08	Alagappapuram Tank	Desilting of Supply Channel Desilting of Tank Repairs to Down stream Apron in Surplus Weir No.2.	Repairs to Down stream Apron in Surplus Weir No.2.
4	10.12.08.	Kalampatti Tank	Desilting the tank. Shutters to Sluices Shutters to Surplus weir. Desilting of	Plug & Plug Rod to Slucies 1 & 2. S.G.Shutters to surplus weir.

			Supply Channel Field channel for sluices.	
5	11.12.08.	Saravanapuram Tank	Bund strengthening Sluice Repair Weir repair Lining of field channel Desilting of Tank Approach Road to Tank	Reconstruction of Slucie No. 2. Reconstruction of U/s Cutoff wall and D/s Apron and S.G.Shutters to Sand went.
6	11.12.08	Avudaiammalpuram Tank	Bund strengthening Shutters to Sluices. Shutters to weir. Revetment to bund in between Sluice No.1 and surplus weir. Field Channel Desilting of Tank in front of Sluice No.2.	S.G.Shutter to sluices 1 & 2. S.G.Shutter to surplus weir sand vent. Revetment to bund from LS.630M to 960M
7	10.12.08.	Chithambarampatti Tank	Skin wall to surplus weir and repairs to D/s apron. Shutters to sluices Desilting of Tank Providing sand vent to surplus weir. Revetment for bund in between Sluice No.1 and surplus weir. Flood Protection wall in between surplus weir and	Increasing the height of the skin wall, repairs to D/s apron. Plug & Plug Rod shutters to sluices 1 & 2. Construction of sand vent in left side of surplus weir. Revetment for bund in between Sluice No.1 and surplus weir for a length of 100M. Flood Protection

			Sluice No.2. Recosntruction of Syphon for the field channel from Sluice No.2 Desilting of surplus course below the main road. Increasing the height of the Field channel wall from Sluice No.2. Providing field channel below the road for Sluice No.2.	wall in between surplus weir and Sluice No.2 for a length of 50M from LS.910m to 960m Reconstruction of Syphon for the field channel from Sluice No.2 Revetment at Approach to weir.
8	10.12.08	Chettikurichi Tank	Bund strengthening Reconstruction of Sluice No.3. Weir repair S.G.Shutters to weir. Desilting of the supply Channel and Construction of dividing wall. Lining of field channel Desilting of the tank in front of Sluice No.2. Repairs to revetment	Reconstruction of Sluice No 1,2&3. Repairs to weir apron. S.G.Shutters to scour vent. Construction of dividing wall.
9	10.12.08	Thirumangalakurichi Tank	Sluice Repair S.G.Shutters to sluices Field channel Increasing the height of Field channel wall near sluice no.1&2.	Reconstruction of damaged Sluice No.2. S.G.Plug & Plug Rod to Sluice No. 1 & 2.

10	29.09.08.	Sayarpadaithangi Tank	S.G.Shutters to weir. Repairs to surplus weir S.G.Shutters to surplus weir S.G.Shutters to Sluices.	S.G.Shutters to weir. Reconstruction of damaged U/s L/s wing wall in surplus weir and damaged apron. S.G.Plug & Plug Rod to Sluice No.1,2 & 3..
11	10.12.08	Ayyanaroothu Tank	Bund strengthening Shutters to sluices. Field Channel Removal of rock in the field channel. Desilting of supply channel and construction of dividing wall.	Standardisation of bund. Plug & Plug Rod shutters to Sluice No.1 & 2. Construction of dividing wall. Removal of rock in the field channel.
12	29.09.08	Rajapudukudy Tank	Bund strengthening Protection wall on both sides of the Sluice No.1&2 Shutters to surplus weirs. Desilting of tank S.G.Shutter to sluices. Field channel Desilting of	Standardisation of bund Protection wall on both sides of the Sluice No.1,2 & 3. S.G.Shutters to Flood carrier in the supply channel. S.G.Shutter to sluices 1,2,3 & 4. Desilting of

			supply channel. Protection wall in the supply channel.	supply channel.
13	12-11-08	Parkkirama pandian tank	>Desilting the tank >Bund strengthening >Construction of Retaining wall in between 2nd and 5th sluices >Replacement of shutter in all the 5 Sluices >Spreading gravel on top of bund >Replacement of shutter in SurplusWeir Repair >Desilting of the supply channel >Construction of Thrashing floors near by sluices	Standardisation of bund Construction of Retaining wall Repairs to sluices no 1 and 2 & provision for shutter Repairs to weir No.1 apron and U/S wing wall and Replacement of shutter Desilting the surplus course Reconstruction of Sluice No.3 Providing Thrashing floor, Ramp, steps, bathing ghat.
14	12-11-08	Seevalaperi Big tank	>Bund strengthening >Spreading gravel on top of bund >Replacement of shutter in SurplusWeir Repair >Desilting of the supply channel >Construction of Thrashing floors near by sluices Construction of a culvert across supply channel	Standardisation of bund Replacement of shutter Construction of Retaining wall Repairs to weir. Reconstruction of Sluice No.1 Repairs to Sluice No.2 Construction of a culvert, Thrashing floor, Ramp. Desilting surplus course.
15	21.4.2009	South Sankarankovil	Sluice Repairs, Tanks Desilting, Bund Strengthening, Removal of	Sluice Repairs, Weir Repairs and Standardisation of Bunds

			Vegetation of in the Tanks	
16	21.4.2009	Sankarankovil	Sluice Repairs, Tanks Desilting, Bund Strengthening, Removal of Vegetation of in the Tanks	Sluice Repairs, Weir Repairs and Standardisation of Bunds
17	21.4.2009	Periya kovilankulam	Sluice Repairs, Tanks Desilting, Bund Strengthening, Removal of Vegetation of in the Tanks	Sluice Repairs, Weir Repairs and Standardisation of Bunds
18	22.4.2009	Ko Maruthappapuram	Sluice Repairs, Tanks Desilting, Bund Strengthening, Removal of Vegetation of in the Tanks	Sluice Repairs, Weir Repairs and Standardisation of Bunds
19	22.4.2009	Zamin Elanthai kulam	Sluice Repairs, Tanks Desilting, Bund Strengthening, Removal of Vegetation of in the Tanks	Sluice Repairs, Weir Repairs and Standardisation of Bunds
20	23.4.2009	Maruthan kinaru	Sluice Repairs, Tanks Desilting, Bund Strengthening, Removal of Vegetation of in the Tanks	Sluice Repairs, Weir Repairs and Standardisation of Bunds
21	23.4.2009	Mahendravadi	Sluice Repairs, Tanks Desilting, Bund Strengthening, Removal of Vegetation of in the Tanks	Sluice Repairs, Weir Repairs and Standardisation of Bunds
22	23.4.2009	Palamkottai	Sluice Repairs, Tanks Desilting, Bund Strengthening, Removal of Vegetation of in the Tanks	Sluice Repairs, Weir Repairs and Standardisation of Bunds
23	24.4.2009	Vellappaneri	Sluice Repairs,	Sluice Repairs,

			Tanks Desilting, Bund Strengthening, Removal of Vegetation of in the Tanks	Weir Repairs and Standardisation of Bunds
24	24.4.2009	Karisal kulam	Sluice Repairs, Tanks Desilting, Bund Strengthening, Removal of Vegetation of in the Tanks	Sluice Repairs, Weir Repairs and Standardisation of Bunds

WALK THROUGH SURVEY - UPPODAI SUB BASIN

Sl No	WalkThrough Survey		Taluk	Former Request	Technical Solution	Proposal in plan
	Date	Location			WRO	WRO
1.	29.9.08	Kalangarai patti New Tank	Kovilpatti.	Formers 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 skin wall to surplus weir and flood protection wall in the weaker portion.	Yes, the problems mentioned by the farmers are genuine. All works are essential and may be carried out based on the funds.	The works of Repairs to sluice and fixing S.G. Plug & plug rod, skin wall to arrest leakages in weir, Repairs to weir in sand vent portion, apron jungle in bund as well as in water spread area, strengthen of tank bund, and construction of retaining wall in weaker portion.
2.	29.9.08	Kalangarai patti Old Tank	Kovilpatti	Formers 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, Reconstruction of sluice No.2 and Repairs to weir.	Yes, the problems mentioned by the farmers are genuine. All works are essential and may be carried out based on the funds.	The works of screw gearing plug and plug rod in sluice, Reconstruction of sluice No.2 and Repairs to Sluice No.I.
3.	29.9.08	Alagappa puram Tank	Kovilpatti	Formers requested to strengthening the tank bund and repairs to down stream apron in surplus weir No.2.	Yes, the problems mentioned by the farmers are genuine. All works are essential and may be carried out based on the funds.	The works proposed to repairs to down stream apron in surplus weir No.2.

4.	10.12.08	Kalampatti Tank	Kovilpatti	Farmers requested to Desilting the tank, shutter to sluices, shutter to surplus weir.	Yes, the problems mentioned by the farmers are genuine. All works are essential and may be carried out based on the funds.	The works proposed to providing shutter to sluice, shutter to surplus weir.
5.	11.12.08	Saravana puram Tank	Kovilpatti	Farmers requested to strengthening the bund by desilting the tank reconstruction of sluice no.2, repairs to down stream apron in the weir and approach road to tank.	Yes, the problems mentioned by the farmers are genuine. All works are essential and may be carried out based on the funds.	The works proposed By reconstruction of sluice no.2, repairs to down stream apron in the weir, by construction of upstream cut off wall and SG shutter to sand vent.
6.	11.12.08	Avudai ammal puram Tank	Kovilpatti	Farmers requested to strengthening the tank bund providing SG Plug and Plug rod to sluices, SG shutter to sand vent in weir, Revetment to bund in between Sluice No.1 to surplus weir.	Yes, the problems mentioned by the farmers are genuine. All works are essential and may be carried out based on the funds.	The works proposed by providing SG Plug and Plug rod to sluices, SG shutter to sand vent in weir, Revetment to bund in between Sluice No.1 to surplus weir.

7.	10.12.08	Chidam baram patti Tank	Kovilpatti	Farmers requested to skin wall to surplus weir and repairs to down stream apron, SG Plug and Plug rod to sluices, desilting the tank, construction of sand vent near surplus weir, revetment for the bund in between sluice no.1 and surplus weir, flood protection wall in between surplus weir and sluice no. 2, reconstruction of syphon.	Yes, the problems mentioned by the farmers are genuine. All works are essential and may be carried out based on the funds.	The works proposed to skin wall to surplus weir and repairs to down stream apron, SG Plug and Plug rod to sluices, construction of sand vent near surplus weir, revetment for the bund in between sluice no.1 and surplus weir, flood protection wall in between surplus weir and sluice no. 2, reconstruction of syphon.
8.	10.12.08	Chetti kurichi Tank	Kovilpatti	Farmers requested to reconstruction of sluice no.1, 2 & 3, construction of dividing wall in surplus course.	Yes, the problems mentioned by the farmers are genuine. All works are essential and may be carried out based on the funds.	The works proposed to reconstruction of sluice no.1, 2 & 3, construction of dividing wall in surplus course.
9.	10.12.08	Thiru mangala kurichi Tank	Kovilpatti	Farmers requested to repairs to sluices, providing SG shutter to weir and providing SG Plug & Plug rod for sluices.	Yes, the problems mentioned by the farmers are genuine. All works are essential and may be carried out based on the funds.	The works proposed to repairs to sluices, providing SG shutter to weir and providing SG Plug & Plug rod for sluices.

10.	29.9.08	Sayarpadai thangi Tank	Kovilpatti	Farmers requested to Providing SG shutter to weir, Repairs to weir, renewal of SG Plug & Plug rod for 3 sluices.	Yes, the problems mentioned by the farmers are genuine. All works are essential and may be carried out based on the funds.	The works proposed to Providing SG shutter to weir, Repairs to weir, renewal of SG Plug & Plug rod for 3 sluices.
11.	10.12.08	Ayya naroothu Tank	Kovilpatti	Farmers requested to Strengthening tank bund, providing SG Plug & Plug rod to sluices, removal of rock in the field channel, construction of diviing wall in the upstream of surplus course.	Yes, the problems mentioned by the farmers are genuine. All works are essential and may be carried out based on the funds.	The works proposed to Strengthening tank bund, providing SG Plug & Plug rod to sluices, removal of rock in the field channel, construction of dividing wall in the upstream of surplus course.
12.	29.9.08	Rajapudu kudy Tank	Kovilpatti	Farmers requested to repairs to sluices by providing protection wall on both side of sluice no.1,2 & 3, shutters to surplus weir, desilting the tank, SG shutter to sluices, desilting the supply channel, flood protection wall in the supply channel in required places.	Yes, the problems mentioned by the farmers are genuine. All works are essential and may be carried out based on the funds.	The works proposed to repairs to sluices by providing protection wall on both side of Sluice No.1,2 & 3, shutters to surplus weir, desilting the tank, SG shutter to sluices, desilting the supply channel.

13.	12.11.08	Parakkiram a panidan Tank	Tirunelveli	Farmers requested to strengthening the tank bund, retaining wall, repairs to weir, repairs to sluice, reconstruction of sluice, repairs to sluice, renewal of SG shutters to weir and sluices, Thrashing floor, ramp, steps, bathing ghat and desilting the surplus course.	Yes, the problems mentioned by the farmers are genuine. All works are essential and to be carried out .	The works proposed to strengthening the tank bund, retaining wall, repairs to weir, repairs to sluice, reconstruction of sluice, repairs to sluice, renewal of SG shutters to weir and sluices, Thrashing floor, ramp, steps, bathing ghat and desilting the surplus course.
14.	12.11.08	Seevalaper i Big Tank	Ottapidaram & Palayamkottai	Farmers requested to strengthening the tank bund retaining wall in the required places, repairs to weir & sluices, reconstruction of sluice, renewal of SG shutters to weir, SG Plug & Plug rod to sluices, Construction of culvert in the surplus course providing approach road to the tank, thrashing floor, providing ramp and desilting the surplus course.	Yes, the problems mentioned by the farmers are genuine. All works are essential and to be carried out .	The works proposed to strengthening the tank bund retaining wall in the required places, repairs to weir & sluices, reconstruction of sluice, renewal of SG shutters to weir, SG Plug & Plug rod to sluices, Construction of culvert in the surplus course providing approach road to the tank, thrashing floor, providing ramp and desilting the surplus course.
15	21.4.2009	South Sankaran kovil	Sankaranko vil	Formers requested to Sluice Repairs, Tanks Desilting, Bund Strengthening, Removal of Vegetation of in the Tanks	Yes, the problems mentioned by the farmers are genuine. All works are essential and to be carried out .	The works proposed to Sluice Repairs, Weir Repairs and Standardisation of Bunds

16	21.4.2009	Sankaran kovil		Formers requested to Sluice Repairs, Tanks Desilting, Bund Strengthening, Removal of Vegetation of in the Tanks	Yes, the problems mentioned by the farmers are genuine. All works are essential and to be carried out .	The works proposed to Sluice Repairs, Weir Repairs and Standardisation of Bunds
17	21.4.2009	Periya kovilan kulam		Formers requested to Sluice Repairs, Tanks Desilting, Bund Strengthening, Removal of Vegetation of in the Tanks	Yes, the problems mentioned by the farmers are genuine. All works are essential and to be carried out .	The works proposed to Sluice Repairs, Weir Repairs and Standardisation of Bunds
18	22.4.2009	Ko Marutha ppapura m		Formers requested to Sluice Repairs, Tanks Desilting, Bund Strengthening, Removal of Vegetation of in the Tanks	Yes, the problems mentioned by the farmers are genuine. All works are essential and to be carried out .	The works proposed to Sluice Repairs, Weir Repairs and Standardisation of Bunds
19	22.4.2009	Zamin Elanthai kulam		Formers requested to Sluice Repairs, Tanks Desilting, Bund Strengthening, Removal of Vegetation of in the Tanks	Yes, the problems mentioned by the farmers are genuine. All works are essential and to be carried out .	The works proposed to Sluice Repairs, Weir Repairs and Standardisation of Bunds
20	23.4.2009	Maruthan kinaru	Sankaramko vil	Formers requested to Sluice Repairs, Tanks Desilting, Bund Strengthening, Removal of Vegetation of in the Tanks	Yes, the problems mentioned by the farmers are genuine. All works are essential and to be carried out .	The works proposed to Sluice Repairs, Weir Repairs and Standardisation of Bunds

21	23.4.2009	Mahendr avadi		Formers requested to Sluice Repairs, Tanks Desilting, Bund Strengthening, Removal of Vegetation of in the Tanks	Yes, the problems mentioned by the farmers are genuine. All works are essential and to be carried out .	The works proposed to Sluice Repairs, Weir Repairs and Standardisation of Bunds
22	23.4.2009	Palam kottai		Formers requested to Sluice Repairs, Tanks Desilting, Bund Strengthening, Removal of Vegetation of in the Tanks	Yes, the problems mentioned by the farmers are genuine. All works are essential and to be carried out .	The works proposed to Sluice Repairs, Weir Repairs and Standardisation of Bunds
23	24.4.2009	Vellappa neri		Formers requested to Sluice Repairs, Tanks Desilting, Bund Strengthening, Removal of Vegetation of in the Tanks	Yes, the problems mentioned by the farmers are genuine. All works are essential and to be carried out .	The works proposed to Sluice Repairs, Weir Repairs and Standardisation of Bunds
24	24.4.2009	Karisal kulam		Formers requested to Sluice Repairs, Tanks Desilting, Bund Strengthening, Removal of Vegetation of in the Tanks	Yes, the problems mentioned by the farmers are genuine. All works are essential and to be carried out .	The works proposed to Sluice Repairs, Weir Repairs and Standardisation of Bunds

1.5 INFRASTRUCTURES OF THE SUB BASIN

LIST OF ANICUTS

Sl. No	Anicuts	Village	Block	Taluk	District	Direct Ayacut Area in Ha	Capacity
1.	Kalangarai patti	Venkateswarapuram	Kayathar	Kovilpatti	Thoothukudy	-	-
2.	Akilandapuram	Akilandapuram	Kayathar	Kovilpatti	Thoothukudy	-	-
3.	Appasamy	Rajapudukudy	Kayathar	Kovilpatti	Thoothukudy	-	-

LIST OF TANKS (Separate statement for Non System tanks)

NON SYSTEM TANKS

Sl. No	Tank	Village	Block	Taluk	District	Direct Ayacut Area in Ha	Capacity in Mcft
1	Kalangaraipatti New Tank	Kalangaraipatti	Kayathar	Kovilpatti	Thoothukudy	64.78	1.07
2	Kalangaraipatti Old Tank	Kalangaraipatti	Kayathar	Kovilpatti	Thoothukudy	52.63	1.68
3	Alagappapuram Tank	Alagappapuram	Kayathar	Kovilpatti	Thoothukudy	55.87	1.03
4	Kalampatti Tank	Kalampatti	Kayathar	Kovilpatti	Thoothukudy	62.75	0.40
5	Saravanapuram Tank	Saravanapuram	Kayathar	Kovilpatti	Thoothukudy	53.12	0.88
6	Avudaiammalpuram Tank	Avudaiammalpuram	Kayathar	Kovilpatti	Thoothukudy	59.92	0.99
7	Chithambarampatti Tank	Chithambarampatti & Chettikurichi	Kayathar	Kovilpatti	Thoothukudy	89.88	1.48
8	Vadakkuperiakulam Tank	Chettikurichi	Kayathar	Kovilpatti	Thoothukudy	52.63	1.47
9	Thirumangalakurichi Tank	Thirumangalakurichi	Kayathar	Kovilpatti	Thoothukudy	103.16	2.55
10	Sayarpadaithangi Tank	Kayathar	Kayathar	Kovilpatti	Thoothukudy	52.72	1.40
11	Ayanaroothu Tank	Ayanaroothu	Kayathar	Kovilpatti	Thoothukudy	45.95	0.76
12	Rajapudukudy Tank	Rajapudukudy	Kayathar	Kovilpatti	Thoothukudy	46.39	1.23
13	Parakkiramapandian kulam	Gangaikondan	Tirunelveli	Tirunelveli	Tirunelveli	295.55	147.00
14	Seevalaperi Big Tank	Seevalaperi	Palayamkottai	Palayamkottai		253.89	178.00
15	Naduvakurichi	Naduvakurichi	Melaneeli thanallur	Sankarankovil		98.34	40.50
16	Mela Neelithanallur	Mela Neelithanallur				83.37	43.20

17	Ramaneri	South Sankarankovil	Sankarankovil	Sankarankovil	Tirunelveli	43.86	13.72
18	Patta kulam	Sankarankovil				69.08	36.99
19	Thaniyuranendhal	Sankarankovil				47.10	31.23
20	Periya Kovilankulam	Periya Kovilankulam				43.83	17.10
21	Singa Konendhal	Ko - Maruthappapuram				50.74	29.71
22	Zamin Elanthai kulam	Zamin Elanthai kulam				54.67	20.51
23	Maruthankinaru	Maruthankinaru	Kuruvikulam			45.93	22.46
24	Mahendravadi Tank	Mahendravai				47.79	18.53
25	Avani Konenthal	Palamkottai				44.06	13.25
26	Sayamalai Big Tank	Sayamalai				106.34	37.14
27	Poolankulam I & II	Vellappaneri				44.67	8.12
28	Vellappaneri	Vellappaneri				64.99	51.20
29	Karisal kulam	Karisal kulam				55.86	25.10

List of Supply Channel

Sl.No.	Name of Supply Channel	Off take point	Length in Km	Village	Block	Taluk	District	Direct Ayacut in Ha
1.	Kalangaraipatti	Kalangaraipatti Anicut	2770	Venkateswarapuram	Kayathar	Kovilpatti	Thoothukudy	-
2.	Akilandapuram	Akilandapuram Anicut	2750	Akilandapuram	Kayathar	Kovilpatti	Thoothukudy	-
3.	Appasamy	Appasamy Anicut	2760	Rajapudukudy	Kayathar	Kovilpatti	Thoothukudy	-

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 (in Ha.)	Scheme in which executed	Amount (Rupees in Lakhs)	Details of components executed	Remarks
1.	Chidambarampatti Tank	89.88	NABARD	18.88	Construction of Field channel to Sluice No.I & II, wing wall to Sluice No.II, Retaining wall near Sluice No.I.	
2.	Naduvakurichi	98.34	NABARD	24.42	Sluices and Weirs Repair and Reconstruction and Bund Strengthening	
3.	Mela Neelithanallur	83.37	NABARD	28.53	Sluices and Weirs Repair and Reconstruction and Bund Strengthening	
4.	Sayamalai big tank	106.34	NABARD	32.10	Sluices and Weirs Repair and Reconstruction and Bund Strengthening	

COMPONENTS PROPOSED IN IAMWARM PROJECT IN THE TANKS THAT HAVE BEEN EXECUTED AFTER 2000

Sl.No.	Name of Tank / Anicut	Components executed under Various Schemes	Components proposed now in IAMWARM
1.	Chidambarampatti	1.Construction of Field channel to Sluice No.I & II. 2.Providing wing walls to Sluice No.II. 3.Construction of Retaining wall.	Construction of sand vent, revetment works in between weir to Sluice No.I and weir to Sluice No.II flood bank to weir, Construction of well syphon crossing the field channel in Sluice No.II and tank bund standardisation.

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

NAME OF SUB BASIN: UPPODAI

SL. NO.	DETAILS	ANICUT			SYSTEM TANK			NON- SYSTEM TANK			ANY OTHER SUPPLY CHANNEL		REMARKS
		NOS	SUPPLY CHANNEL IN KM	DIRECT AYACUT	NOS	SUPPLY CHANNEL IN KM	AYACUT	NOS	SUPPLY CHANNEL IN KM	AYACUT	LENGTH	DIRECT AYACUT	
1	Available Infrastructure in sub basin	3	8.28	-		-		29	-	2189.87	-	-	
2	Infrastructure excluded in IAMWARM Project since works carried out under various schemes from 2000	-	-	-	-	-	-	4	-	-	-	-	
3	Infrastructures that does not require any rehabilitation works	2	8.28	-	-	-	-	3	-	208.05	-	-	
4	Works taken up in IAMWARM project												
a)	Works executed in other Scheme but also proposed in IAMWARM							1					
b)	Works proposed in IAMWARM alone.	1	-	-	-	-	-	25					
	TOTAL							26		1901.82			

Certified that the Panchayat Union Tanks are not considered in this project.

2. Certified that the Component of works in tanks executed under various schemes (Viz, WRCP I, NABARD, PART II schemes etc.,) since 2000 were not proposed in this project.

1.6 REHABILITATION OF IRRIGATION INFRASTRUCTURE

1.6 Rehabilitation of IRRIGATION Infrastructure

1.6.1. Structural Status & Deficiencies in the System

The following are the present structural condition of the Uppodai sub-basin system.

1. This system is a old system existing for more than 100 years as such requires Rehabilitation.
2. Heavy accumulation of slit due to contour nature of canal system.
3. Lack of adequate control of regulating structures like Anicuts, Head Sluices, Sand/Scour vents etc.,
4. The Non system tanks are to be rehabilitated

Salient Features of Proposals:-

In order to improve the conveyance and Operational Efficiency in Irrigation, it is now proposed to improve and modernize the irrigation infrastructures in Uppodai Sub Basin.

1. Repairs to the Anicut by providing shutter to Head Sluice and Sand vent.
2. Trimming the supply channels by earthwork excavation.
3. Repairing, Restoring the traditional water bodies (i.e. tanks)
   a. Desilting the supply channels to tank.
   b. Strengthening the bunds of the tanks and channels wherever necessary for effectively storing the water and conveying it to the entire command area and also for conveying agriculture inputs to the field.
   c. Repairs to the damaged weirs.
   d. Reconstruction of damaged sluices.
   e. Repairs to the damaged Sluices.
   f. Providing revetments and retaining walls in selective area of the tanks.
   g. Providing S.G. Shutter /Plug arrangements to Sluices, Head sluices, Sand vents, Weirs etc.,

1.6.2. Expected Outcome

1. Increase in conveyance efficiency by from 43% to 53%.
2. The present Gap area of 600.08Ha, is to be converted as a fully irrigated area.
3. The following irrigation infrastructure development works are proposed in the sub basin.

   Rehabilitation works for 1 anicut.

   Rehabilitation works for 26-tanks.

   Rehabilitation of supply channel for a length of 8.28 KM.

TANK DETAILS WITH FREE BOARD PROVIDED

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	Kalangaraipatti New Tank	4.10	1.00	1.50	2000
2	Ayanaroothu Tank	3.10	1.00	1.50	1040
3	Rajapudukudy Tank	4.235	1.00	1.50	2250
4	Parakkiramapandia kulam	5.16	1.80	-	4600
5	Seevalaperi	5.64	2.00	-	3600
6	Ramaneri	3.43	1.00	1.50	1750
7	Periya kovilankulam	4.22	1.00	1.50	1830
8	Singa konenthal	4.88	1.00	1.50	2680
9	Vellappaneri	3.86	1.00	1.50	3510
10	Karisalkulam	4.34	1.00	1.50	1440

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

Details of proposals in each Infrastructure of the sub basin (Package No. 1)

Sl.No	Name of Tank	Tank Bund			Sluices					Shutter for Sluice		Anicut		Shutter for Anicut		Weir			Shutter for weir		Supply Channel		Measuring Device		Total Amount in Rupees in Lakhs
		Total Length	Exposed length	Amount in Lakhs	Total No.of Sluices	No.of Sluice to be Reconstructed	Amount in Lakhs	No.of Sluices to be Repaired	Amount in Lakhs	Nos.	Amount in Lakhs	Repairs	Amount in Lakhs	Nos.	Amount in Lakhs	Total No.of weir	No.of weirs to be Repaired	Amount in Lakhs	Nos.	Amount in Lakhs	Length of proposed Retaining wall	Amount in Lakhs	Nos.	Amount in Lakhs	
1	Kalangaraipatti Old Tank	2770	0	0.57	3	1	3.88	1	2.59	3	0.57	1	0.57	2	0.60	1	0	0	0	0	CD works 1	0.57	3	0.43	9.78
2	Kalangaraipatti New Tank	2000	1940	16.54	2	0	0	0	0	2	0.38	0	0	0	0	1	1	16.53	1	0.75	0	0	2	0.29	34.49
3	Alagappapuram Tank	1950	0	0.38	2	0	0	0	0	0	0	0	0	0	0	2	2	2.84	0	0	0	0	2	0.29	3.51
4	Kalampatti Tank	2360	2333	14.75	2	0	0	0	0	2	0.38	0	0	0	0	1	0	0	0	0	0	0	2	0.29	15.42
5	Saravanapuram Tank	1600	0	0.23	2	1	1.97	0	0	2	0.38	0	0	0	0	1	1	3.49	1	0.75	0	0	2	0.29	7.11
6	Avudaiammalpuram Tank	1350	1277	16.98	2	0	0	0	0	2	0.38	0	0	0	0	1	0	0.00	1	0.50	0	0	2	0.29	18.15
7	Chidambarampatti Tank	1920	1816	19.25	2	0	0	0	0	2	0.38	0	0	0	0	1	1	1.47	18	2.70	0	0	2	0.29	24.09
8	Vadakkuperiakulam Tank	2410	0	0.57	3	0	0	3	6.23	3	0.57	0	0	0	0	2	0	0.00	0	0.00	0	0	3	0.43	7.80
9	Thirumangalakurichi Tank	4140	0	0.57	2	0	0	0	0	2	0.38	0	0	0	0	4	1	0.60	3	1.05	0	0	2	0.29	2.89
10	Sayarpadaithangi Tank	1850	0	0.57	3	0	0	0	0	3	0.57	0	0	0	0	2	1	1.16	2	0.95	B/S	0.57	3	0.43	4.25
11	Ayyanaruthu Tank	1040	996	4.66	2	0	0	1	0.23	2	0.38	0	0	0	0	1	0	0	0	0.00	210RM	15.52	2	0.29	21.08
12	Rajapudukudy	2250	2177	21.03	4	2	4.41	0	0	4	0.76	0	0	0	0	2	0	0	2	0.60	CD works 1	0.99	4	0.57	28.36
				96.10	0	0	10.26	0	9.05	0	5.13	1	0.57	0	0.60	0	0	26.09	0	7.30	0	17.65	0	4.18	176.39

Details of proposals in each Infrastructure of the sub basin PACKAGE – II

Sl No	Name of tank/ Anicut/ Reservoir	Bund		Sluice				Weir				Supply Channel		Retaining wall		Measuring Device		Amount in Lakhs
				Repairs		Reconstruction		Repairs		Reconstruction								
		Length	Amt	No	Amt	No	Amt	No	Amt	No	Amt	No	Amt	Length	Amt	No	Amt.	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**
1	Parakkirama pandia kulam	4600 M^3	54.192	2	3.35	2	7.104	1	4.07	4.393	-	-	-	250	12.00	6	1.03	74.13
2	Seevalaperi	3600 M^3	36.40							-	-	2 Nos	6.00	315	15.00	3	0.513	55.36
	Total																	129.50

Details of proposals in each Infrastructure of the sub basin PACKAGE - III

Sl No	Name of tank/ Anicut/ Reservoir	Bund		Sluice				Weir				Steps		Retaining wall		Amount in Lakhs
				Repairs		Reconstruction		Repairs		Reconstruction						
		Qty	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**
1	Ramaneri	26550	15.93	1	2.02	1	1.33	1	0.69	-	-	1	0.80	-	-	20.77
2	Patta kulam	-	-	-	-	-	-	1	0.92	-	-	-	-	80	11.72	12.64
3	Thaniyura nenthal	-	-	1	1.31	-	-	1	0.69	-	-	-	-	80	11.72	13.72
4	Periya kovilankulam	27750	16.65	1	1.31	-	-	1	1.03	-	-	1	0.80	40	5.86	25.65
5	Singa konenthal	40640	24.39	1	0.72	-	-	1	1.03	-	-	1	0.80	40	5.86	32.80
6	Zamin Elanthai kulam	-	-	1	3.33	1	1.31	1	1.67	-	-	-	-	40	5.86	12.17
7	Maruthan kinaru	-	-	3	2.31	-	-	-	-	-	-	-	-	22	3.19	5.50
8	Mahendravadi	-	-	2	2.31	-	-	4	3.06	-	-	-	-	12	1.78	7.15
9	Avanikonenthal	-	-	2	4.43	-	-	1	1.04	-	-	-	-	40	5.86	11.33
10	Poolankulam I & II	-	-	3	2.31	-	-	-	-	-	-	-	-	80	11.72	14.03
11	Vellappaneri	47145	28.28	1	1.81	-	-	-	-	-	-	1	0.80	40	5.86	36.75
12	Karisalkulam	21840	13.10	1	1.81	-	-	1	0.92	-	-	1	0.80	40	5.86	22.49
	Total															215.00

PACKAGE - I

B. WRO COST TABLE

Sl. No.	Description of work	Quantity	Amount in Lakhs	Remarks
I. Tank Component				
	Tank Bund : Strengthening the tank bund	116070 M^3	67.17	
	Sluice : Repairs	5 Nos	14.19	
	Reconstruction	4 Nos	10.27	
	Measuring Device	29 Nos	4.18	
	Weir : Repairs	7 Nos	32.80	
	Supply channel : Cross Masonry works and Retaining wall	210 RM	18.25	
	: Repairs to Anicut	1No	1.16	
	Construction of Revetment in Tank Bund	3680 M	28.37	
	TOTAL	--	**176.39**	

PACKAGE - II

B. WRO COST TABLE

Sl. No.	Description of work	Quantity	Amount in Lakhs	Remarks
I. Tank Component				
	Tank Bund : Strengthening the tank bund	134460 M^3	90.60	
	Sluice : Repairs	2 Nos	3.35	
	Reconstruction	4 Nos	18.10	
	New Sluice	1 No	4.07	
	Weir : Repairs	2 Nos	7.44	
	Construction of Culvert	2 Nos	2.78	
	Construction of Retaining wall in the Supply channel	20M	1.63	
	Measuring Device	9 Nos	1.54	
	SUB TOTAL	--	**129.51**	

PACKAGE - III

B. WRO COST TABLE

Sl. No.	Description of work	Quantity	Amt in Lakhs	Remarks
I. Tank Component				
	Tank Bund : Strengthening the tank bund	**238219** M^3	112.16	
	Sluice : Repairs	19 Nos	41.65	
	Reconstruction	1 Nos	2.51	
	Weir : Repairs	9 Nos	10.3	
	Construction of Steps	7 Nos	2.90	
	Construction of sluices head wall in Tank Bund	165 RM	30.42	
	Construction of Revetment in the tank bund	200 RM	2.31	
	Demarcating and fixing boundary stones	972 Nos.	8.24	
	Measuring device	25 Nos.	4.18	
	SUB TOTAL	--	**214.67**	

PACKAGE DETAILS

Sl.No.	Package No	Name of Work	Amount in Lakhs
1	IAMWARM / WRD UPPODAI – I (2009 - 2010)	Rehabilitation and Modernisation of Non System tanks in Uppodai Sub Basin in Kovilpatti Taluk of Thoothukudy District.	176.39
2	IAMWARM / WRD UPPODAI - II (2009 - 2010)	Rehabilitation and Modernisation of Non System tanks in Uppodai Sub Basin in Palayamkottai & Tirunelveli Taluk of Tirunelveli District and Ottapidaram Taluk in Thoothukudy District.	129.51
3	IAMWARM / WRD UPPODAI - III (2009 - 2010)	Rehabilitation and Modernisation of Non System tanks in Uppodai Sub Basin in Sankarankovil Taluk of Tirunelveli District.	214.67
		Total Amount	**520.57**

WRO COST TABLE – ABSTRACT

Sl. No	Description of work	Quantity		Amount in Lakhs	Remarks
I. Tank Component					
1	Tank Bund Strengthening the tank bund	488749	M3	269.93	
	Sluice Repair	26	Nos.	59.19	
	Reconstruction	9	Nos.	30.88	
	New Sluice	1	Nos.	4.07	
	Weir Repairs	18	Nos	50.54	
	Construction of Culvert	2	Nos.	2.78	
	Construction of Retaining wall in the supply channel and cross masonry works	210	RM	18.25	
	Construction of Sluice head wall in the tank bund	365	RM	32.73	
	Construction of Revertment in the tank bund	3880	RM	30.00	
	Demarking and fixing boundary stones	972	Nos	8.24	
	Repairs to Anicut	1	No	1.16	
	Measuring Device	63	Nos	9.90	
	Construction of steps	7	Nos	2.90	
	SubTotal			**520.57**	

II. Non Tank Component		**NIL**			
	SubTotal	**----**	**----**	**----**	----
III	**Environment cell**			**4.00**	
IV	**Ground water**			**---**	---
	Total			**524.57**	

1). Tank component = 524.57 Lakhs.
2). Non-Tank component = Nil

Total = 524.57 Lakhs.

PACKAGE I

Calculation of machineries Requirement

Hydraulic excavator &

Tippers / Lorries	6	Nos			
working hour=	8	Hours / Day			
	2	loads/ hour			
1 trip of quantity=	4	m3/ trip			
		m3			
For 1 day=	384	/Day			
For 1 month=	25	Working days			
	9600	m^3			
Total quantity of earth work =	118520	m^3	12	12	Months

Working period for earth work= 12 months + 3 Months rainy season

Machineries required for earth work:

1	Hydraulic excavator =	2	Nos	
2	Tippers / Lorries =	6	Nos	
3	Power roller =	2	Nos	
4	Vibrated compactor =	4	Nos	
5	Water lorries =	4	Nos	

Mixer machine

working hour=	6	Hours / Day			
		m^3/			
	2	hour			
		m3			
For 1 day=	12	/Day			
For 1 month=	25	Working days			
	300	m^3			
Total quantity of concrete	1700	m^3	6	Nos	

Mixer machine required= 3 Nos for 10 days / month -- 8 months

Material conveyance Tippers / Lorries

Cement =	10	mt / Trip	1 trip / day	10	mt / day
		m^3 /			
Sand =	5.66	Trip	2 trips / day	11.32	m^3 /day
		m^3 /			
Metal / stone =	5.6	Trip	5 Trips / day	28	m^3 /day
for M.7.5 Concrete	62				
for M.15 Concrete	320	mt			
for M.20 Concrete	143	mt			
for RR Masonry	2				
Total quantity of cement	527	mt	52.7	53	lorries
Lorry required for conveyance	53	Nos	53	lorries	
Total quantity of sand	1809	m^3	160		
Lorry required for conveyance	160	m^3	160	Lorries	
Total quantity of metal	6159	m^3	220		
Lorry required for conveyance	220	m^3	220	Lorries	
Total quantity Revetment	4629	m^3	165		
Lorry required for conveyance					
Lorry required for conveyance			**598**	**Lorries**	

Tipper / Lorries for conveyance of materials

21 Lorries/days

12 Nos for 20 days for 8 months

PACKAGE II

Calculation of machineries Requirement

Hydraulic excavator & Tippers / Lorries	6	Nos			
working hour=	8	Hours / Day			
	2	loads/ hour			
1 trip of quantity=	4	m3/ trip			
		m3			
For 1 day=	384	/Day			
For 1 month=	25	Working days			
	9600	m^3			
Total quantity of earth work =	113000	m^3	11.77083333	11.771	Months
Working period for earth work=	8 months + 4 Months rainy season				
Machineries required for earth work:					
1 Hydraulic excavator =	2	Nos			
2 Tippers / Lorries =	6	Nos			
3 Power roller =	2	Nos			
4 Vibrated compactor =	4	Nos			
5 Water lorries =	4	Nos			
Mixer machine					
working hour=	6	Hours / Day			
		m^3/			
	2	hour			
		m3			
For 1 day=	12	/Day			
For 1 month=	25	Working days			
	300	m^3			
Total quantity of concrete	11654	m^3	38.84666667	39	Nos
Mixer machine required=	**4 Nos** for 10 days / month -- 8 months				
Material conveyance Tippers / Lorries					
Cement =	10	mt / Trip	1 trip / day	10	mt / day
		m^3 /			
Sand =	5.66	Trip	2 trips / day	11.32	m^3 /day
		m^3 /			
Metal / stone =	5.6	Trip	5 trips / day	44.8	m^3 /day
for 1:4:8 concrete	2049.3				
for 1:3:6 concrete	22278	mt			
for 1:2:4 concrete	243	mt			
Total quantity of cement	24571	mt	2457.054	2,457	lorries
Lorry required for conveyance	2,457	Nos	2,457	lorries	
Total quantity of sand	5244	m^3	463.2773852	463	lorries
Lorry required for conveyance	463	m^3	463	Lorries	
Total quantity of metal	10490	m^3	234	Nos	
Lorry required for conveyance	234	m^3	234	Lorries	
Lorry required for conveyance			**3,154**	**Lorries**	
Tipper / Lorries for conveyance of materials					
		112.66	113	Lorries/days	
	9 Nos for 20 days for 18 months				

PACKAGE III

Calculation of machineries Requirement

Hydraulic excavator & Tippers / Lorries 4 Nos

working hour= 6 Hours / Day

2 loads/ hour

1 trip of quantity= 4 m3/ trip

m3

For 1 day= 192 /Day

For 1 month= 20 Working days

3840 m^3

Total quantity of earth work = 163925 m^3

Working period for earth work= 15 months + 3 Months rainy season

Machineries required for earth work:

1 Hydraulic excavator = 3 Nos

2 Tippers / Lorries = 12 Nos

3 Power roller = 3 Nos

4 Vibrated compactor = 3 Nos

5 Water lorries = 3 Nos

Mixer machine 2m3/hour for 6hours/day = 12m3/day

Total quantity of concrete 2861.5 m^3

Mixer machine required= 3 Nos for 11 days / month -- 11 months

Material conveyance Tippers / Lorries

Cement =	10	mt / Trip	1 trip / day	10	mt / day
Sand =	5.66	m^3 / Trip	2 trips / day	11.32	m^3 /day
Metal / stone =	5.6	m^3 / Trip	3 trips / day	16.98	m^3 /day

Total quantity of cement 864 mt

Lorry required for conveyance 87 lorries

Total quantity of sand 1991 m^3

Lorry required for conveyance 1991/11.32m3 178 Lorries

Total quantity of metal 3984 m^3

Lorry required for conveyance 3984/16.98m3 235 Lorries

Total Quantity of Stone 242

Lorry required for conveyance 242/16.98 15 Lorries

Total Quantity of Gravel 232

Lorry required for conveyance 232/16.98 14 Lorries

Total Quantity of Steel 2 MT

Lorry required for conveyance 2/10 1 Lorries

Total **530 Lorries**

Tipper / Lorries for conveyance of materials

4 Nos for 10 days for 15 months

UPPODAI SUB BASIN - PACKAGE NO.I

REQUIREMENT OF MATERIALS

Sl. No	Description of Item	Quantity	Unit	Cement in MT	Sand in M^3	40mm Metal in M^3	20mm Metal in M^3	Rubble Stone in M^3
1	M 7.5 Grade Concrete using 40mm metal	383	M^3	62	172	345	0	0
2	M.15 Grade Concrete using 20mm metal	986	M^3	320	444	0	887	0
3	M.20 Grade Concrete using 20mm metal	331	M^3	143	149	0	298	0
4	R.R.Masonry	14	M^3	2	5	0	0	16
5	Revetment	4156	M^3	0	1039	0	0	4613
	Total			527	1809	345	1185	4629

UPPODAI SUB BASIN - PACKAGE NO.II

REQUIREMENT OF MATERIALS

Sl.No	Description of Item	Quantity	Unit	Cement in MT	Sand in M^3	40mm Metal in M^3	20mm Metal in M^3	Rouble stone in M^3
1	M 7.5 Grade Concrete using 40mm metal	1265	M^3	2049.3	569.25	1139	0	0
2	M 10 Grade Concrete using Graded Metal	10314	M^3	22278.24	4641.3	5570	3713	0
3	M 15 Grade Concrete using 20mm Metal	75	M^3	243	33.75	0	68	0
	Total			24570.54	5244.3	6709	3781	0

UPPODAI SUB BASIN - PACKAGE NO.III

REQUIREMENT OF MATERIALS

Sl.No	Description of Item	Quantity	Unit	Cement in MT	Sand in M^3	40mm Metal in M^3	20mm Metal in M^3	Rouble stone in M^3	Steel	Gravel
1	M 7.5 Grade Concrete using 40mm metal	475	M^3	76.95	214	427.5	0	0	0	0
2	M 10 Grade Concrete using Graded Metal	1645.5	M^3	355.428	740	888.57	592.38	0	0	0
	M 10 Concrete using 20mm Metal	271	M^3	58.536	122		243.9			
	M 10 Concrete using 40mm Metal	149	M^3	32.184	67	134.1				
3	M 15 Grade Concrete	470	M^3	101.52	212	-	423			
4	M 20 Grade Concrete using 20mm Metal	271	M^3	975.6	122	243.9	18	0	0	0
5	Rough stone dry packing	433	M^3	0	0	0	0	476.3	0	0
6	R.R masonry	150	M^3	18.36	51			150		
7	Fabrication	59.21	Qtl	0	0	0	0	0	59.21	0
8	Gravel	307	M^3	0	0	0	0	0	0	356.12
9	NP3 Hume pipe	30	RM							
	Total			1619	1528	1694	1277	626	59	356

0/1 IAMWARM / WRD / UPD / WORKS / PHASE III / 2009 - 2010

CONSTRUCTION METHODOLOGY - 15 MONTHS

Description of Item	Unit	Working Months								Rainy Season			Working Months				Total
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Earth work Excavation																	
Tank Bund	M^3	10000	10000	12000	12000	12000	12000	12000	12000	0	0	0	5000	9500	10000	2020	118520
Foundation	M^3	300	400	400	300	300	300	300	525	0	0	0	0	0	0	0	2825
Concrete																	0
M.7.5	M^3	40	45	45	50	50	50	50	53	0	0	0	0	0	0	0	383
M.15	M^3	30	30	40	40	50	50	150	150	0	0	0	150	150	146	0	986
M.20	M^3	30	30	40	40	50	50	50	41	0	0	0	0	0	0	0	331
Revetment	M^3	300	300	350	350	400	400	400	400	0	0	0	250	350	350	306	4156
R.R.Masonry	M^3	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	14

1.7. ENVIRONMENTAL COMPONENT

INDEX

IAMWARM Project

(Environmental Component in Uppodai Subbasin)

Name of the River Basin	Tamiraparani Aru River Basin
Name of Sub basin	Uppodai Sub basin
Name of WUA	**To be formed**
Name of Division	The Executive Engineer, PWD-WRO., Korampallam Aru Basin division, Thoothukudi.
Name of Sub division	1. The Assistant Executive Engineer, PWD-WRO., Korampallam Aru Basin Sub division, Kovilpatti.
District	1.Thoothukudi District 2.Tirunelveli District
Taluk	Thoothukudi District **1.Kovilpatti Taluk** Tirunelveli District **2. Tirunelveli Taluk** **3. Palayamkottai Taluk**
Block	Thoothukudi District **1. Kayatharu Block** **2. Ottapidaram Block** Tirunelveli District **3. Manur Block** **4. Palayamkottai Block**
I) Name of tank severely affected by Aquatic weeds	Enclosed Annexure - I
II) Domestic Sewage	Part of Kovilpatti municipality sewage is let into the Moopanpatti tank(near Railway station)
III) Municipal Solid Waste	In Ottapidaram the solids are dumped into nearby waterbodies like pond.
IV) Industries	Enclosed Annexure - II
V) Water quality status	i)Surface water **The surface water samples were collected and tested periodically by the Environmental Cell Division, Madurai The surface water quality is generally good in this sub basin, low in TDS (< 0.5gms/cm), chloride is medium to hard (temporary) and alkaline in nature. All the steams and tanks are complied with drinking and irrigation quality standards.**

	ii) Ground water **The ground water samples were collected at T.Duraisamypuram, Kalugumalai, Kayathar, Idaiseval, &Elavelangal and tested periodically by the Geo chemical laboratory, Madurai.Generally in virudhunagar district, the TDS values in the range of 500 – 2000 mg / lit., which is moderate., which is the acceptable limit for irrigation. Excess nitrate content is present in 1 or 2 places. As excessive nitrate values are not persistently present in the ground water, the nitrate pollution has not taken place in this sub basin. In general, the quality of ground water is moderate, which is below the tolerable limit.**

ANNEXURE – I

Tanks affected by Aquatic weeds

Sl. No	Name of tank	Name of village	Ayacut in Ha	Type of weed
1	**Rajapudhukudi tank**	**Rajapudhukudi**	**46.39**	**-**
2	**Sayarpadai Thanki**	**Kayathar**	**52.72**	**Prosopis Juli Flora**
3	**Kalangaraipatti old tank**	**Kalangaraipatti**	**52.63**	**Prosopis Juli Flora**
4	**Kalangaraipatti New tank**	**Kalangaraipatti**	**64.78**	**-**
5	**Saravanapuram tank**	**Saravanapuram**	**53.12**	**Prosopis Juli Flora**
6	**Chidamparampatti tank**	**Chidamparampatti**	**89.88**	**Prosopis Juli Flora**
7	**Avudaiammalpuram tank**	**Avudaiammalpuram**	**59.92**	**-**
8	**Chattrapatti tank**	**Chattrapatti**	**31.94**	**-**
9	**Chettikurichi**	**Vadakuperiyakulam**	**52.63**	**-**
10	**Alagappapuram tank**	**Alagappapuram**	**55.87**	**Prosopis Juli Flora**
11	**Kallampatti tank**	**Kallampatti**	**62.75**	**Prosopis Juli Flora**
12	**Thirumanagalakurichi tank**	**Thirumanagalakurichi**	**103.16**	**-**
13	**Ayyanoorthu tank**	**Ayyanoorthu**	**45.95**	**Prosopis Juli Flora**
14	**Kattarankulam tank**	**Kattarankulam**	**24.29**	**-**
15	**Parakramapandiankulam tank**	**Parakramapandiankulam**	**295.55**	**-**
16	**Sevalaperi pudukulam tank**	**Sevalaperi pudukulam**	**253.89**	**-**
		Total ayacut	1345.47	

ANNEXURE – II

Industries

Sl. No	Name of industry	Category	Type	Quantity of effluent(KLD)	
				Sewage	Trade
1	**Sri Vinayaka Blue metal,Aasoor**	**Metal Works**	**O/S**		
2	**Asmita Engg. Works,Akilandapuram**	**Engg works**	**O/S**		
3	**Ebin Fathima Blue Metal Industries,Akilandapuram.**	**Metal Works**	**O/S**		
4	**Ivrcl Infrastructures&Projects Ltd, Akilandapuram.**	**Infra structure**	**O/S**		
5	**Maimoon Industries, Akilandapuram.**	**-**	**O/S**		
6	**Malaiarasi Blue Metals,Akilandapuram.**	**Metal Works**	**O/S**		
7	**Mass Industries, Akilandapuram.**	**-**	**O/S**		
8	**S.V.A.Lakshmi Blue Metal Industries,Akilandapuram.**	**Metal Works**	**O/S**		
9	**Jameela Cem Industries, Ayyanaruthu.**	**Cements**	**O/S**		
10	**Alphio Match Industries, Chettikuruichi.**	**Matches**	**R/S**		
11	**Ivrcl Infrastructures&Projects Ltd, Chettikuruichi..**	**Infra structure**	**O/S**		
12	**Selvi Blue Metal, Chettikuruichi.**	**Metal Works**	**O/S**		
13	**Anand Match Industries, Kalangaraipatti**	**Matches**	**R/S**		
14	**Alaguram Match Works, Kalugumalai.**	**Matches**	**R/S**		
15	**Annammal Match Industries, Kalugumalai**	**Matches**	**R/S**		
16	**Dhanalakshmi Match Works, Kalugumalai**	**Matches**	**R/S**		
17	**Nirmala Match Industries, Kalugumalai**	**Matches**	**R/S**		

18	**Pope The King Match Factory,Kalugumalai**	**Matches**	**R/S**		
19	**Pope The King Match Factory B Unit,Kalugumalai**	**Matches**	**R/S**		
20	**Premalatha Match Works, Kalugumalai**	**Matches**	**R/S**		
21	**R.R.R.Match Industries, Kalugumalai**	**Matches**	**R/S**		
22	**Rajendran Match Industries, Kalugumalai**	**Matches**	**R/S**		
23	**Rathna Match Industries, Kalugumalai**	**Matches**	**R/S**		
24	**Richard Match Company, Kalugumalai**	**Matches**	**R/S**		
25	**Sasa Clinic, Kalugumalai**	**Hospital**	**R/S**		
26	**Sundravel Match Industries, Kalugumalai**	**Matches**	**R/S**		
27	**Thangam Match Works, Kalugumalai**	**Matches**	**R/S**		
28	**Welcome Match Works, Kalugumalai**	**Matches**	**R/S**		
29	**PTC Spinning Mills (P) Ltd, Kalugumalai**	**Spinning**	**O/L**		
30	**Jeya Hanuman Textiles, Kalugumalai**	**Textiles**	**O/S**		
31	**Babu Blue Metal Industries, Kayathar**	**Metal Works**	**O/S**		
32	**H.Ayoop Khan Industries, Kayathar**	**-**	**O/S**		
33	**Mohidien Pitchai Mat Industries, Kayathar**	**Mat**	**O/S**		
34	**P.M.Sultan Mat Works, Kayathar**	**Mat**	**O/S**		
35	**Sulaiman Lime kiln, Kayathar**	**Lime**	**O/S**		
36	**Arasan Phosphates (P) Ltd, Kottali**	**Chemicals**	**R/M**		

37	**Kayaar Exports Ovt Ltd, Nalattinputtur**	**-**	**O/L**		
38	**Ivrcl Infrastructure and Projects Ltd,Nalattinputtur.**	**Infra structure**	**O/S**		
39	**K.R.Exports(p)Ltd, Nalattinpudur**	**-**	**O/M**		
40	**Padma Industries, Nalattinputtur**	**-**	**O/S**		
41	**Sri Palaniandavar Matches, Omanakulam**	**Matches**	**R/S**		
42	**Blast Abrasives, Therku V.P puram**	**-**	**R/S**		
43	**Fathima Blue Metal Industries, Therkullanthaikulam**	**Metal Works**	**O/S**		
44	**Bharat Match Works, Vanaramutti**	**Matches**	**R/S**		

Note: **The total number of industries located in the Uppodai sub basin is around 44 ,in which all the category industries are given in the table.**

Name of work :- Environmental Monitoring on Water and Soil quality and creating awareness & Updating of “Environmental and Social Assessment Report” for Uppodai Sub Basin

Estimate Cost Rs 4.00 Lakhs

ENVIRONMANTAL MANAGEMENT FRAME WORK

INRODUCTION

Under IAMWARM, 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. An Environmental assessment study has been conducted by Environment Protection Training and Research Institute, Hyderabad and identifies the Environmental issues, social issues and remedial measures for Tamiraparani river basin as follows.

Environmental issues	**-Sedimentation** **-Sand mining** **-Soil erosion** **-Dumping of solid waste** **-Sewage pollution**
Social issues	**-Dry land agriculture** **-Reduction in livestock** **-Women empowerment-SHGs**
Remedial measures	**-Livestock services delivered and managed.** **-Aquatic weed management** **-Solid Waste management**

The Environmental Cell of WRO assessed Environmental impact on the quality of Surface water, Ground water and Soil by collecting water & soil samples and testing them. Micro level Environmental Status Report for Tamiraparani River basin was prepared with the assistance of World Bank.

Also awareness programs and Workshops were conducted to create awareness on the Environmental issues and remedies among the Public, Farmers, Government Officials and NGO’s. 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 Environmental issues pertaining to that area and remedial action to overcome the problems is must.

DESCRIPTION OF SUB BASIN:

Uppodai is one of the tributary of the river Chithar. This stream originates from the Kalugumalai hills area.The river Uppodai transverse through Kalangaraipatti, Chettikuruchi, Vellalankottai, Kayattar, Rajapudukudi, Parakramapandian and Sevalaperi villages and confluences with Tamiraparani river at Seevalaperi. This stream starts only from the plain terrain and there is no hilly catchment area.

There are 3 anicuts namely 1)Kalangaraipatti anicut (to feed Kalangaraipatti Old Tank), 2)Akilandapuram Anicut (to feed Sayarpadaithangi Tank) and 3).Appasamy Anicut (to feed Rajapudukudy Tank) in this sub basin. There are 16 non system tanks under this sub basin and the total command area of this basin is 1346.42Ha. The Uppodai stream ends at Chithar river.

The Uppodai sub basin is located between the latitude 80 50 ' 00 '' N and 90 10 ' 00 '' N and the longitude 770 40 ' 00" E and 77 0 50' 00 '' E. The command area of this sub basin comes under the Kovilpatti Taluk in Thoothukudy District and Palayamkottai Taluk and Tirunelveli Taluk in Tirunelveli District

ENVIRONMENTAL PROBLEMS:

The following environmental issues were identified in the Uppodai sub basin.

WATER WEEDS:

Prosopis Juli flora has invaded the cultivable lands in lower reaches and water bodies ie,tanks, channels and rivers. Hence, these plants need to be eliminated totally for the conserving precious water resources. The details of tanks slightly affected by water weeds are given in the annexture-1.The aquatic weed growth affect the carrying capacity of channel and storage capacity of tanks,damage the lining of the channel,decrease the water quality and increase the evapo transpiration.

INDUSTRIAL POLLUTION:

The total number of industries located in the Uppodai sub basin is around 44, which includes the industries like Matches, Oil mill, Spinning, Ginning, Chemical, Hospital, Pesticide, Steel rolling, Garments etc, There is no highly polluting Red category Industries.

There are total of 18 match industries and the waste are dumped in a pit and finally burnt. The effluents are discharged in to the open drains. So for, there has been no pollution problem in the activity of these small-scale industries.

All the industries have their own treatment plant and the treated effluent is used to irrigate their own farm land. Trade Effluent from these industries is being monitored periodically by TNPCB. Any improvement to minimize the effect of pollution will be dealt by the TNPCB.

SOLID WASTE DIPOSAL:

The problem of Garbage collection and its disposal has assumed importance, in the context of rapid growth of population, Urbanization, industrial growth and development. There is no organized scientific method of disposal in all the Panchayats of this sub basin.

Under the Rural welfare funds a new scheme for Solid waster Management plan is under implementation. Under that scheme, collection tank for disposable and un-disposable 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.

SEWAGE DISPOSAL LET INTO WATER BODIES

During the field survey, it is found that in many locations, public sanitary complex have been constructed near riverbanks. This leads to every possibility to contaminate the water sources.

So creating awareness among the Presidents of the local bodies is must and to motivate them to adopt solid waste management and sewage management. Wherever required. Workshop including filed visits, exclusively for them is to be conducted under the IAM WARM project.

ACTIVITIES PROPOSED

To monitor the quality of water and soil and create database regarding the Environmental Status for this sub basin, this proposal has now been proposed with the following activities at sub basin level. The provisions and necessity are explained below.

I. MONITORING WATER AND SOIL QUALITY, project works monitoring

Collection and testing of surface water samples is essential to understand the problem on water quality more precisely. Hence, it is proposed to collect and test the surface water sample in Uppodai river at three selected locations, for a period of three years. Water samples at the following locations will be collected and tested once in 3 months for a period of three years so as to assess the environmental impact on the quality of surface water of this sub basin more precisely.

1. Kalankaraipatti - D/S of Kalankaraipatti New tank.
2. Thirumanagalakurichi - D/S of Thirumanagalakurichi tank.
3. Parakramapandian - D/S of Parakramapandian Kulam

In addition to the above identified locations, water samples will also be collected once in a year from tanks and nearby wells in three selected locations, where sewage is directly let into water bodies. These samples will be tested to asses the impact on the quality of surface and ground water.

Soil samples are also to be collected from one selected location to asses the impact on the quality of soil due various Environmental problems like use of chemical fertilizer and using the polluted water. Even from the same locations more number of samples at regular one-year interval has been collected and tested to determine precisely the impact on the degradation of the quality of the soil. Therefore testing of soil samples is essential. Soil samples thus collected will be tested in the Agricultural College.

Under this item following provisions have been made.

1. Testing charges for the water and soil samples.
2. Provision for Conveyance, Purchase of Cans, bottles, chemicals, Documentation of water quality data, Driver salary and Computer operator

II.ENVIRONMENTAL AND SOCIAL KNOWLEDGE BASE

Micro level Environmental Status Reports for Tamiraparani river basin have been prepared. In these reports Environmental problems and remedial measures have been documented at the basin level. Moreover Environmental and social assessment on river basins of Tamilnadu have been done by Environmental protection Training & Research Institute, Hydrabad. Based on these report and the data now proposed to be collected, Environmental and social assessment for each sub basins are to be updated and documented in order to program further activities.

Under this item following provisions have been made.

1. Salary for supporting staff i.e.Technical assistant,
2. Expert analysis and development reporting.

III.ENVIRONMENTAL AND SOCIAL AWARENESS CREATION

Awareness programs are necessary to create awareness among the public about environmental problems and the action to be taken by them to remove or reduce the impacts due to the environmental problems.

Hence, to create and motivate the people, awareness programs are to conducted in the villages where sewage is directly let in to the water bodies. It is also proposed to conduct awareness meeting in schools /institutions to cover the following subjects in addition to placing stickers, tin sheets, and pamphlets containing message related to the following.

- **Sanitation.**
- **Solid waste treatment.**
- **Sewage treatment and converting the same in to gas.**
- **Natural farming.**
- **Conversion of aquatic weeds in to 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 one location 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 institution / NGO's.

TOTAL COST

The total proposal cost works out to Rs. **4.00 Lakhs (Rupees Four Lakhs only)**

Name of Work : - Environmental Monitoring on Water and Soil Quality and Creating Awareness & Updating of "Environmental and Social Assessment Report" for Uppodai SUBBASIN

Detailed Estimate

Sl no	Description of work	No	Measurements			Cont ents
			L	B	D	
I	Monitoring Water and Soil Quality, Project Works Monitoring					
1	**Water Samples from rivers in 3 locations collected once in four months for a period of three years 3x3x3 = 27 Nos**	**27 Nos**				**27 Nos**
2	**Water Samples from rivers in 3 locations collected once in four months for a period of three years 3x1x3 = 3 Nos**	**3 Nos**				**3 Nos**
3	**Testing charges for Soil sample collected from polluted sites (1 nos / year x 3 years = 3 Nos)**	**3 Nos**				**3 Nos**
4	**Hiring Jeep driver on service contract basis for the Department vehicle(1manmonths/yrx3yrs=3 Nos)**	**3 Man months**				**3 Man months**
5	**Purchase of Cans, bottles, chemicals and Documentation of water quality data and engaging labour**	**3 year**				**3 year**
6	**provisions for field vists for environmental monitoring for project activites with respect to environmental safe guards**	**3 year**				**3 year**
II	Environmental and Social knowledge base					
1	**Village level data collection on Environmental and Social state REGARDING OTHER IMPACTS (1 man months / year x 3 years = 3 Nos)**	**15 Man months**				**15 Man months**
2	**Expert analysis and Development reporting on other impacts**	**LS**				**LS**
3	**Impact studies due to project investments**	**10 Man Months**				**10 Man Months**
4	**Expert analysis and Development reporting due to project investments (After Project)**	**LS**				**LS**
III	Environmental and Social Awareness creation					
1	**Awareness propagation through Stickers, Tin sheets, Phamlets and Banners**	**3yrs**				**3yrs**
2	**Awareness programe for public (1 Nos/ year x 1 year = 1 No)**	**1 No**				**1 No**
3	**Awareness meeting in Schools / Institutions (1 Nos/ year x 1 years = 1 Nos)**	**1 Nos**				**1 Nos**

4	**Preparing and publishing Environmental Atlas at subbasin level for the use of the line departments / Institutions**	**LS**				**LS**
5	**Documentation of the entire activities, Upgradation of computer and accessoties and purchase of Video films and stationaries**	**LS**				**LS**
IV	Variation in Rates and unforseen items	**LS**				**LS**

Name of Work : - Environmental Monitoring on Water and Soil Quality and Creating Awareness & Updating of "Environmental and Social Assessment Report" for Uppodai SUBBASIN

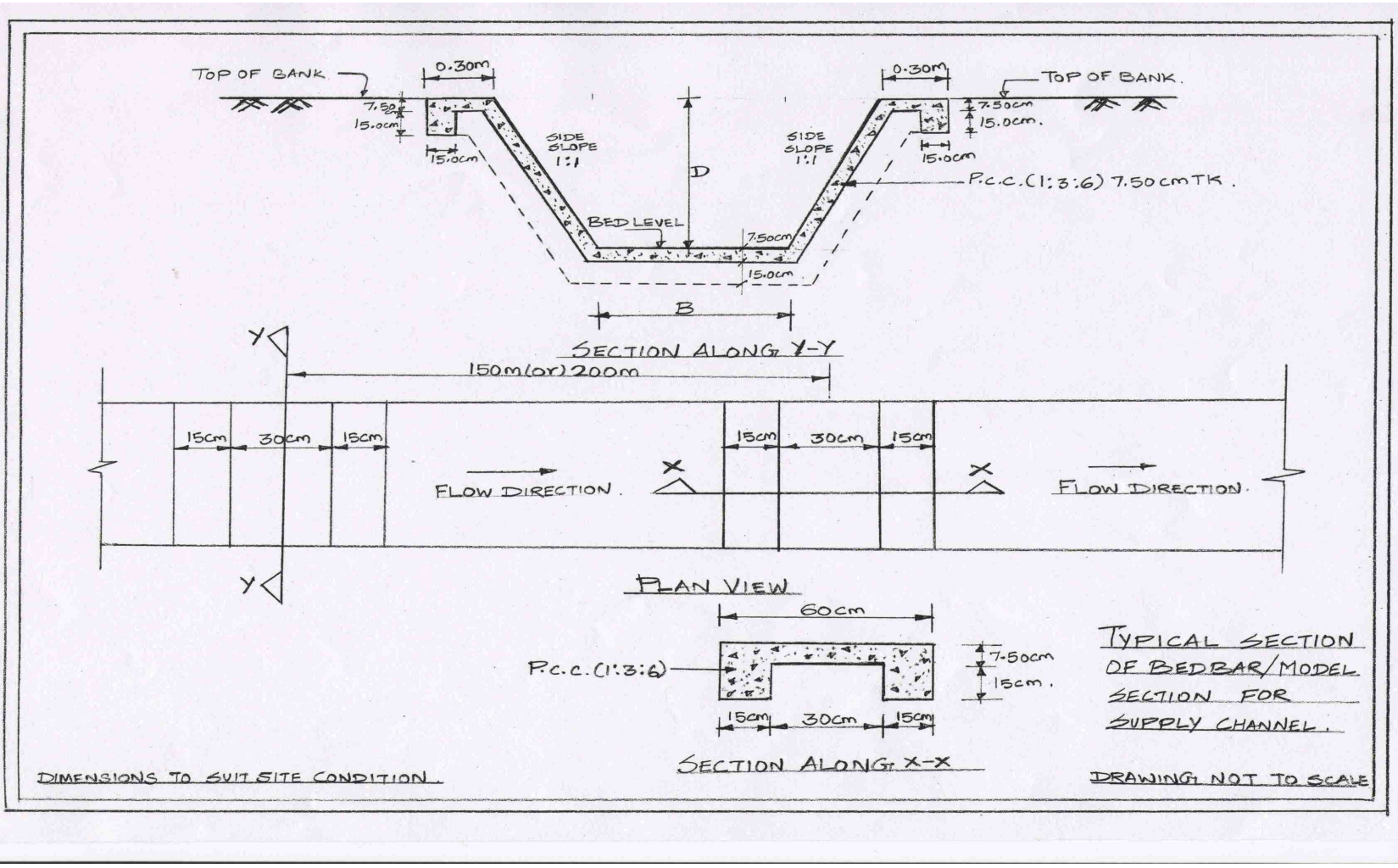
Abtract Estimate

Sl no	Qty.		Description of work	Rate (Rs)	Per	Amount
I	Monitoring Water and Soil Quality, Project Works Monitoring					
1	**27**	**Nos**	**Testing charges for Water samples**	**1400**	**Each**	**37800**
2	**3**	**Nos**	**Testing charges for Water samples**	**12000**	**Each**	**36000**
3	**3**	**Nos**	**Testing charges for Soil sample**	**7350**	**LS**	**22050**
4	**3**	**Man months**	**Hiring Jeep driver on service contract basis**	**3500**	**1Man month**	**10500**
5	**3**	**years**	**Conveyance, Purchase of Cans, bottles, chemicals and Documentation of water quality data, engaging labour**	**3300**	**per year**	**9900**
6	3	year	**provisions for field vists for environmental monitoring for project activites with respect to environmental safe guards**	**5000**	**per year**	**15000**
II	Environmental and Social knowledge base					
1		**15 Man months**	**Village level data collection on Environmental and Social state REGARDING OTHER IMPACTS (1 man months / year x 3 years = 3 Nos)**	**5000**	**1Man month**	**75000**
2		**LS**	**Expert analysis and Development reporting on other impacts**	**LS**	**LS**	**15000**
3		**10 Man Months**	**Impact studies due to project investments**	**5000**	**1Man month**	**50000**

4		**LS**	**Expert analysis and Development reporting due to project investments (After Project)**	**LS**	**LS**	**10000**
III	Environmental and Social Awareness creation					
1		**3 years**	**Awareness propagation through Stickers, Tin sheets, Phamlets and Banners**	**5000**	**per year**	**15000**
2	**1**	**Nos**	**Awarensss programe for public**	**15000**	**Each**	**15000**
3	**1**	**Nos**	**Awareness meeting in Schools / Institutions**	**15000**	**Each**	**15000**
4		**LS**	**Preparing and publishing Environmental Atlas at subbasin level for the use of the line departments / Institutions**	**LS**		**50000**
5		**LS**	**Documentation of the entire activities, Upgradation of computer and accessoties and purchase of Video films and stationaries**	**LS**		**19000**
IV			Variation in Rates and unforseen items			**4750**
				Total		400000

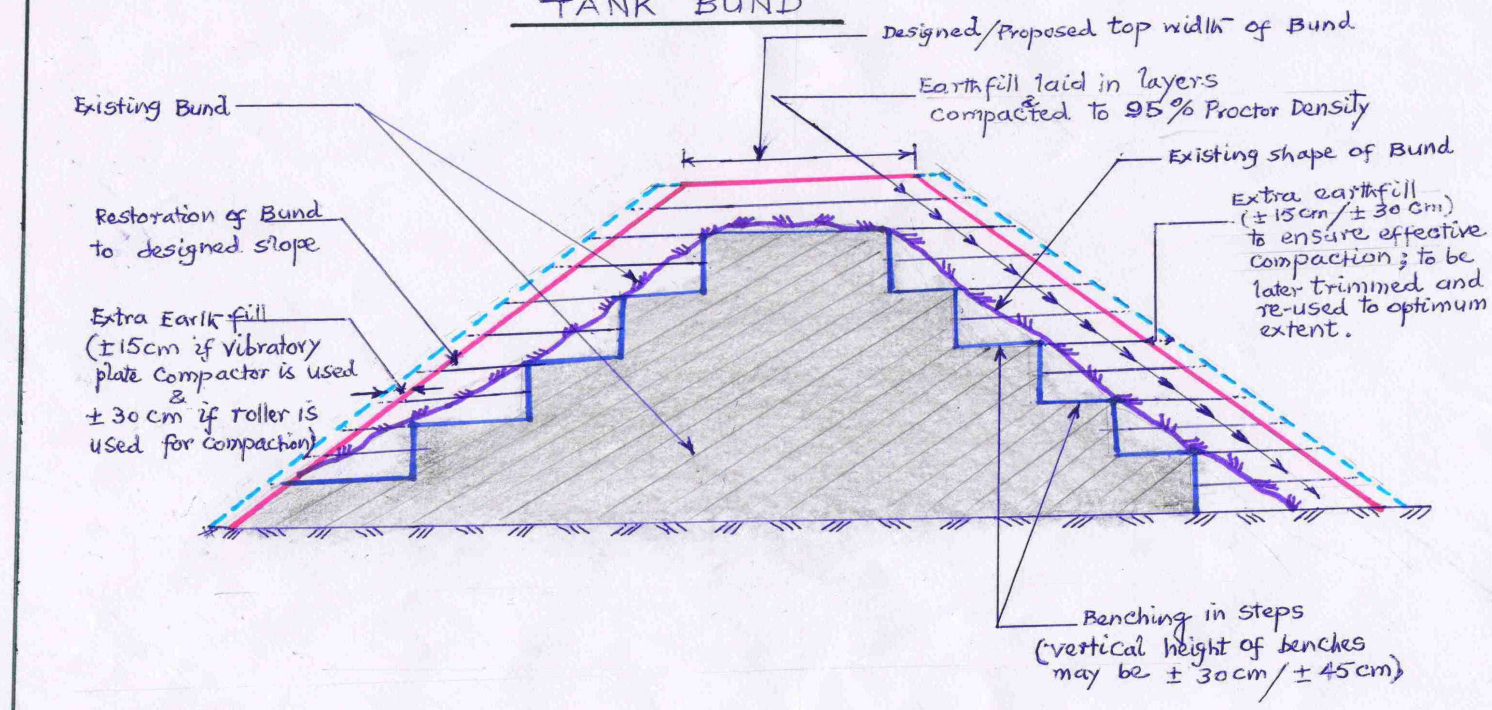
(Rupees Four lakhs only)

DESIGN DRAWING

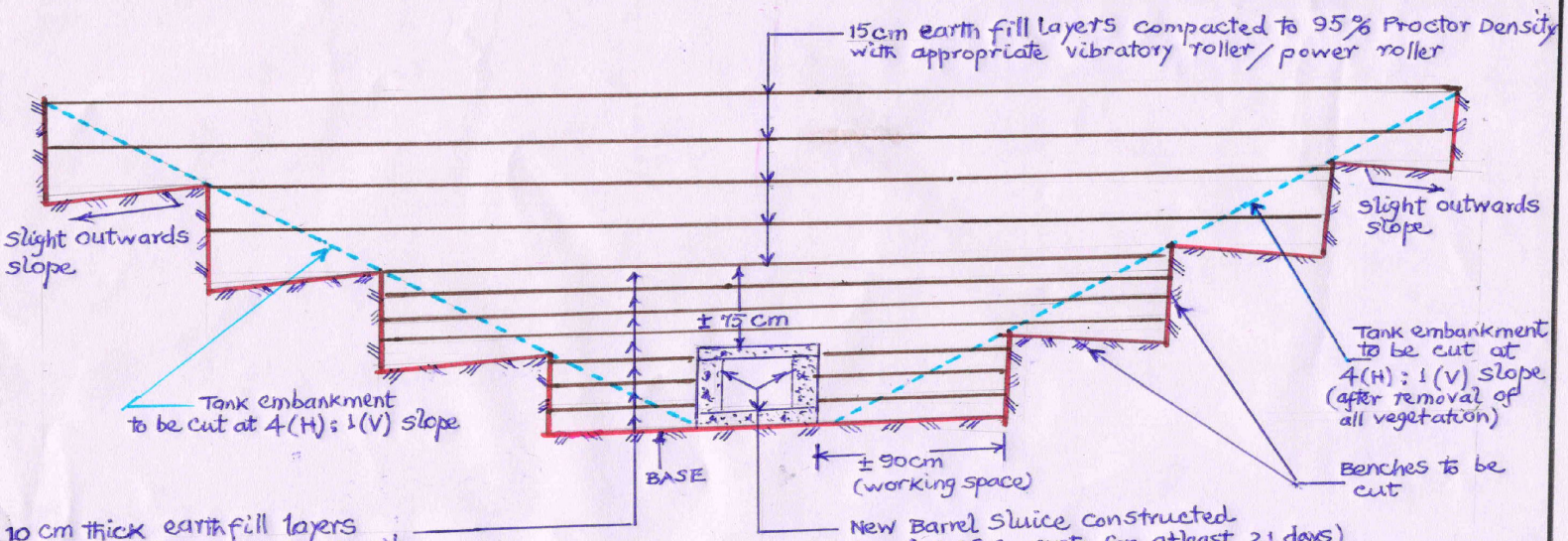

TOP OF BANK
0.30m
7.50cm
15.0cm
15.0cm
SIDE SLOPE 1:1
D
BED LEVEL
7.50cm
15.0cm
B
SIDE SLOPE 1:1
0.30m
TOP OF BANK.
7.50cm
15.0cm.
15.0cm
P.C.C.(1:3:6) 7.50cm TK.
SECTION ALONG Y-Y
Y
150m(or)200m
15cm
30cm
15cm
FLOW DIRECTION.
X
X
FLOW DIRECTION.
Y
PLAN VIEW
60cm
P.C.C.(1:3:6)
7.50cm
15cm.
15cm
30cm
15cm
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

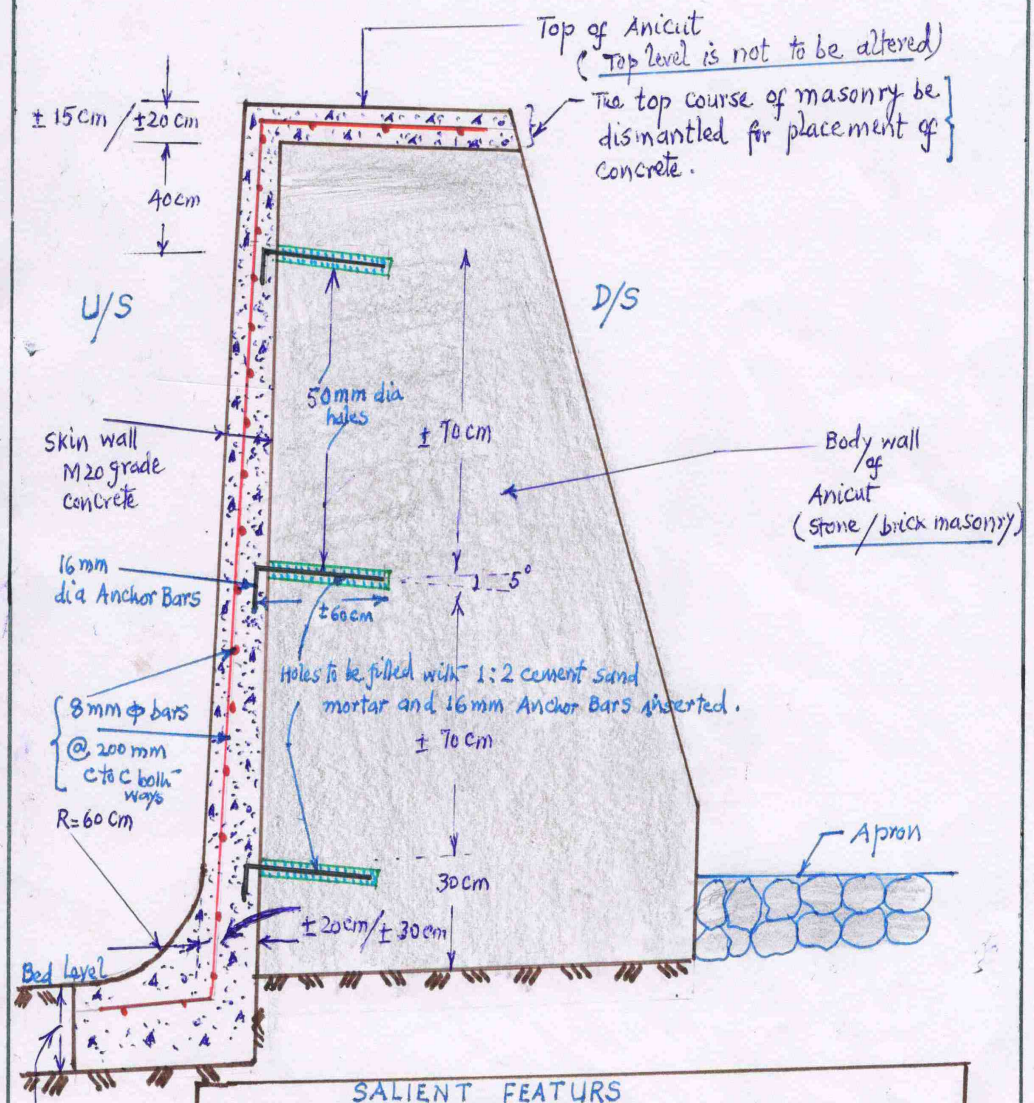
NOTES (i) The Base MUST be made smooth & hard, duly compacted with compactors / pneumatic tampers.

(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 re-used (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 FEATURS

- 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 ± 1.50 m.