GOVERNMENT OF TAMILNADU

WATER RESOURCES DEPARTMENT

TN IAMWARM PROJECT

KAYALKUDIYAR SUB BASIN

DETAILED PROJECT REPORT

Madurai Region

Madurai

TNIAMWARM PROJECT

KAYALKUDIYAR SUB BASIN

WATER RESOURCE DEPARTMENT

WATER RESOURCES ORGANISATION

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1.1 INTRODUCTION

1. INTRODUCTION

1.1 GENERAL

Agriculture is the dominant sector in the Indian economy. Tamil Nadu, depends largely on the surface water irrigation as well as ground water irrigation. The state has used the surface and ground water potential to the maximum limit and hence the future development and expansion depends only on the efficient and economical use of water potential and resources.

To achieve higher water use efficiency, it is necessary to improve and upgrade the existing conveyance system and also to introduce modern irrigation methods.

With the above objective, a comprehensive programme has been proposed with a Multi Disciplinary Approach.

1.2 DESCRIPTION OF THE VAIPPAR BASIN

The River Vaippar originates at an altitude of 1644m in Vasudevanallur reserve forest on the eastern slopes of Western Ghats in Tirunelveli District and run eastward for a distance of 112 km and finally debouches into Gulf of Mannar near Vembar village, 18 km from Vilathikulam town of Thoothukudi district. The Vaippar river basin is located between latitude 8°59'N to 9°49' N and longitude 77°15'E to 78°23'E, having an area of 5423 Sqkm and is surrounded by Thamirabarani basin on the South, Western ghats and Vaigai basin on the West, Gundar basin on the North and Bay of Bengal on the East This basin has been divided into 13 sub-basins namely as follows;

1. Nishabanadhi
2. Kalingalar
3. Deviar
4. Nagariyar
5. Sevalaperiyar
6. **Kayalkudiyar**

7. Vallampatti Odai/Uppodai
8 . Sindapalli Uppodai
9. Arjunanadhi
10. Kousiganadhi
11. Uppathurar
12. Sinkottaiyar
13. Vaippar

1.3 DESCRIPTION OF THE KAYALKUDIYAR SUB BASIN:-

Kayalkudiyar is a tributary of Vaippar and it originates in Rajapalayam and Srivilliputtur taluk joins in the left flank near Vembakottai village. In this junction only the Vembakottai reservoir has been constructed. Vembakottai reservoir scheme has been executed in such a way by blocking the Kayalkudiyar within the reservoir.

The hilly drainage area of kayalkudiyar Sub basin is 58.5 Sq.km. and the plain drainage area is 201.50 Sq.km. Hence the total drainage area is 260 Sq.km. Srivilliputtur and Sivakasi are the two rainfall stations which have got influential effect to this sub basin. Out of the two influential effect the Srivilliputtur is greater than that of Sivakasi rainfall station.

Just in the southern side of the origin of Chittar river (a major tributary of Arujunanadhi) the river Kayalkudiyar river starts at an altitude of about 1,500 m above M.S.L. in the eastern slope of Western ghats in Srivilliputtur taluk of Virudhunagar District. The sub basins Arujunanadhi and Sindapalli Uppodai lie in the North and the Sevalperiyar Sub Basin lies in the South and the Vembokkottai Dam lies in the East of Kayalkudiyar Sub Basin. The Kayalkudiyar river originates from the Kayalkudiyar Oultet in the Anaithaliyar River and ends at Vembokottai Dam. There are Six anicuts across in the Kayalkudiyar River Kothankulam Anicut, Pillayarkulam Anicut, Achanthavilthan Anicut ,Thulukankulam Anicut, Melakkal Anicut and Kelakkal Anicut and the Non-system tanks under this sub basin are 13 Tanks with total Ayacut of 861.680 Ha.

Scope of the project

The water resources department in coordination with the following line departments have proposed to improve the irrigation service delivery and productivity of irrigated agriculture with effective integrated water resources management in the sub basin. The line departments are:

a) Agriculture department
b) Department of Horticulture and plantation crops
c) Agriculture Engineering Department
d) Tamilnadu Agriculture University
e) Department of Agriculture marketing and agriculture business services.
f) Animal Husbandry and veterinary services.
g) Fisheries department

Water resources department

In order to improve the conveyance and operational efficiency, it is now proposed to improve and modernize the structural components in Kayalkudiyar Sub basin (viz)

1) Strengthening of tank bunds by using machineries
2) Reconstructions and repairs to sluices
3) Repair to damaged weir
4) Reconstruction of worn out weir
5) Desilting the supply channels using machineries
6) Provision for RCC boundary posts along the tank boundries
7) Provision for measuring devices at D/S of sluices.
8) Lining the irrigation channel for 30m length at the D/S of sluices

Report accompanying with Estimate for Rehabilitation and Modernisation of Non System Tanks of its supply channels in Kayalkudiyar Sub Basin in Srivilliputhur, Sivakasi & Rajapalayam taluk of Virudhunagar District

PACKAGE NO : 01/IAMWARM/WRO/KKR/WORKS/IV (2010 – 2011)

ESTIMATE AMOUNT: RS. 224.20 LAKHS

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influential effect to this sub basin. Out of the two influential effect the Srivilliputtur is greater than that of Sivakasi rainfall station.

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There are 13 tanks in this basin and the total registered ayacut under these tanks under PWD are 861.68 ha.

There are 6 Nos of Anicuts across in Kayalkudiyar river as follows.

1) Kothankulam Anicut
2) Pillayarkulam Anicut
3) Achanthavirthaan Anicut,
4) Thulukkankulam Anicut,
5) Melakkal Anicut,
6) Keelakkal Anicut

There are 13 Non system tanks fed by this sub basin in Srivilliputhur ,Sivakasi & Rajapalayam Taluks of Virudhunagar District.

2. Details of Ayacut

The details of ayacut area is classified as Direct Ayacut and Indirect Ayacut which are furnished below.

AYACUT UNDER KAYALKUDIYAR:-

Sl No.	Description	No. of tanks/channel	Ayacut Area in Ha
1	Non System Tanks	13	861.68
2	Direct Ayacut from Anicut	-	-

PRESENT STATE AND PROPOSALS:

ANICUTS AND HEAD SLUICES

In the sub basin out of 6 Anicuts 2 Numbers of anicuts has been proposed to be repaired. In Kothankulam Anicut and Pillayarkulam Anicut new S.G.shutter arrangement has been proposed. The remaining four anicuts are in good condition .Also New Grade wall has been proposed at Kayalkudiyar Offtake Point.. Due to this Commandability up to tail end reaches will be restored.

SUPPLY CHANNELS

Most of the supply channels are heavy silted up due to sliding vegetation and encroachments in some of the places of the supply channel are heavily eroded and there is possibility of breaches and over toping. To overcome the above difficulties now it is proposed to desilting the supply channels to its original bed width.

TANKS:-

A. BUND

Most of the tanks are warranted desilting and standardization. In most of the tanks storing capacity has been considerably reduced due to the siltation and the ryots are representing that even three filling is not sufficient for the single crop of paddy. In most of the places the bund is just below the MWL and the rear slope is eroded and encroached and hence require standardizing the ryots also represented to make the top of bund road worthy for conveying manures and fertilizers, etc. to fields through vehicles. Also represented to provides steps near sluices for easy approach to filed and sluices.

It is now proposed in this estimate to standardizing the tank bund with top width of 3m at TBL with front slope of 2:1 and rear slope 2 :1 with necessary

model sections at every 500m interval. Steps have also been proposed to near sluices for easy approach to field and sluices.

B. SLUICES

Some of the sluices in the tank are in dilapidated condition and require reconstruction also some of the sluices require repairs such as providing cistern leading channels and reconstruction of damaged head wall / guide wall / wing wall / tower head wall etc.

Necessary provision have been made in this estimate for reconstruction dilapidated sluices and repairs to the damaged sluices such as providing cistern leading channels and reconstruction of damaged head wall / guide wall / wing wall / tower head wall etc.

WEIR

One Tank namely ThirumaalaiVanankinan surplus weir is in completely damaged condition. Provision has been made in this estimate to reconstruction of the same. Another five tank surplus weir is required repair in Wings, return and apron. Necessory provision has been made .

SHUTTERS

Most of the sluices and Weirs have no shutters and Some of the existing shutters are in damaged condition with require renewal .Some of the existing shutters are not in operation condition which require removing, repairing and refixing with renewal of necessary parts. Most difficulties are experienced during flood time for operation with very old type of damaged paddle shutters. Most of the anicuts and tank weirs are provided with dam stones, but wooden blanks are available for driving the water into the supply channel from anicuts and storing the water upto MWL in the tanks.

Lining of Irrigation Channels

In the Sluices, irrigation Channel immediately D/S of sluice has been proposed for Cement concrete lining for the length of 30 m. from Rear Cistern for easy flow to the field. Also Measuring devices are proposed to fixed at that Point.

To over come above difficulties provisions have been made in this estimate for

- Providing New S.G.Shutter arrangement for Weir
- Providing New S.G.Plug Rod arrangement for Sluices

Approach: To rehabilitate the irrigation system and service delivery:

a. Thematic Maps on land use, soils, crops, water bodies, and other agricultural and demographic attributes are prepared by IWS.
b. The crop water requirements for the crops during without and with Project situation are prepared by IWS. The crops proposed by Agriculture and Horticulture Departments will be tailored in consultation with Agricultural Marketing Department and the Water Users Association.

c. The adequacy & status of the feeder channels to tanks, distribution system etc, have been assessed by the WRO (both regional and Plan Formulation wing) as follows:
   - Repairs to the damaged Anicuts
   - Desilting the supply channels by earthwork excavation using machineries
   - Strengthening the tank bund by desilting the tank using machineries
   - Reconstruction of Collapsed weir
   - Repairs to the damaged weirs
   - Reconstruction of Collapsed Sluices
   - Repairs to the damaged Sluices
   - Providing S.G. Shutter / Plug arrangements to Sluices, Head sluices, Scour vents etc.,
   - Providing Wooden planks to Anicut / Weir Dam stones
   - Lining of Irrigation Channel from Sluice
   - Measuring Devices are providing for immedietly D/S of Sluice

The following L.S Provisions has also been made in this Estimate.

1. Lumpsum Provision for Labour welfare fund @ 0.30 %.
2. Lumpsum Provision for advertisement charges, Documentation,Name Board Photographic charges, PS &Contigencies @ 2.5 %.

A. KAYALKUDIYAR SUB BASIN:-

Rehabilitation of Rehabilitation and Modernisation of Non Systen Tanks of its supply channels in Kayalkudiyar Sub Basin in Srivilliputhur ,Sivakasi & Rajapalayam taluk of Virudhunagar District	Est.Rs.224.20Lakhs.
Total	Est.Rs.224.20Lakhs

There will be substantial improvement in storage capacity which facilitates raising of high value and less water intensive crops as second crop in a considerable area.

Outcome Indicators

The indicators for evaluating the performance of WRO are as follows:

- The conveyance efficiency is expected to be improved from the present 43% to 53%
- The present gap area of 214.16 Ha will be bridged totally in the project
- Rehabilitation/ Reconstruction of Irrigation Infrastructure
- The following irrigation infrastructure development works are proposed in the sub basins

Rehabilitation of 2 Anicuts.and 13 tanks and selected Supply Channel in Kayalkudiyar sub basin.

Besides this, the WRO is actively engaged in formation of WUAs as per TNFMIS Act 2000 and Rules by preparing the relevant documents such as maps showing the hydraulic boundary of WUA, land owners voters list etc. To help in the above collection of data involving social and field activities, Agricultural Extension Officers, SHGs etc. It is estimated that about 13 WUA shall have to be formed in these Sub basin.

Tank Components

The practice of tank irrigation has been prevalent for time immemorial. Tanks help to store water for lean season and have played a significant role in the irrigation

sector. They not only provide a source for irrigation but also help in recharging ground water under suitable conditions. There are **13 Non-system tanks** with an ayacut of **861.68 ha in Kayalkudiyar** These tanks are quite old and are in urgent need of repairs & rehabilitation. The irrigation potential of these tanks has declined with siltation, poor maintenance of sluices, bund erosion and failure of the distribution system.

Under the IAMWARM project, the following investments are proposed to rehabilitate the PWD tanks. And for improving the supply channels, Anicuts desilting to restore capacity, improvements to bund, weirs and sluices in 13 PWD tanks in Kayalkudiyar Sub Basin, a sum of Rs.224.20Lakhs has been proposed. This Estimate is prepared based on the current schedule of rate for the year 2010 – 2011 and the estimate amount work out to Rs. 224.20Lakhs.

CONCLUSION

By completing the rehabilitation works, water distribution can be achieved according to the ayacut, capacity or tanks and cropping pattern etc. Water regulating and flood control can be effectively carried out by this, damage to the river/ tank bund can be avoided. The conveyance efficient of the system will be very increased and lot of water can be minimized. Finally the living standards of the farmers will appreciably be raised.

Scope of The Project

By Taking up the rehabilitation works by this project, equal water distribution can be achieved Proportionate to the ayacut, capacity of tanks and cropping pattern etc. Water regulation and Flood control can be effectively carried out and by this, damage to the river / tank bund can be avoided there by nullifying cultivation gap. The conveyance efficiency and storage efficiency of the system will be increased to meet out the current demands and the Loss of Water can be minimized. Finally the Living standards of the Farmers will appreciably be developed.

By constructing the grade wall across Anaithalaiyar river course the required water can be diverted to the Alizodai Tank which will satisfy the long pending demand of the farmers.

Further the following objectives are also will be achieved by the implementation of this project.

1) Involving the Water User Associations in each and every aspect of water management, water regulation, water budgeting and over all maintenance of irrigation structures by involving the stake holders themselves.
2) Educating the farmers to adopt latest technical knowhow in the agriculture practice for the crops like paddy, pulses, and horticultural crops etc.
3) Improving the financial capacity of the farmers by divertised activate like fish farming, live stock production etc.
4) Introducing to the farmers the latest agricultural equipments to enhance agricultural productivity and also to provide marketing support so as to enable the farmers to get reasonable margin.

CONVERGENT TABLE- ABSTRACT (FOR EACH CLUSTER)

Sl No.	Number & Name of the cluster	Total Ayacut (Ha)			Total Area (Ha)			WRD Activities		Agriculture		TNAU		Horticulture		Agri marketing		AED		Fisheries		Animal Husbandry	
		FI	PI	Gap	Wop	WP	Gap	Activities	Length / Nos.	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	KC – I PADIKKA SUVAITHAN PATTI	96.370	39.840	70.940	136.210	207.150		St. TB, RC Weir , RE Weir, RE Sluice, DS chl, Li. Cha	5743 m 1 No. 1 No. 5 Nos. 5900 m 180 m														
2	KC-II MELA PATTAM KARISAL KULAM	245.840	115.805	106.335	361.645	467.980		St. TB, RE Sluice, RE Weir, Li. Cha , DS chl , Cn. Grade Wall	11357 m 9 Nos. 4 Nos. 450 m 8750 m 10 m														
3	KC-III NATHI KUDI SIR KULAM	86.370	63.295	36.885	149.665	186.550		St. TB, RE Sluice, RC Sluice , Li. Cha DS. Cha	9356 m 2 Nos. 2 Nos. 270 m 3750 m														
GRANT TOTAL		428.580	218.940	214.160	647.520	861.680																	

WISE / INFRASTRUCTURE WISE / VILLAGE WISE CONVERGENT TABLE

Number & Name of Cluster:I- KCI PADIKKASUVAITHANPATTI CLUSTER

Sl No.	Infrastructure/ Tank/ Anicut	Total Ayacut (Ha)			Total Area (Ha)			WRD Activities		Agriculture		TNAU		Horticulture		Agri marketing		AED		Fisheries		Animal Husbandry	
		FI	PI	Gap	Wop	WP	Gap	Activities	Length / Nos.	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	24
1	Padikkasuvaithanpatti Tank	34.600	14.830	55.090	49.430	104.520	-	St.TB, RE Sluice, Li.Chl, DS Chl.	2312 m 2 Nos. 60 m 3900 m														
2	Edyankulam Tank	37.010	14.395	9.695	51.405	61.100	-	St.TB, RE Sluice, RE Weir, Li. Chl, DS Chl.	2071 m 1 No. 1 No. 60 m 1150 m														
3	Thirumalaivankinan tank	24.760	10.615	6.155	35.375	41.530	-	St.TB, RE Sluice, RC Weir, Li. Chl, DS Chl.	1360 m 2 Nos. 1 No. 60 m 850 m														
	Total	96.370	39.840	70.940	136.210	207.150																	

Number & Name of Cluster:II- KC2 MELAPATTAM KARISALKULAM CLUSTER

Sl No.	Infrastructure / Tank/ Anicut	Total Ayacut (Ha)			Total Area (Ha)			WRD Activities		Agriculture		TNAU		Horticulture		Agri marketing		AED		Fisheries		Animal Husbandry	
		FI	PI	Gap	Wop	WP	Gap	Activities	Length / NO	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	24
1	Chettikulam Big & Small Tank	37.460	16.050	3.330	53.510	56.840		St. TB, RE Sluice, Li. Chl, DS Chl,	1402 m 2 Nos. 120 m 1100 m														
2	Melapattam Karisalkulam Tank	60.200	20.070	16.000	80.270	96.270		St. TB, RE Sluice, Cn.Grade Wall, Li. Chl, DS Chl.	2440 m 3 Nos. 10 m 90 m 2250 m														
3	Kothankulam Tank	58.600	25.120	5.720	83.720	89.440		St.TB, RE Sluice, RE Weir, Li. Chl, DS Chl.	1600 m 1 No. 1 No. 90 m 1400 m														
4	Sitharkulam Tank	11.170	7.440	40.490	18.610	59.100		St.TB, RE Sluice, Li.Chl, DS Chl.	1615m 1 No. 30 m 600 m														

5	Veppankulam Tank	38.250	25.495	17.595	63.745	81.340		St.TB, RE Sluice, RE Weir, DS Chl.	2000 m 1 No. 1 No. 300 m															
6	Pillayarkulam Tank	40.160	21.630	23.200	61.790	84.990		St.TB, RE Sluice, RE Weir, Li. Chl, DS Chl	2300 m 1 No. 2 Nos. 120 m 3100 m															
	Total	245.840	115.805	106.335	361.645	467.980																		

Number & Name of Cluster:III-KC3 NATHIKUDI SIRUKULAM CLUSTER

Sl No.	Infrastructure/ Tank/ Anicut	Total Ayacut (Ha)			Total Area (Ha)			WRD Activities		Agriculture		TNAU		Horticulture		Agri marketing		AED		Fisheries		Animal Husbandry	
		FI	PI	Gap	Wop	WP	Gap	Activities	Length / Nos.	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	24
1	Vadakarai Tank	15.140	10.090	16.650	25.230	41.880		St.TB, RE Sluice, DS Chl, Li.Chl.	2256 m 1 No. 1400 m 30 m														
2	Nathikudi Sirukulam Tank	29.770	16.025	7.105	45.795	52.900		St.TB, RESluices, DS Chl, Li.Chl.	2820 m 1 Nos. 2350 m 90 m														
3	Nathikudi Sevalkulam Tank	28.200	17.285	0.645	45.485	46.130		St.TB, Li.Chl.	1950 m 60m														
4	Gopalasamuthiram Tank	13.260	19.895	12.485	33.155	45.640		St.TB, RCSluices, Li.Chl.	2300 m 2 No. 90 m														
	Total	86.370	63.295	36.885	149.665	186.550																	

1.2 HYDROLOGY

1.2. HYDROLOGY

1. 2.1 GENERAL

Kayalkudiyar is a tributary of Vaippar and joins in the left flank near Vembakottai village. In this junction only, Vembakottai reservoir has been constructed. Vembakottai reservoir scheme has been executed in such a way by blocking the Kayalkudiyar within the reservoir.

The hilly drainage area of kayalkudiyar basin is 58.5 Sq.km. and the plain drainage area is 201.50 Sq.km. Hence the total drainage area is 260 Sq.km. Srivilliputtur and Sivakasi are the two rainfall stations which have got influential effect to this basin. Out of the two the influential effect of Srivilliputtur is greater than that of Sivakasi rainfall station.

1. 2.2 LOCATION

Buried pediment occur in small area in the western side of the sub basin, in the north of Rajapalayam. Remaining part of the basin is occupied by pediment and shallow pediments. Shallow pediments occur at Nachiyarkovil, Vaithialingapuram and Edirkottai.

1. 2.3 CATCHMENT AREA OF KAYALKUDIYAR SUB-BASIN

The Kayalkudiyar Sub Basins has a typical climate, owing to the marginal catchments area in the Western Ghats and extensive major catchments area in plains. Kayalkudiyar enjoys the benefits of mostly North East monsoon and slightly in summer season.

1. 2.4 HYDRO METEOROLOGY

The Hydro Meteorology parameters include rainfall, temperature, humidity, wind velocity, evaporation and duration of sun shine which determine the climate of the basin.

1. 2.5 RAIN FALL

Average annual rainfall of gauging stations influencing this sub basin is as follows

Name of Rain gauge Station	North East Monsoon	Summer	South west monsoon	Annual
Srivilliputhur	**449**	**185**	**148**	**782**

1. 2.6 CLIMATE

The Vaippar basin lies in a low rainfall belt having an annual average rainfall of 722 mm. Southwest monsoon contribute 148 mm (20%), while NE monsoon contributes 414 mm (57%). This basin receives a major share of its rainfall during NE monsoon. For the measurement of Hydro meteorological parameters in the basin area, there is one weather station at Kavalur near Virudhunagar; its data is taken for the study.

1. 2.7 SOIL CLASSIFICATION

In this sub basin, due to different stages, Weathering & parent material, the soil types are met with in combination of Inceptisol, Alfisol and Vertisol. More prominent type is Inceptisol.

Inceptisol	Red or brown or grey soil with surface horizon more developed than sub surface. They are developing soils, moderately deep, coarse loamy to loam moderately drained to well drained	Suited for commonly grown crops with exceptions

Alfisol	The red or brown soils having accumulation of alleviated clay in sub surface horizon it well drained, poor water and nutrient holding capacity.	Annual crops with shallow roots systems cum up wells
Vertisols	Black soil	Suitable for cotton, Pulses etc

1. 2.8 LAND HOLDINGS

The details of farm holdings and size classes prevalent in Kayalkudiyar Sub basin are given below

FOR KAYALKUDIYAR SUB BASIN:-

Category	Size of holdings	Numbers	Percentage
Marginal	Below 1.00 Ha	4262	61.7 %
Small	1.00 – 2.00 Ha	2096	30.30%
Medium	2.00 – 5.00 Ha	433	6.30%
Big	5.0 ha & above	122	1.7%
Total		**6913**	

Above table revealed that the marginal farmers alone accounted for 62 percent in the Sub basin followed by small farmers. Developmental initiatives will be establishment in marginal and small farmers

1. 2.9 DEMOGRAPHY

Name Of Sub Basin	Total No. Of Blocks	Total No. Of Villages	Population		
			2001	2011	2025
Kayalkudiyar Sub basin	3	12	73710	86241	100902

1. 2. 10 LIVE STOCK - POPULATION:-

Name of Sub basin	Cattle	Buffalo	Sheep	Goats	Pigs	Dogs	Others	Poultry
Kayalkudiyar Basin	2702	1735	9361	2678	300	---	198	12128
Monthly requirement	0.56 MCum							

1. 2.11 INDUSTERIES & MONTHLY WATER DEMAND

Name of Sub basin	Medium Industries			Small Industries			Water Requirement		
	2004	2010	2025	2004	2010	2025	2004	2010	2025
Kayalkudiyar Sub Basin	0	0	0	285	308	332	9.27	10.02	10.82

GOVERNMENT OF TAMILNADU
Public Works Department
Water Resources Department

From

Er.P.Sivasankaran,B.E.,
Engineer,WRD,
Chief Engineer & Director,
Institute for Water Studies,
Tharamani, Chennai 600 113.
Email Id: ceiwswrd@gmail.com
Email:eepwdwrorjm@yahoo.co.in
Ph:044-2254 2380, 2254 2674
Fax: 044-2254 2360.

To

The Executive

Public Works Department,
Upper Vaippar Basin Division,
Rajapalayam.

Letter No. /IAMWARM/IWS/2010/dt.21.10.2010.

Sir,

Sub: IAMWARM Project – IV. Phase Sub Basins Kayalkudiyar Sub Basin DPR Preparation – Water Balance Statement and Crop Water Requirement for with Project and without project – Revised Statement – Reg.

Ref: EE, Upper Vaippar Basin Division, Lr.No. D1/2010/C.69(7)/dated20.10.10

*****

With reference to the letter cited above, the following details are furnished for Kayalkudiyar Sub Baisn of Vaippar Basin.

1. Revised Water Balance Statement – Without Project and With Project (water efficiency = 43%)

2. Revised Crop Water Requirement – Without Project and With Project. (water efficiency = 53%)

Encl: 4Pages

Sd / ……..
Chief Engineer & Director,
Institute for Water Studies,
Tharamani,
Chennai 600 113.

CROPPING PATTERN

Name of the sub Basin	**: Kayalkudiyar**	Fully Irrigated	:	428.58	Ha
District	: Virudhunagar	Partially Irrigated	:	218.94	Ha
Registered Ayacut Area	: 861.68 Ha.	Gap	:	214.16	Ha
		Total Ayacut Area	:	**861.68**	Ha

Sl No.	Crop	Without Project				With Project				Increasing
		FI	PI	RF/G	TOTAL	FI	PI	RF/G	TOTAL	
I	**Perennial crop**									
1	Coconut	0	26.57	0	**26.57**	26.57	0	0	**26.57**	0
2	Mango	0	1.51	0	**1.51**	1.51	0	0	**1.51**	0
3	Citrus	0	1.12	0	**1.12**	1.12	0	0	**1.12**	
4	Guava	0	0.04	0	**0.04**	0.04	0	0	**0.04**	0
5	Teak	0	2.98	0	**2.98**	2.98	0	0	**2.98**	0
	Total	**0.00**	**32.22**	**0.00**	**32.22**	**32.22**	**0.00**	**0.00**	**32.22**	**0.00**
II	Annual Crop									
1	Sugarcane	54.49	0	0	**54.49**	54.49	0	0	**54.49**	0
2	Banana	2.41	0	0	**2.41**	2.41	0	0	**2.41**	0
3	Mulberry	0.89	0	0	**0.89**	0.89	0	0	**0.89**	0
	Total	**57.79**	**0.00**	**0.00**	**57.79**	**57.79**	**0.00**	**0.00**	**57.79**	**0.00**
I	**1st crop**									
1. a	Paddy (SD)	368.58	65.19	0	**433.77**	0	0	0	**0**	-433.77
b	Paddy SRI	0	0	0	**0.00**	420.00	0	0	**420.00**	420.00
2	Maize	0	37.70		**37.70**	130.00	0	0	**130.00**	92.30
3	Ragi	0.21	0	0	**0.21**	0	0	0	**0**	-0.21
4	Cotton	0	72.07	0	**72.07**	80.67	0	0	**80.67**	8.60
5	Gingelly	2.00	0	0	**2.00**	0	0	0	**0**	-2.00
6	Chillies	0	1.76	0	**1.76**	0	0	0	**0**	-1.76
7	Bhendi	0	0	0	**0.0**	90.00	0	0	**90.00**	90.00
8	Tomato	0	0	0	**0.0**	21.00	0	0	**21.00**	21.00
9	Brinjal	0	0	0	**0.0**	20.00	0	0	**20.00**	20.00
10	Fodder Cholam	0	10.00	0	**10.00**	10.00	0	0	**10.00**	0
11	Non Agri. Purposes	0	0	0	**0.00**	0	0	0	**0**	0
12	Fallow	0	0	214.16	**214.16**	0	0	0	**0**	-214.16
	Total	**370.79**	**186.72**	**214.16**	**771.67**	**771.67**	**0.00**	**0.00**	**771.67**	**0.00**
IV	**Grand Total (I+II+III)**	**428.58**	**218.94**	**214.16**	**861.68**	**861.68**	**0.00**	**0.00**	**861.68**	**0.00**
	2 nd crop									
1. a	Paddy	0	0	0	**0.00**	0	0	0	**0**	0
b	Paddy SRI	0	0	0	**0.00**	0	0	0	**0**	0
2	Maize	0	0	0	**0.00**	40.00	0	0	**40.00**	40.00
3	Pulses	0	0	0	**0.00**	130.00	0	0	**130.00**	130.00
4	Cotton	0	0	0	**0.00**	30.00	0	0	**30.00**	30.00
5	Bhendi	0	0	0	**0.00**	65.00	0	0	**65.00**	65.00
6	Tomato	0	0	0	**0.00**	10.00	0	0	**10.00**	10.00
7	Brinjal	0	0	0	**0.00**	8.00	0	0	**8.00**	8.00
8	Fodder Cholam	0	0	0	**0.00**	10.00	0	0	**10.00**	10.00
	Total	**0.00**	**0.00**	**0.00**	**0.00**	**293.00**	**0.00**	**0.00**	**293.00**	**293.00**
V	**3rd crop**									
	Total									
	Great Grand Total	**428.58**	**218.94**	**214.16**	**851.68**	**1154.68**	**0.00**	**0.00**	**1154.68**	**293.00**
	Cropping Intensity				**75.15%**				**134.00%**	

EE (WRD) **JD (AH)** **TNAU** **DD (Horti)** **JD(Agri)**

KAYALKUDIYAR SUB BASIN – VAIPPAR BASIN

Crop water requirement without Project

Sl No.	Name of Crop	Area in Ha	Crop water requirements in mm	Total Crop water requirement in Mcm	Irrigation water requirement at source Eff=43%	Total Irrigation requirement in Mcm
I	**Perennial Crops**					
1	Coconut	26.57	1300	0.345	0.80	0.80
2	Mango	1.51	402	0.006	0.01	0.01
3	Citrus	1.12	219	0.002	0.01	0.01
4	Guava	0.04	256	0.000	0.00	0.00
5	Teak	2.98	500	0.015	0.03	0.03
	Sub Total	**32.22**		**0.37**	**0.86**	**0.86**
II	**Annual Crops**					
1	Sugarcane	54.49	985	0.537	1.25	1.25
2	Banana	2.41	1050	0.025	0.06	0.06
3	Mulberry	0.89	510	0.005	0.01	0.01
	Sub Total	**57.79**		**0.57**	**1.32**	**1.32**
III	**Ist Crop**					
1.a	Paddy (SD)	433.77	950	4.121	9.58	9.58
b	Paddy SRI	0.00	665	0.000	0.00	0.00
2	Maize	37.70	550	0.207	0.48	0.48
3	Ragi	0.21	303	0.001	0.00	0.00
4	Cotton	72.07	383	0.276	0.64	0.64
5	Gingelly	2.00	342	0.007	0.02	0.02
6	Chillies	1.76	424	0.007	0.02	0.02
7	Fodder Cholam	10.00	386	0.039	0.09	0.09
	Sub Total	**557.51**		**4.66**	**10.83**	**10.83**
	Grand Total (I+II+III)	**647.52**		**5.59**	**13.01**	**13.01**

KAYALKUDIYAR SUB BASIN – VAIPPAR BASIN

Crop water requirement with Project

Sl No.	Name of Crop	Area in Ha	Crop water requirements in mm	Total Crop water requirement in Mcm	Irrigation water requirement at source Eff=43%	Total Irrigation requirement in Mcm
I	**Perennial Crops**					
1	Coconut	26.57	1300	0.345	0.65	0.65
2	Mango	1.51	402	0.006	0.01	0.01
3	Citrus	1.12	219	0.002	0.01	0.01
4	Guava	0.04	256	0.000	0.00	0.00
5	Teak	2.98	500	0.015	0.03	0.03
	Sub Total	**32.22**		**0.37**	**0.70**	**0.70**
II	**Annual Crops**					
1	Sugarcane	54.49	985	0.537	1.01	1.01
2	Banana	2.41	1050	0.025	0.06	0.06
3	Mulberry	0.89	510	0.005	0.01	0.01
	Sub Total	**57.79**		**0.57**	**1.07**	**1.07**
III	**Ist Crop**					
1.a	Paddy (SD)	0.00	950	0.000	0.00	0.00
b	Paddy SRI	420.00	665	2.793	5.27	5.27
2	Maize	130.00	550	0.715	1.35	1.35
3	Ragi	0.00	303	0.000	0.00	0.00
4	Cotton	80.67	383	0.309	0.58	0.58
5	Gingelly	0.00	342	0.000	0.00	0.00
6	Chillies	0.00	424	0.000	0.00	0.00
7	Bhendi	90.00	462	0.416	0.78	0.78
8	Tomato	21.00	600	0.126	0.24	0.24
9	Brinjal	20.00	462	0.092	0.17	0.17
10	Fodder Cholam	10.00	386	0.039	0.07	0.07
	Sub Total	**771.67**		**4.49**	**8.47**	**8.47**
	Grand Total (I+II+III)	**861.68**		**5.43**	**10.24**	**10.24**
IV	**2nd Crop**					
1.a	Paddy	0.00	610	0.000	0.00	0.00
B	Paddy SRI	0.00	427	0.000	0.00	0.00
2	Maize	40.00	400	0.160	0.30	0.30
3	Pulses	130.00	300	0.390	0.74	0.74
4	Cotton	30.00	350	0.105	0.20	0.20
5	Bhendi	65.00	432	0.281	0.53	0.53
6	Tomato	10.00	450	0.045	0.08	0.08
7	Brinjal	8.00	432	0.035	0.07	0.07
8	Fodder Cholam	10.00	380	0.038	0.07	0.07
	Total	**293.00**		**1.05**	**1.99**	**1.99**
	Great Grand Total	**1154.68**		**6.48**	**12.22**	**12.22**

KAYALKUDIYAR SUB BASIN – VAIPPAR BASIN

Water Potential without Project

Surface Water Potential		=	35.48	Mcm
Ground Water Potential		=	40.54	Mcm
Total Potential		**=**	**76.02**	**Mcm**

Water Demand without Project

Domestic		=	1.72	Mcm
Livestock		=	0.56	Mcm
Industrial		=	10.02	Mcm
Irrigation	WRO	=	12.22	Mcm
	PU & GW	=	5.47	Mcm
Total Water Demand		**=**	**29.99**	**Mcm**
Water Balance		**=**	**46.03**	**Mcm**

KAYALKUDIYAR SUB BASIN – VAIPPAR BASIN

Water Potential without Project

Surface Water Potential		=	35.48	Mcm
Ground Water Potential		=	40.54	Mcm
Total Potential		**=**	**76.02**	**Mcm**

Water Demand without Project

Domestic		=	1.72	Mcm
Livestock		=	0.56	Mcm
Industrial		=	10.02	Mcm
Irrigation	WRO	=	13.01	Mcm
	PU & GW	=	5.47	Mcm
Total Water Demand		**=**	**30.78**	**Mcm**
Water Balance		**=**	**45.24**	**Mcm**

1.3 HYDRAULICS OF THE COMPONENTS

HYDRAULIC PARTICULARS

a) ANICUT

Sl.No	Name of Anicut	Village	Direct Ayacut	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	Kothankulam Anicut	Kothankulam	-	72.00	153.97	---	3.60	3.60	1053	--	--	--	29.82	1400	4.0	0.60	1 in 1000	-	
2	Pillayarkulam Anicut	Pillayarkulam	-	186.00	140.67	---	3.12	3.12	2720	--	1.35 m x 1.35 m	139.50	77.02	2000	9.0	0.75	I in 1000	-	
3	Thulukkankulam Anicut	Padikasuvaithan patti	-	33.20	139.04	---	--	--	1040	--	--	--	29.45	--	--	--	--	--	
4	Achanthavirthan Anicut	Achanthavirthan	-	220.00	124.12	---	22.30	22.30	3555	--	--	-	100.66	1200	--	0.60	1 in 1000	-	
5	Kelakkal Anicut	Nathikudi	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
6	Melakkal Anicut	Nathikudi	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		Total	-	511.20	--	---	29.02	29.02	8368				236.95	4600	-	-	-	-	

b) TANKS (Separate statement for System & Non System Tanks)-Non Systems 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	VIRUDHUNAGAR	SRIVILLIPUTTUR	Padikasuvaithan patti Tank	104.52	26.27	1	5.18	6.70	0.67	146.180	146.780	2	2	21.00 7.15	915	2312	3900	Edyankulam Tank	Thulukkankulam Tank
2			Edyankulam Tank	61.10	9.33	2	2.10	2.34	0.21	150.570	150.720	2	1	32.30	520	2071	1150	Thirumalaivankinan Tank	Padikasuvaithanpatti Tank
3			Thirumalaivankinan tank	41.53	4.72	2	2.54	2.54	0.16	151.740	152.200	2	1	6.20	110.2	954	850	Valaikulam Tank	Edyankulam Tank
4		Rajapalayam	Chettikulam Big & Small Tank	56.84	4.86 0.54	2 1.16	0.54 0.18	0.54 0.18	0.15	159.910 158.480	160.510 159.030	2 1	1 -	9.54 -	220	925 477	1100	Athiyoor Tank	Kothankulam Tank
5			Melapattam Karisalkulam Tank	96.27	22.32	3	0.67	1.09	0.57	157.580	158.030	3	1	13.03	627	2440	2250		Kothankulam Tank
6			Kothankulam Tank	89.44	22.83	2	4.84	4.84	0.57	150.670	151.130	3	1	42.00	930	1600	1400	Melapattam Karisalkulam Tank	Puthukulam P.U. Tank
7			Sitharkulam Tank	59.10	10.84	2	1.48	5.67	0.26	145.850	146.300	1	1	75.00	996	1615	600	Puthukulam Tank	Pillayarkulam Tank
8			Pillayarkulam Tank	84.99	31.09	1	5.85	13.93	0.73	138.870	138.930	2	3	22.00 21.15 7.30	1350	2300	3100	Sitharkulam Tank	Veppankulam Tank

9	Virudhunagar Srivilliputtur	Veppankulam Tank	81.34	22.98	2	2.20	10.57	0.43	137.600	138.200	2	1	36.70	1090	2000	300	Pillayarkulam Tank	Periyathi kulam P.U.Tank
10		Vadakari Tank	41.88	24.81	1	8.05	8.05	0.77	127.400	127.700	1	2	12.00 20.00	2125	2256	1400	Pillayarkulam Tank	Naryankulam P.U.Tank
11		Nathikudi Sirukulam Tank	52.90	17.24	2	3.16	12.69	0.86	117.900	118.500	3	1	39.70	1105	2820	2350	--	--
12		Nathikudi Sevalkulam Tank	46.13	10.90	2	5.63	5.63	0.80	119.85	180.30	2	1	33.50	1905	1950	--	--	--
13		Gopalasamuthiram Tank	45.64	14.40	1	1.34	1.321	0.79	97.07	97.53	3	2	26.21 11.43	1420	2300	---	--	--
		Total	**861.68**	**223.136**	**24.16**	**43.76**	**76.091**	**6.97**			**29**	**18**	**436.21**	**1331 3.20**	**26020**	**18400**		

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)
Under IAMWARM Project

SALIENT FEATURES OF IMPLEMENTATION OF PIM IN KAYALKUDIYAR SUB BASIN

1. **The Sub Basin**: This is one of the 13 sub-basins of the Vaippar River Basin. Totally 13 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 13 tanks are located within the sub basin's hydraulic spread over 11 villages of Rajapalayam , Srivilliputtur and Sivakasi taluks in Virudunagar District. The total command area under these 13 tanks works out to 861.68 ha (Annexure 1).

2. **Command Area**

   i. Under System Tanks — NIL

   ii. Under Non-System Tanks (13 tanks) — 861.68 Ha.

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

i)	Associations already formed under WRCP	Nil
ii)	Associations proposed to be formed under IAMWARM project covering 13 tanks and 11 villages only	13 Nos. (861.68 Ha)
iii)	Total No. W.U.As	13 Nos.
iv)	The total command area covered by the above WUAs works out to	861.68 Ha.

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

   Activities undertaken and "Walkthrough Surveys" carried out:

   i. There are 13 tanks in the sub basin spread over 11 village, as directed out in Annexure-1. 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, list of works suggested by the farmers, list of works analysed and finalized by WRO officials, are all furnished in the Annexure – 2

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

   i. Form-I : Details to be notified by District Collectors (before 31.3.2011)

ii. Form – II: WUA document to be notified by District Collectors (before 30.04.2011)

iii. Completion of preparatory works for the conduct of Elections for WUAs (before 30.06.2011)

6. Schedule for conduct of elections in the sub basin for forming Management Committees

7. Support Organisation (Sos)

i. Initiating and completing the process of publishing EOI to hire support organisation at sub basin level

ii. Short listing and providing request for proposals (RFPs) to all the short listed agencies, and obtaining Technical and Cost proposals

iii. Selection and deployment of support organization to the Sub-basin

8. Appointment and the role of competent Authorities:

i. Section 26 of the Tamil Nadu Farmers' Management of Irrigation Systems (TNFMIS) Act provides for the appointment of "Competent Authorities" to assist the respective farmers orginsation (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 the WUAs formed under IAMWARM, project is based on the ' WRO Section officer wise ' distribution as listed below:

Sl. No.	Details of Competent Authorities	Details of WUAs in Code
1.	Section Officer, WRO, Irrigation Section-I, Srivilliputtur	WUAs 1, 2, 3, 4, 5
2.	Section Officer, WRO, Irrigation Section-II, Srivilliputtur	WUAs 6,7,8,9
3.	Section Officer, WRO, Irrigation Section, Krishnankovil.	WUAs 10, 11,12, 13

:

Name of the WRO Sub Divisional Officers working in the Kayalkudiyar Sub Basin:

.

Assistant. Executive Engineer, Upper Vaippar Basin Sub Division, Srivilliputtur.	WUAs 1 to 13

.

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 120 Nos. of farmers from 9 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 farmers and the tasks to be taken up under scheme modernisation finalised.

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 modernisation 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. 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 (9 numbers) located win in the sub basin the

Details of Walk through Surveys

Sl. No	Date of Visit	Name of Tank Visited	Awareness Programe((No of Formers attended)	Walk through survey (No of Formers attended)
1	06.04.2010	Kothankulam Tank	8	8
2	06.04.2010	Sitharkulam Tank	12	9
3	06.04.2010	Veppankulam Tank	6	6
4	06.04.2010	Pillayarkulam Tank	8	8
5	07.04.2010	Edayankulam Tank	18	12
6	07.04.2010	Thirumalaivan kinan Tank	3	3
7	07.04.2010	Padikasuvaithan patti Tank	7	7
8	07.04.2010	Melapattam Karisalkulam Tank	3	3
9	07.04.2010	Chettikulam Big & Small Tank	6	6
10	08.04.2010	Gopalasamuthiram Tank	9	9
11	08.04.2010	Nathikudi Sirukulam Tank	13	10
12	08.04.2010	Nathikudi Sevalkulam Tank	13	9
13	08.04.2010	Vadakarai Tank	14	12

ii. With the proposal to form new WUAs under IAMWARM in “Kayalkudiayar” the Managing Committees will be trained to take up the responsibility of improving the water charges recovery percentage. These will be followed up, after completion the modernisation 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”

ii. Analysis. They will also organise various “Capacity building” programmes at suitable locations within the sub basin command are, to benefit the farmers of the WUAs in the sub – basin.

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

iv. 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 Committee” of the WUAs.

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

Annexure-I

An Assesment of command Area and WUAs under the control of WRD in Kayalkudiyar Sub basin

Sl. No	Name of Irrigation System and Tank	Ayacut Area in Ha	Location of comand area			Coverage of Command area Under Different Projects		Status of formation of WUA in the subbasin
			Village	Taluk	District	WRCP	IAMWARM	To be formed Under IAMWARM
1	Padikkasuvaithanpatti Tank	104.52	Padikkasuvaithanpatti	Srivilliputtur		NIL	104.52	KR-1
2	Edayankulam Tank	61.10	Edyankulam			NIL	61.10	KR-2
3	Thirumalaivankinan Tank	41.53	Mamsapuram			NIL	41.53	KR-3
4	Chettikulam Big & Small Tank	56.84	Chettikulam	Rajapalayam		NIL	56.84	KR-4
5	Melapattam Karisalkulam Tank	96.27	Melapattam Karisalkulam			NIL	96.27	KR-5
6	Kothankulam Tank	89.44	Kothankulam			NIL	89.44	KR-6
7	Sitharkulam Tank	59.10	Araisayarpatti			NIL	59.10	KR-7
8	Veppankulam Tank	81.34	Pillayarkulam	Srivilli Puttur		NIL	81.34	KR-8
9	Pillaryarkulam Tank	84.99	Pillayarkulam			NIL	84.99	KR-9
10	Vadakarai Tank	41.88	Achamthavilthan			NIL	41.88	KR-10

11	Nathikudi Sirukulam Tank	52.90	Nathikudi	Sivakasi	Virudhunagar	NIL	52.90	KR – 11
12	Nathikudi Sevalkulam Tank	46.13	Nathikudi			NIL	46.13	KR – 12
13	Gopala Samuthiram Tank	45.64	Ethikottai			NIL	45.64	KR – 13
	Total						861.68	

ANNEXTURE – II

DETAILS OF MODERNISATION WORKS AS SUGGESTED BY THE FARMERS AND AN FINALISED BY THE OFFICIALS OF WRO

Sl. No.	Date of visit	Name of the Village visited	Out come of walk through survey and discussion with the farmers		Remarks
			Works Suggested by the farmers	Work Finalized by WRO officials	
1	06.04.2010	Kothankulam Tank Kothankulam Village	1. Tank Bund Improvement 2. Construction of Field Channel 3. Desilting of Supply Channel 4. Repair to Weir	St.TB, RE Sluice, RE Weir, Li. Chl, DS Chl.	
2	06.04.2010	Arasiyarpatti Village Sitharkulam Tank	1.Rehabilitation of tank surplus, weir, sluices 2..Strengthening tank bund 3. Desilting the supply channel	St.TB, RE Sluice, Li.Chl, DS Chl.	
3	06.04.2010	Pillayarkulam Village Veppankulam Tank	1.Rehabilation of sluices 2. .Strengthening tank bunds 3.Desilting the supply channels	St.TB, RE Sluice, RE Weir, DS Chl.	
4	06.04.2010	Pillayarkulam Village Pillayarkulam Tank	1.Repairs to the sluices 2.Strengthening tank bunds 3.Desilting the supply channels 4. Repairs to Anicut	St.TB, RE Sluice, RE Weir, Li. Chl, DS Chl.	
5	07.04.2010	Edayankulam Tank Edayankulam Village	1. Tank Bund Improvement 2. Shutter Provision in the Sluice	St.TB, RE Sluice, RE Weir, Li. Chl, DS Chl.	

			3. Repairs to Weir 4. Desilting the Supply Channel		
Sl. No.	**Date of visit**	**Name of the Village visited**	**Out come of walk through survey and discussion with the farmers**		**Remarks**
			Works Suggested by the farmers	**Work Finalized by WRO officials**	
6	07.04.2010	Padikassuvaithanpatti Tank Padikassuvaithanpatti Viallge	1. Desilting the Supply Channel 2. Reconstruction of 2 Sluices 3. Tank Bund Improvements 4. Repairs to the weir 5. Construction of Field Channel	St.TB, RE Sluice, Li.Chl, DS Chl.	
7	07.04.2010	Melapattam Karisalkulam Tank Melapattam Karisalkulam Village	1. Desilting of the Supply Channel 2. Reconstruction of 3 Sluices 3. Providing Screw Gearing shutter to the Weir 4. Tank Bund Improvements 5. Grade Wall to the Alizodai outlet 6. Construction of Field Channel	St. TB, RE Sluice, Cn.Grade Wall, Li. Chl, DS Chl.	
8	07.04.2010	Thirumalaivankinan Tank Mamsapuram Village	1. Tank Bund Improvements 2. Reconstrution of Weir 3. Screw Gearing shutter to the Sluice 4. Desilting of the Supply Channel 5. Construction of Field Channel	St.TB, RE Sluice, RE Weir, Li. Chl, DS Chl.	
9	07.04.2010	Chettikulam Big & Small Tank Chettikulam Village	1. Reconstruction of 3 Sluices 2. Desilting of Supply Channel 3. Reparis to the Weir 4. Construction of Field Channel	St. TB, RE Sluice, Li. Chl, DS Chl.	
10	08.04.2010	Ethirkottai Village Gopalasamuthiram Tank	1.Strengthening the tank bund 2.Reconstruction of Sluice I,II,III 3.Reparis to Weir 4. Desilting Supply Channel 5. Construction of Field Channel	St.TB, RC Sluices, Li.Chl.	

11	08.04.2010	Nathikudi Sirukulam Tank Nathikudi	1.Repairs to the sluices 2.Strengthening tank bund 3.Desilting the supply channel	St.TB, RE Sluices, DS Chl, Li.Chl.	
12	08.04.2010	Nathikudi Sevalkulam Tank Nathikudi	1. Strengthening tank bund 2. Repair to Sluice 3. Repair to Weir 4. Thrashing Floor & Godown 5. SRI 6. Fish Culture in Tank	St.TB, Li.Chl.	
13	08.04.2010	Vadakarai Tank Achamthavilthan Village	1. Strengthening tank bund 2. Repair to Sluice 3. SG Shutter Sand Vent Anicuts 4. Enchroachment & Eviction 5. Throashing Floor	St.TB, RE Sluice, DS Chl, Li.Chl.	

ABSTRACT

1	Commend area already covered under WRCP and other Projects/Schemes	**NIL**
2	Commend area proposed to be covered under IAMWARM Project (Total of column 8) -	861.68
3	Total Command area controlled by WRO of PWD in the Sub basin	861.68
4	Total No. of WUAs already formed under WRCP	NIL
5	Total No.of WUAs proposed to be formed under IAMWARM	13
	Total No. of WUAs that will cover the entire sub-basin	13

WALK THROUGH SURVEY

Sl. No	Walk Through Survey		Farmers request	Technical Solution								Proposals in Plan								Remarks
	Date	Location		WRO	Agri	Horti	AED	TNAU	AGMT	AHD	Fisheries	WRO	Agri	Horti	AED	TNAU	AGMT	AHD	Fisheries	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	06.04.2010	Kothankulam Tank	• Tank bund Improvement • Construction of field Channel • Desilting of Supply Channel. • Shutter Arrangement to the weir	All proposals are accepted .								St.TB, RE Sluice, RE Weir, Li. Chl, DS Chl.								
2	07.04.2010	Edyankulam Tank	• Tank bund Improvement • Shutter provision in the Ist Sluice • Repairs to weir • Desilting of Supply Channel • Construction of Field Channel	All proposal are accepted								St.TB, RE Sluice, RE Weir, Li. Chl, DS Chl.								
3	07.04.2010	Thirumalaivankinan Tank	• Tank bund Improvement • Reconstruction of Weir • Desilting of Supply Channel • Shutter in the Sluice • Construction of Field Channel	All proposal are accepted								St.TB, RE Sluice, RE Weir, Li. Chl, DS Chl.								

4	07.04.2010	Padikasuvaithanpatti Tank	• Tank bund Improvement • Desilting the Supply Channel • Reconstruction of Sluice • Construction of Field Channel • Weir Repairs	DS chl, C.FB , St,TB are necessary Improvements to the weir.								St.TB, RE Sluice, Li.Chl, DS Chl.								
5	07.04.2010	Melapattam Karisalkulam Tank	• Tank bund Improvement • Desilting the Supply Channel • Grade wall in the Alizodai outlet	All proposals are accepted								St. TB, RE Sluice, Cn.Grade Wall, Li. Chl, DS Chl.								
6	07.04.2010	Chettikulam Big & Small Tank	• Reconstruction of Sluice • Surplus course Desilting • Repairs to the Weir • Desilting the Supply Channel • Construction of Field Channel	All proposals are accepted except repairs to the weir. Since the weir is in good condition.								St. TB, RE Sluice, Li. Chl, DS Chl.								
7	08.04.2010	Vadakarai Tank	• Tank bund Improvement • Sluice Improvement • SG Shutter to sand vent Anicuts • SC Improvement • Enchorachment Eviction • Tharshing floor	St.TB, RE Sluices, RE Weir, DS chl Lining								St.TB, RE Sluice, DS Chl, Li.Chl.								

8	08.04.2010	Nathikudi Sirukulam Tank	• Tank bund Improvement • Supply channel	St.TB, RE Sluices DS Chl								St.TB, RE Sluices, DS Chl, Li.Chl.								
9	08.04.2010	Nathikudi Sevalkulam Tank	• Tank bund Improvement • Sluice Repair • Weir Improvement • Thrashing floor & Godown • Fish Culture in tank • SRI	St.TB, RE Sluices, RE Weir								St.TB, RE Sluices, RE Weir, Li.Chl.								
10	08.04.2010	Gopalasam muthiram Tank	• Tank bund Improvement • Weir Improvement • Sluice Repair • Supply Channel Improvement • Thrashing floor & Godown • SRI	St.TB, RE Sluices, RE Weir ,DS chl								St.TB, RE Sluices, Li.Chl.								

a. St. TB - Standardisation of Tank Bund

b. RC Sluices - Reconstruction of Sluices

c. RE Sluices - Repairs to Sluices

d. RC weir - Reconstruction of Weir

e. RE weir - Repairs to weir

f. DS chl - Desilting of Supply Channels

g. Li. Chl – Lining the Field Channel

1.5 IRRIGATION INFRASTRUCTURE

LIST OF ANICUTS

Sl. No	Anicuts	Village	Block	Taluk	District	Direct Ayacut Area in Ha	Capacity in Mcft
1	Kothankulam Anicut	Kothankulam	Rajapalayam	Rajapalayam	Virudunagar	-	-
2	Pillayarkulam Anicut	Pillayarkulam	Srivilliputtur	Srivilliputtur	Virudunagar	-	-
3	Thulukkankulam Anicut	Padikkasuvaithanpatti	Srivilliputtur	Srivilliputtur	Virudunagar	-	-
4	Achanthavirathan Anicut	Achanthavirthan	Srivilliputtur	Srivilliputtur	Virudunagar	-	-
5	Melakkal Anicut	Nathikudi	Vembokottai	Sivakasi	Virudhunagar	-	-
6	Keelakal Anicut	Nathikudi	Vembokottai	Sivakasi	Virudhunagar	-	-

LIST OF TANKS (Separate statement for System and Non System tanks)- Non System Tank

Sl. No	Tank	Village	Block	Taluk	District	Ayacut Area in Ha	Capacity in Mcft
1	Padikkasuvaithanpatti Tank	Padikkasuvaithanpatti	Srivilliputtur	Srivilliputtur	Virudunagar	104.52	26.27
2	Edyankulam Tank	Edyankulam	Srivilliputtur	Srivilliputtur	Virudunagar	61.10	9.33
3	Thirumalaivankinan Tank	Mamsapuram	Srivilliputtur	Srivilliputtur	Virudunagar	41.53	4.72
4	Chettikulam Big & Small Tank	Chettikulam	Rajapalyam	Rajapalayam	Virudunagar	56.84	5.40
5	Melapattam Karisalkulam Tank	Melapattam Karisalkulam	Rajapalyam	Rajapalayam	Virudunagar	96.27	22.32
6	Kothankulam Tank	Kothankulam	Srivilliputtur	Rajapalayam	Virudunagar	89.44	22.83
7	Sitharkulam Tank	Araisyarpatti	Srivilliputtur	Rajapalayam	Virudunagar	59.10	10.84
8	Pillayarkulam Tank	Pillayarkulam	Srivilliputtur	Srivilliputtur	Virudunagar	84.99	31.09
9	Veppankulam Tank	Pillayarkulam	Srivilliputtur	Srivilliputtur	Virudunagar	81.340	22.98
10	Vadakarai Tank	Achanthavirthan	Srivilliputtur	Srivilliputtur	Virudunagar	41.880	24.81

11	Nathikudi Sirukulam Tank	Nathikudi	Vembokottai	Sivakasi	Virudunagar	52.900	17.24
12	Nathikudi Sevalkulam Tank	Nathikudi	Vembokottai	Sivakasi	Virudunagar	46.130	10.90
13	Gopalasamuthiram Tank	Ethirkottai	Vembokottai	Sivakasi	Virudunagar	45.640	14.40
	Total					861.68	

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	Melapattam Karisalkulam S/C	Melapattam Karisalkulam Head Sluice	2.25	Melapattam Karisalkulam	Rajapalayam	Rajapalayam	Virudunagar	
2	Thirumalaivankinan S/C	Valaikulam Head Sluice	0.85	Mamsapuram	Srivilliputtur	Srivilliputtur	Virudunagar	
3	Edayankulam S/C	Thirumalaivankinan Tank Surplus	1.15	Edyankulam	Srivilliputtur	Srivilliputtur	Virudunagar	
4	Padikasuvaithanpatti S/C	Edyankulam Tank Surplus	3.90	Padikasuvaithanpatti	Srivilliputtur	Srivilliputtur	Virudunagar	
5	Chettikulam Big & Small S/C	Athiyoor Tank Surplus	1.10	Chettikulam	Rajapalayam	Rajapalayam	Virudunagar	
6	Kothankulam S/C	Kothankulam Anicut	1.40	Kothankulam	Rajapalayam	Rajapalayam	Virudunagar	
7	Sitharkulam S/C	Kothankulam Tank Surplus	0.60	Arasiyarpatti	Srivilliputtur	Rajapalayam	Virudunagar	
8	Pillayarkulam S/C	Pillayarkulam Anicut	3.10	Pillayarkulam	Srivilliputtur	Srivilliputtur	Virudunagar	

9	Veppankulam S/C	Pillayarkulam Tank Surplus	0.30	Pillayarkulam	Srivilliputtur	Srivilliputtur	Virudunagar	
10	Vadakarai S/C	Achanthavil than Anicut	1.40	Achan thavilthan	Srivilliputtur	Srivilliputtur	Virudunagar	
11 (a)	Nathikudi Sirukulam S/C I	Melakkal Anicut	0.35	Nathikudi	Vembokkottai	Sivakasi	Virudhunagar	
11 (b)	Nathikudi Sirukulam S/C II	Open off take	2.00	Nathikudi	Vembokkottai	Sivakasi	Virudhunagar	
12	Nathikudi Sevalkulam S/C	-	-	Nathikudi	Vembokkottai	Sivakasi	Virudhunagar	
13	Gopalasamuthiram S/C	-	-	Ethirkottai	Vembokkottai	Sivakasi	Virudhunagar	
	TOTAL		18.400					

List of tanks/Anicuts executed under various schemes (Viz, Part II Scheme, NABARD, WRCP I etc.,) since 2003.

Sl.No.	Name of Anicut / Tank	Ayacut in Ha	Scheme in which executed	Amount	Details of components executed	Remarks
1	**NIL**					

Work taken up under NABARD but also taken up in IAMWARM Project

Sl No	Name of tank	Work done under NABARD Programme	Work Now proposed in IAMWARM	Remarks
	NIL			

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

NAME OF SUB BASIN: KAYALKUDIYAR

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	6	-	-	-	-	-	13	18.40	861.68	-	-	-
2	Infrastructure excluded in iamwarm project since works carried out under various schemes from 2003	-	-	-	-	-	-		-	-	-	-	-
3	Infrastructures that does not require any rehabilitation works	4	-	-	-	-	-	-	-	-	-	-	-
4	a)Work executedunder NABARD But also proposed in IAMWARM	-	-	-	-	-	-	-	-	-	-	-	-
	b)Work proposed in IAMWARM alone	2	-	-				13	18.40	861.68	-	-	-

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

REHABILITATION OF IRRIGATION INFRASTRUCTURE OF THE SUB-BASIN

STRUCTURAL STATUS & DEFICIENCIES IN THE SYSTEM

The following are the present structural condition of the KAYALKUDIYAR Sub Basin

1. This systems are old systems existing for more than 100 Years as such requires Rehabilitation.
2. Heavy accumulation of silt due to hilly region and contour nature of Channel system
3. Lack of adequate control of regulating structures like Anicuts, Head Sluices, Sand/ scour vents etc.,
4. The damaged (or) dilapidated condition of the existing anicuts, diversion head works etc. and supply channels causes to poor standard of the entire conveyor system.
5. The Non system tanks are to be rehabilitated.

In order to improve the conveyance and Operational Efficiency in Irrigation, it is now proposed to improve and modernize the Irrigation Infrastructures in kayalkudiyar Sub basin.

1. The Screw Gearing shutters provisions made in the sand vent of the Anicuts.
2. Desilting the supply channels by earthwork excavation using machineries
3. Providing Wooden planks to Anicut / Weir Dam stones
4. Repairing, Restoring the traditional water bodies (i.e. tanks)
   a. 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.
   b. Reconstruction of Collapsed weirs
   c. Repairs to the damaged weirs
   d. Reconstruction of Collapsed Sluices
   e. Repairs to the damaged Sluices
   f. Providing S.G. Shutter / Plug arrangements to Sluices, Head sluices, Scour vents etc.,
   g. Removing, Repairing and refixing in position of the existing S.G. shuttering arrangements and providing locking arrangements etc.,
   h. Construction of Grade wall near off take point of Azhosodai tank.
   i. Turfing along the entire rear slope of the tank bund .
   j. Measuring devices in the downstream of the sluices .
   k. Bed bars in supply channels at 200m intervals has been provided.
   l. Lining of irrigation channel D/S of sluices.

Outcome of the Project

1. Increase in conveyance efficiency from 43% to 53%

2. The present Gap area of 214.160 ha. is to be converted as a fully irrigated area

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

Rehabilitation of 13 tanks and selected Supply Channel in Kayalkudiyar sub basin.

SALIENT FEATURES OF PROPOSED WORKS

Standerdisation of tank bund :-

In Kayalkudiyar Sub basin there are 13 nos. of tanks having an Ayacut of 861.68 Ha. in most of the Tanks the tank bunds are below standards. The tank bund for a length of 26426 m has to be standardized.This will also increase the capacity of tank.

In the Kayalkudiyar River Sub basin the grade wall for a length of 10 m has been proposed to construct near the off take point of Azhosodai tank since the bed level eroded heavily and there is no flow of water to Azhosodai tank for the past 20 years.

In this sub basin the most of the tank sluices and weirs are in damaged conditions and also without shutter arrangements. Hence reconstruction of sluices, weirs and repairs to the sluices and weirs and shutter arrangements wherever necessary to be proposed. Due to this repair and reconstruction to the sluices and weirs the wastage of water is sustain ably reduced and proper water regulation for irrigation has to be maintained.

Desilting the Supply Channel:-

The earthen supply channel feeding to 13 tanks having an Ayacut of 861.68 ha.and length of 18400 m The supply channel are at present reduced from the original section which results adequate quantum of water is not carried out through this channel to the tanks and finds its way to adjacent fields and lesser quantum of water flows to the tanks and balance water over flank and flows in to agriculture land.

By restoring the supply channel to the original section to carry adequate discharge to the tanks without outflanking. Hence the desilting of selected supply channel proposed in this project. This ensures adequate storage in the tanks during normal rainfall seasons.

Anicut Improvement :-

In the sub basin out of 6 Anicuts 2 Numbers of anicuts has been proposed to be repaired. The remaining Four anicuts are in good condition Due to this Commandability up to tail end reaches will be restored.

TANK DETAILS WITH FREE BOARD PROVIDED

Sl. No.	Name of the Tank	Maximum Height of Bund	Free Board		Length of Bund
			Provided previously	Provided now	
1	Padikasuvaithanpatti Tank	3.50	0.62	1.50	2312
2	Edyankulam Tank	1.94	1.38	1.38	2071
3	Thirumalaivankinan Tank	2.94	0.90	1.25	1360
4	Chettikulam Big & Small Tank	3.42 1.24	1.00 1.00	1.50 1.25	1402
5	Melapattam Karisalkulam Tank	3.32	1.23	1.50	2440
6	Kothankulam Tank	3.53	0.91	1.50	1600
7	Sitharkulam Tank	3.50	0.90	1.50	1615
8	Veppankulam Tank	3.58	1.25	1.50	2000
9	Pillayarkulam Tank	4.32	0.91	1.50	2300
10	Vadakari Tank	3.76	0.93	1.50	2256
11	Nathikudi Sirukulam Tank	2.40	0.92	1.25	2820
12	Nathikudi Sevalkulam Tank	3.59	0.92	1.50	1950
13	Gopalasamuthiram Tank	3.07	0.92	1.50	2300

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

IAMWARM PROJECT

Kayalkudiyar Sub Basin – WRO Work Details

Sl No.	Tank/Anicut/ Name	Tank Bund		Supply Channel	Sluice			Weir					Measuring Devices		Irrigation Channel		Anicut			Component wise Amount in Lakhs								Total
		Length in M	Qty in M3	Qty in M3	Plug & Plug rod	Minor Repair	Recons t	S.G. Shutter	Minor Repair	Major Repair	Recons t	H.S	Nos	Amount	Length	Amount	S.G. Shutter	Minor Repair	Grade Wall	Bund	SC	SI	Weir	Anicut	Grade Wall	H.S	O. L	
1	Padikkasuvaithanpatti Tank	2312	15400	8584	1	2	-	-	-	-	-		2	0.22	70	1.79	-	-	-	10.33	2.46	1.58	-	-	-	-	-	16.38
2	Edayankulam Tank	2071	4850	2290	1	1	-	-	1	-	-		2	0.22	70	1.79	-	-	-	4.68	0.68	0.89	1.10	-	-	-	-	9.36
3	Thirumalai vanankinan Tank	1360	6900	2600	1	2	-	-	-	-	1	1	2	0.22	70	1.79	-	-	-	10.48	0.71	0.72	6.65	-	-	1.03		21.60
A	Alizodai Grade Wall	-	-	-	-	-	-	-	-	-	-				-	-	-	-	1	-	-	-	-	-	8.63	-	-	8.63
4	Chettikulam Big & Small Tank	1402	8950	3500	3	2	-	-	-	-	-		3	0.43	140	3.67	-	-	-	7.84	1.00	3.49	-	-	-	-	-	16.43
5	Melapattam Karisalkulam Tank	2440	15000	9900	3	3	-	-	-	-	-		3	0.33	105	2.71	-	-	-	10.59	2.93	2.65	-	-	-		2.12	21.33
B	Kothankulam Anicut	-	-	-	-	-	-	-	-	-	-				-	-	3	1	-	-	-	-	-	1.25	-	-	-	1.25
6	Kothankulam Tank	1600	8600	3600	1	1	-	-	1	-	-		3	0.33	105	2.71	-	-	-	6.73	1	0.43	0.24	-	-	-	-	11.44
7	Sitharkulam Tank	1615	12500	2270	-	1	-	-	-	-	-		1	0.11	35	0.88	-	-	-	8.02	0.63	1.8	-	-	-	-	-	11.44
C	Pillayarkulam Anicut	-	-	-	-	-	-	-	-	-	-				-	-	2	1	-	-	-	-	-	3.37	-	-	-	3.37
8	Pillayarkulam Tank	2300	11000	13900	1	1	-	4	2	-	-		4	0.43	140	3.69	-	-	-	8.3	3.7	0.42	3.58	-	-	-	-	20.12
9	Veppankulam Tank	2000	16000	1350	1	1	-	-	1	-	-		-	-	-	-	-	-	-	9.95	0.39	0.94	2.41	-	-	-	-	13.69
10	Vadakarai Tank	2256	12575	6400	1	1	0	-	-	-	-		1	0.1	35	0.93	-	-	-	9.05	1.71	2.33	-	-	-	-	-	14.12
11	Nathikudi Sirukulam Tank	2820	27050	15200	1	1	-	-	-	-	-		3	0.31	105	2.68	-	-	-	10.24	4.59	0.78	-	-	-	-	-	18.60
12	Nathikudi Sevalkulam Tank	1950	13340	-	0	0	-	-	-	-	-		2	0.2	70	1.78	-	-	-	8.77	-	0	-	-	-	-	-	10.75
13	Gopalasamuthiram Tank	2300	20900	-	2	-	2	-	-	-	-		3	0.31	105	2.68	-	-	-	6.59	-	5.44	-	-	-	-	-	15.02
	Total	26426	173065	69594	16	16	2	4	5	0	1		29	3.21	1050	31.66	5	2	1	111.57	19.8	21.47	13.98	4.62	8.63	1.03	2.12	218.09

Details of proposals in each infrastructure of the sub basin

Sl No.	Name of tank/ Anicut/ Reservoir	Bund		Sluice				Weir				Anicut		Grade Wall in River		Outlet		Head Sluice		Supply Channel		Irrigation channel		Measuring Devices		Amount in Lakhs
		Length	Amt	Repair	Amt	Reconst ruction	Amt	Repair	Amt	Reconstr uction	Amt	Repair	Amt	No	Amt	No.	Amt	No.	Amt	No	Amt	Length(m)	Amt	No	Amt	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1	Padikkasuvaithanpatti Tank	2312	10.33	2	1.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3900 m	2.46	70	1.79	2	0.22	16.38
2	Edyankulam Tank	2071	4.68	1	0.89	-	-	1	1.10	-	-	-	-	-	-	-	-	-	-	1150 m	0.68	70	1.79	2	0.22	9.36
3	Thirumalai vankinan Tank	1360	10.48	2	0.72	-	-	-	-	1	6.65	-	-	-	-	-	-	1	1.03	850 m	0.71	70	1.79	2	0.22	21.60
4	Chettikulam Big & Small Tank	1402	7.84	2	3.49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1100 m	1.00	140	3.67	4	0.43	16.4
5	Melapattam Karisalkulam Tank	2440	10.59	3	2.65	-	-	-	-	-	-	-	-	1 No. (10 mt)	8.63	1	2.12	-	-	2250 m	2.93	105	2.71	3	0.33	29.96
6	Kothankulam tank	1600	6.73	1	0.43	-	-	1	0.24	-	-	1	1.25	-	-	-	-	-	-	1400 m	1	105	2.71	3	0.33	12.69
7	Sitharkulam Tank	1615	8.02	1	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	600 m	0.63	35	0.88	1	0.11	11.44
8	Pillayarkulam Tank	2300	8.3	1	0.42	-	-	2	3.58	-	-	1	3.37	-	-	-	-	-	-	3100 m	3.7	140	3.69	4	0.43	23.49
9	Veppankulam Tank	2000	9.95	1	0.94	-	-	1	2.41	-	-	-	-	-	-	-	-	-	-	300 m	0.39	-	-	-	-	13.69
10	Vadakarai Tank	2256	9.05	1	2.33			-	-	-	-	-	-	-	-	-	-	-	-	1400 m	1.71	35	0.93	1	0.10	14.12
11	Nathikudi Sirukulam Tank	2820	10.24	1	0.78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2350 m	4.59	105	2.68	3	0.31	18.60
12	Nathikudi Sevelkulam Tank	1950	8.77			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	1.78	2	0.2	10.75
13	Gopalasamuthiram Tank	2300	6.59	-	-	2	5.44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	105	2.68	3	0.31	15.02
	Total	26426	111.57	16	16.03	2	5.44	5	7.33	1	6.65	2	4.62	1	8.63	1	2.12	1	1.03	18400	19.8	1050	31.66	29	3.21	218.09

A. WRO COST TABLE

Sl. No	Description of work	Quantity	Amount in Lakhs	Remarks
I. Tank Component				
a.	**Tank Bund Improvements (26426 m)**	**173065m^3**	**111.57**	
b.	**Sluice Reconstructions**	**2 Nos**	**5.44**	
c.	**Sluice Repairs**	**16 Nos**	**16.03**	
d.	**Weir Reconstructions**	**1 No**	**6.65**	
e.	**Weir Repairs**	**5 Nos**	**7.33**	
f.	**Anaicut Repairs**	**2 Nos**	**4.62**	
g.	**Head Sluice**	**1 No**	**1.03**	
h.	**Outlet**	**1 No**	**2.12**	
i.	**Construction of grade wall**	**1 No**	**8.63**	
j.	**Supply cannel improvements**	**69594m^3**	**19.80**	
k.	**Lining of irrigation channels (29x30w+15%)**	**1050m**	**31.66**	
l.	**Measuring Devices (V Notches/ CTF.(cut throat Fluwe)**	**29 Nos**	**3.21**	
	Sub Total		**218.09**	
	LS Provisions			
	Provisions for labour welfare fund, PS charges, contingencies, Advertisement charges, Documentation Charges, Name board, Photographic charges at 2.80%		**6.11**	
	Total		**224.20**	

(P.T.O)

Sl. No	Description of work	Quantity	Amount in Lakhs	Remarks
	Environmental Charges		**2.00 Lakhs**	
	Ground water		**Nil**	
	Grand Total		**226.20 Lakhs**	

Abstract

1. **Tank Component --- 224.20 Lakhs**
2. **Non Tank Components --- Nil Lakhs**
3. **Environmental cell --- 2.00 Lakhs**

Total 226.20 Lakhs

(Rupees Two crores twenty six lakhs and twenty thousands)

A.(PHYSICAL AND FINANCIAL PROGRAM)

Sl. No.		Description	I Year		II Year				
			Qty	Amt in Lakhs	Qty	Amt in Lakhs	Qty		Amt in Lakhs
		TANK COMPONENTS							
I		**Tank Bund Improvements**							
	1	Earthwork for Bund	**100000**	**64.50**	**73065**	**52.93**	**173065**	**M³**	**111.57**
II		**Improvement of sluices**							
	1	Reconstruction	**-**	**-**	**2**	**5.44**	**32**	**Nos**	**5.44**
	2	Repair	**8**	**8.03**	**8**	**8.00**	**16**	**Nos**	**16.03**
III		**Improvement of Weir**							
	1	Reconstruction	**-**	**-**	**1**	**6.65**	**1**	**No**	**6.65**
	2	Repair	**5**	**7.33**	**-**	**-**	**5**	**Nos**	**7.33**
V		**Supply Channel Improvement**							
	1	Earthwork	**35000**	**10.00**	**19594**	**9.80**	**69594**	**M³**	**19.80**
		Head Sluice	**1**	**1.03**	**-**	**-**	**1**	**No.**	**1.03**
		Outlet	**1**	**2.12**	**-**	**-**	**1**	**No.**	**2.12**
VI		**Anicut improvement**							
	1	Repair	**1**	**2.30**	**1**	**2.32**	**2**	**Nos**	**4.62**
	2	Grade Wall			**1**	**8.63**	**1**	**No.**	**8.63**
	3	Irrigation Channel	**600**	**18.00**	**450**	**13.66**	**100**	**M**	**31.66**
VII		**Environmental cell**	**-**	**1.00**	**-**	**1.00**	**-**		**2.00**
VIII		**Provision for Labour Welfare, unforeseen items, Advertisement charges, Photographic Charges**	**-**	**3.50**	**-**	**2.48**	**-**	**-**	**6.11**
IX		**Measuring Devices**	**20**	**2.10**	**9**	**1.11**	**29**	**Nos**	**3.21**
		Total							**226.20**

Package Details

Package – 1

Sl. No.	Name of Tank / Anicut	No of Tanks	Amount in Lakhs
1.	**Rehabilitation of Non System, Anicuts and Supply Channels in Kayalkudiyar Sub basin in Rajapalayam , Srivilliputtur & Sivakasi Block in Rajapalayam , Srivilliputtur & Sivakasi Taluk of Virudhunagar District.**	**13(Non System tanks)**	**218.09**
2.	**L.S. Provisions**		**6.11**
	TOTAL		**224.20**

KAYALKUDIYAR SUB BASIN

PACKAGE NO.1

BROAD REQUIREMENT OF CONSTRUCTION EQUIPMENT

BASED ON BROAD CALCULATIONS THE EQUIPMENT REQUIRED IS LISTED BELOW

Machineries required for earth work&concrete

Sl.No	Equipment	Numbers
1	Hydraulic Excavator (±0.90Cu.m)	5
2	Hydraulic Excavator with steel plate attachment (For compaction of earth fill on slopes of tank bund)	2
3	Tippers/Lorries(8/10Tonne)	20
4	Power Rollers/Vibratory Power Rollers (including 2 power rollers of (± 0.90m width)	3
5	Water tankers (Truck mounted water tankers of ±10000 Litres)	3
6	Pneumatic Tampers/Earth Rammers (for compaction of earth fill adjoining the new concrete irrigation sluices to be constructed)	3
7	Air Compressors (±300cfm)	2
8	Plate Vibrators for compaction of sub grade and of bed bar concrete lining	3
9	Dozer (D6 or equivalent)	3
10	Mechanical Concrete mixers 14/10 cft, 10/7 cft	5
11	Concrete vibrators	5

Executive Engineer,PWD,
Upper Vaippar basin division,
Rajapalayam

KAYALKUDIYAR SUB BASIN
PAKCAGE NO.1

Requirement of Construction Equipments and Materials

5 Nos	**Dydraulic excavator (± 0.90Cum)**	**1**	
2 Nos	**Hydraulic Excavator with steel plate attachment (for compaction of earth fill on slopes of tank bund)**	**2**	
20 Nos	**Tippers/Lorries(8 to 10 Tonne)**	**3**	
3 Nos	**Power Rollers/Vibratory Power Roller**	**4**	
3 Nos	**Water Tankers(Truck Mounted of ± 10000 Liters)**	**5**	
3 Nos	**Pneumatic Tampers/Earth Rammers**	**6**	
2 Nos	**Air Compressors (±300cfm)**	**7**	
3 Nos	**Plate Vibrators**	**8**	
3 Nos	**Dozer (D6 or equivalent)**	**9**	
5 Nos	**Mechanical Concrete mixers 14/10 cft, 10/7 cft**	**10**	
5 Nos	**Concrete vibrators**	**11**	
1123MT	**Cement**	**12**	
1581 Cum	**Sand**	**13**	
25.58Qtl	**Steel**	**14**	
2180Cum	**Metal 40mm**	**15**	
245Cum	**Metal 20mm**	**16**	
798Cum	**Rough Stone Masonry**	**17**	
232Cum	**Gravel**	**18**	

REQUIREMENT OF MATERIALS

Sl. No	Description	Qty	Unit	Cement in mt	Sand m Cum	20mm Jelly in M3	40mm Jelly in M3	R.R.	Gravel Baging	Steel
1.	M.7.5 Using 40mm	736	M^3	119	331		662			
2.	M.10 Using 20mm	106	M^3	458	48	95				
3.	M.10 Using 40mm	1002	M^3	216	451		902			
4.	M.15 Using 20mm	126	M^3	16	57	113				
5.	M.15 Using 40mm	684	M^3	221	308		616			
6.	M.20 Using 20mm	32	M^3	14	15	29				
7.	Fabrication	25.58	Qtl							25.58
8.	Random Rubble	542	M^3	66	82			488		
9.	Rough stone	345	M^3					310		
10	Gravel Backing	232	M^3						232	
11	Plastering 1:4, 20mm	1294	M^2	10	285					
12	R.C.C. precast post	302	Nos	2	4	8				
	Toal			1123	1581	245	2180	798	232	25.58

PACKAGE-I
Construction methodology

Sl No	Description of Item	Working Months															Rainy season			Total
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
	Earth work excavation																			
1	Bund	14500	14500	14500	14500	14500	14500	14500	14500	14500	14500	14000	14065							173065
2	Channel		10000	10000	10000	10000	10000	10000	9594											69594
3	Foundation		600	600	600	600	627													3027
	Concrete																			
4	M 7.5 grade			150	150	150	150	136												736
5	M 10 grade using 20mm				25	25	25	25	6											106
6	M.10 using 40mm			200	200	200	150	150	102											1002
6	M 15 grade using 20mm					25	25	25	25	26										126
7	M.15 using 40mm			100	100	100	100	100	100	84										684
7	M 20 grade using 20mm					5	5	5	5	5	5	2								32
8	Plastering											250	250	250	250	294				1294
9	RR in CM 1:4				90	90	90	90	90	92										542

1.7 ENVIRONMENTAL COMPONENT

GOVERNMENT OF TAMILNADU
PUBLIC WORKS DEPARTMENT
WATER RESOURCES ORGANISATION

PROPOSAL FOR ENVIRONMENTAL ACTIVITIES

ENVIRONMENTAL MONITORING ON WATER AND SOIL QUALITY AND CREATING AWARENESS & UPDATING OF "ENVIRONMENTAL AND SOCIAL ASSESSMENT REPORT" FOR KAYALKUDIYAR SUB BASIN

EST.RS.2.00 LAKHS.

WATER RESOURCES ORGANISATION, PWD,
ENVIRONMENTAL CELL DIVISION,
MADURAI.

INDEX

IAMWARM Project

(Environmental Component in Kayalkudiyar Subbasin)

Name of the River Basin	Vaippar River Basin
Name of Sub basin	Kayalkudiyar Sub basin
Name of WUA	To be formed
Name of Division	The Executive Engineer, PWD-WRO., Uppar Vaippar Basin division, Rajapalayam
Name of Sub division	The Assistant Executive Engineer, PWD-WRO., Uppar Vaippar Basin Sub division, Srvalliputhur
District Taluk	Virudhunagar District Virudhunagar District 1.RajapalayamTaluk 2.Srivalliputhur Taluk 3.Sivakasi Taluk
Block	Virudhunagar District 1. RajapalayamBlock 2. Srivalliputhur Block 3. .Sivakasi Block
I) Name of tank severely affected by Aquatic weeds II) Domestic Sewage	Enclosed Annexure - I Enclosed Annexure - II
III) Municipal solid Waste	Enclosed Annexure - III
IV) Industries	Enclosed Annexure - IV

IAMWARM Project

(Environmental Component in Kayalkudiyar Subbasin)

Name of the River Basin	Vaippar River Basin
Name of Sub basin	Kayalkudiyar Sub basin
Name of WUA	To be formed
Name of Division	The Executive Engineer, PWD-WRO., Uppar Vaippar Basin division, Rajapalayam
Name of Sub division	The Assistant Executive Engineer, PWD-WRO., Uppar Vaippar Basin Sub division, Srvalliputhur
District Taluk	Virudhunagar District Virudhunagar District 1.RajapalayamTaluk 2.Srivalliputhur Taluk 3.Sivakasi Taiuk
Block	Virudhunagar District 1. RajapalayamBlock 2. Srivalliputhur Block 3. .Sivakasi Block
I) Name of tank severely affected by Aquatic weeds II) Domestic Sewage	Enclosed Annexure - I Enclosed Annexure - II
III) Municipal solid Waste	Enclosed Annexure - III
IV) Industries	Enclosed Annexure - IV

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 streams and tanks are complied with drinking and irrigation quality standards.
	ii) Ground water The ground water samples were collected at Anuppankulam, Mulliseval & Uppathur 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. All the monitoring wells in the district are having the Fluoride value ranges from 0.4 -1.5 mg / lit., which is moderate. The SAR values of all the monitoring wells are below 10, 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.

29/6/10

Junior Engineer, , PWD / WRO
Environmental Cell Section-IV,
Tirunelveli.

29/6/10

Assistant Executive Engineer, PWD / WRO
Environmental Cell Subdivision,
Tirunelveli.

Executive Engineer, PWD / WRO,
Environmental Cell Division,
Madurai.

ANNEXURE – I

Tanks affected by Aquatic weeds

Sl. No	Name of tank	Name of village	Ayacut in Ha	Type of weed
1	Chettikulam Big and small tank	Chettikulam	56.84	Juli flora
2	Melapattam Karisalkulam tank	Melapattam Karisalkulam	96.27	Juli flora & Ipomoea cornea
3	Kothankulam Tank	Kothankulam	89.44	Juli flora
4	Sitharkulam	Arasiyarpatti	59.10	Juli flora
5	Veppankulamtank	Veppankulam	81.34	Juli flora
6	Pillaiyarkulam i tank	Pillaiyarkulam	84.99	Juli flora & Ipomoea cornea
7	Padikasuvaithan patti	Padikasuvaithan patti	104.52	Juli flora
8	Edayakulam Tank	Edayakulam	61.10	Juli flora
9.	Thirumalaivangian Tank	Mamasapuram	41.53	Juli flora
10	Vadakarai Tank	Achanthavilthan	41.88	Juli flora
11	Surukulam)	Nathuikudi	52.90	Juli flora
12	Sevaikulam	Nathuikudi	46.13	Juli flora
13	GopalasamdramTank	Ethirkottai	45.64	Juli flora
		Total	861.68	

ANNEXURE – II

Domestic Sewage Inlet

Sl. No	Name of Town / Village	Name of water bodies in to which the sewage is discharged
1	Rajapalayam	Kothankulam
2	Srivilliputhur	Padikasuvaithan patti tank
3	Sivakasi	Gopalasadram tank

ANNEXURE – III

Solid Waste Dumping

Sl. No	Name of Town / Village	Name of water bodies in to which the solid waste is dumped
1	Sivakasi	Compost yard

ANNEXURE – IV

List of Industries

Sl.No	Name of industry	Category	Type
	Sivakasi Taluk.		
1	Tamil Nadu cement corporation Ltd Alangulam	Cement	R/L
2	Tamil Nadu cement corporation Ltd Alangulam Lime stone Mines Alangulam	Mines/Limestone	R/L
3	Meenaksni match co 733/12 Valayapatti Alangulam	Match	R/S
	Rajapalayam tTaluk		
1	Meena Chemical 46/D North Car Street Chathrspatti	Bleech Liquer	R/S
2	Srinivasa Product Muthyramaligapuram, Chathrspatti	Bleech Liquer	R/S
3	Om Shri Varu Chemicals (p)Ltd 144 post office road Rajapalayam	Chemical	R/S
4	Gomathiram Chemical Iyyan kollamkondan Rajapalayam	Chemical	R/S
5	JP Labaratories SRamalingaouram Rajapalayam	Chemical	R/S
6	RAMCO Industries 119/D PSK Nager Rajapalayam	Chemical	R/S
7	Standard Match IndustriesLtd K UNIT 167C Sammandapuram	Match	R/S
8	The Sivakasi Match Industries	Match	R/S
9	Alphari Plaster Malayadipatti	Match	R/S
10	Asok Industries Malayadipatti	POP	R/S
11	Sri Venkateswara Products North Venganallur	POP	R/S
12	Sri Balaji Plasters S Ramalingaputram	POP	R/S
13	Sri Bharathi Ramachand Products 533/3 North Venganallur	POP	R/S
14	Ashivatham Industries M-19 Thiruvanallur Road	POP	R/S
15	Gowri House Metal Works Malayadipatti	Electro plating	R/S
16	Sri Jayajothi and Co Ltd B Unit Keelarajakularaman	Spinning	O/L
17	Rajapalayam Mills Ltd Rajapalyam	Spinning	O/L
18	Sundardasan Spinning Mills Rajapalayam	Spinning	O/L
19	Sri Ramco Spinners Rjapalayam	Spinning	O/L

20	Jai Ranga Mills (p)Ltd Ayyankoilankondan	Spinning	O/L
21	Arumu ga Fabrics Pvt Ltd Chathrapatti	Sizing	O/L
22	Ramraj Surgical Cotton Mills Sankarankoil Road Rajapalayam	Bleaching	O/M
23	Limenaph chemicals Sankarankoil Road Rajapalayam	Lime skin	O/M
24	Dig Vijay Poly Tax 61 Kumarasamy Nager Rajapalayam	Poly Sacks	O/M
25	New Tex paper Board Mills (p) ltd Sammandapuram Village Rajapalayam	Spinning	O/M
26	Alagappa Cotton Mills Rajapalayam	Spinning	O/M
27	Amaravathi Spinning Mills 130 Middle Street Samsigapuram	Spinning	O/M
28	Arumugam Spinning Mills(9)P Ltd Chathrapatti	Spinning	O/M
29	Jai Bharathi Textiles (p) Ltd	Spinning	O/M
30	*R S Spinning Mills Rajapalayam (p) Ltd*	Spinning	O/M
31	Sri Bharathi Cotton Mills 117 T B Road Rajapalayam	Spinning	O/M
32	Sri Rajalakshmi Spinners 110A Cotton Market Rajapalayam	Spinning	O/M
33	Sri Rajasekar Spinning Mills 79-p/15 Rajapalayam Road Rajapalayam	Spinning	O/M
34	Sri Padmavathi Cotton Mills Elaiyangudi Rajapalayam	Spinning	O/M
35	Shri T P Textile Pvt Ltd –ii Rajapalayam	Spinning	O/M
36	Orthofix India Ltd Samsupuram Rajapalayam	Bandage	O/S
37	Arumuga Textile Export Tenkasi Road Rajapalayam	Bleaching	O/S
38	Sri Meenal Surgical Cotton Rajapalayam	Bleaching	O/S
39	Sri Ram Products 216 -Sri Ram Nager Rajapalayam	Bleaching	O/S
40	The Premier Products 79-D/15 Rajapalayam Road Chathrapatti Rajapalayam	Bleaching	O/S
41	SriDurga Clays 497/2A Thobakulam Villlage Keelarajakularaman Rajapalayam	Clay	O/S
42	Aravind Herbal Lab Pvt Ltd 140 Mudangari Road Rajapalayam	Herbal	O/S
43	Sri Balaraman Industries ,Rajapalayam	Insulation Tap	O/S
44	Devi Chemicals Nallamangalam Rajapalayam Town	Lime kiln	
45	Sri kasiram Chemicals Industries Rajapalayam	Lime kiln	O/S
46	Sun Industries North Venganallur Rajapalayam	Lime kiln	O/S
47	Janatha Industries ,Sankankarankoil Road,Rajapalayam	Lime Powder	O/S

48	Siva Oil Mills,62,Cotton Market,Rajapalayam	Oil Mill	O/S
49	Fulfill Pack Pvt.Ltd,295,Pudupalayam,Rajapalayam	Poly Sacks	O/S
50	Anandaraman Handmade Paper mills,Keelarajakularaman village	Pulp paper	O/S
51	Maharaja Paper Board Pvt.Ltd,5,PSK Road,Rajapalayam	Pulp paper	O/S
52	Radakrishna Rice Mills, Keelarajakularaman village	Rice Mill	O/S
53	Sri Jeyaram Motor Service,Tenkasi Road, Rajapalayam	Ser Station	O/S
54	Premier Enterprises,Sankarapandiyapuram,Chathrapatti	Sizing	O/S
55	Premier Sizing Industries,Melarajakularaman village,Chathrapatti	Sizing	O/S
56	Premier Textiles Exporters, Sankarapandiyapuram, Rajapalayam	Sizing	O/S
57	Rajasekar Textiles,Ayyaanarpuram, Rajapalayam	Sizing	O/S
58	Supreme Bandage, Ayyaanarpuram, Chathrapatti, Rajapalayam	Sizing	O/S
59	Ajantha Spinners,Thombakullam Post, Rajapalayam	Spinning	O/S
60	Anandaraman Textiles Mills(P) Ltd,1205/2A, Chathrapatti, Rajapalayam	Spinning	O/S
61	Anushya Cotton Mills,S.Ramalingapuram, Rajapalayam	Spinning	O/S
62	Jeyam Spinning Mills,Cotton Market, Rajapalayam	Spinning	O/S
63	Prasanth Spinners Pvt.Ltd,1026, Cotton Market, Rajapalayam	Spinning	O/S
64	Radha Spinning Mills,1063, Cotton Market, Rajapalayam	Spinning	O/S
65	Ragul Spinning Mills,189,Dharmapuram Street, Rajapalayam	Spinning	O/S
66	Senthur Textiles Pvt.Ltd,1066, Cotton Market, Rajapalayam	Spinning	O/S
67	Sri Bharathi Cotton Mills Ltd,B'unit,North venganallur, Rajapalayam	Spinning	O/S
68	Sri Saravana Blue Metals,Ayan kollankondan, Rajapalayam	Stone crusher	O/S
69	The Charkonite Products,R.S.No.778/1, Ayan kollankondan	Stone crusher	O/S
70	Shenbagavalli Textiles,Pvt.Ltd, Chathrapatti.	Weaving	O/S

71	Jana Industries,141/F1 T P Mills Road, Rajapalayam	Willing	O/S
72	Dhanalakshmi Industriers 292 Main Bazaar Rajapalayam	Willing	O/S
73	Nap Willows Factory 63 Cotton Market Rajapalayam	Willing	O/S
74	Rajapalavam Willow Factory Cotton Market	Willing	O/S
75	Rajashree Industriers 1266/2 Pillaiyarkulam	Willing	O/S
76	Sry Vijayalakshmi Willow Industry Rajapalayam	Willing	O/S
77	Ramya Clay Rajapalayam	Clay	O/S
78	Vijay Pipe Industriers Rajapalayam	Electrical Class	O/S
79	Archana Chemicals & Industriers	Lime stone	O/S
80	ROSS, Rajapalayam	Neem seed Oil	O/S
81	Sri Balaji Blue Metals	Stone crusher	O/S
82	Sri Vidthya Textiles Mills Rajapalayam	Willing	O/S
83	S.S.T Retreating Company Rajapalayam	Tyre retradung	O/S
84	Ramraj Surgical Cotton Mills	Bleeching	O/S
85	Polyspin (P)Ltd	Poly sacks	O/S
86	Annai Aluminium Industries	Aluminium	O/S
87	Meena Chemicals	Bleech Liquor	O/S
88	Limenaph Chemicals	Chemical	O/S
89	Ramco Industries	Chemical	O/S
	Srivilliputhur		O/S
1	Spinning Mills	Spinning	O/S
2	Off set Printers	Spinning	O/S
3	Spinning Mills	Spinning	O/S

Note: The total number of industries located in the Kayalkudiyar sub basin is around 89, in this the red 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 Kayaikudiyar Sub Basin

Estimate Cost Rs 2.00 Lakhs

ENVIRONMANTAL MANAGEMENT FRAME WORK

INRODUCTION

Under TNWRCP, with World Bank assistance, special emphasis was given for the first time in WRO, to assess the Environmental status and degradation caused for all River basins in Tamilnadu. 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 Vaippar 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 Vaippar 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

Kayalkudiyar is a tributary of Vappar and join in the left flank near vembakottai village .In this junction only,Vembakottai reservoir has been constructed . Vembakottai reservoir scheme has been executed in such a way by blocking the Kayalkudiyar within the reservoir

Just the reservoir side of the original of Chittar river(A Major tributary of Arjunanadhi)the river kayalkudiyar starts at an altitude of about 1500m above M.S.L. lin the eastern slope of western ghats in Srivilliputhur taluk of Virudunagar district .To the south of the stream , another major steram also orginates in the eastern slope of western ghats at an altitude of about 1500m above M.S.L where the other side is the origin of periyar river (a major tributory of Arjunanadhi).This stream passes near Hariharaperumal kovil and runs south east direction .After traversing some distance it joints with Kallar .Again this main stream branches in to two and a number of small streams .They feed a lot of tanks on their way to join again just north west o Pulippanipatti hamlet (Or west Kakkivadampatti village) in Sathur taluk of Virudhunagar District .It then runs south –western direction passing north of Kaliyanpatti ,Subramaniapuram Kundaiyiruppu and Muttukandiapuram before entering into Vembakotti reservoir

The hilly drainage area of Kalyalkudiyar basin is 58.5sq km and the drainage areais 201.50 sq km .Hence the total drainage area is 260 sq km Srivilliputhur and Sivakasi are the wo rain fall station which have got influential effect to this basin . Out of the two the influential effect of Srivilliputhur is greater than the that of Sivakasi

The are four anicuts across this river by which 140 ha is directly fed and 93 ha is indirectly fed by 3tanks . The non system tanks under this basin are 27 and the total ayacut irrigated by them is 1208ha, Combined to the registere d ayacut under this system is 1261ha

ENVIRONMENTAL PROBLEMS:

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

WATER WEEDS

Ipomoea cornea and Juli flora has invaded the cultivable lands in lower reaches and water bodies' ie,tanks, channels and rivers. Hence, these plants need to be elimnated totally for the conserving precious water rescurces. But on the contrary, in some villages local people desire to grow Julie flora in the water spread area of the tanks. Once in 4 or 5 years they get cutting order from the revenue authorities, sale the Julie flora or coal produced from it and keep the money for the common expenses like court case for the temple repair and Local festivals etc. This is on account of lack of guidance and ignorance of its ill effects. Hence, this problem has to be addressed in all forms. List of tanks affected by water weeds are given in the Annexure-I.

INDUSTRIAL POLLUTION

The total number of industries located in the Kayalkudiyar sub basin is around 89, which inofudes the industries like Cement, Mines/Limestone, Chemical, Sugar, Liquer,POP,Spinning, Bleaching ,Clay,Herbal, Match works,Weaving, Willing,Electrical glass, Neem seed Oil,Lime Stone, Irrigation Tar/Oil Mill,Lime kiln, Stone crusher etc

There is no highly polluting Red category Industries and ther important red category industries are listed out in the annexure – IV

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 and banks of tanks. 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

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 Kayalkudiyar river at two selected locations, for a period of three years. Water samples at the following locations will be collected and tested once in 4 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. Achanthavilthan - D/S of Causeway.
2. Melapattam - D/S of Causeway.

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

Soil sample is 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 location 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 Vaippar 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. 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.

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. 2.00 Lakhs (Rupees Two Lakhs only)

29/6/16

Junior Engineer, , PWD - WRO
Environmental Cell Section-IV,
Tirunelveli. -7

29/6/16

Assistant Executive Engineer, , PWD - WRO
Environmental Cell Subdivision,
Tirunelveli.-7

Executive Engineer, PWD - WRO,
Environmental Cell Division,
Madurai.

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

Detailed Estimate

Sl no	Description of work	No	Measurements			Contents
			L	B	D	
I	**Monitoring Water and Soil Quality by fixing Nodal Agency (any Educational Institution)**					
1	Testing charges for Water samples	18 Nos				18 Nos
a	Water samples from rivers (2 location x 3 times / year x 3 years= 18 Nos)					
	Total no of Water samples = 18 Nos					
2	Water sample Testing(Pesticides) (1 no / year x 3 years = 3 Nos)	3 Nos				3 Nos
3	Testing charges for Soil sample collected from polluted sites (1 no / year x 3 years = 3 Nos)	3 Nos				3 Nos
4	Hiring /eep driver on service contract basis for the Department vehicle (1manmonth / year x 3 years =3Nos)	3 Man months				3 Man months
5	Purchase of Cans, bottles, chemicals and Documentation of water quality data, hire purchase of still camera, engaging labour etc.,	3 years				3 years
6	Provisions for field visits for environmental monitoring of project activties with respect to environmntal safeguards	3 years				3 years
II	**Environmental and Social knowledge base by fixing Nodal Agency (any Educational Institution)**					
1	Village level data collection on Environmental and Social state (2 man month / year x 3 years = 6 Nos)	6 Man months				6 Man months
2	Expert analysis and Development reporting	LS				LS
3	Impact studies due to project investemnts	4 Man months				4 Man months
4	Expert analysis and Development reporting due to project investments (After Project)	LS				LS
III	**Environmental and Social Awareness creation by fixing Nodal agency**					
1	Preparing and publishing of environmental Atlas	LS				LS
2	Documentation of the entire activities, Upgradation of computer and accessories and purchase of Video films and stationaries, engaging computer operator etc.,	LS				LS
IV	**Variation in Rates and unforseen items**	LS				LS

29/6/10

Junior Engineer,PWD-WRO,
Environmental Cell Section-IV,
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29/6/10

Assistat Executive Engineer,PWD-WRO,
Environmental Cell Sodivision,
Tirunelveli-07.

Executive Engineer,PWD,WRO,
Environmental Cell Division,
Madurai.

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

Abtract Estimate

Sl no	Qty.		Description of work	Rate (Rs)	Per	Amount (Rs)
I			**Monitoring Water and Soil Quality by fixing Nodal Agency (any Educational Institution)**			
1	18	Nos	Testing charges for Water samples	1400	Each	25200
2	3	No	Water sample Testing(Pesticides)	12000	No	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	1500	per year	4500
6	3	years	Provisions for field visits for environmental monitoring of project activities with respect to environmntal safeguards.	3000	per year	9000
II			**Environmental and Social knowledge base by fixing Nodal Agency (any Educational Institution)**			
1	6	Man months	Village level data collection on Environmental and Social state	5000	1Man month	30000
2		LS	Expert analysis and Development reporting	LS	LS	7000
3	4	Man months	Impact studies due to project Investemnts	5000	1Man month	20000
4		LS	Expert analysis and Development reporting due to project investments (After Project)	LS	LS	5000
III			**Environmental and Social Awareness creation by fixing Nodal agency**			
1		LS	Preparing and publishing of environmental Atlas	LS	LS	20000
2		LS	Documentation of the entire activities, Upgradation of computer and accessories and purchase of Video films and stationaries, engaging computer operators etc.,	LS		10000
V			Variation in Rates and unforseen items			750
				Total		200000
			(Rupees Two lakhs only)			

29/6/10

Junior Engineer, PWD,WRO, Environmental Cell Sec-IV, Tirunelveli.

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DESIGN AND DRAWING

Design of surplus weir of

Thirumalaivankinan tank in Srivilliputtur taluk

(a) Hydraulic Design

1) Length of Weir

Maximum Discharge fromCatchment = 4.51 cumecs (As per History register)

Length of existing weir = 6.15 m

Head of flow H = 0.45 m

Type Broad Crested weir

Discharge per metre width for B.C Weir Q1 = $CLH^{3/2}$ C = constant = 1.66

$=1.66\ L\ H^{3/2}$

= 1.66 x1.00 x0.45 3/2

For 1m =0.5011 Cumecs

Discharge through weir For 6.15 m =6.15 X 0.5011

Q1 = 3.082 cumecs

Discharge through Scour vent

Size of Vent = 0.90 x 0.90 M

No of vents - 2 Nos

Discharge $Q = C\ A \sqrt{h}$

$Q2 = 2.75 \times 0.90 \times 0.90 \times \sqrt{0.9} \times 2 = 4.226$ cumecs

Total Discharge = Q1 + Q2

= 3.082 + 4.226

= 7.308 cumecs

Total Discharge from catchment = 4.51 cumecs

Discharge provided = 7.308 cumecs

Hence safe

As per History Register

FTL of tank + 151.740 M

MWL of tank + 152.190 M

TBL of Tank 153.440M

Body wall height = Crest level – Existing G.L.

=151.740 -150.840

= 0.90 m

Scour Depth:-

NormalScour, R = $1.35\ (q^2/f)^{1/3}$

$= 1.35 \times (0.50^2/1)^{1/3}$

= 0.63 M

Front Scour level = 152.19-1.5 R

= 152.19-1.50 x0.63

= 151.255

ie. U/s Cut off depth = 0.945 m

Hence Provide minimum depth = 1.50 m

Rear Scour level = RMFL- 2 R

= 152.200-2.00 x0.63

= 152.200 – 1.26

= 150.940

ie. D/s Cut off depth = 1.26 m

Hence Provide minimum depth = 1.50 m

Structural Design

Height of Body wall as existing =0.90m

Top width of Body wall = $(H^{1/2} + d^{1/2})$ /1.81

= $(0.90^{1/2} + 0.45^{1/2})$ / 1.81 =

= 0.894 m

Adopt 0.90 m

Base width of body wall = $(H + D)/ p^{1/2}$

= $(0.90 + 0.45) / 2.40^{1/2}$

= 0.87 m

= 0.90 m

H- Height of bodywall

D- Head over crest

p-Specific gravity of concrete

Since height of bodywall is 0.90 m the base width may be Adopt 0.90 m

Total Length of U/S apron W1 = 1.50 Hb

=1.50 x 0.90

=1.35 m

LENGTH OF U/S Apron

Total Length of D/S Impervious Apron W2 = $4C \sqrt{Hb/10}$ C=6 for Clay

= $4 \times 6 \times \sqrt{0.90/10}$

= 4 x 6 x 0.30 = 7.20

Provide =7.50m

Length of D/S Apron

= $2.21C \sqrt{Hb/10}$ C=6 for Clay

= $2.21 \times 6 \times \sqrt{0.90/10}$

= 2.21 x 6 x 0.30 = 3.978

Provide =4.00m

Check for Exit gradient

x - b/d C E MI's circular No A2/24014/80-23/20 dt. 21.07.80.

Where b= length of solid apron

d= depth of cut off wall below apron level

=(3.60+0.90+4.00)/1.50

= 8.50 / 1.50

= 5.67

$\lambda = (1+(1+ \alpha^2)^{1/2})/2$

$= (1+(1+ 5.67^2)^{1/2})/2$

$= (1+(1+97.81)^{1/2})/2$

$= (1+98.91)^{1/2})/2$

= (1+9.94)/2 = 10.94 / 2

= 3.38

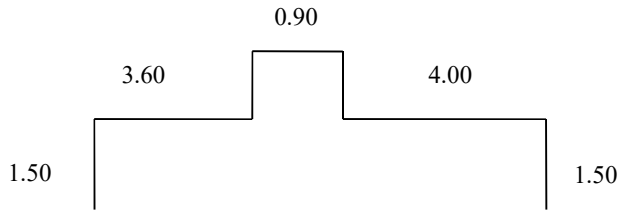
Exit gradient GE = Hb/d x /(3.14 $\lambda^{½)}$ =Hb /d x 1/ 3.14 √h

=0.90/0.90 / 1/5.771

= 0.17 < 0.25

For Block cotton soil GE 1/5 to 1/7
Hence safe

Check for creep length



Total creep length required = CHb

= 6 x 0.90 =5.40 m

Total creep length provided = 1.50 +3.60 +0.90+4.00 +1.50

= 11.50 m

Hence safe

Check for Uplift

Creep length up to Toe = 1.50 +3.60+0.90

= 6.00 m

Residual head = Hb – (Hb /Creep length) X creep length up to toe

0.90 –(0.90/11.90x 6.00)

= 0.45

Provide 0.60M thick inclusive of wearing coat 15cm thick

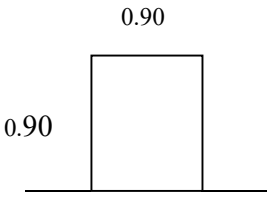
Check for Stability

Condition : I

Front water level up to Crest

Hb = Height of Body wall = 0.90 m

Taking moment about o



Sl No	Area of section M2	Specific Gravity t/m	Weight t	Lever Arm m	Moment t-m
1	0.90 x 0.90 = 0.81	2.40	1.94	0.90 / 2 = 0.45	0.87
			1.94		

Moment due to water pressure = $H^3/6$

$0.90^3 / 6 = 0.12$ t-m

Total Moment 0.87 +0.12 = 0.99 t-m

Lever Arm resultant = 0.99 / 1.94 = 0.51

Resultant falls within middle third

Condition : II **when the rear water level is at Crest level when weir is discharging full**

Total moment

Sl No	Area of section M2	Specific Gravity (under water t/m	Weight t	Lever Arm m	Moment t-m
1	0.90 x 0.90 = 0.81	1.40	1.13	0.90 / 2 = 0.45	0.51
			1.13		0.51

Horizontal moment due to water pressure = ½ H^2x h

=1/2 x0.90 x0.90 x0.45 =0.18 t-m

Total moment = 0.51 +0.18 =0.69 t-m

Lever Arm resultant = 0.69 / 1.13 = 0.60

Resultant falls within middle third

Condition : III **when the tail water is at critical condition**

Since this is tank weir this condition will not occure.So this check is not necessory

Design of Abutment:

Top level of abutment = TBL ie 153.45

Height of abutment = 153.45-150.84= 2.61 m say 2.60 m

Base width of abutment as per Coulums theeory = 0.68 x 2 .60
=1.768 m
Adobt 1.80 m
Adobt top width 0.45 m

Design of U/S Return:

Top level of Return = MWL + 0.30 m
= 152.20 + 0.30
= 152.500

Height of Return = 152.500-150.84
= 1.66 m

Base width of Return as per Coulums theeory = 0.60x 1.66
=0.996 m Adobt 1.00 m
Adobt top width 0.45 m

Design of D/S Return:

Top level of Return = FTL + 0.30 m
= 151.740 + 0.30
= 152.040

Height of Return = 152.040-150.840
= 1.20 m

Base width of Return as per Coulums theeory = 0.50 x 1.20
=0.60 m Adobt - 0.90m
Adobt top width 0.45 m

DESIGN OF GRADE WALL

1)Design flood :- The Anaithalaiyar River emerging from the Western Ghats divide in to two arms at Anaithaliayar River dividing dam, one right side arm feeding Athiyoor Tank and left side arm feeding Valaikulam Tank. This grade wall is proposed to be constructed near the Kayalkudiyar outlet wall.

There is an existing grade wall constructed at the distance of 200M in the U/S side of the proposed grade wall. The maximum flood discharge of the existing grade wall is 1623 cusees. (45.96 cumecs) . The same maximum flood discharge is taken for this grade wall design purpose.

$q = 2/3\ Cd \times l \times h \sqrt{2gh}$ d = 0.562

l = 44m

$45.96 = 2/3 \times 0.56 \times 44 \times h \sqrt{2 \times 9.8 \times h}$

45.96 = 73.0L h 3/2

h = 0.73 m (or) 0.75m.

Crest level of outlet = 167.350 m

Maximum flood level = 167.35 + 0.75 = 168.100 m

Maximum flood level for the river = 168.100 m

Bed level of river at 100 m U/S of grade wall = 165.08 m

Bed level of river at 100 m D/S of grade wall = 164.410 m

= 0.670

Difference = 0.670 m

Bed fall = 0.67/200 = 1/299 Say 1/300

Velosity (v) = 1/n R ⅔ S ½ n = 0.025

As per calculation sheet attached the wetted area = 41.80 m2

Wetted perimeter = 24.50 m

R = A / P = 41.80 / 24.50 = 1.706

V = 1/0.025 x (1.706) ⅔ x (1/300) ½

= 3.30 m/sec.

Discharge Q 41.80 x 3.30 = 137.94 cumec.

The linear water way available at the side is 10m. only hence the grade wall will be taken as 10m.

Afflux :-

$$Q = C.L \left[(H + ha)^{3/2} - ha^{3/2} \right]$$

Where H = Depth of flow over crest and

ha = head due to velocity of approach

C = Coefficient of discharge.

$$Va = \frac{Q}{B(H\ R)}$$

H_R = Height of weir + depth of flow (first assumption)

= 1.35+3.50 = 4.85 m

B = Width of anicut

Va = 137.94 / 10 x 4.85 = 2.84 m/sec.

$ha = Va^2 / 2\ g = 2.84^2 / 2 \times 9.81 = 0.41$ m.

Assume C = 3.30 for FPS units

for S.I. units 3.30 / 8.02 x 19.62 = 1.82

137.94 = 1.82 x 10 [(4+0.41)3/2 – 0.41½]

7.58 = (11 + 0.41) 3/2 – 0.26

(H + 0.41) 3/2 = 7.84

H + 0.41 = 3.94

H = 3.53 m

Check the assumption on C and HR.

d/h = R.M.F.L – Crest level / Head over crest = 168.100-165.95 / 3.50

= 0.61

from graph C = 3.30

Hence O.K.

HR = height of anicut + depth of flow over crest

= 1.35+3.53 = 4.88 against 4.85 m O.K.

Length of back water

L = 1.55 (F.M.F.L – R.M.F.L) x 1/s

= 1.50 (169.450 – 168.100) x 300

= 605 m.

However in this case this grade wall is proposed to be constructed near the outlet wall during flood time, the water may no afflux much since the water is simultaneously suplusing through the outlet wall of 44 m.

Length of Aprons and Talus :-

i)Hb = Crest level – Low water level

= 165.95 – 164.600 = 1.350 m

Q = discharge per / unit width = 137.94 / 10 = 13.79 m3 / sec / m length

ii) Creep coefficient = 8 since the soil available at the site will be S.D.R.

Length of impervious apron on d/s = $4c \sqrt{Hb/10} \times 1/\sqrt{3.28}$

$= 4 \times 8\sqrt{1.35/10} \times 1/1.81$

= 6.49 or 6.50m

Total length of apron = $10c \sqrt{Hb / 10 \times a /75} \times \sqrt{3.281}$

$= 10x8\sqrt{1.35/10x}\sqrt{13.79/75x1.81}$

= 22.81m

Length of talus = 22.81 – 6.50 = 16.31m say 16.50m

ImPervious apron on U/S = 2.00m (1.5hs or 2.00m which ever is greater)

= 1.50x1.35 = 2.025 say 2.0 m

Scour depth

Q = 137.94 q = 137.94/10 = 13.79m3/sec/m Q = 137.94

Normal scour ® = $1.35 (q2/f)^{1/3}$ F = 1.20 q= Q/L = 137.94/10 = 13.79

$= 1.35 (13.79^2/1.20)^{1/3}$ f = 1.20

= 7.30m

Front Scour level = F.M.F.L. – 1.50 R

= 165.45 – 1.50 x 7.30

= 158.500m.

= 168.100 - 1.50x 7.30

= 157.15

Rear scour level = 168.100- 1.50x7.30 = 157.15m

Depth of front cut off = 164.600-158.500

= 6.10 m.

Depth of rear cut off = 164.600 – 157.15 = 7.45m

Morever the soil available at the site is SDR strab not of scouring nature the depth of cut off is worked out may not be found to be necessary.

Hence minimum depth of 1.50m is proposed on

U/S 2.00 m on D/S for safely.

Check for Creep Length :-

Total Creep Length required = C x Hr = 8 x 1.35

= 10.80 m

The grade wall profile is proposed as for C E (I) Circular.

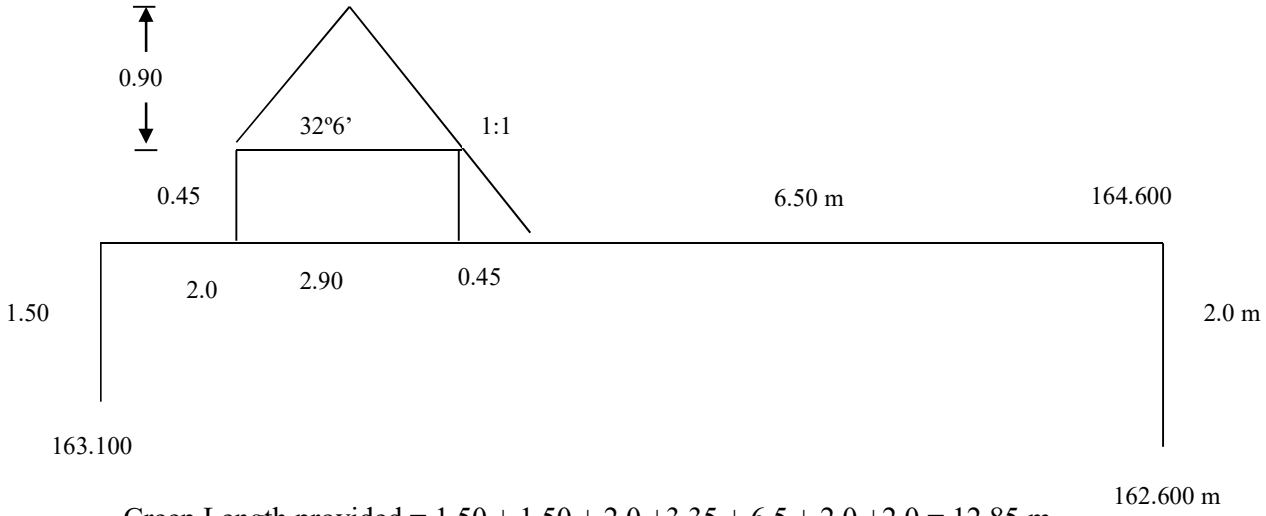
Memo NO. F 2 / 93388 / 81 – 4 / dt. 06.03.82.

Bottom width = H + 0.58 d

= H + 0.58 x 3.50 = 3.35 m = 1.35 m

Ogee curve = 32º 6’

Ogee depth = d / 4 = 3.50 / 4 = 0.90 m.



Creep Length provided = 1.50 + 1.50 + 2.0 +3.35 + 6.5 + 2.0 +2.0 = 12.85 m

Check for uplift :-

Creep length upto toe = 3.00 + 2.00 + 3.35 = 8.350 m

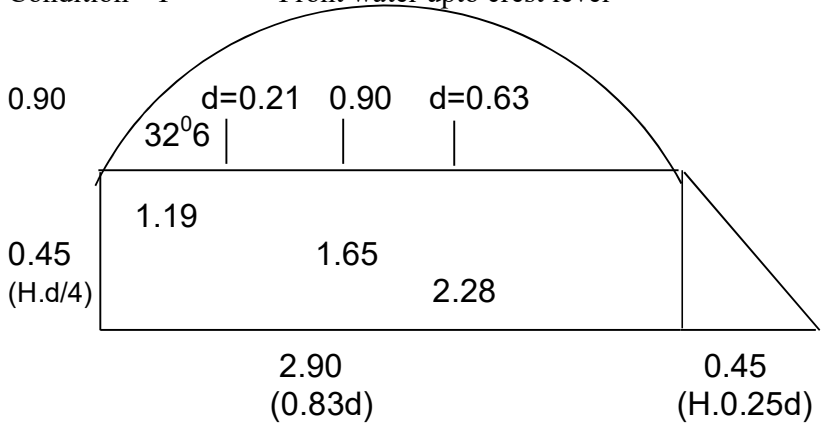
Residual head = 1.35 - 1.35 / 18.85 x 8.35 = 0.75

Thickness of Concrete= 0.75 / 1.25 = 0.60 m

Provide 0.60 m depth of apron concrete including 15 cm of wearing coat.

Stability for 3 Conditions of flow

Condition – I Front water upto crest level



Sl NO.	Area	Specific gravity	Weight	Lever arm	Moment
A	2.90 x 0.45 = 1.31	2.25	2.95	1.45	4.28
B	0.50 x 0.45 x 0.45 = 0.10	2.25	0.23	3.05	0.70
C	0.50 x 1.65 x 0.90 = 0.74	2.25	1.67	1.10	1.84
D	0.63 x 0.90 = 0.57	2.25	1.28	1.97	2.52
E	0.50 x 0.62 x 0.63 = 0.20	2.25	0.45	2.49	1.12
F	½ x 1.65 x 0.90 = 0.74	1.00	1.67	0.55	0.92

Moment due to water pressure = $H^3 / 6 = 1.35^3 / 6 = 0.410$

Total moment = 11.38 + 0.41 = 11.79

Lever arm of resultant = 11.79 / 8.25 = 1.43

Provide 6'' hume Pipes @ 1.82m intervals at above the level of the Existing Bed.

Resultant falls with in middle third (ie 1.12 to 2.23)

Hence O.K.

Condition – II

When the rear water level is at crest level

When the weir is discharging full

D = Depth of downstream water = 168.100-161.100 = 3.50

d = depth of flow over crest = 3.50m

K = d/D = 3.50/3.50 = 1

When the down stream water level is at crest level

D = 1.35 m

D = 1x 1.35 = 1.35 m

Sl NO.	Area	Specific gravity	Weight	Lever arm	Moment
A	2.90 x 0.45 = 1.31	1.25	1.64	1.45	2.38
B	0.50 x 0.45 = 0.10	1.25	0.13	3.05	0.69
C	0.50 x 1.65 x 0.90 = 0.74	1.25	0.92	1.10	1.01
D	0.63 x 0.90 = 0.57	1.25	0.71	1.97	1.40
E	0.50 x 0.62 x 0.63 = 0.20	1.25	0.25	2.49	0.62

Horizontal moment due to water pressure = $\frac{1}{2} M^2h$

Total moment = 5.80 + 1.23 = 7.03

Lever arm of resultant force = 7.03/3.65

= 1.93

Resultant falls with in the middle third (ie 1.12 to 2.23)

Hence O.K

Condition III

When the tail water is at critical condition

When its depth = $H\sqrt{K}$

H = 1.35 m

K = 1 as calculated previously

D = depth of tail water for critical condition

= $\sqrt{1}$ x 1.35 = 1.35

H depth over crest for critical condition = K x D

= 1x 1.35 = 1.35 m

Sl NO.	Area	Specific gravity	Weight	Lever arm	Moment
A	2.90 x 0.45 = 1.31	1.25	1.64	1.45	2.38
B	0.50 x 0.45x0.45 = 0.10	1.25	0.13	3.05	0.39
C	0.50 x 1.65 x 0.90 = 0.74	1.25	0.92	1.10	1.01
D	0.63 x 0.90 = 0.57	1.25	0.71	1.97	1.40
E	0.50 x 0.62 x 0.63 = 0.20	1.25	0.25	2.49	0.62
			3.65		5.80

Moment due to water pressure

= 1/6 (H^3+3dH^2 – D^3)

= 1/6 (1.35^3 + 3x1.35x1.35^2 – 1.35^3)

= 0.41

Total moment = 5.80+ 0.41 = 6.21

Lever arm of resultant = 6.21/3.65 = 1.70 m

Resultant falls with in the middle third (ie 1.12 to 2.23)

Hence O.K.

Provide 6'' hume Pipes @ 1.82m intervals at above the level of the Existing Bed.

Typical design of Tank Sluices VADAKARAI Tank

Ayacut of Sluice No. I : 41.880 Ha

a) Water Requirement :

Registered ayacut of Sluice No. : 1 103.49 acres

Adoping duty of 40 acre/ 1 cusec : 103.49 / 40 : 2.59 cusec

or 0.082 cumec

b) Sill level

Average Field level is taken as sill level is already fixed as 123.640 m

c) Vent Way

Vent way is designed for the discharge when the water level is 1.20m above the sill level

Discharge $Q = Cd\ A\ \sqrt{2gh}$

$0.082 = 0.60A\sqrt{2x9.81x1.20}$

$A = 0.082 / 2.92$

$= 0.028\ m^2$

Area of barrel provided is 0.75 x 0.90 m = 0.675 m^2 so as to clean and barrel easily.

d) Design of plug hole

The size of the orifice in the plug share is generally calculated so as to pass the full supply for as average driving head of 0.30m

Discharge $Q = Cd\ A\ \sqrt{2gh}$

$0.082 = 0.60\ A\ \sqrt{2 \times 9.81 \times 0.30}$

$A = 0.082 / 1.46$

$= 0.056\ m^2$

But the plug hole is provided as 0.10 m dia

e) Design of Bottom vent

This vent is brought into use, when the water level is less than 0.60m over the sill level. At other times, the vent is completely closed by Shutters , this vent is made of sufficient size of fully supply with 0.15 m head.

Discharge $Q = Cd\ A\ \sqrt{2gh}$

$0.082 = 0.60\ A\ \sqrt{2 \times 9.81 \times 0.15}$

$A = 0.082 / 1.03$

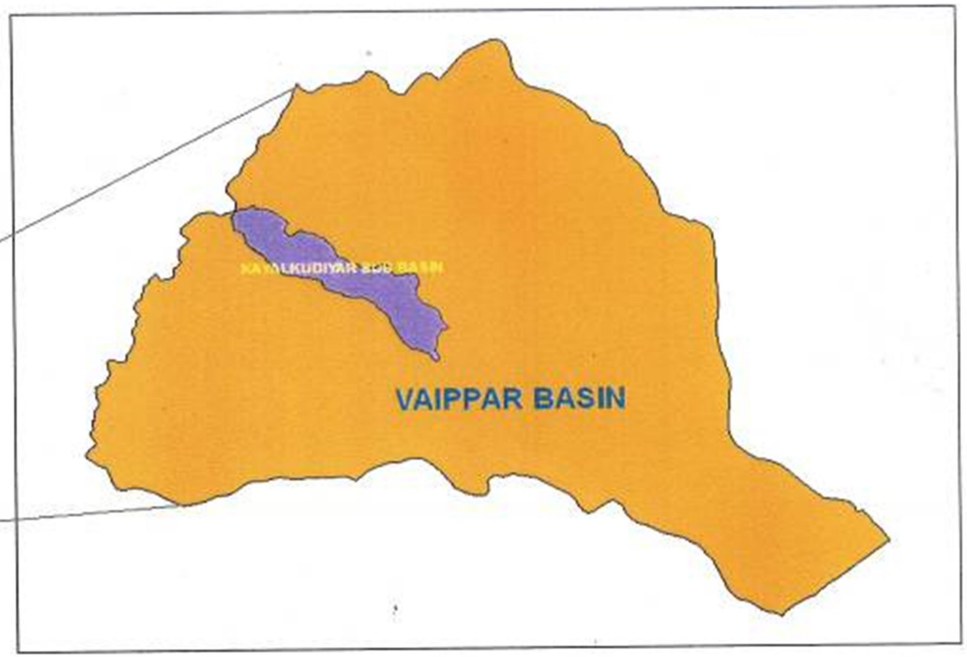
$= 0.079\ m^2$

But the bottom vent hole is usually provided as 0.15 m x 0.15m.

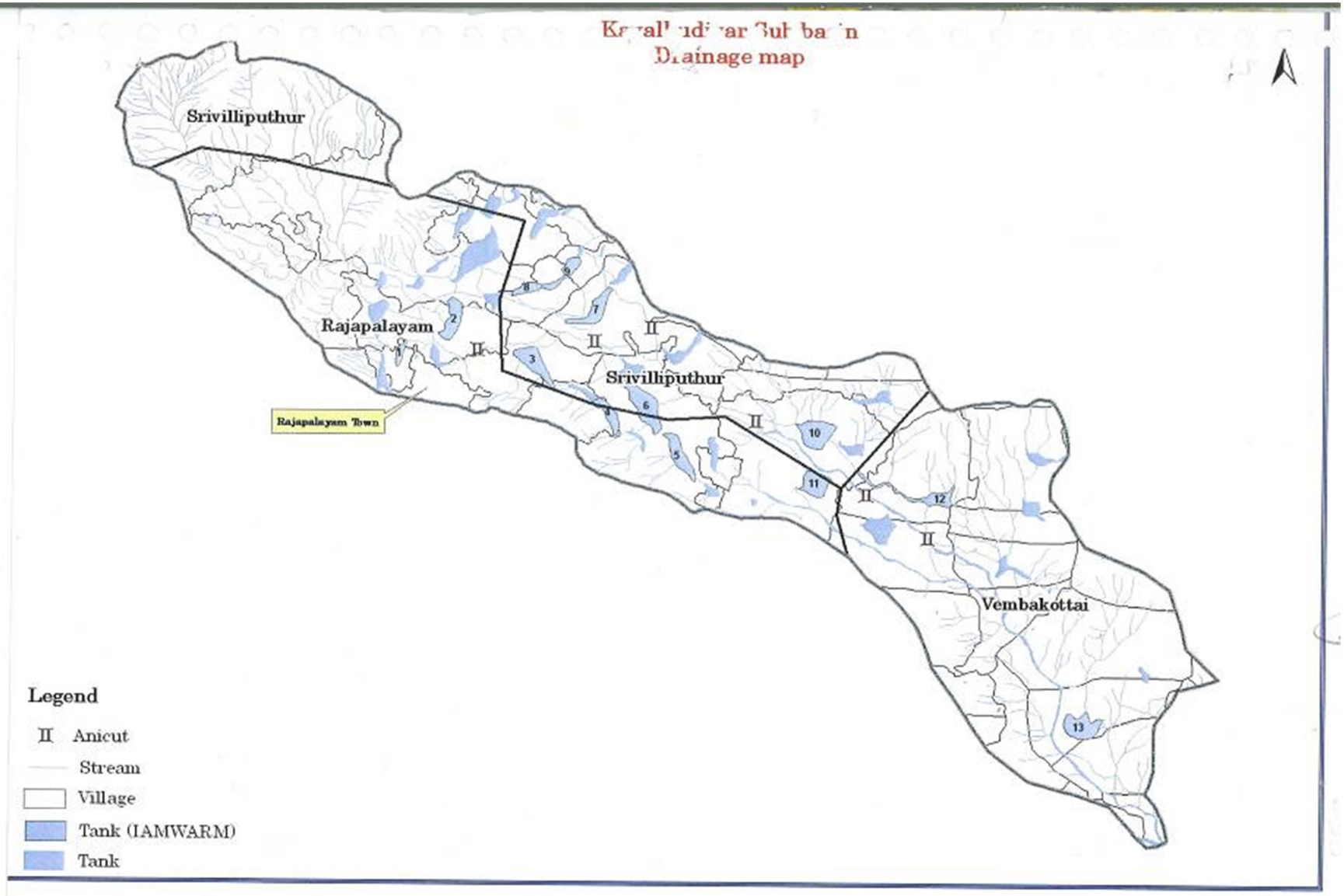
The front structure is designed for Tower head type when the depth of storage is more than 2.70m.

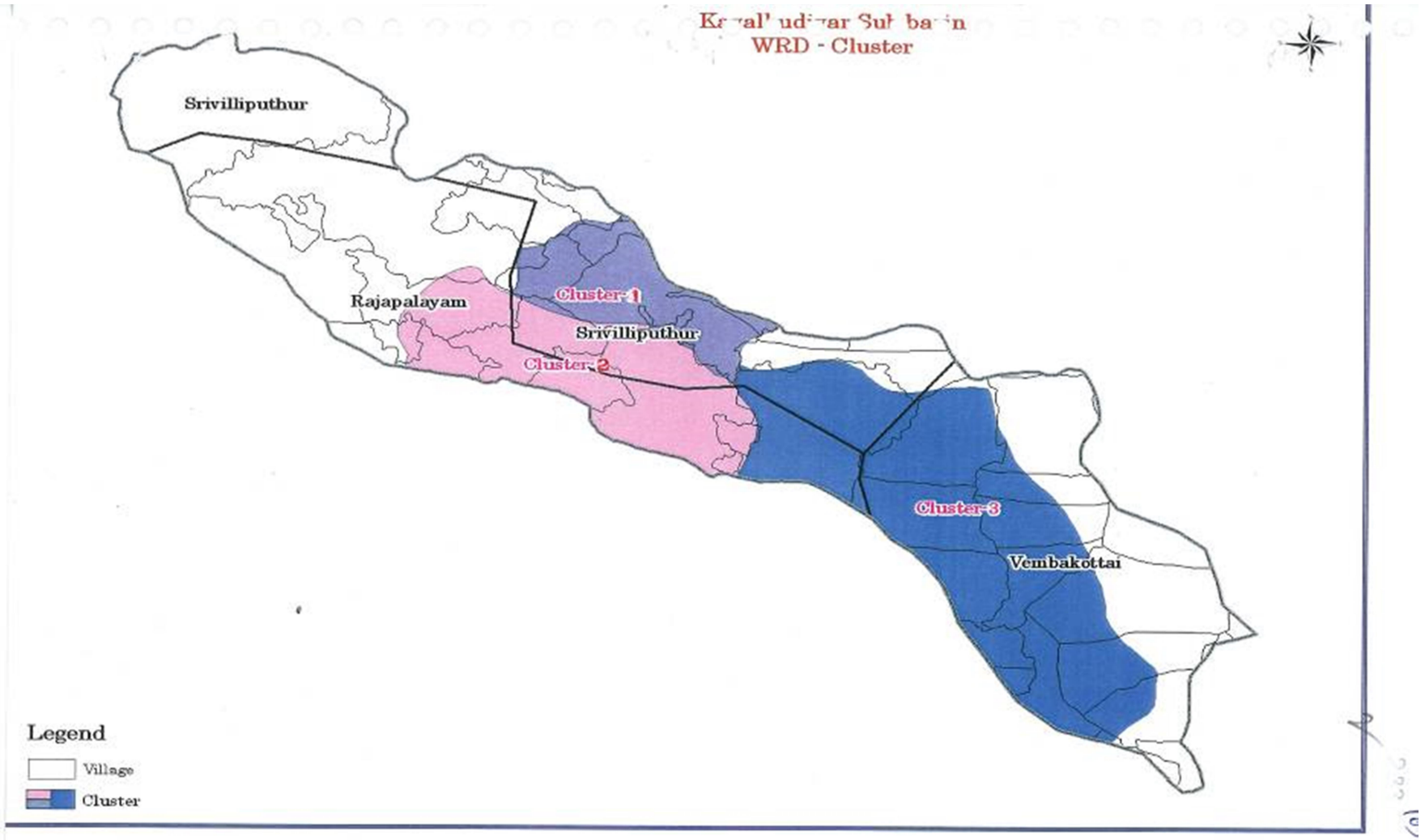
The rear cistern is provided of size 1.20m x 1.20 m along with the downstream leading channel wherever necessary.

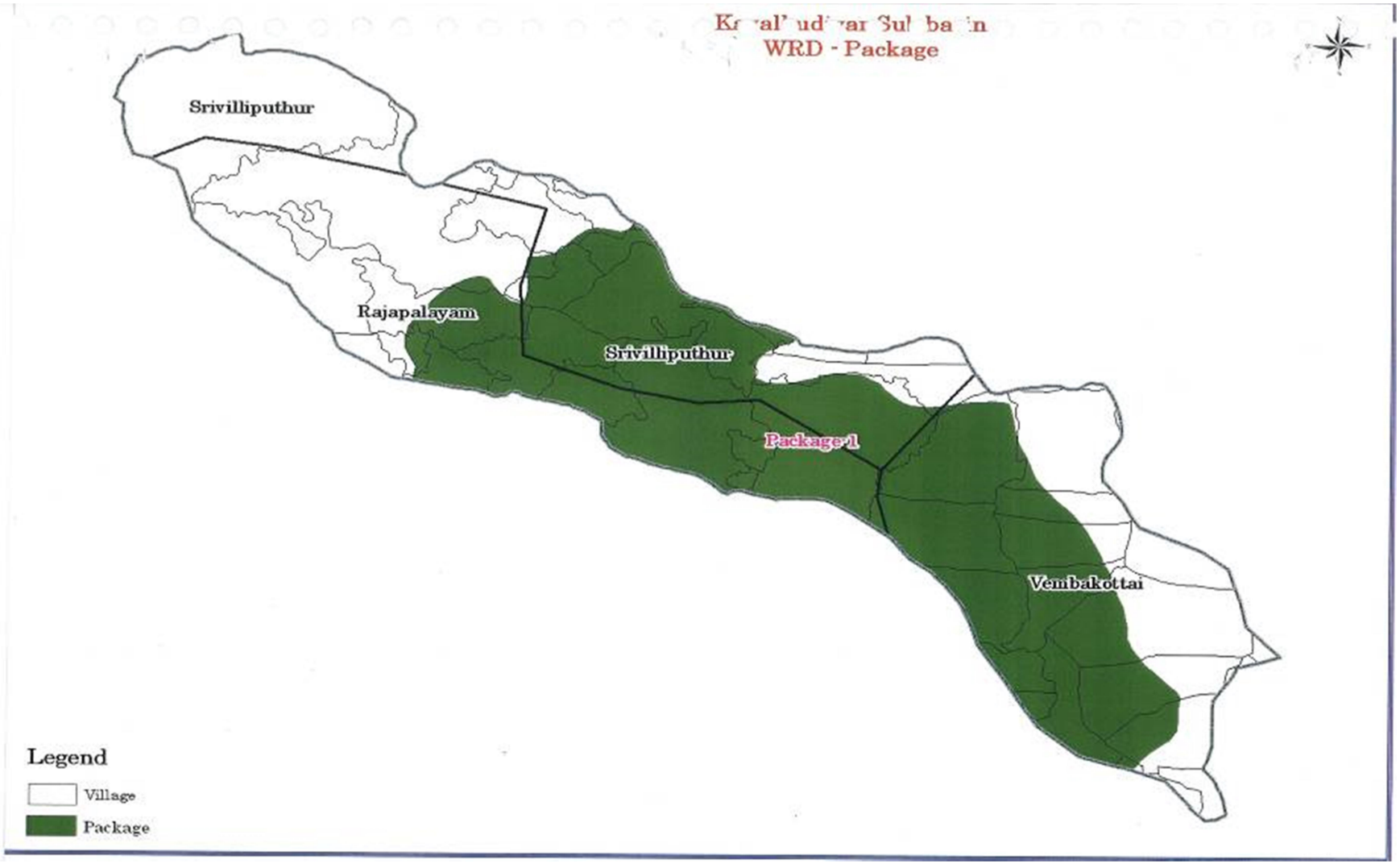
KAYALKUDIYAR SUB BASIN
INDEX MAP

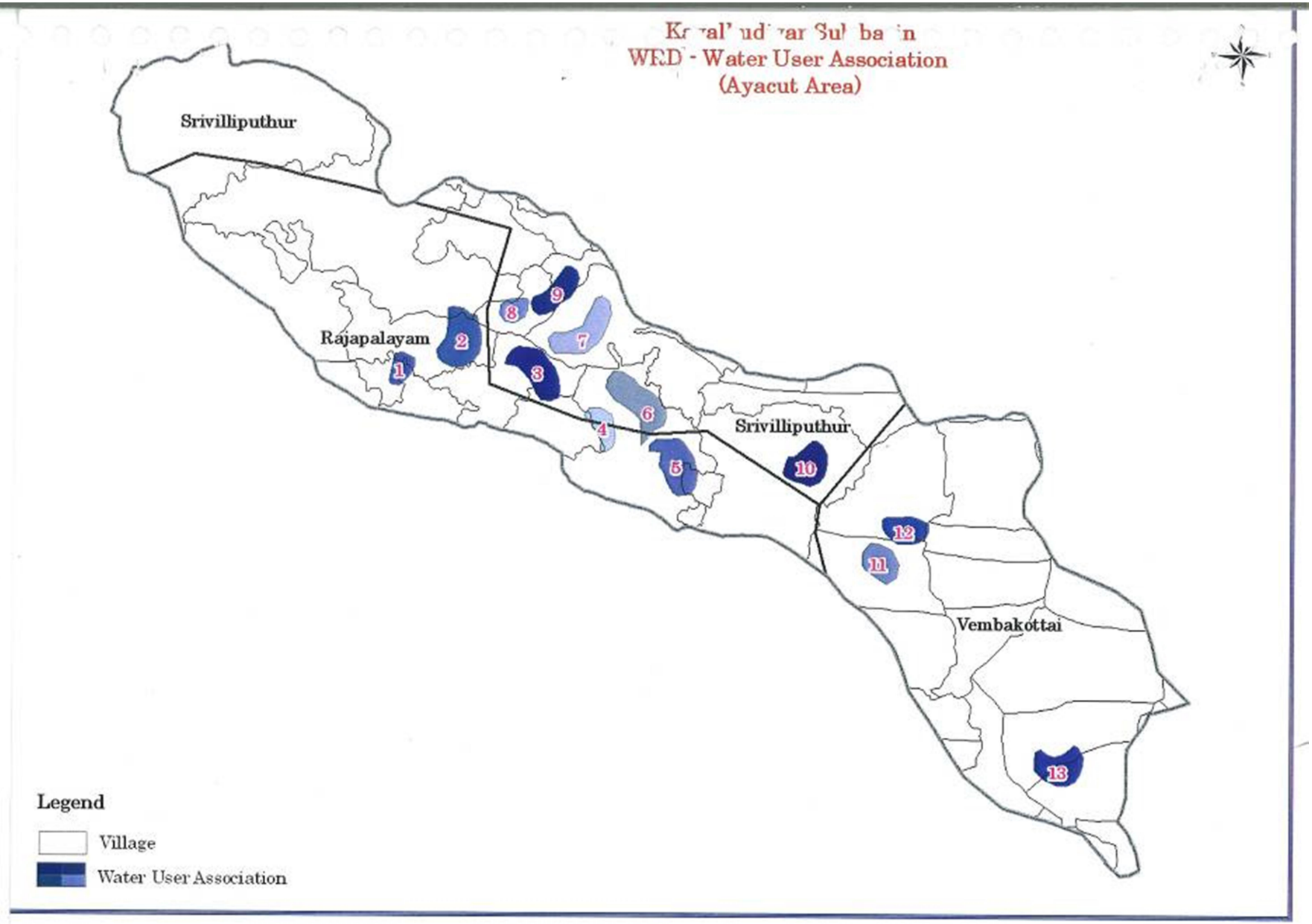


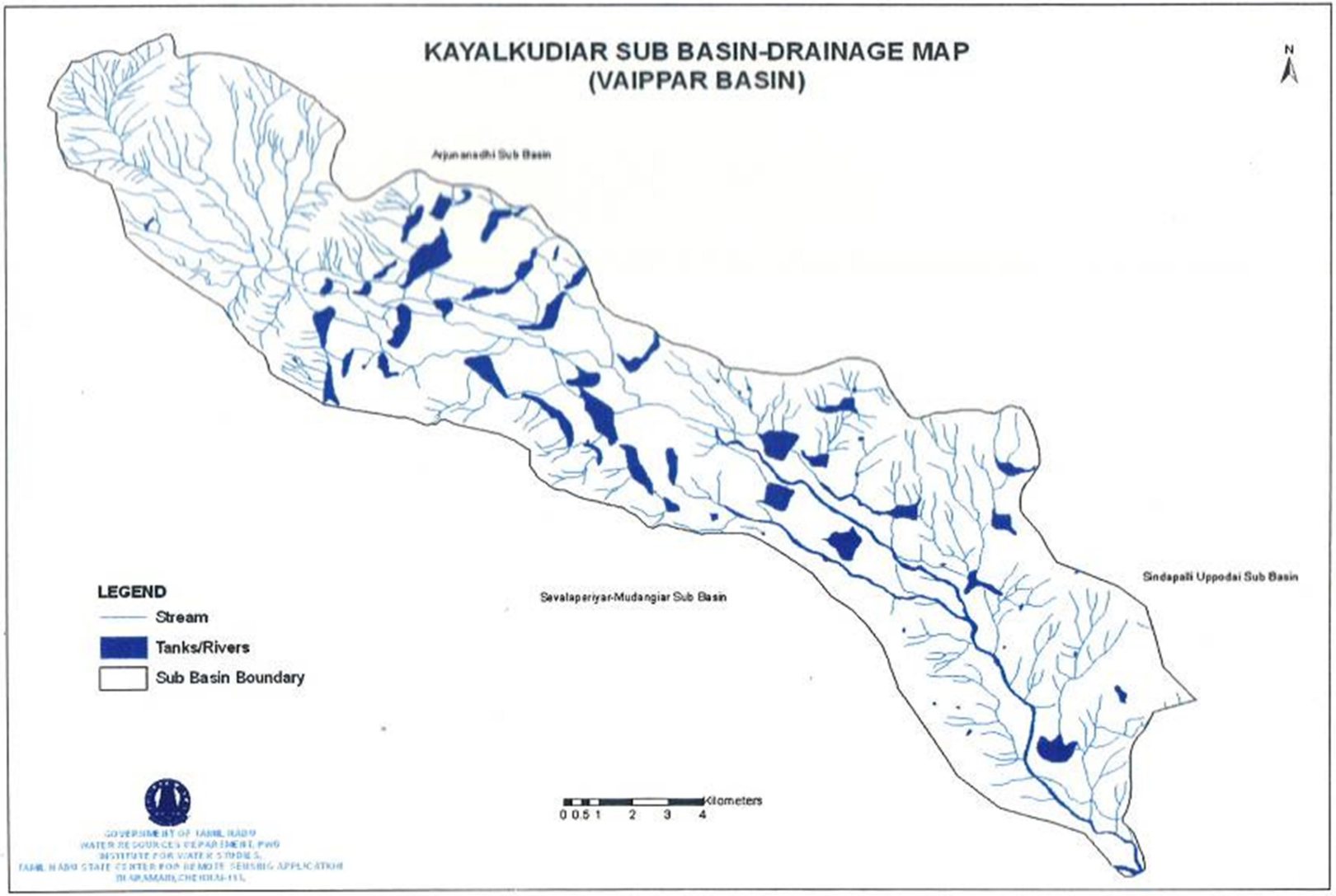
GOVERNMENT OF TAMIL NADU
WATER RESOURCES DEPARTMENT, PWD
INSTITUTE FOR WATER STUDIES,
TAMIL NADU STATE CENTRE FOR REMORE SENSING APPLICATION
THARAMANI CHENNAI 113

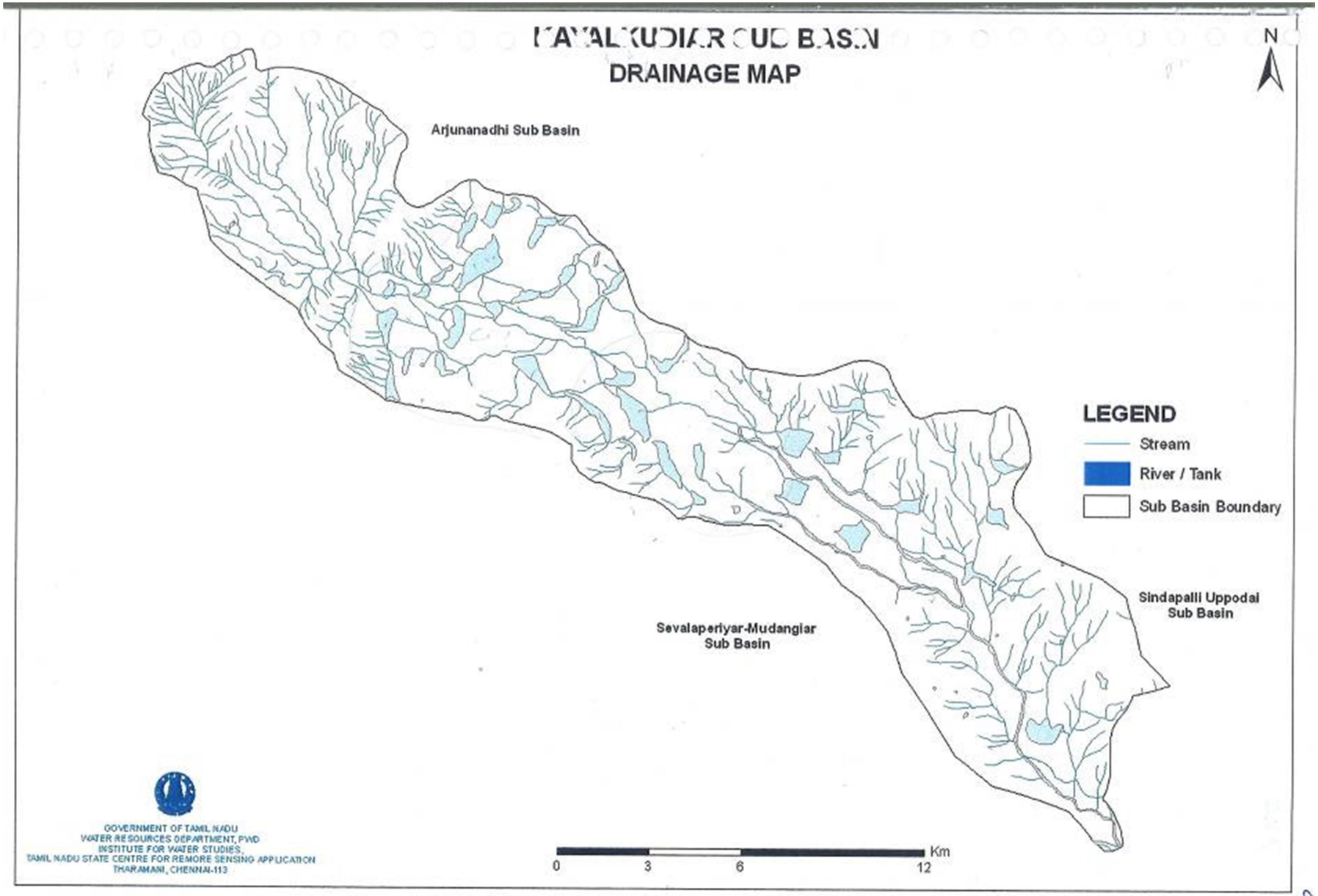

Srivilliputhur
Rajapalayam
Srivilliputhur
Rajapalayam Town
Vembakottai
Legend
Anicut
Stream
Village
Tank (IAMWARM)
Tank


Srivilliputhur
Rajapalayam
Cluster-1
Srivilliputhur
Cluster-2
Cluster-3
Vembakottai
Legend
Village
Cluster


Srivilliputhur
Rajapalayam
Srivilliputhur
Package-1
Vembakottai
Legend
Village
Package


Srivilliputhur
Rajapalayam
Srivilliputhur
Vembakottai
1
2
3
4
5
6
7
8
9
10
11
12
13
Legend
Village
Water User Association

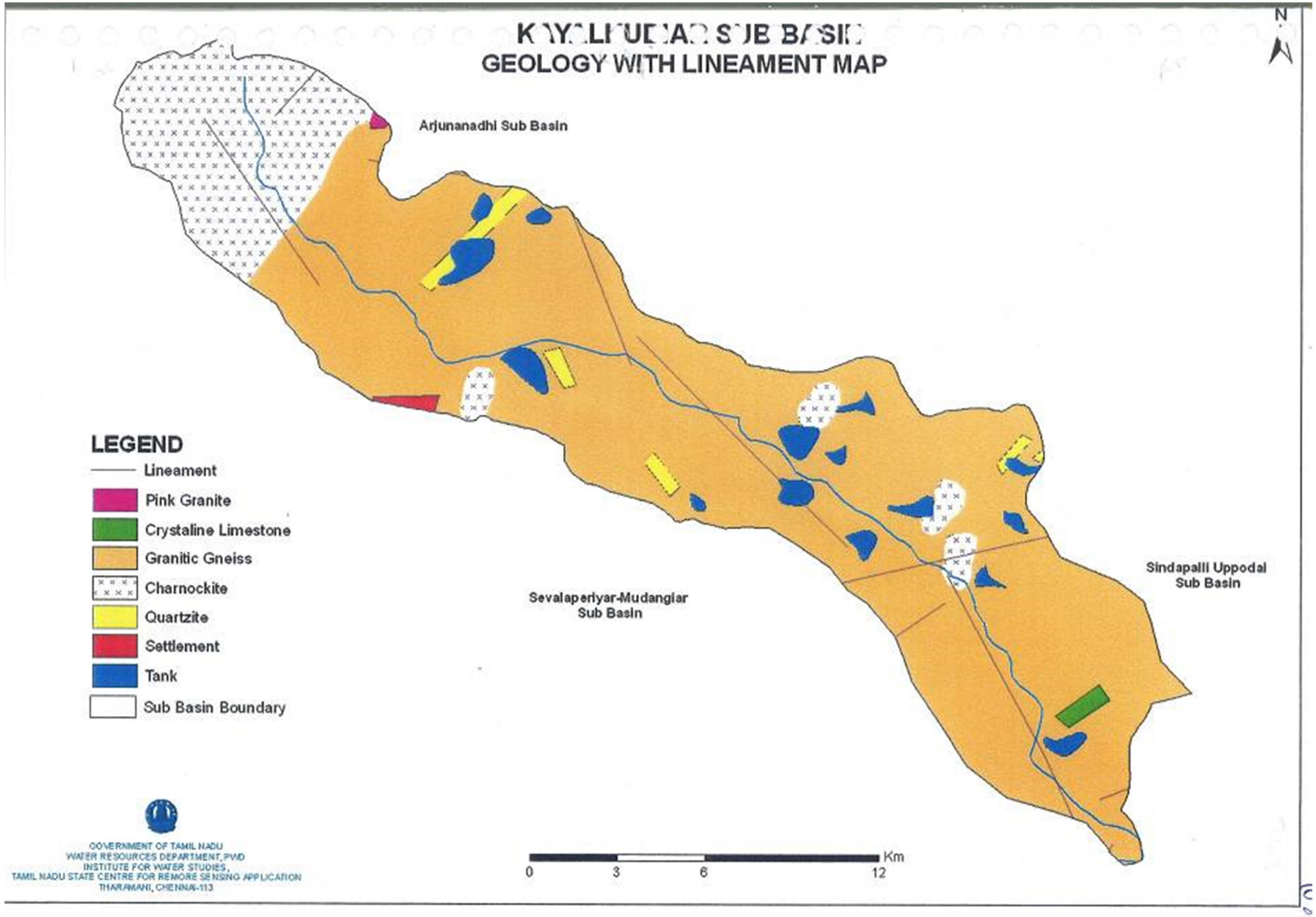

KAYALKUDIAR SUB BASIN-DRAINAGE MAP
(VAIPPAR BASIN)
N
Arjunanadhi Sub Basin
Sevalaperiyar-Mudangiar Sub Basin
Sindapalli Uppodai Sub Basin
LEGEND
Stream
Tanks/Rivers
Sub Basin Boundary
0 0.5 1 2 3 4
Kilometers


PAMBAR KUDIAR SUB BASIN
DRAINAGE MAP
N
Arjunanadhi Sub Basin
Sevalaperiyar-Mudangiar
Sub Basin
Sindapalli Uppodai
Sub Basin
LEGEND
Stream
River / Tank
Sub Basin Boundary
GOVERNMENT OF TAMIL NADU
WATER RESOURCES DEPARTMENT, PWD
INSTITUTE FOR WATER STUDIES,
TAMIL NADU STATE CENTRE FOR REMORE SENSING APPLICATION
THARAMANI, CHENNAI-113
0
3
6
12
Km

KAYALKUDIAR SUB BASIN
VILLAGE MAP

GOVERNMENT OF TAMIL NADU
WATER RESOURCES DEPARTMENT, PWD
INSTITUTE FOR WATER STUDIES,
TAMIL NADU STATE CENTRE FOR REMORE SENSING APPLICATION
THARAMANI, CHENNAI-113

KAYALPUDAN SUB BASIN
GEOLOGY WITH LINEAMENT MAP



GOVERNMENT OF TAMIL NADU
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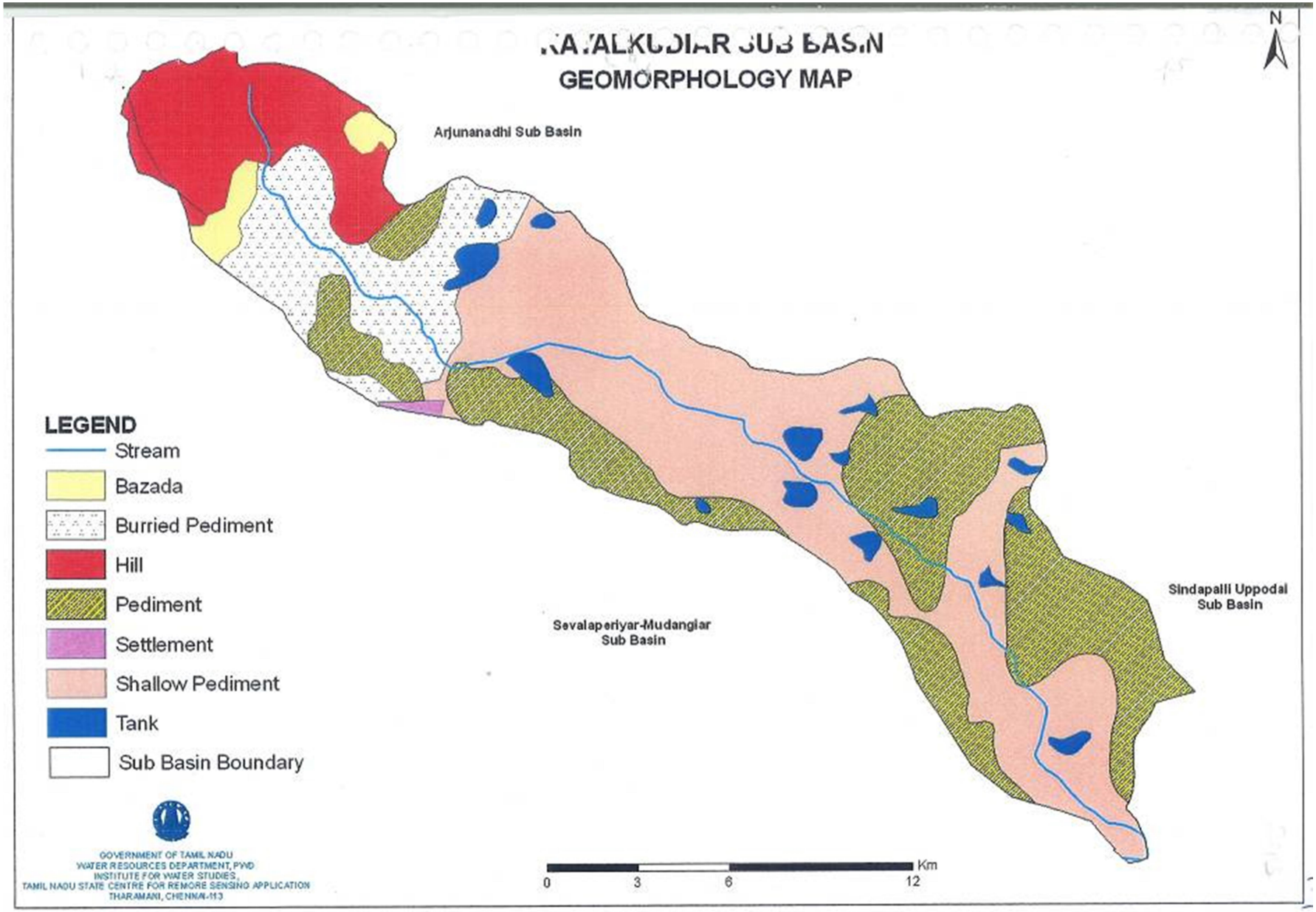
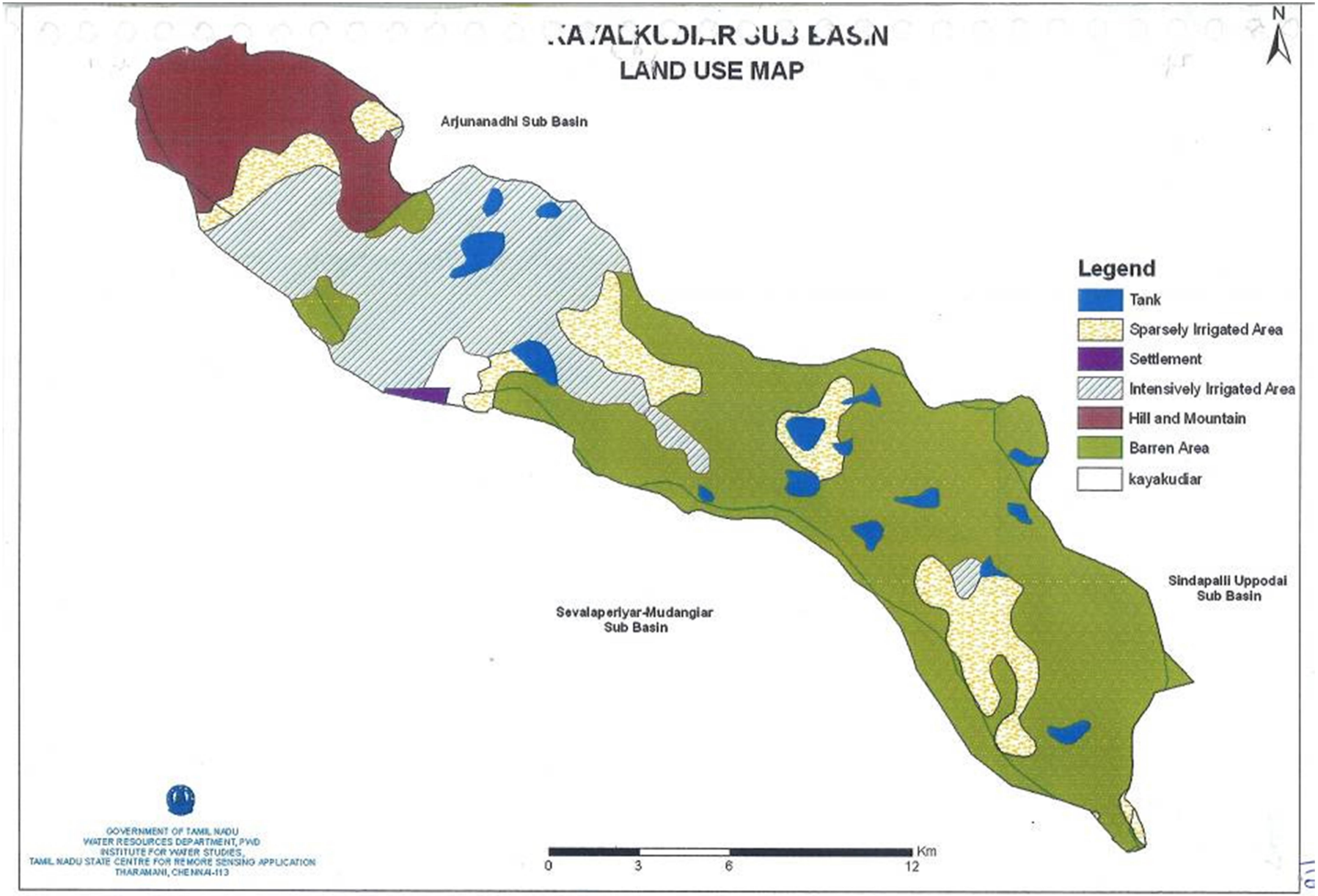
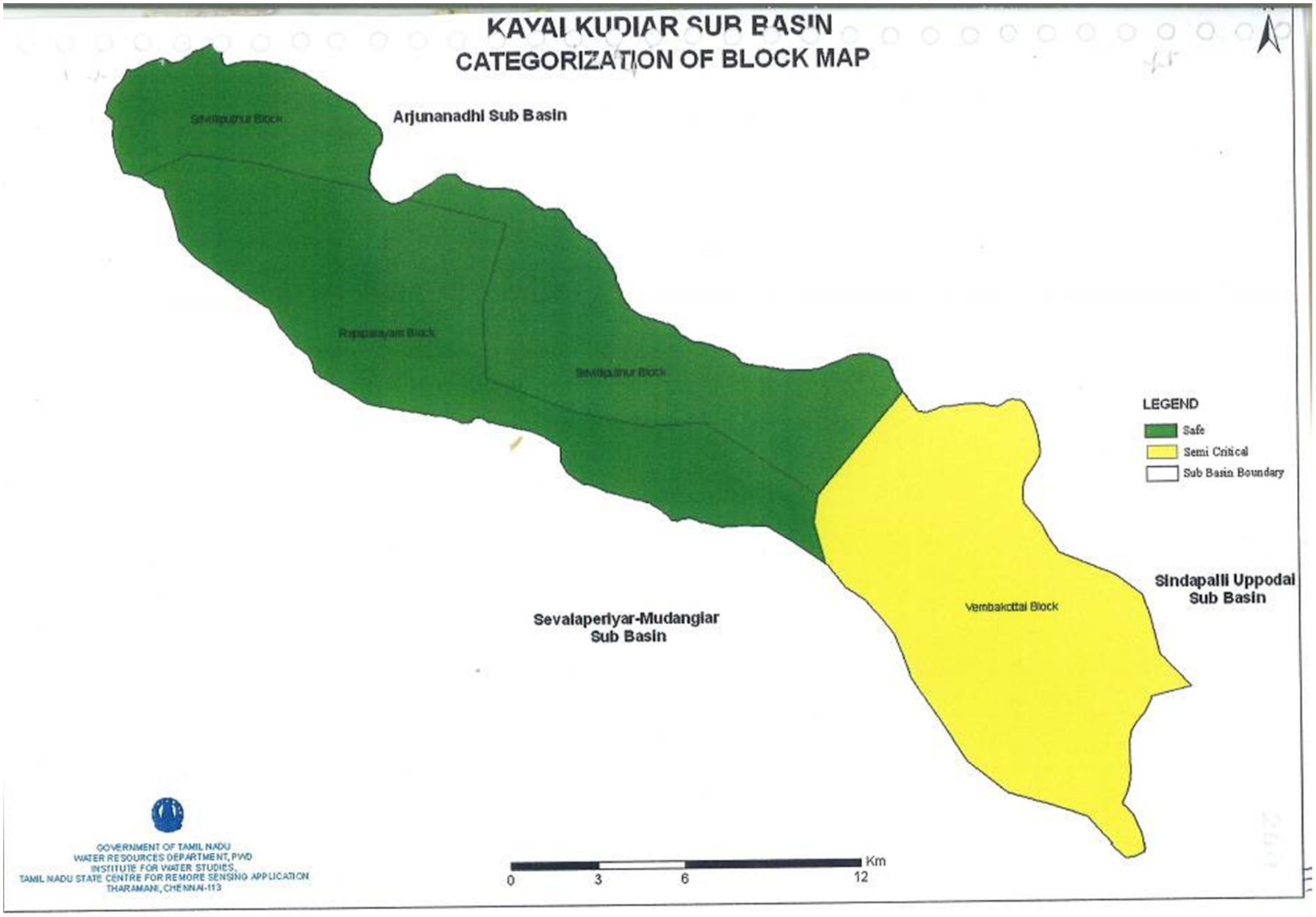
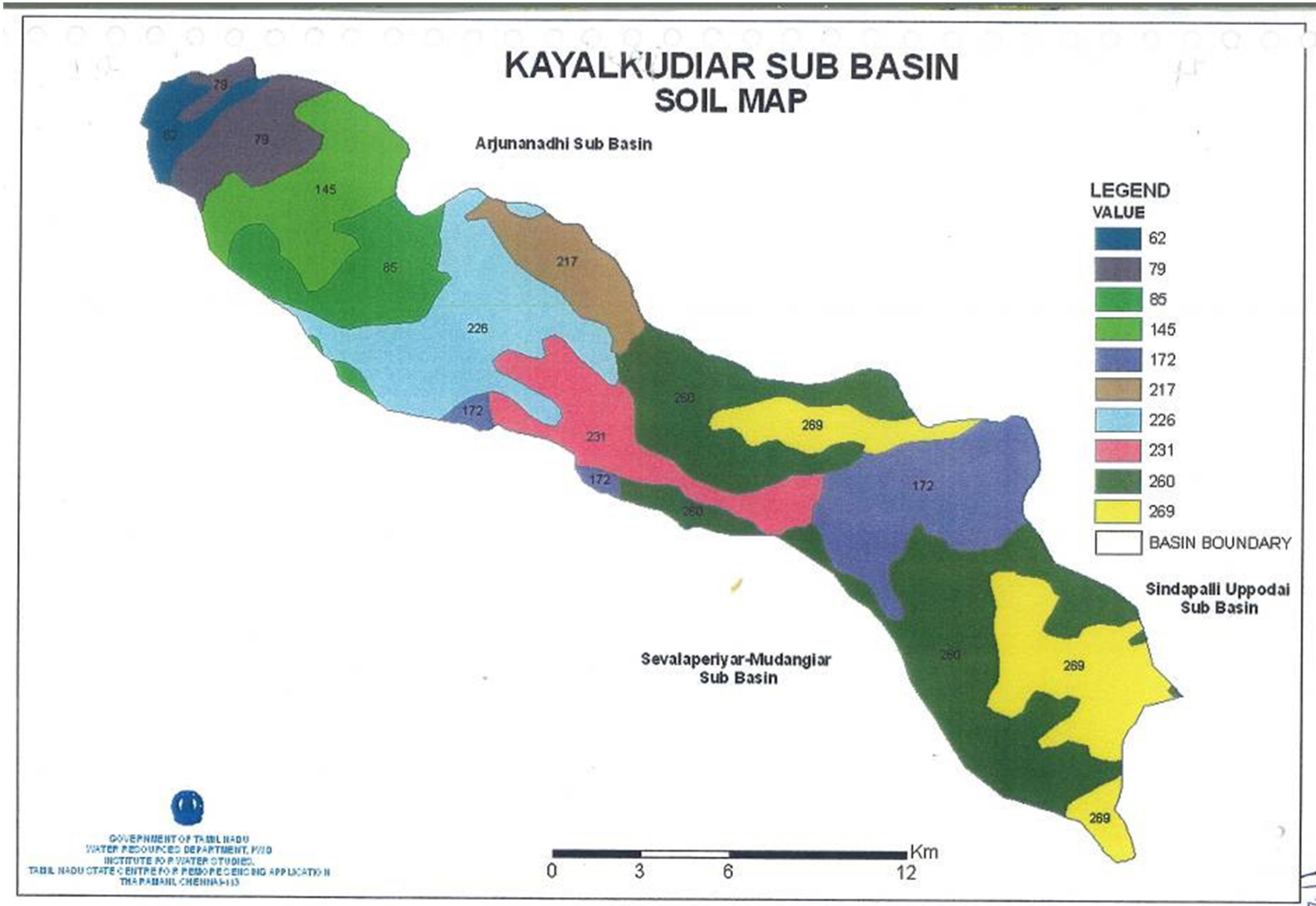
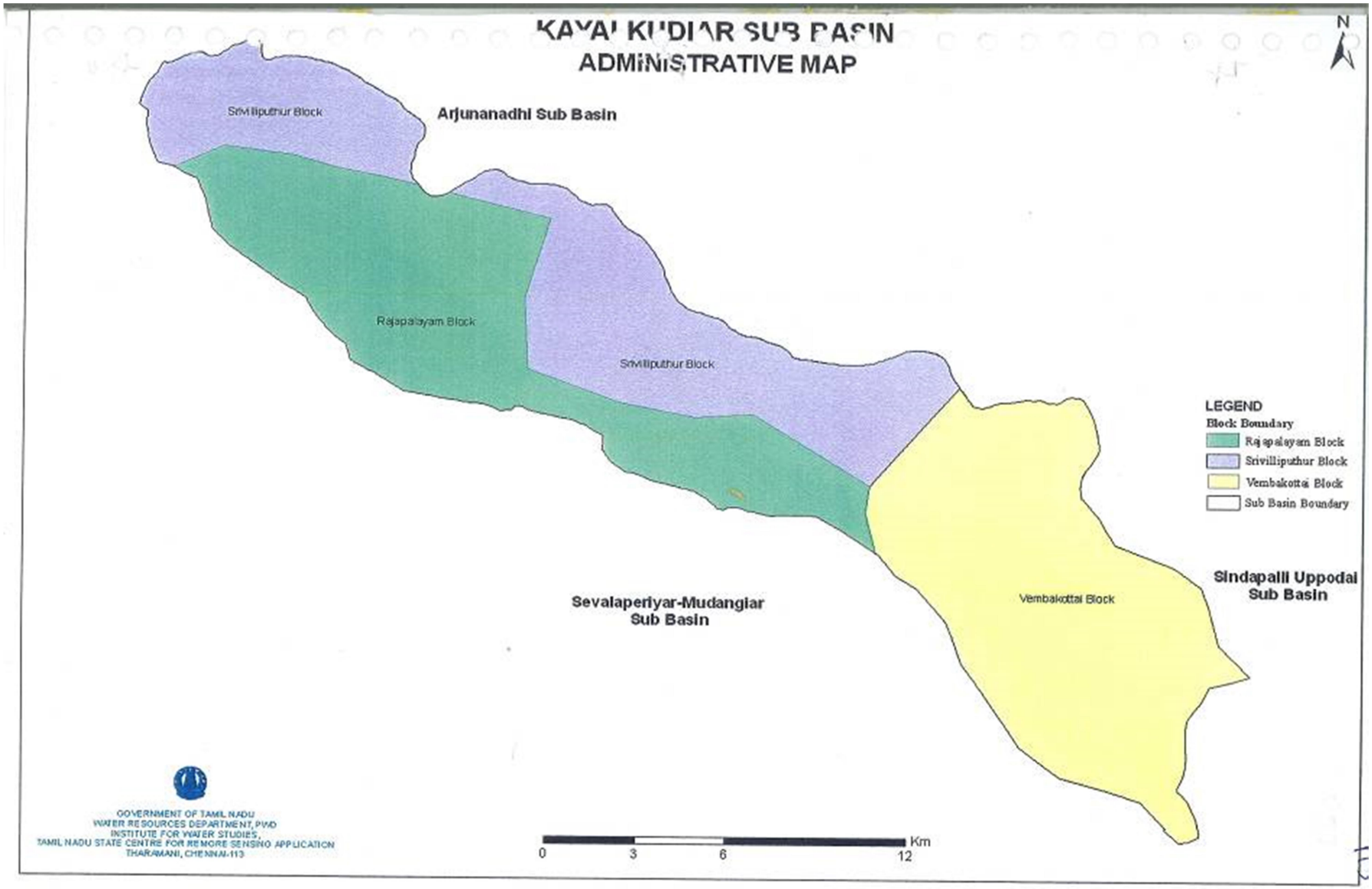
TAMIL NADU STATE CENTRE FOR REMORE SENSING APPLICATION
THARAMANI, CHENNAI-113


KATALKUDIAR SUB BASIN
GEOMORPHOLOGY MAP
N
Arjunanadhi Sub Basin
Sindapalli Uppodai Sub Basin
Sevalaperiyar-Mudangiar Sub Basin
LEGEND
Stream
Bazada
Burried Pediment
Hill
Pediment
Settlement
Shallow Pediment
Tank
Sub Basin Boundary
GOVERNMENT OF TAMIL NADU
WATER RESOURCES DEPARTMENT, PWD
INSTITUTE FOR WATER STUDIES,
TAMIL NADU STATE CENTRE FOR REMORE SENSING APPLICATION
THARAMANI, CHENNAI-113
0
3
6
12
Km


KAYALKUDIAR SUB BASIN
LAND USE MAP
N
Arjunanadhi Sub Basin
Sevalaperiyar-Mudangiar
Sub Basin
Sindapalli Uppodai
Sub Basin
Legend
Tank
Sparsely Irrigated Area
Settlement
Intensively Irrigated Area
Hill and Mountain
Barren Area
kayakudiar
GOVERNMENT OF TAMIL NADU
WATER RESOURCES DEPARTMENT, PWD
INSTITUTE FOR WATER STUDIES,
TAMIL NADU STATE CENTRE FOR REMORE SENSING APPLICATION
THARAMANI, CHENNAI-113
0
3
6
12
Km

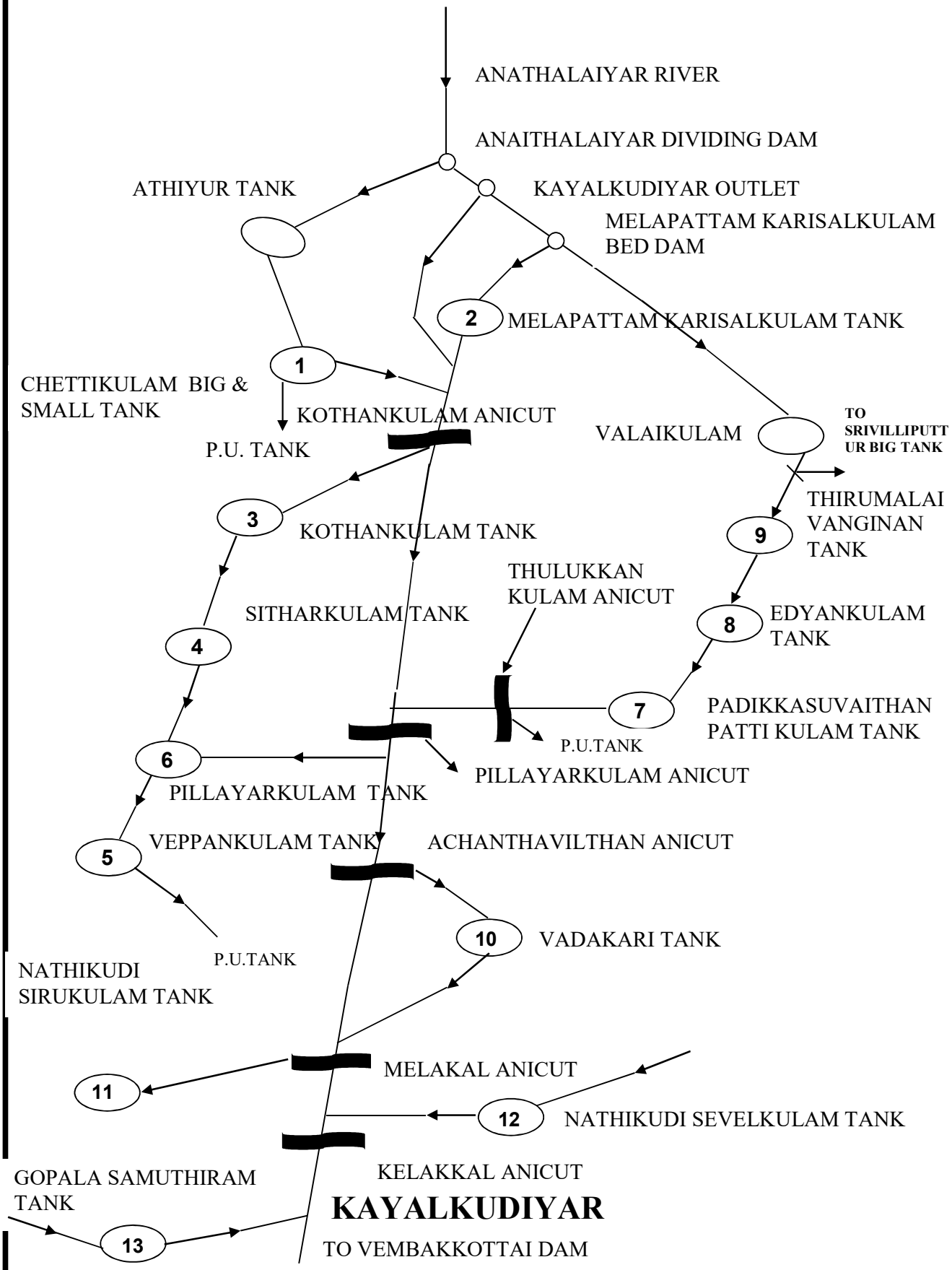

KAYAL KUDIAR SUB BASIN
CATEGORIZATION OF BLOCK MAP
Arjunanadhi Sub Basin
Sivilliputhur Block
Rajapalayam Block
Sivilliputhur Block
Vembakottai Block
Sevalaperiyar-Mudangiar
Sub Basin
Sindapalli Uppodai
Sub Basin
LEGEND
Safe
Semi Critical
Sub Basin Boundary
GOVERNMENT OF TAMIL NADU
WATER RESOURCES DEPARTMENT, PWD
INSTITUTE FOR WATER STUDIES,
TAMIL NADU STATE CENTRE FOR REMORE SENSING APPLICATION
THARAMANI, CHENNAI-113
0
3
6
12
Km


KAYALKUDIAR SUB BASIN
SOIL MAP
Arjunanadhi Sub Basin
Sevalaperiyar-Mudangiar
Sub Basin
Sindapalli Uppodai
Sub Basin
LEGEND
VALUE
62
79
85
145
172
217
226
231
260
269
BASIN BOUNDARY
GOVERNMENT OF TAMIL NADU
WATER RESOURCES DEPARTMENT, PWD
INSTITUTE FOR WATER STUDIES,
TAMIL NADU STATE CENTRE FOR REMOTE SENSING APPLICATION
THARAMANI, CHENNAI-113
0
3
6
12
Km

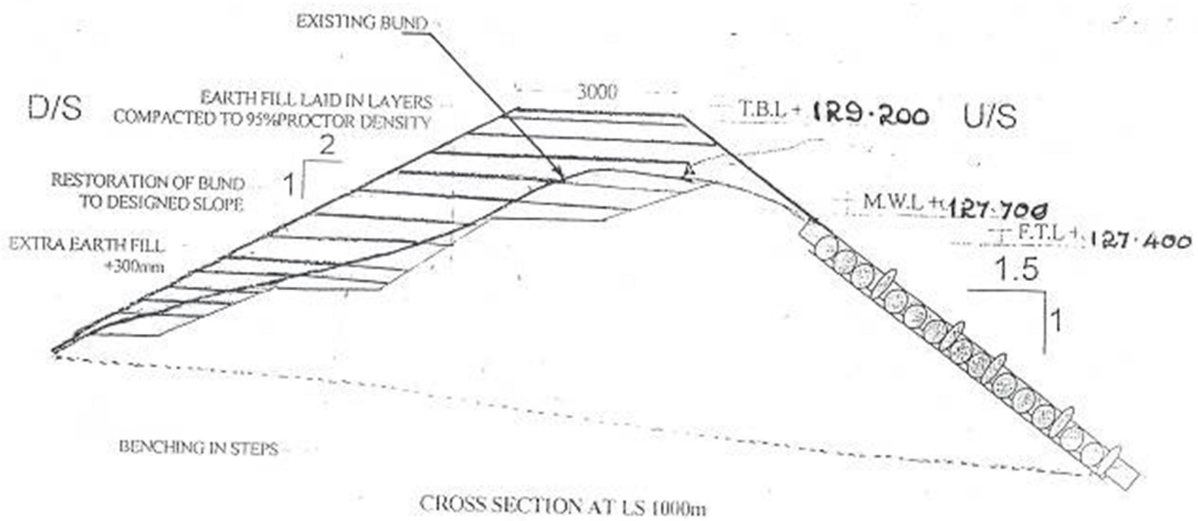

KAYAL KUDIAR SUB BASIN
ADMINISTRATIVE MAP
N
Srivilliputhur Block
Arjunanadhi Sub Basin
Rajapalayam Block
Srivilliputhur Block
Vembakottai Block
Sindapalli Uppodai
Sub Basin
Sevalaperiyar-Mudangiar
Sub Basin
LEGEND
Block Boundary
Rajapalayam Block
Srivilliputhur Block
Vembakottai Block
Sub Basin Boundary
GOVERNMENT OF TAMIL NADU
WATER RESOURCES DEPARTMENT, PWD
INSTITUTE FOR WATER STUDIES,
TAMIL NADU STATE CENTRE FOR REMORE SENSING APPLICATION
THARAMANI, CHENNAI-113
0
3
6
12
Km

KAYALKUDIYAR SUB BASIN

FLOW CHART



RAISING AND STRENGTHENING OF BUND IN VADAKARAI TANK



CROSS SECTION AT LS 1000m

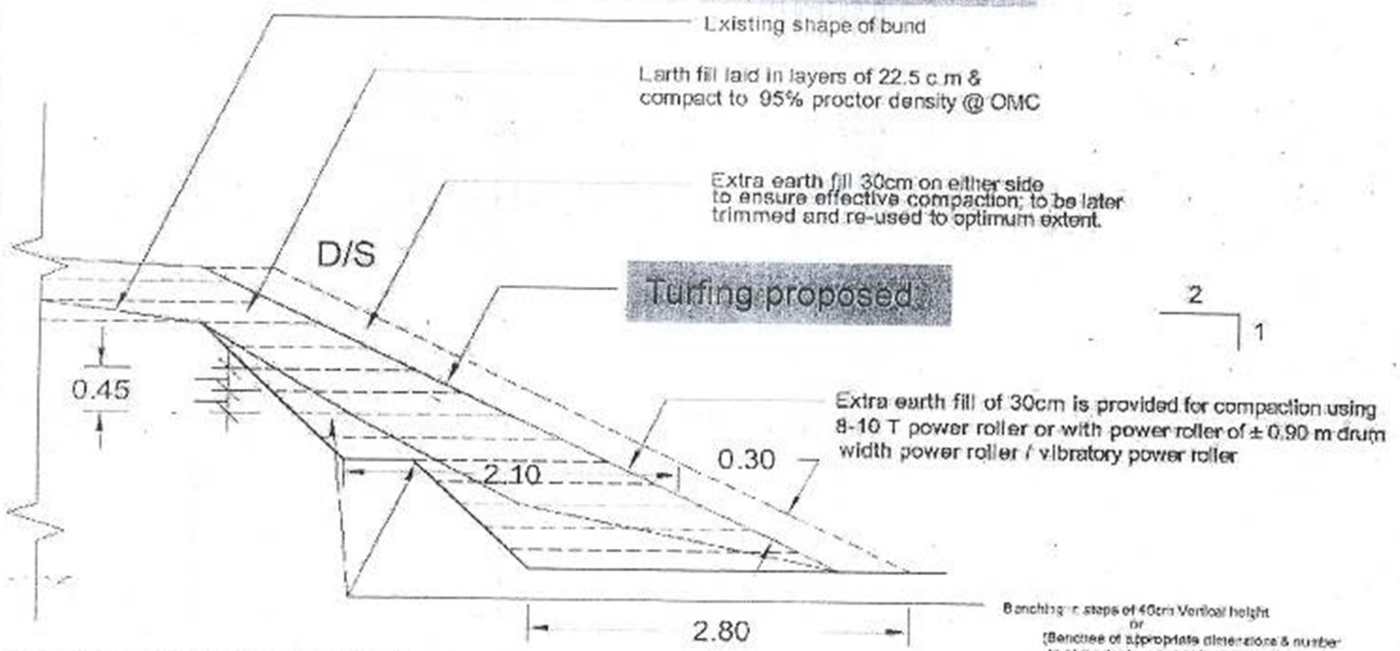
TN IAMWARM PROJECT - PHASE IV
KAYALKUDIYAR SUB BASIN

UPPER VAIPPAR BASIN DIVISION
SUB DIVISION : SRIVILLIPUTHUR

VADAKARAI TANK - BUND

ALL DIMENSIONS ARE IN MM
ALL LEVELS ARE IN M

METHODOLOGY OF RAISING & STRENGTHENING OF VADAKARAI TANK BUND



* Proctor density test for every 300m3 of earth work and at least one test in each layer (IS 2720-1975(Part -XXIX))

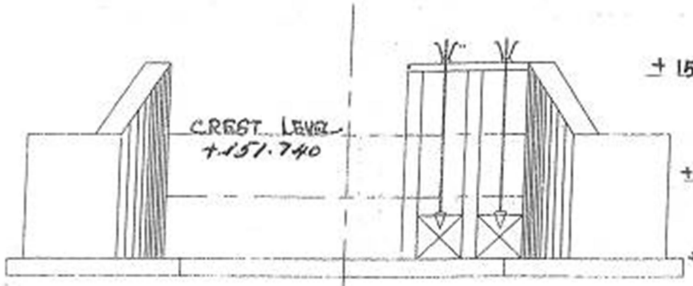
ENLARGED (PART SECTION)

KAYALKUDIAR SUB BASIN, PACKAGE NO.1

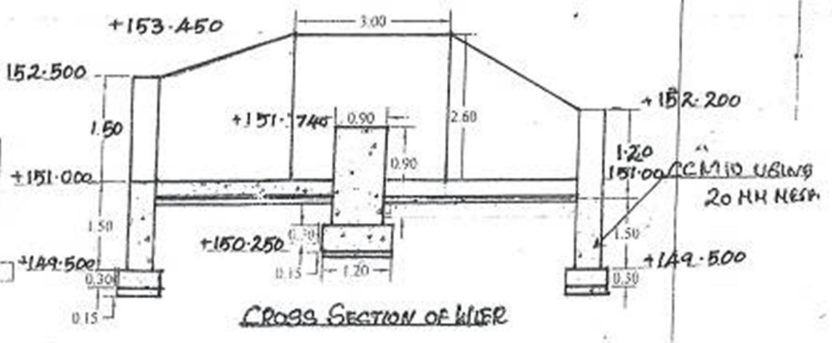
* All Dimensions and Levels are in Meters

Scale 1:50

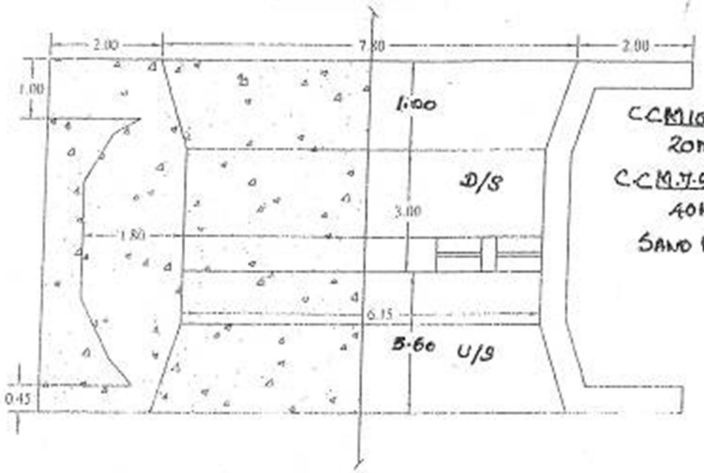
RECONSTRUCTION OF SURPLUS WEIR IN THIRUMALAIVANANGIAN TANK

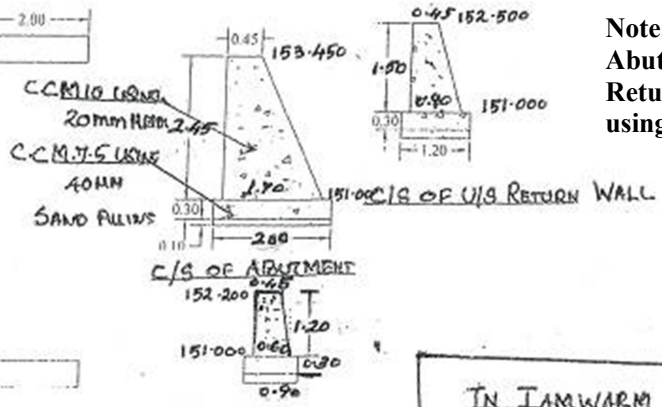


ELEVATION



CROSS SECTION OF WEIR





C/S OF D/S RETURN WALL

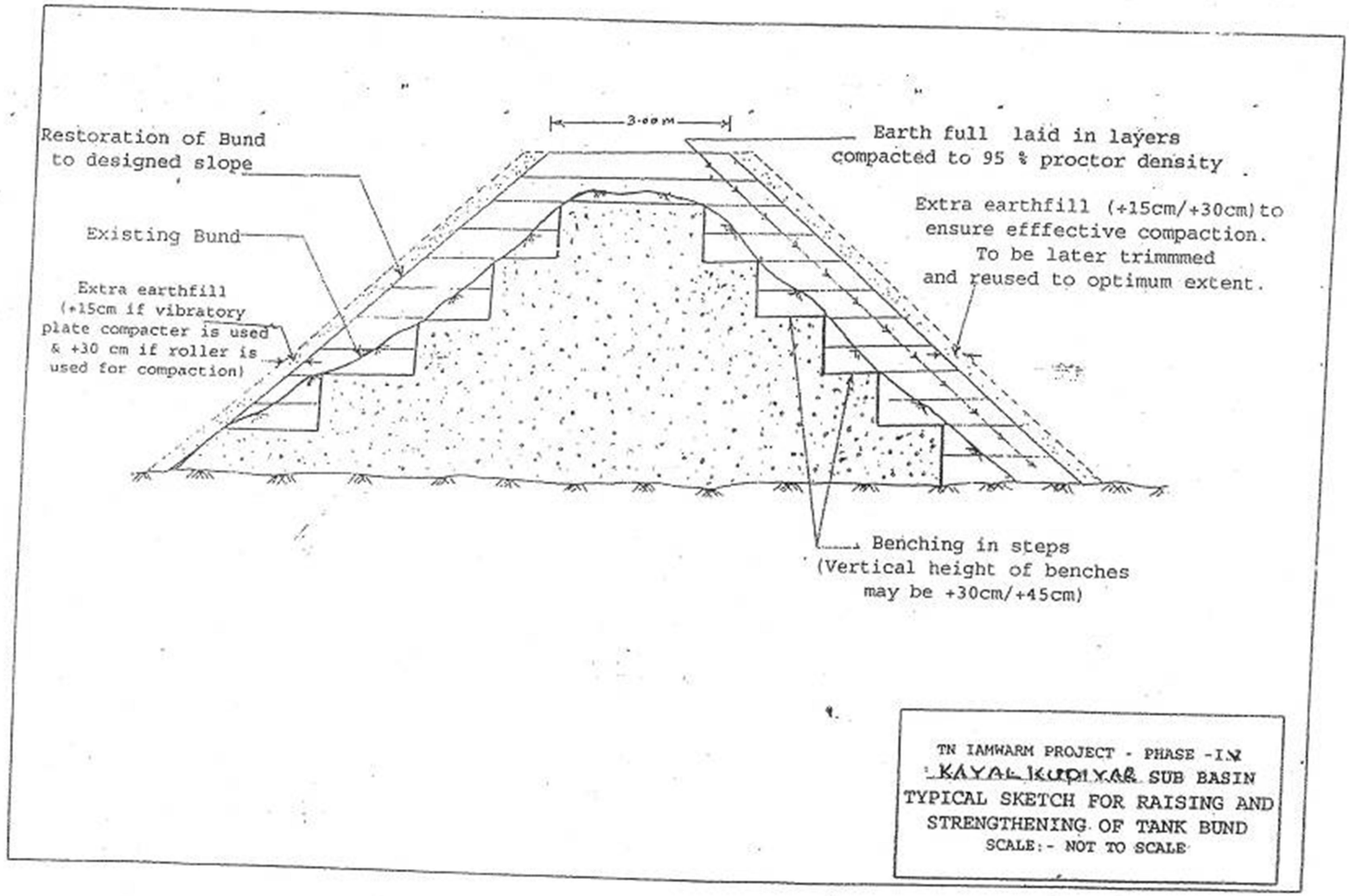
Note :-
Abutment , wing wall ,
Return wall are in cc M10
using 40 mm metal

EXECUTIVE ENGINEER, P.W.D., W.R.O.,
UPPER VAIPPAR BASIN DIVI.
RAJAPALAYAM.

IN TAMWARM PROJECT
KAYALKUDIYAR SUB BASIN
TYPICAL RECONSTRUCTION OF
SURPLUS WEIR

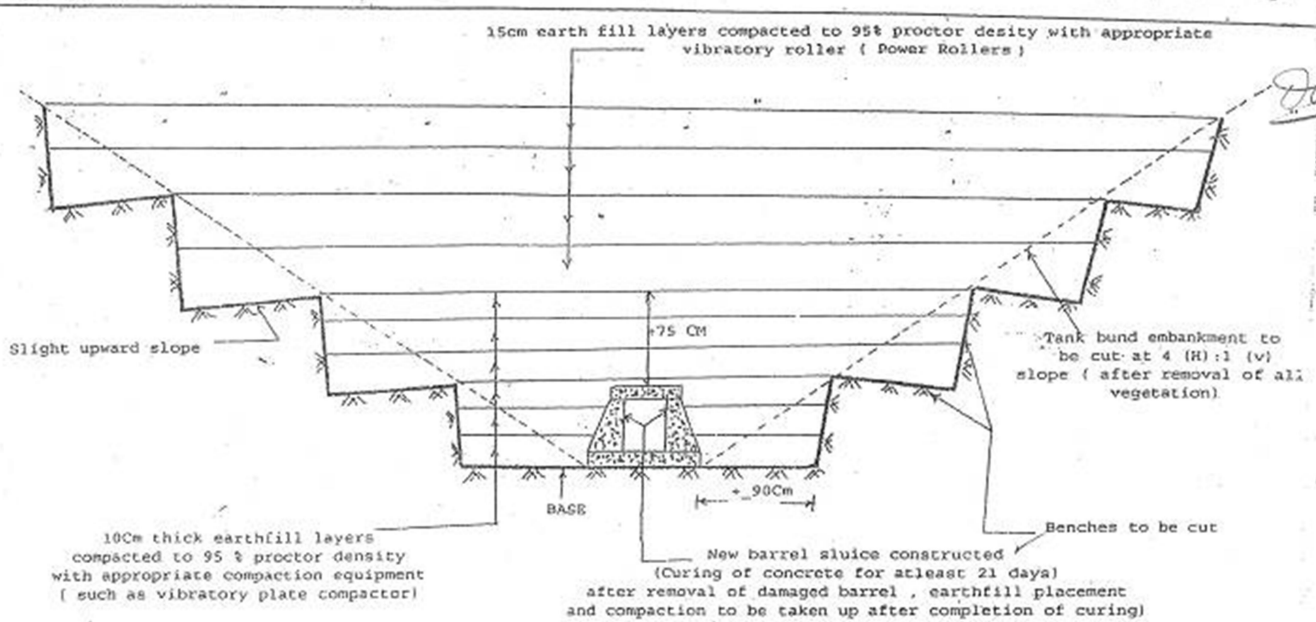
THIS DRAWING IS BASED ON C.E (IRRIGATION) CIRCULAR MEMO NO : A2 / 6953 / 81-12 / DATED 14.04.1981

ASSISTANT EXECUTIVE ENGINEER. P.W.D. (WRD)
VAIPPAR BASIN SUB DIVISION. SRIVILLIPUTTUR



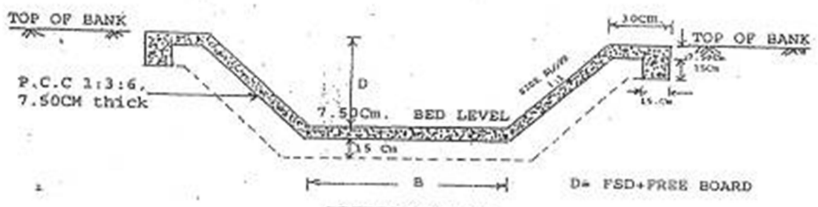
TN IAMWARM PROJECT - PHASE -IN
KAYAL KUDIYAR SUB BASIN
TYPICAL SKETCH FOR RAISING AND STRENGTHENING OF TANK BUND
SCALE:- NOT TO SCALE

209 89

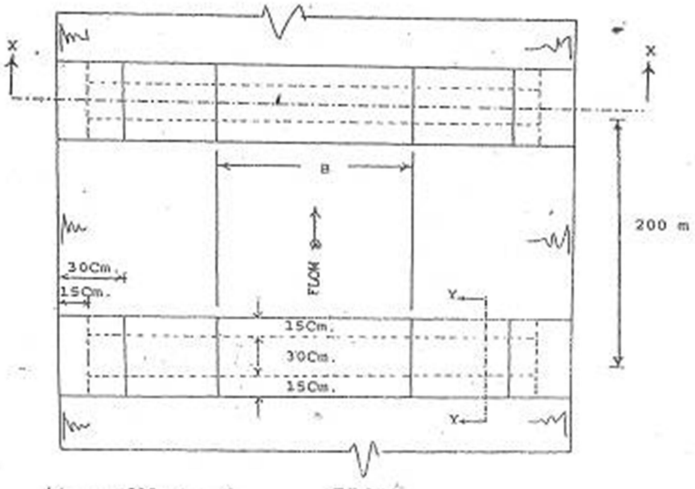


7N IAMNARM PROJECT - PHASE -IV
KAYALKUDIYAR SUB BASIN
TYPICAL SKETCH TO CUT OPEN THE BUND FOR RECONSTRUCTION OF TANK SLUICE
SCALE:- NOT TO SCALE

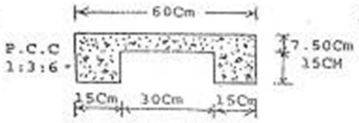
NOTES:-
I. The Base must be made smooth & hard duly compacted with compactors / pneumatic tampers.
II) Earth fill compaction adjoining the barrel and Benches should be compacted by mechanical / pneumanic tampers to ensure efffective compactibn
III) Earth obtained from benching be reused (after removal of clods (bigger than 7.5 cm) , Vegetation etc) in earth fill layers.



SECTION AT XX

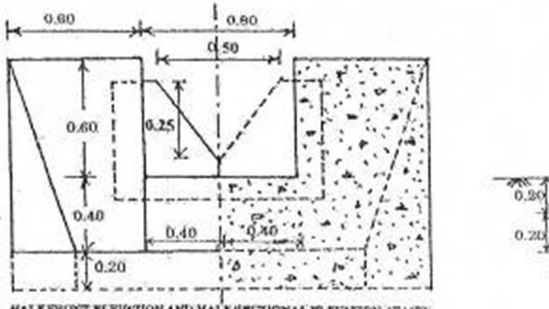


PLAN

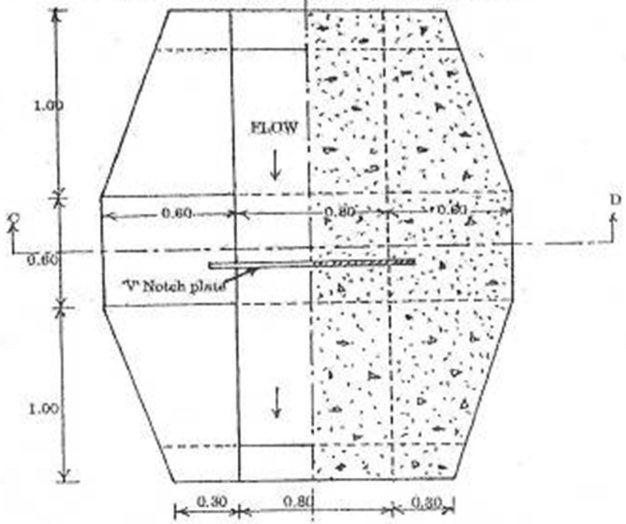


TN IAMWARM PROJECT - PHASE -I
KAYALKUDIYAR SUB BASIN
TYPICAL SKETCH OF BED BAR / MODEL SECTION FOR SUPLLY CHANNELS
SCALE:- NOT TO SCALE

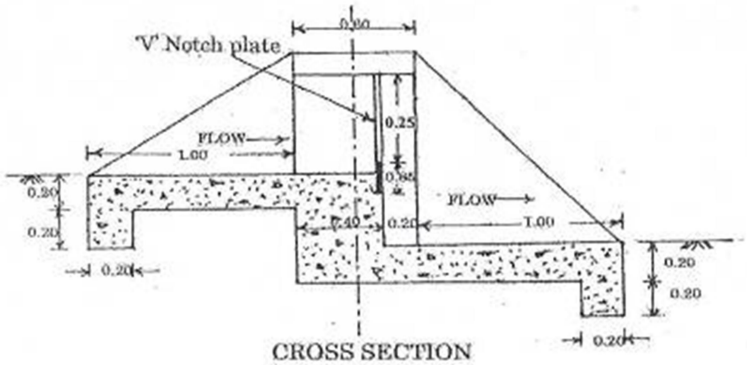
TYPE - A
1 CUSEC V-NOTCH



HALF FRONT ELEVATION AND HALF SECTIONAL ELEVATION AT 'CD'



HALF PLAN AT TOP AND HALF PLAN AT BOTTOM



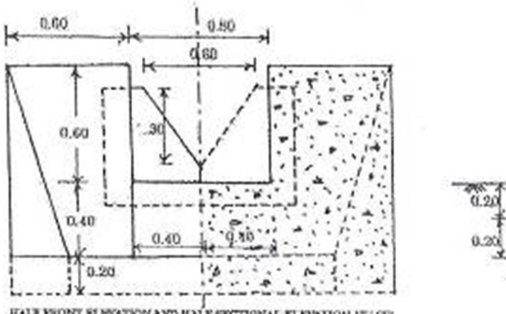
CROSS SECTION

'V' -NOTCH - SALIENT DETAILS (For 1 to 4 C/s)

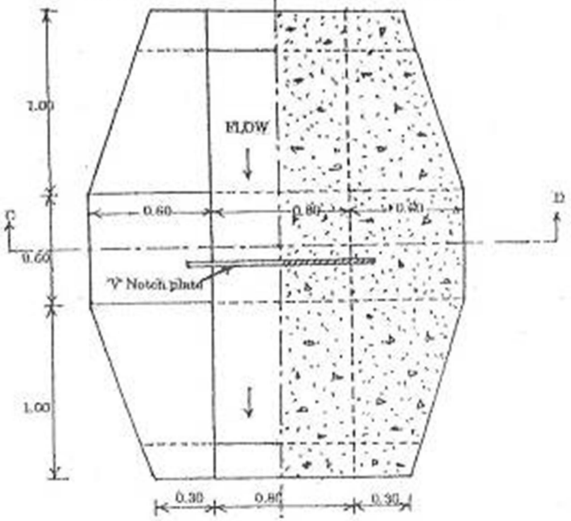
Discharge		Head Over Crest Cm	V Notch size Cm	Overall size Cm	Nos. Required
Cusec	Litre / sec				
1	28.3	20.5	25 x 50	50 x 65	4 Nos
2	56.6	27	30 x 60	50 x 75	—
3	85	32	35 x 70	55 x 90	—
4	113.27	36	42 x 84	60 x 100	—

IAMWARM PROJECT - PHASE IV
KAYALKUDIAR SUB BASIN
PROVIDING FLOW MEASURING DEVICE ('V' NOTCH) IN THE FIELD CHANNEL OF TANK SLUICE
Scale :- 1cm =0.25m
All dimention are in 'Metre'

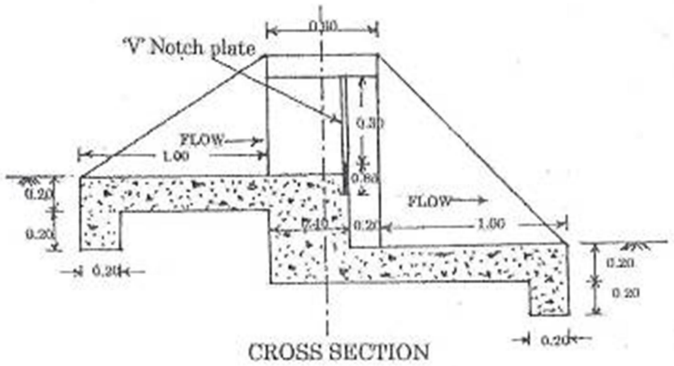
TYPE - B
2 CUSEC V-NOTCH



HALF FRONT ELEVATION AND HALF SECTIONAL ELEVATION AT 'CD'



HALF PLAN AT TOP AND HALF PLAN AT BOTTOM



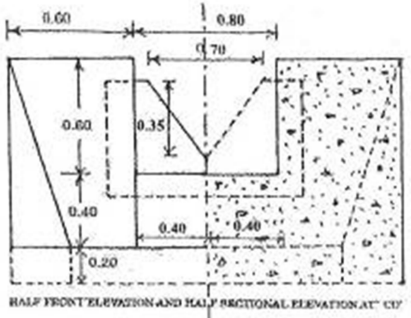
CROSS SECTION

'V' -NOTCH - SALIENT DETAILS (For 1 to 4 C/s)

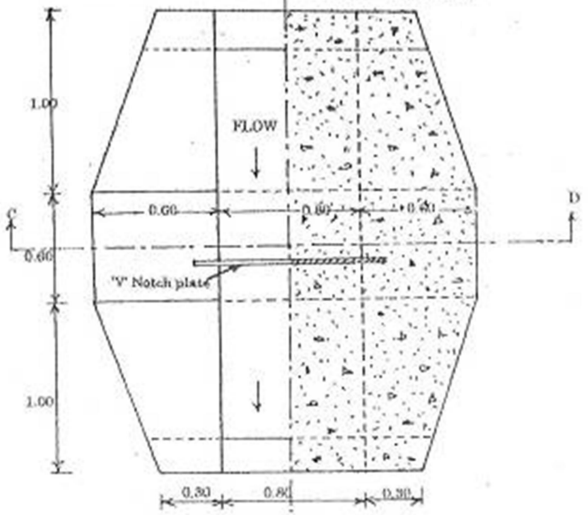
Discharge		Head Over Crest Cm	V Notch size Cm	Overall size Cm	Nos Required
Cusec	Litre / sec				
1	28.3	20.5	25 x 50	50 x 65	—
2	56.6	27	30 x 60	50 x 75	17 Nos
3	85	32	35 x 70	55 x 90	—
4	113.27	36	42 x 84	60 x 100	—

IAMWARM PROJECT - PHASE IV
KAYALKUDIAR SUB BASIN
PROVIDING FLOW MEASURING DEVICE ('V' NOTCH) IN THE FIELD CHANNEL OF TANK SLUICE
Scale :- 1cm =0.25m
All dimention are in 'Metre'

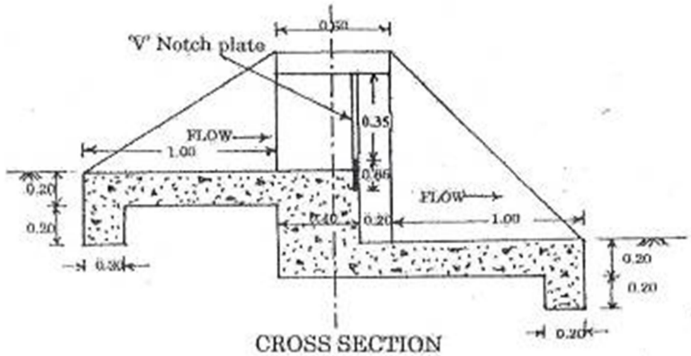
TYPE - C
1 CUSEC V-NOTCH



HALF FRONT ELEVATION AND HALF SECTIONAL ELEVATION AT 'CD'



HALF PLAN AT TOP AND HALF PLAN AT BOTTOM



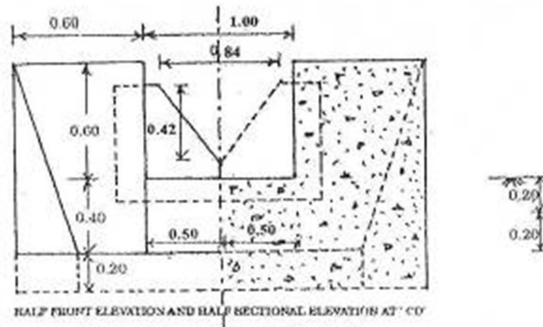
CROSS SECTION

'V' -NOTCH - SALIENT DETAILS (For 1 to 4 C/s)

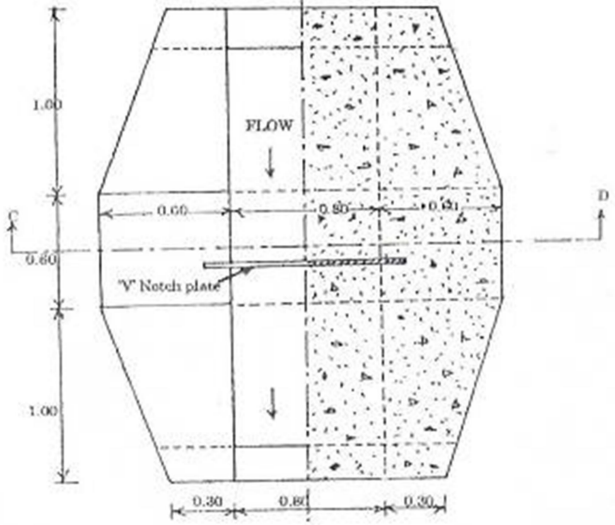
Discharge		Head Over Crest Cm	'V' Notch size Cm	Overall size Cm	Nos Required
Cusec	Litre / sec				
1	28.3	20.5	25 x 50	50 x 65	—
2	56.6	27	30 x 60	50 x 75	—
3	85	32	35 x 70	55 x 90	5 Nos
4	113.27	36	42 x 84	60 x 100	—

IAMWARM PROJECT - PHASE IV
KAYALKUDIAR SUB BASIN
PROVIDING FLOW MEASURING DEVICE ('V' NOTCH) IN THE FIELD CHANNEL OF TANK SLUICE
Scale :- 1cm =0.25m
All dimention are in 'Metre'

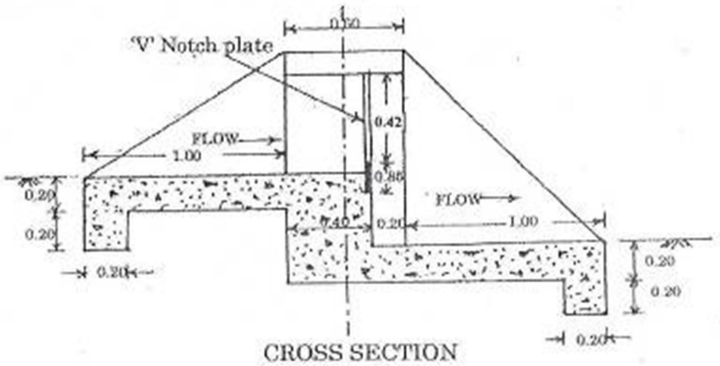
TYPE - D
4 CUSEC V-NOTCH



HALF FRONT ELEVATION AND HALF SECTIONAL ELEVATION AT 'CD'



HALF PLAN AT TOP AND HALF PLAN AT BOTTOM



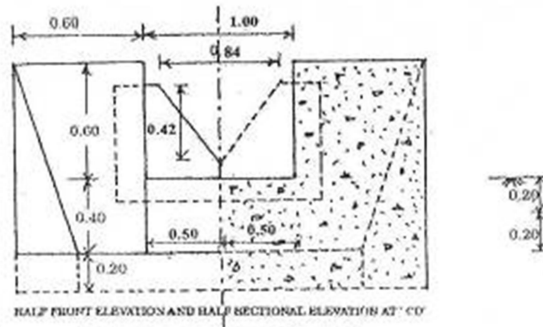
CROSS SECTION

'V' -NOTCH - SALIENT DETAILS (For 1 to 4 C/s)

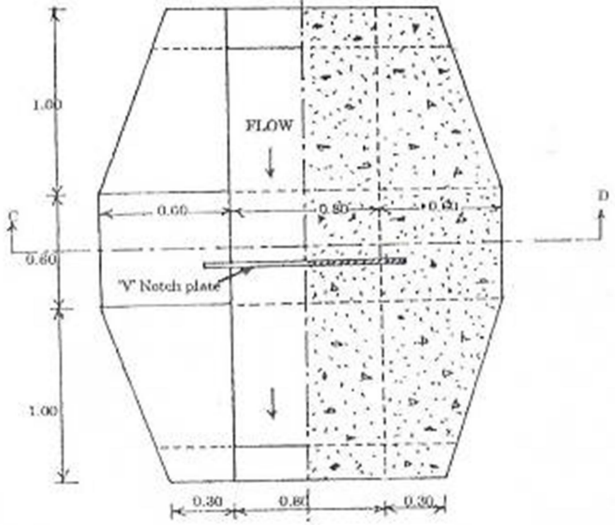
Discharge		Head Over Crest Cm	V Notch size Cm	Overall size Cm	Nos Required
Cusec	Litre / sec				
1	28.3	20.5	25 x 50	50 x 65	—
2	56.6	27	30 x 60	60 x 75	—
3	85	32	35 x 70	55 x 90	—
4	113.27	36	42 x 84	60 x 100	3 Nos

IAMWARM PROJECT - PHASE IV
KAYALKUDIAR SUB BASIN
PROVIDING FLOW MEASURING DEVICE ('V' NOTCH) IN THE FIELD CHANNEL OF TANK SLUICE
Scale :- 1cm =0.25m
All dimention are in 'Metre'

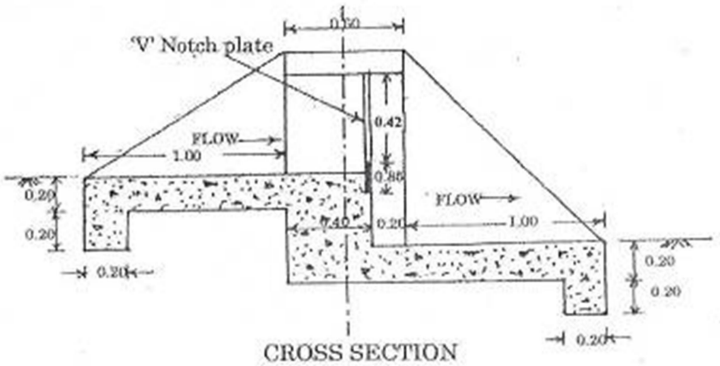
TYPE - D
4 CUSEC V-NOTCH



HALF FRONT ELEVATION AND HALF SECTIONAL ELEVATION AT 'CD'



HALF PLAN AT TOP AND HALF PLAN AT BOTTOM



CROSS SECTION

'V' -NOTCH - SALIENT DETAILS (For 1 to 4 C/s)

Discharge		Head Over Crest Cm	V Notch size Cm	Overall size Cm	Nos Required
Cusec	Litre / sec				
1	28.3	20.5	25 x 50	50 x 65	—
2	56.6	27	30 x 60	60 x 75	—
3	85	32	35 x 70	55 x 90	—
4	113.27	36	42 x 84	60 x 100	3 Nos

IAMWARM PROJECT - PHASE IV
KAYALKUDIAR SUB BASIN
PROVIDING FLOW MEASURING DEVICE ('V' NOTCH) IN THE FIELD CHANNEL OF TANK SLUICE
Scale :- 1cm =0.25m
All dimention are in 'Metre'

PACKAGE –WISE ABSTRACT OF NOTCHES PROPOSED

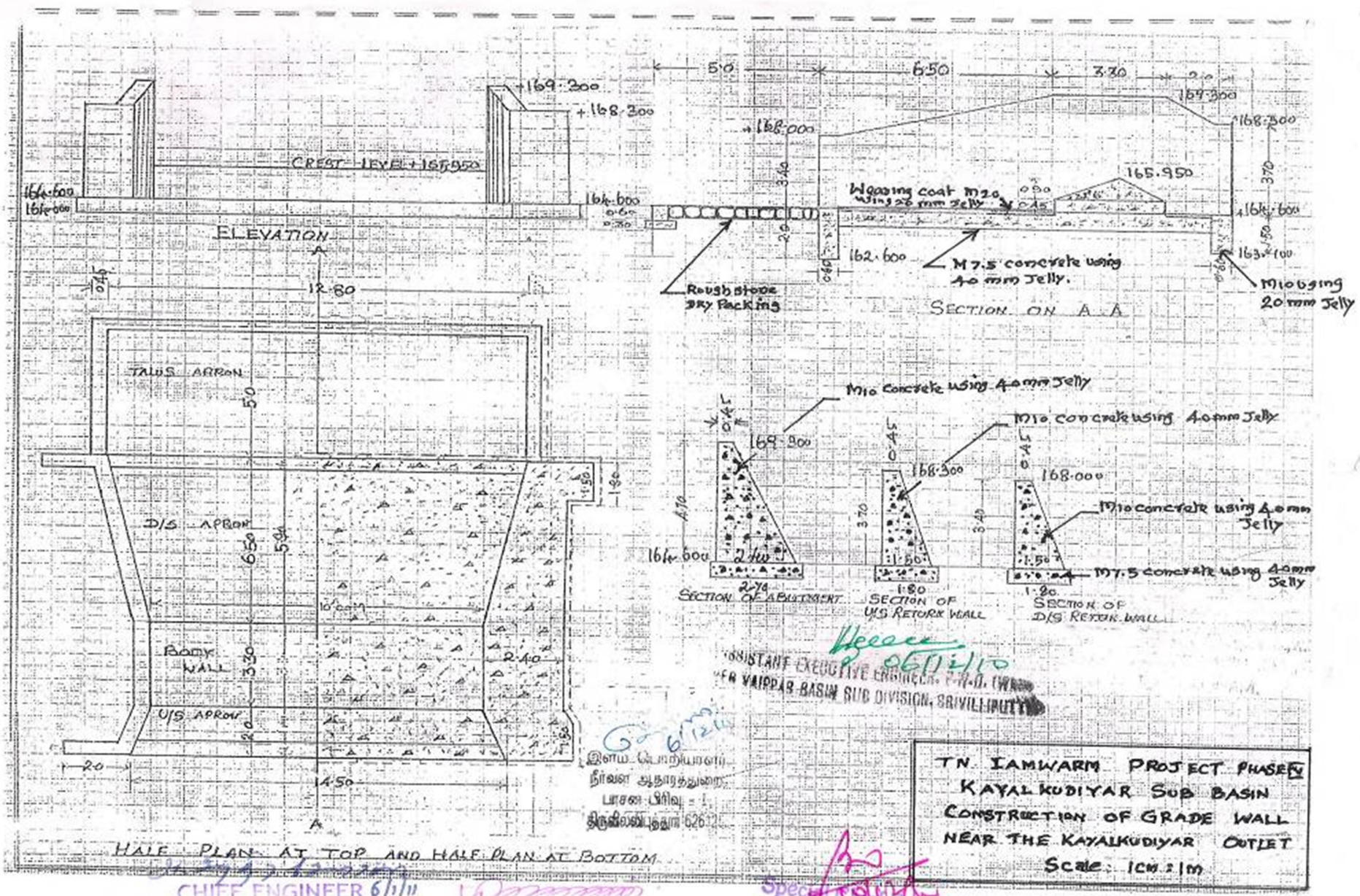
Sub Basin : Kayalkudiyar Sub Basin

Total No. of Packages : 1 No

Total No.of Notches proposed : 29 Nos

PACKAGE No.1

Sl.No	Type of Notch	Discharge in Cusec	Numbers
1	Type – A 1 Cusecs 'V' Notch	Up to 1 Cusecs	4
2	Type – B 2 Cusecs 'V' Notch	1 to 2 Cusecs	17
3	Type – C 3 Cusecs 'V' Notch	2 to 3 Cusecs	5
4	Type – D 4 Cusecs 'V' Notch	3 to 4 Cusecs	3
	Total		29



ASSISTANT EXECUTIVE ENGINEER, P.W.D. (WRO)
FOR VAIPPAR BASIN SUB DIVISION, SRIVILLIPUTTUR

இளை பொறியாளர்
நீர்வள ஆதாரத்துறை
பாசன பிரிவு - I
திருவில்லிபுத்தூர் 626125

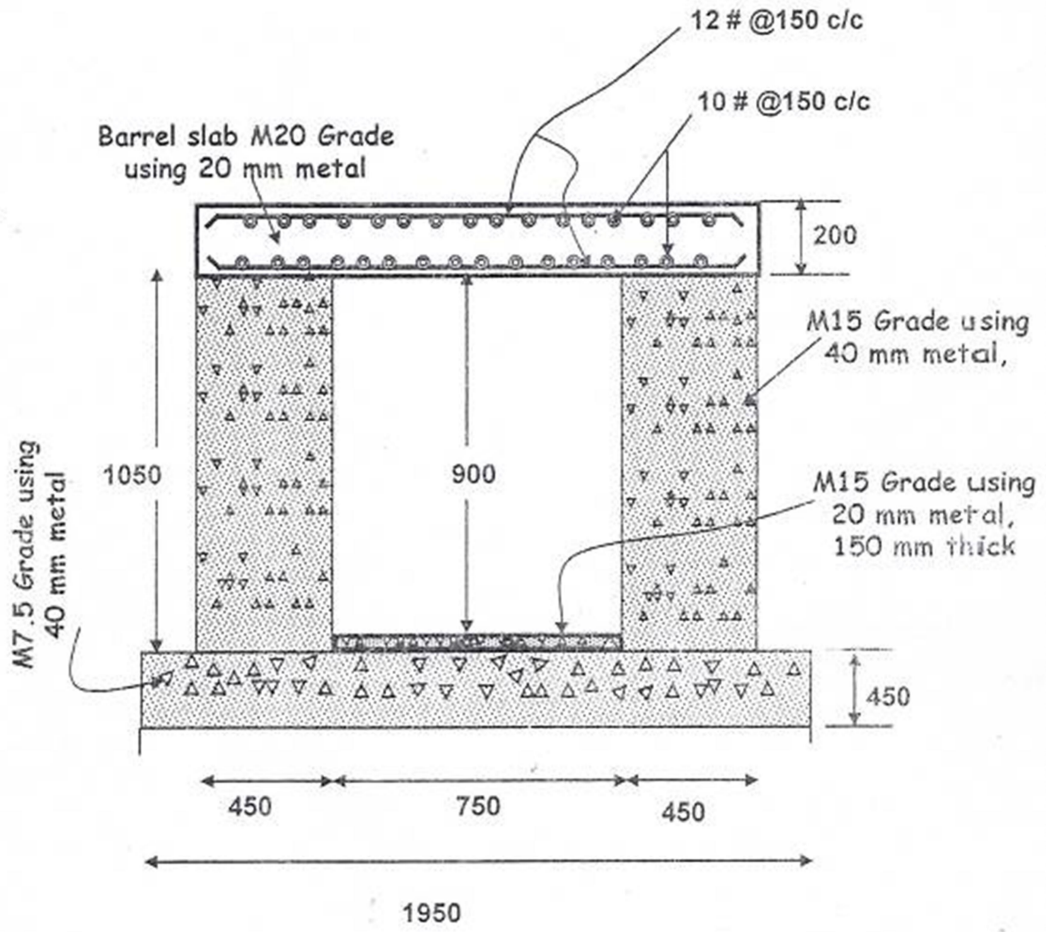
TN IAMWARM PROJECT PHASE IV
KAYALKUDIYAR SUB BASIN
CONSTRUCTION OF GRADE WALL NEAR THE KAYALKUDIYAR OUTLET
Scale : 1cm = 1m

CHIEF ENGINEER 6/1/11
Water Resources Organisation
Madurai Region,
Madurai - 625 002

Executive Engineer
Upper Vaippar Basin Division
Rajapalayam.

Special Executive Engineer
P.W.D. / W.R.O.
Vaippar Basin Circle
Virudhunagar.

TYPICAL CROSS SECTION OF SLUICE BARREL

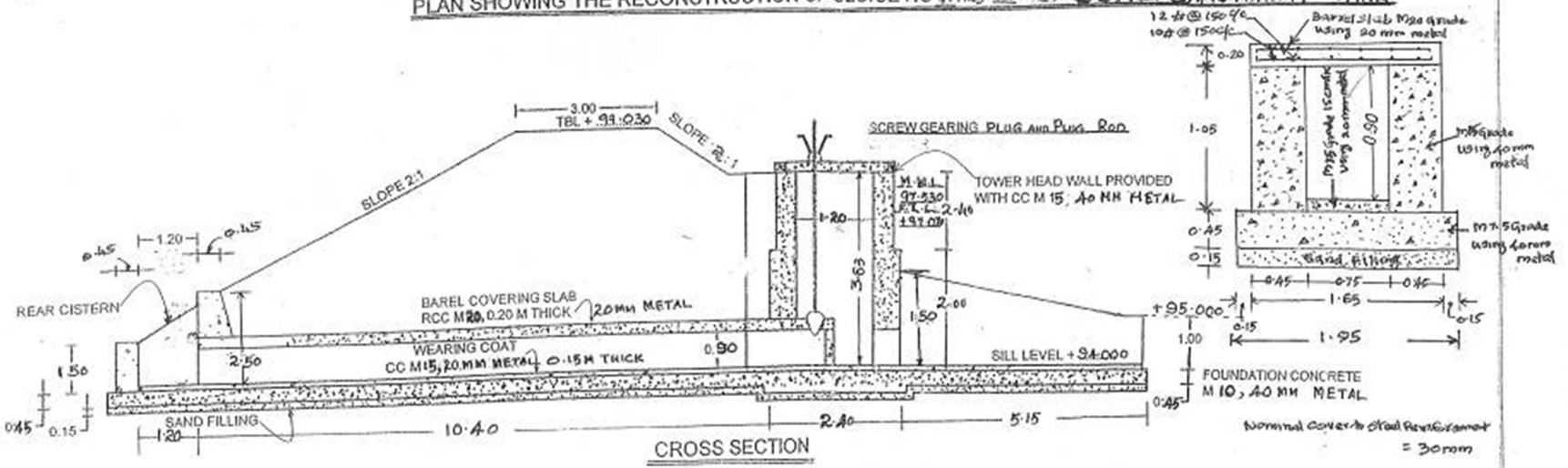


Nominal cover to steel reinforcements = 30 mm

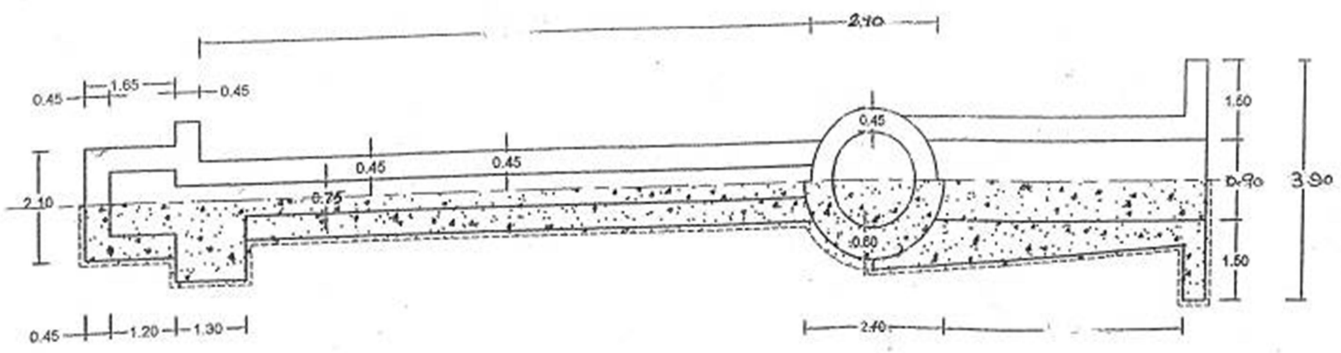
ALL DIMENSIONS ARE IN MM

Note:

PLAN SHOWING THE RECONSTRUCTION OF SLUICE NO II AND III OF GOPALASAMUTHIRAM TANK



CROSS SECTION



HALF PLAN AT TOP AND HALF PLAN AT BOTTOM

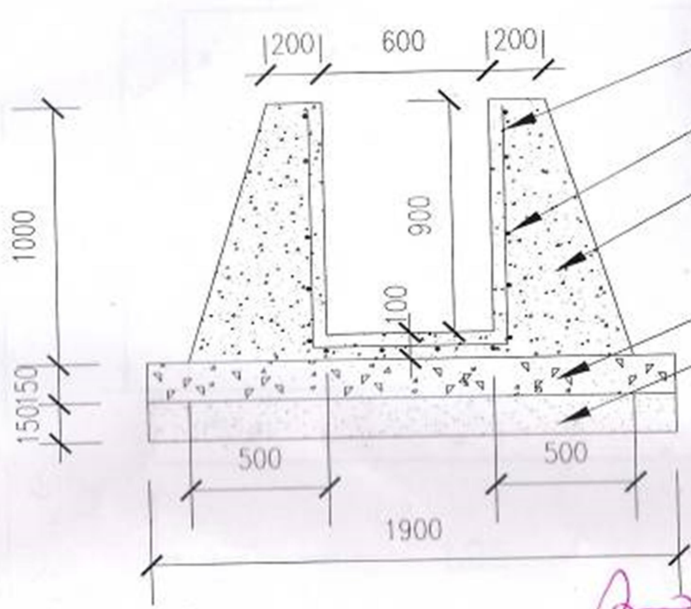
HYDRAULIC PARTICULARS	
F.T.L	+ 97.070 M
M.W.L	+ 97.530 M
T.B.L	+ 99.030 M
SILL LEVEL	+ 94.000 M
SLUICE II & III	
AYACUT	SLUICE II - 59.30 AC
	III - 24.41 AC

JUNIOR ENGINEER,
Water Resources Department,
Irrigation Section,
KRISH...

Assistant Executive Engineer, P.W.D.,
Upper Valpar Basin Sub-Division

Executive Engineer, P.W.D., W.R.O.,
Upper Valpar Basin Division, Kalapetty

LINING OF IRRIGATION CHANNEL
TYPICAL CROSS SECTION
FOR BLACK COTTON SOIL



Main Rod 8mm @ 200mm c/c

Distributor Rod 6mm @ 300mm c/c

CC M15 Using 20mm aggregate

CC M7.5 using 40mm aggregate

Sand filling

Note:-

1. This section to be used in Black cotton soil.
2. Soil samples to be got tested for swell pressure and adequacy of channel section provided to be checked before adoption.
3. Nominal cover to steel reinforcements = 30 mm

All Dimensions are in mm

Executive Engineer, PWD.
Upper Vaippar Basin Division
Rajapalayam.

3/2/11
Superintending Engineer
Upper Vaippar Basin Circle
Virudhunagar.

KAYALKUDIYAR SUB BASIN
REMARKS POINTED OUT BY ER.R.K. MALDOTRA WORLD BANK CONSULTANT ON 01.02.2011

Sl.No	Remarks pointed out	Action taken
1	Instructed to modify the machinery requirement as broad requirement of construction equipment and tabular column of "Requirement of Construction equipment and materials"	As pr the instructions the statement has now been modified.
2	Instructed change the flow measurement drawing corresponding to 1 cusec, 2 cusecs,3 cu and note the requirement ;o hes in the drawing itself	Accordingly s drawing for 1 cusecs,3 cusecs and 4 cusecs for 'V' notches now furnished and number of V Notches required also now furnished in the DPR.
3	Instructed to follow uniform standards for lining of Irrigation channel and also instructed to delete the wearing coat.	Accordingly fresh drawing now enclosed
4	Instructed ;to modify the drawing of sluice barrel in the DPR	Accordingly fresh drawing now enclosed.
5	Instructed to note the specification in the drawing of construction of Grade wall in drawing neatly	Accordingly the specification details now furnished neatly.
6	instructed to include new drawing for lining the irrigation channel for black cotton soil	Now enclosed

Executive Enginner,PWD/WRD
Upper Vaippar Basin Division
Rajapalayam

KAYALKUDIYAR SUB BASIN

PACKAGE NO.1

REQUIREMENT OF CONSTRUCTION EQUIPMENTS AND MATERIALS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Hydraulic excavator (± 0.90Cum)	**Hydraulic Excavator with steel plate**	**Tippers/Lorries(8 to 10 Tonne)**	**Power Rollers/Vibratory Power Roller**	**Water Tankers(Truck Mounted of ± 10000 Liters)**	**Pneumatic Tampers/Earth Rammers**	**Air Compressors (±300cfm)**	**Plate Vibrators**	**Dozer (D6 or equivalent)**	**Mechanical Concrete mixers 14/10 cft, 10/7 cft**	**Concrete vibrators**	**Cement**	**Sand**	**Steel**	**Metal 40mm**	**Metal 20mm**	**Rough Stone Masonry**	**Gravel**
5 Nos	2Nos	20Nos	3Nos	3Nos	3Nos	32os	3Nos	3Nos	5 Nos	5 Nos	1123MT	1581cum	25.58Qtl	2180cum	245cum	798cum	232cum

Executive Engineer PWD/WRD
Upper Vaippar Basin Division
Rajapalayam