MICRO WATERSHED BASED ACTION PLAN

MOOZHI MICRO WATERSHED (4V26a)

Moozhi micro watershed is the second largest watershed in the IWMP cluster (IWMP-I) with an area of 1892.12 ha (23.69 % of total geographical area). This micro watershed is spread over Pullampara & Manickal Grama Panchayaths of Vamanapuram block and Vembayam, Panavoor and Anad Grama Panchayaths of Nedumangadu block. The Vamanapuram River flows through the North West boundary of the watershed.

General Description

Table No. 17.1 - General Description of Moozhi micro watershed

Name of micro watershed	:	Moozhi
Micro watershed code	:	4V26a
River basin	:	Vamanapuram
District	:	Thiruvananthapuram
Block Panchayath	:	Vamanapuram, Nedumangadu
GramaPanchayath	:	Pullampara, Manickal, Vembayam, Panavoor & Anad
Villages	:	Pullampara, Manickal, Thekkada, Panavoor & Anad
Latitude	:	$8^0$38’31” to $8^0$42’18” North
Longitude	:	$76^0$55’54” to $76^0$58’50”East
Wards	:	Pullampara Panchayath- 3, 4, 9, 10, 11 (full), 5, 8, 15 (part) Manickal Panchayath – 7 (full), 8, 9 (part) Vembayam Panchayath – Panavoor Panchayath – 12, 13, 14 (part) Anad Panchayath -1(part)
Total Area	:	1892.12 ha
% of area in the IWMP cluster	:	23.69 %

Socio economic profile

As per the information provided in the baseline survey conducted, Moozhi micro watershed has a total number of 3409 households with a total population of 9117. The micro watershed has a total male population of 4444 and a total female population of 4673. 1240 numbers of BPL families reside in the micro watershed area. A total number of 3014 persons have registered under MGNREGS. 517 households belong to Schedule Caste and 52 families belong to Schedule Tribe. Majority of the farmers are marginal farmers having only less than 1 ha of own land. Agriculture is the major source of livelihood in the micro watershed area. Apart from agriculture/horticultural practices, animal husbandry is also a source of livelihood some families in the watershed area. The socio economic details of the Moozhi micro watershed are given below:

Table No. 17.2 - Socio economic details of Moozhi micro watershed

1.	Total number of households		3409
2.	Population	Male	4444
		Female	4673
		Total	9117
	Child population	Male	2000
		Female	1881
		Total	3881
3.	No. of BPL families		1240
4.	No. of persons enrolled under MGNREGS		3014
5.	Households	Scheduled Caste	517
		Scheduled Tribe	52
		General	2840
6.	Land holdings	Landless	42
		Very Marginal (less than 5 cents)	573
		Marginal (5 to 250 cents)	2545
		Small (250 to 500 cents)	220
		Large (more than 500 cents)	4

Biophysical Resources

Physiography

The relief of the watershed ranges from 10 m above MSL to 310 m above MSL. The majority of the area falls in the relief category of 60 to 100 m above MSL which occurs in an area of 670.20 ha (35.42 %). An area of 59.66 ha is located above 200 m above MSL.

Slope

The watershed area is divided into six categories of slope classes. The majority of area is under the strongly sloping class having 10 – 15 % slope. The category spreads over an area of 673.51 ha (35.59 %), 524.02 ha of the watershed area is having very steeply sloping lands which requires urgent soil and water conservation measures.

Drains

The Vamanapuram River flowing through the north- west and south boundary of the watershed is the major drain of this watershed. A number of drains are originating from the different parts of this watershed which drains to the Vamanapuram River near Moozhi. The watershed also has the 7 numbers of ponds distributed throughout the watershed area. The details of the drains and ponds in the watershed area are given in table No. 17.3 & 17.4.

Table No. 17.3 Table showing the details of Drains in Moozhi micro watershed

Grama Panchayat	Drains	Length (m)	Breadth (m)	Depth (m)
Pullampara	Anakuzhi Thodu	1000	5	5
	Chararoad Ela Thodu	950	3	4
	Kaithodu(1)	250	1	1
	Kaithodu(2)	250	1	1
	Kunchiyiramalli Ela Thodu	1050	1.5	2
	Pullampara Mankuzhi Thodu	2900	5	3
	Pullampara Menkamala Ela Thodu	2250	10	3.5
	Sasthamnada Thodu	1000	5	2.4
	Thembakala Kidarakuzhi Thodu	3500	3	5
	Thoombarakonam Thodu	950	2	2
	Uruvittikonam Thodu	1050	5	1

	Vellumannadi Thodu	3000	5	3
Manikkal	Anakuzhi Thodu	1000	5	5
	Anamugham Kallupalam Thodu	750	1	0.5
	Ayakode Ovinmugham Thodu	600	1	0.5
	Nedunkani Kaithodu	250	1	0.5
	Puthuval Nedunkani Thodu	850	1	0.5
	Thalayil Kaithodu	575	1	0.5
	Thalayil Thodu	2825	4	0.5
	Udiyamcode Panamoodu Thodu	450	1	0.5
Vembayam	Pottanpara Madhapuram Thodu	550	1	0.5
	Katta Madapuram Thodu	350	1	0.5

Table No. 17.4 Table showing the details of Ponds in Moozhi micro watershed

Sl. No	Grama Panchayat	Pond	Survey No.	Length (m)	Breadth (m)	Depth (m)
1	Pullampara	Adithattu Para Kulam	163	5	4	2
2		Adithattu Para Kulam1	161	4	2	2
3		Chullalam Vellanchira Kulam	199	3	4	2
4		Mukkudil Karikkakam Kulam	202	2	1	2
5		Anchamkallu Kuttikadu Kulam	225	2	2	3
6		Kaduvankuzhi Kulam	429	4	4	3
7	Manikal	Thalayil Chira	278	6	5	4

Land use

Agriculture is one of the prime activities in the watershed area. The major land use category mapped in the watershed area is rubber plantation. It occurs in an area of 1336.03 ha (70.61 %). The second major category is the mixed crops, which is the typical homestead cultivation of Kerala wherein the different crop species are grown together that cannot be spatially mapped separately. This is mapped in an area of 408.82 ha. An area of 2.14 ha is under paddy cultivation and an area of 1.34 ha of paddy lands has been left as cultivable wasteland which can be brought to paddy cultivation by providing

necessary labour and irrigation facilities. An area of 0.42 ha is mapped as cultivable wastelands which can be brought under horticulture. An area of 10.17 ha (0.53 %) is under the built up land and an area of 10.99 ha is under the rocky area. The details of the land use categories with spatial extent are given in table.

Table No. 17.5 - Table showing land use categories in Moozhi micro watershed

Sl. No.	Land use category	Area in ha	Percentage
1	Builtup land	10.17	0.54
2	Paddy	2.14	0.11
3	Paddy converted Banana	3.93	0.21
4	Paddy converted Builtup land	0.45	0.02
5	Paddy converted Coconut	4.12	0.22
6	Paddy converted Tapioca	5.69	0.30
7	Paddy converted Banana + Tapioca	2.81	0.15
8	Paddy converted Vegetables	0.80	0.04
9	Paddy converted cultivable waste land	1.34	0.07
10	Paddy converted Mixed Crops	43.28	2.29
11	Paddy converted Rubber	20.14	1.06
12	Mixed Crops	408.82	21.61
13	Plantation Rubber	1255.32	66.34
14	Plantation Rubber (Young)	80.71	4.27
15	Cultivable Waste Land	0.42	0.02
16	River	4.44	0.23
17	River Bank	15.98	0.84
18	Road land	19.64	1.04
19	Water body	0.95	0.05
20	Rock	10.99	0.58
	Total	**1892.12**	**100.00**

Geology

The major geological unit in the watershed is Garnet-Biotite gneiss with Migmatite occurring in an area of 1696.59 ha (89.66 %). The remaining area has a

geological formation of Garnetiferous Biotite. The majority of the area is under the rock group of Migmatite complex followed by Khondalite group of rocks. A small portion of the area has Charnokite group of rocks. There are four geomorphological units of which more than 90 % (1739.54 ha) of the area falls under the category viz. lower plateau (laterite). An area of 71.19 ha is mapped under the category, valley fill.

Soils

The major soil series mapped in the watershed area is Nedumangad series having a solumn thickness of 150 cm with very dark brown to pale brown colour. The soil is very strongly acid and has a surface texture of gravelly sandy clay loam to gravelly sandy clay. This is distributed in an area of 1561.52 ha (82.52 %). The river bank area is mapped under Mudhakkal series (21.01 ha) which is alluvial in origin. The major wetland series is Amaravila which is mapped in an area of 25.55 ha. Soils in more than half of the watershed area are deep soils with a depth of 100-150 cm and 21.59 % of the area (408.62 ha) is having moderately shallow soils with a depth of 50- 75 cm. The major surface soil textures in the watershed area constitutes that of gravelly clay loam (794.86 ha) and gravelly loam (757.92 ha). Nearly 50 % of the watershed area is prone to severe soil erosion which calls for proper soil and water conservation measures in the area.