Mission Support Unit

Andhra Pradesh Water Conservation Mission

Example of a Micro Plan

Water Management Plan of Damaragidda Village
Water Year 2004-2005

Index

Note:

This plan was prepared by the Natural Resource Committee of Damaragidda Village, Andhra Pradesh, India as a result of a two-day training in micro water management planning.

The training was organized under the Water Conservation Mission, convened by the Commissioner Rural Development of the Government of Andhra Pradesh. As part of a capacity building program in 800 such villages capacity building plans were made, facilitated by local non-government organizations.

Water Management Plan of Damaragidda Village
Water Year 2004-2005

Introduction

Water is must for the survival of human beings. Our village has been water problem for the last few years. Decreasing rainfall has been depleting ground water resource thus causing a number of problems for us. In the past say about 40 years ago, we used to have abundant water resources. We had green hillocks over flowing wells, fertile lands and supportive livestock. Why the situation deteriorated gradually? Now we are facing severe crisis. Scarcity of drinking and irrigation water is haunting us. We are almost experiencing drought conditions dried wells and barren lands are starring at us. Then we had resolved to go into the causes of this situation and changes over lives for better by protecting the god given natural resources.

Taking a cue from some villages, which have succeeded in conserving and increasing ground water we also had decided to lay down some rules and regulations in order to protect our water resources with this determination, a meeting was convened on 16.09.2004 at panchayat office to take some collective decisions in order to preserve the depleting ground water levels.

Data Collection for the plan

We have taken some data from our village secretary to prepare a water management plan for our village. The details given by him are as follows:

Area of village: 2380 Average rainfall: 813 mm

Wetland	Dryland	Barren land	Habitations	Reserve forest	Area under cultivation
	2380	--	19	--	1600

Population of village : 1510
Cattle : 428
Goats / Sheep : 1000

Drinking water sources:			Working	Not working
1. Water tanks	:	(1)	(1)	--
2. Mini tanks	:	(1)	(1)	--
3. Hand pumps	:	(4)	(1)	(3)
4. Domestic taps	:	(300)	(300)	--
5. Street taps	:	(4)	(4)	--
6. Drinking water wells	:	(3)	(3) In rainy season	
7. Drinking water borewells	:	(1)	(1) Water supply from well	

Irrigation water resources

1. Agricultural wells	:	(62)	(32) working in rainy season	not working
2. Agricultural bore wells	:	(6)	(4)	(2)

Tanks and ponds

S.NO	Details	Area of tank	Area of ayacut

1	Percolation tanks of Rallagadda	½ acre	5 acre

Streams: Eedullavagu, Rallakattavagu

Method

Having resolved to preserve and protect the water resources in our village, all of us have setout on the task of go in to the present conditions of water resources in the village and know the changes they have under gone over time, For this purpose we divided ourselves into four groups and it was decided each group and follow a particular method to assess the condition of water bodies and resources. As part of the process, the first group will walk through the village and make an assessment. The second group was asked to assess the situation in and around the village on the basis of social map of the village. The third group was entrusted with the task of assessing the changes that work place in the village over a period of 40 years. The task given to the fourth group is to assess to the inflow of water in to the village and the quantum being utilized.

Village walk

Our group has set out from the village panchayat office and went over the house of Manneguda Beerappa on the way to Mangalgadda. We passed besides Mangalgadda stream via Begari Mallaiahs well and through the fields of Tenugu Ramachandraiah and over the fields of Seelam Narsimha Reddy. On the way, we passed through the agricultural borewells of Seelam Srinivas Reddy and Tondapalli Narsimhulu and the fields of Gangada Mallaiah before entering village. And then we reached OHSR Tank in the village via the village panchayat bore. We have observed the following things during our exploratory walk.

- The village has a drinking water tank of 40,000-liter capacity. However, the water from this tank is not sufficient for the people of village.
- An open well is situated adjacent to Telugu Kishtaiah near Manneguda Beerappa's house. With the depth of 18 yards, the well serves only during rainy season. As it was not in usage for a long time, the water has turned saline.
- There was a hand pump beside the house of Tenugu Kishtaiah. It was sunk 200 ft deep. There are four bores of this type out of which only one is working.
- A list well (Mota Bavi) was there at the house of Srinivas Rao. Its depth is 12 yards. But it has accumulated silt up to 5 yards.
- Mangalgadda stream is located at short distance from lift well. The stream flows only during rainy season. The stream flows for four months if there was adequate rainfall.
- Beside the stream, there was agricultural well belonging to Begani Mallaiah. It is of 12 yards depth. It contains water only in rainy season. Five-acre land is cultivated under this well.
- An old time check dam (Katura) was there in Mangalgadda stream. Of 8-meter length, it has its sidewalls collapsed and the water is leaking.
- There was an agricultural well in the property of Chilkur Mallaiah. Its depth is 8 yards and present water level is 2 yards.
- There is village panchayat bore at the field of Gangada Mallaiah. Depth of this bore is 260 ft. Presently it is not working because of loss of washer.

Sl. No		Tank	Well	Bore	Well	Stream	well	Check dam	Well	Well	Bore
1	Quantity	40,000 ft	18 yards	200 ft	12 yards	--	12 yards	8 mts	8 yards	8 yards	260 ft
2	Quality	Safe	Unsafe	Safe	Unsafe	--	--	Safe	Unsafe	2 mts water level	safe
3	Time of working	Always	Rainy season	Always	--	Rainy season	Rainy season	Get water in rainy season	Rainy season	Work only in rainy season	Always
4	Use	Yes	No	Yes	No use	--	Currently in use	--	No use	--	Village panchayat
5	Ownership	Village panchayat	Village panchayat	Village Panchayat	Village Panchayat	Farmers	Farmers	Farmers	Farmers	Farmers	No washer
6	Problem	--	Silted	--	Silted	Filled with trees	--	Side walls collapsed	--	Silting	Washer to be fixed
7	Suggestion	--	Desilting	--	Desilting	Clearing trees	--	Walls to be built	--	--	--

Village: Dammarigadda **Mandal:** Chevella

Changes over time

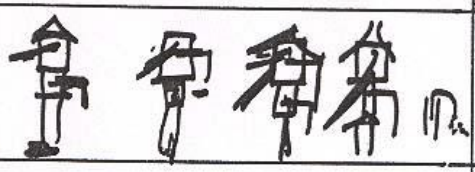
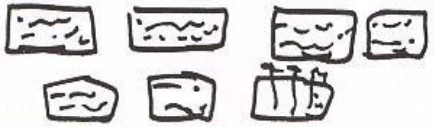
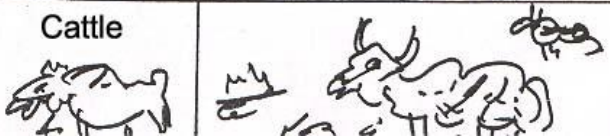
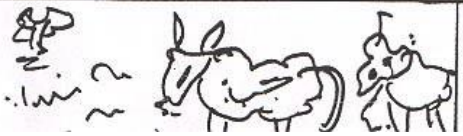
All members of our group went into the village and discussed the use of water resources and changes in the patterns taken place in the last 50 years.

Sl. No	Details	60 years ago	40 years ago	Present situation
1	Wells	There used to be wells numbering 20 to 30. Water used to be at 9-10 yards. Water filled up after one round of lifting (Mota). Ten acre was cultivated under each well.	There used to be 40-50 wells. There arrived oil engines. Twenty acre was cultivated using one engine.	Sixty-two wells are in existence. Electric motors are being used. A well is not able to wet 2 acres adequately. Water level is down in wells.
2	Rain	During the four months season soil used to be fully wet making even walking difficult. Small furrows were made to drain water.	Gradually, rainfall began to decrease. Even the available rain too has erratic. No trace of water just two days after the rain.	Rain occurs occasionally during the end of May and June. But there is no water despite occasional down pour
3	Tanks / Ponds	--	--	Peddapollavagu (stream) has 10 check dams and Cherilavagu has 10 dams. A farm pond was built in Somalonivanka
4	Bores	No bores in the period	One or two bores were sunk after 1992	There are six bores out of which only 4 are working. The remaining struck rock.
5	Crops	Onions, Millets, sugar cane, turmeric were cultivated. Cultivation down by lift system (Mota) of water supply. Use of chemicals at	Millet, wheat, Chilly, onion were cultivated. Oil engines became vogue. Usage of chemical	Sorghum, wheat, rice, vegetables are being cultivated. Cash crops like turmeric and cotton are being cultivated

		minimum.	fertilizers began to rise.	in large areas.
6	Population	There used to be 50-60 houses with a population of 300 to 400.	100 to 150 houses with a population of about 1000.	Around 250 houses with the population reaching up to 1500.

Analysis of changes over time

Mandal : Chevella
Village : Damarigadda

Subject	50 years ago	20 years ago	Now
Wells			
Bores			
Ponds			
Rains			
Crops			
Cattle			

Need assessment

We the members of all four groups came together and arrived at the estimation of the total water inflows of the village and the quantum of water being used for different purposes. The primary data collected by us has served as a basis for our estimates.

Total area of village : 2380 (A)
Total population of village : 1510
Total number of cattle : 428
Total number of goats / sheet : 1000

Needs	Number	Per head / Per 1000	Required water (A.M)
For humans	1510	4.0 / 1000	6.04
For cattle	428	6.0 / 1000	2.60
For sheep / Goats	1000	1.0 / 1000	1.0
Total:			**10.0 (A.M)**

Sl. No	Crops	Kharif				Rabi			
		Area (acres)	Irrigated crop area (acres)	Water requirement (A.M)	Total requirement (A.M)	Area (acres)	Irrigated crop area (acres)	Water requirement (A.M)	Total requirement (A.M)
1	Rice	10	5	1.0	5	28	28	1.0	28
2	Cotton	200	--			50	50	0.5	25
3	Onions	15	5	0.5	3	40	40	0.5	20
4	Maize	350				70	70	0.6	42
5	Sunflower	25				15	15	0.5	8
6	Flowers	20	10	0.7	0.7	25	25	0.7	18
7	Vegetables	100	30	0.6	18	55	55	0.6	33
8	Sorghum	115	--						
9	Turmeric	5				5	5	0.5	3
10	Black gram	10							
11	Red gram	100							
12	Green gram	20							
13	Wheat					10	10	0.6	6
	Total	**955**			**33**		**298**		**183**

Map of village community resources

All of our group members marked roads, houses, government buildings, street taps, tanks, ponds, streams, rivulets and fields with lime, sand, colors, stones and tree branches. At the time of mapping members of other three groups too joined the effort by marking their observations in the village map. We marked the village water resources and community assets in the map. We observed the following things through the map.

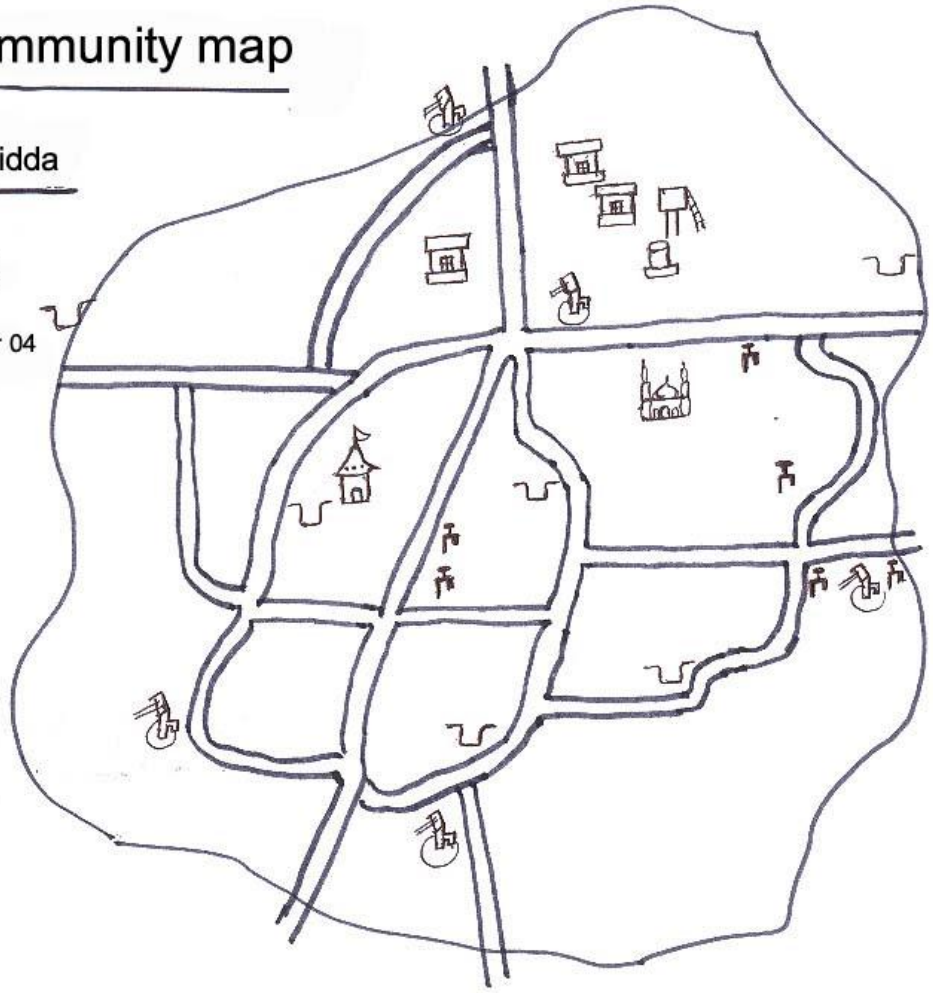
- First we marked school buildings, roads, and government office in the village.
- Next street taps were identified. There are four taps and are working out of them.
- Water tank was marked. There is one water tank in the village with a capacity of 40,000 liters.
- There are four hand pumps out of which only one is working. Other three are not in use.
- There are 300 domestic taps. All of them are working.
- There are about 65 agricultural wells. Of them, around 40 would work in rainy season.
- There are 6 agricultural borewells. Out of them only 4 are presently working.
- Recently constructed Rallagadda percolation tank was marked in the map. Its area is half-an-acre. Bund of the tank was breached when it rained heavily.
- Rallakatta Vagu (stream) and Mangalgadda Vagu (stream) were marked in the map. About 10 to 15 check dams were also marked.

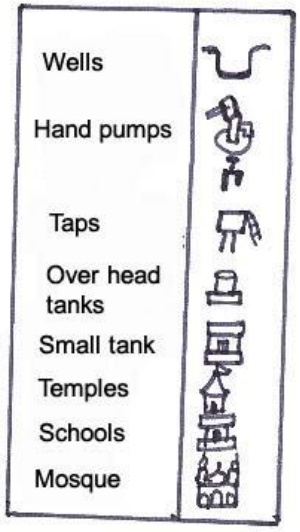
Village community map

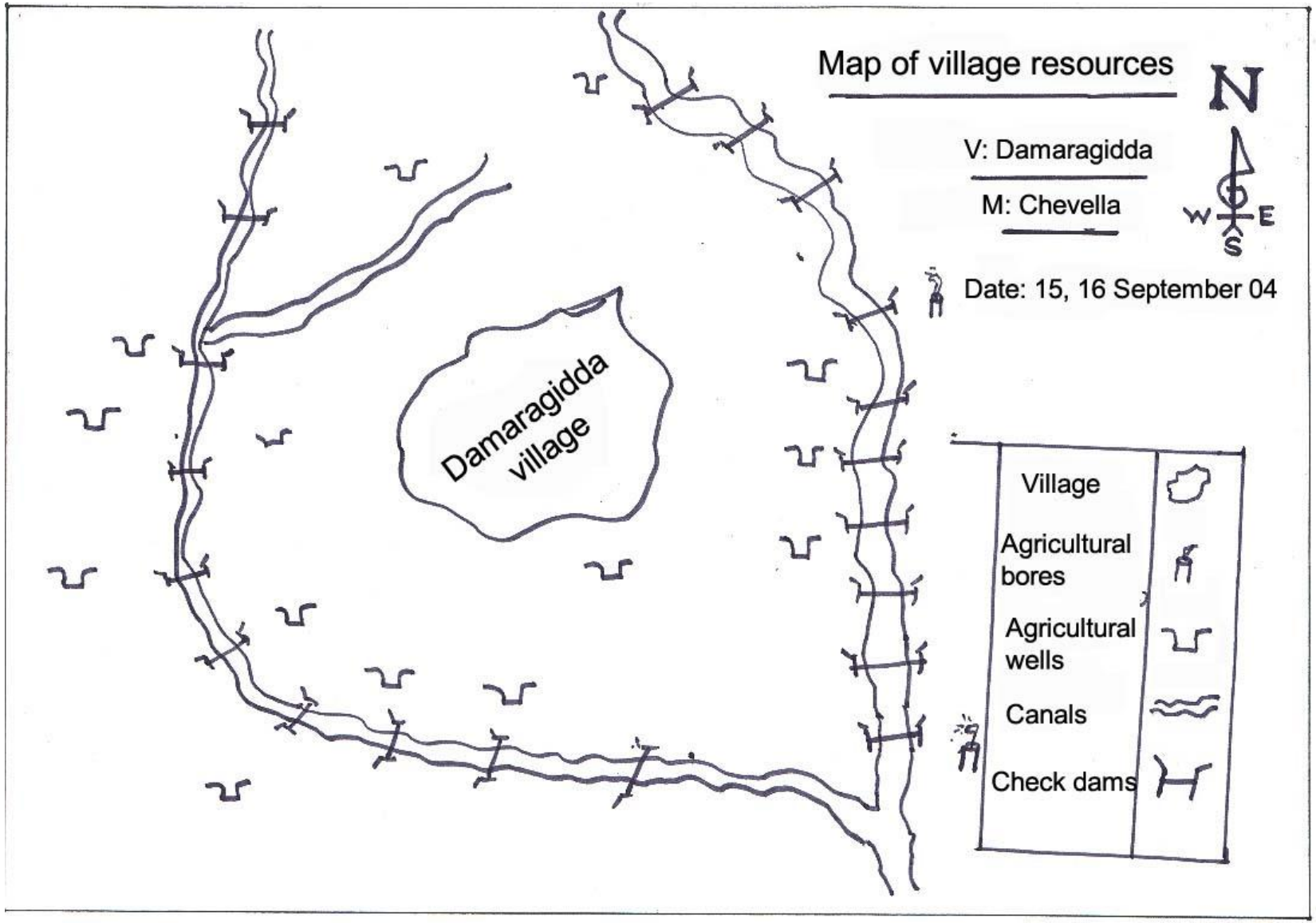
V: Damarigidda

M: Chevella

Date: 15, 16 September 04






Map of village resources
N
W
E
S
V: Damaragidda
M: Chevella
Date: 15, 16 September 04
Damaragidda village
Village
Agricultural bores
Agricultural wells
Canals
Check dams

Water budget of village

Water inflow to the village by rain = Area x Normal rainfall (A.M)

We found that 70% of rain water is lost by way of evaporation and humidity

Ten percent of total rainwater received by village is lost by run off.

Ten percent of total rainwater received by village adds to under ground water.

The following are the details of water retained in tanks / ponds in the village:

Sl. No	Name of pond / tank	Area	Depth	Water stored (A.M)
1				
2				
3				
4				
5				
	Total:			

Total quantity available to village = 190 A.M

Addition to ground water + Water retained through tanks, ponds

Water budget = Available water + Water consumption = 190-226 = -26 A.M

Going by the above formula to arrive at the quantity of water required for our needs, it was found that our village is receiving 190 A.M annually. But our annual consumption is 226 A.M which means more than 36 A.M than we are getting. This addition usage is from ground water reserves. In other words, we are profligate in using the water, which was preserved by our forefather. Having realized our folly, we had decided to protect the existing resources for our grand children and prepare the following water management plan accordingly.

Village water management plan

Sl. No	Problem	Reasons	Solutions	Who	Outlay		Time	
					Total	Public contribution	Designing	Completion
1	Tank is not getting adequate water	Lack of pipeline	New extra pipeline should be laid from bore well.	Village panchayat	50,000	Maintenance	16/9/2004	20/12/2004
2	Rice is cultivated in 28 acres		In current year, irrigated dry (ID) crops are being cultivated in 18 acres	Farmer				
3	Vegetable are cultivated in 100 acres	--	We will cultivate 50 acres under drip irrigation.	DWMA, Farmers (Government)	5 lakhs	Maintenance	17/9/2004	18/01/2004
4	Percolation pond need to be constructed on Mangalgadda stream	--	Percolation pond is to be constructed	Government, DWMA	3 lakhs	Maintenance	18/9/2004	20/11/2004

Resolution

Village: Damaragidda **Mandal:** Chevella **District:** Ranga Reddy

Date	Name of member	Subject	Discussions, Resolutions
16.09.2004	1. Ch. Venkatesham, Sarpanch 2. M. Venkataiah (Ex Sarpanch) 3. T. Anjaiah, Member 4. Challam Pratap Reddy, Member 5. Gudikadi Venkataiah, Member 6. Mannegudem Anjaiah, Member 7. Begari Manemma, Member 8. Boda Anantaiah, Member 9. Boda Damaiah, Member	Training programme for natural resources committee on village level micro plan	The meeting on 16.09.2004 was held under the chairmanship of village headman (sarpanch). Venkatesam and was attended by all the members. The condition of different natural resources in the village was reviewed and discussed with members of natural resources committee members from various villages in the training programme. A micro plan (water management plan) was prepared and passed unanimously in the meeting.