CONTENTS (IWMP I)

CHAPTER- 1

METHODOLOGY

INTRODUCTION

Since 2003, the Government of India (GOI) adopted watershed management as a strategy to address the sustainable agricultural productivity in the rainfed areas since the last three decades. Further, GOI has adopted watershed management as a national policy. Several studies have highlighted that appropriate natural resource management and its utilization results in enhancement in agricultural productivity. In order to achieve food security, minimize the water conflicts and reduce poverty, it has become essential to increase productivity of rainfed / dry land farming by complete utilization of the available natural resources.

In Haryana, watershed activities were undertaken by Department of Agriculture (Soil Conservation), Forest Department and Rural Development Department. The existing scheme of watershed, like DPAP, DDP, IWDP & Haryali were brought under one umbrella in the name of Integrated Watershed Management Programme in the year 2008. The scheme is basically for rainfed area, Common Guidelines were framed by National Rainfed Area Authority. Rural Development Department is the Nodal Department for implementation of IWMP through State Level Nodal Agency.

In order to implement watershed (IWMP I) area programme a systematic survey has been conducted to know the potentiality of each village / Micro-Watershed. With this view, a baseline survey inUtawar Sub-Watershed (IWMP I)comprising of nine micro watersheds namelyRansika (2C5D4c1), Lakhnala (2C5D4c3), Malai (2C5D3u2), Gohpur (2C3D3u6), Guraksar (2C5E1g4),Rupraka (2C5D3u3), Khilluka (2C5E1g2), Tonka (2C5D3u1), Utawar (2C5D3t3). The base line survey conducted shall be considered as bench mark against which the results of project could be compared at

the end of the implementation. It would also be helpful in guiding watershed programmes and to plan its goal in identifiable terms and be used as future reference. PRA techniques and transect walk were conducted with the Gram Sabha members and beneficiaries for building confidence in participation during project planning.

1.1 SCIENTIFIC PLANNING

1.1.1 Cluster Approach

This envisages a broader vision of Geo-hydrological unit which involves treating the clusterUtawar Sub-Watershed (IWMPI) of 9 micro watersheds namelyRansika (2C5D4c1), Lakhnala (2C5D4c3), Malai (2C5D3u2), Gohpur (2C3D3u6), Guraksar (2C5E1g4),Rupraka (2C5D3u3), Khilluka (2C5E1g2), Tonka (2C5D3u1), Utawar (2C5D3t3) with their respective codes.

1.1.2 Base Line Survey

Bench mark survey was conducted for collection of base line data on various bio-physical and socio-economic aspects initiated by the following methods:-

1.1.3 Collection of Primary Data

The project was sanctioned in 30th Steering committee meeting for IWMP on 30.01.2013 and the preparatory phase started in 2013.Initially, meetings were arranged with officials of concerned departments, technical experts and stake holders. During this meeting, preliminary details of the proposed project including location of villages and criteria of selection and was thoroughly discussed.

In order to have first hand information, a joint visit in the project area was made along with PRI members. In this survey, physical location of the watershed, drainage pattern, land use and other problems related to the area were assessed. Sarpanches and local people were involved in the discussions and needs and scope of watershed works were taken up.

All assigned villages were marked on the maps prepared by Soil and Land Use Survey of India (SLUSI).

The primary data related to land holding, crop area, production, depth to water level, ground water quality and soil were collected from agriculture and revenue records of the village, the socio economic data of the target villages were collected from Anganwari workers and Panchayat Secretary in the village and district.

1.1.4 Collection of Secondary data

The data with regard to Demographic, socio-economic, infrastructure, land use, primary and secondary occupation, major crops grown and the production of crops and seasonal vegetable, marketing facilities, fodder production, agro-forestry crops, livestock and milk production, status of self help groups, previous watershed schemes and works undertaken under MGNREGA etc. was gathered with the help of a designed Performa. Additional information was gathered by group and individual discussions with women groups, landless and other poor sections of the society. The issues concerning water availability, use of common property resources, fuel and fodder availability, wage employment opportunity and other major concerns were collected and debated.

1.2 PARTICIPATORY RURAL APPRAISAL

The due process of Participatory Rural Appraisal approach was followed in which village committees were sensitized on project objectiveand project activities. An appraisal of land resources, water resources, forest and pasture land resources, common property resources, production system and livestock resources was carried out by collecting data from primary and secondary sources. Group meeting were organized at common places and problem and possible solution were

debated, discussed and efforts were made to reach agreement on activities required under the projects. This was followed by transect walks across the entire area of the village and spots indicated by the community. The Technical possibilities were discussed and measurements were recorded for jointly agreed activities. Similarly, discussions were held about entry point activities and items of work were finalized keeping in view the availability of funds in the project. Through discussions were held on production activities and innovative techniques of improving crop, fruit and milk production. The women groups were sensitized about income generating activities and skill improvement by various types of trainings. The department field staff facilitated the process of participation at the planning stage. The department officials simultaneously stated the process of forming watershed committees for each village. The roles and responsibilities of all stake holders as per guidelines , the mechanism of fund flows, cost sharing arrangement in different components and operational mechanism of the projects was thoroughly discussed with the community and Watershed Committees (WC) in detail.

1.2.1Participatory Net Planning

The action plan was formulated based on the PRA, Geo-hydrological condition, Drainage pattern, Soil class, Soil erosion, forest and agriculture land. The project proposals were deliberated in the Gram Sabha meetings which were approved with required amendments.

Based on the experience of the experts working in the area and catchment area characteristics each structures like Dug out Pond, Cement Stone Masonry Structures (Inlet & Outlet), Roof Top Rain water Harvesting Structures, Small Earthen Embankments (Commonland),land leveling (common land), cattle trough, Water conveyance system, Retaining wall,

Plantation&Community Water Storage Tank were recommended to conserve and store water used for life saving additional irrigation potential in the rainfed area and to avoid further degradation of the land.

1.2.2 Community Participants in Social Mapping

The village communities were apprised about project activities. Group meetings were organized at common places, problems and possible solutions were debated, discussed and efforts were made to reach agreement on activities required under the project. Social mapping involving local community was prepared. Infrastructure services and other village resources such as ponds, wells, agriculture land etc. were mapped.

1.2.3 Transect Walk

Reconnaissance survey was carried out through transect walk in order to identify the needs, treatments required and worksites. The sites were marked on the maps and different treatment measures required were recommended.

1.2.4 Focus Group Discussions

Focus Group Discussions (FGD) were conducted in order to obtain communities' approval on various identified needs. It was helpful in complementing the assessment emerged from PRA and to derive the opinion of the communities on various issues.

Gram Sabha members participation in group discussion– Photograph

1.3USE OF GIS TECHNOLOGY FOR PLANNING

A scientific tool has been promoted at various stages of watershed development planning.

Various maps were prepared such as Base map, Present Land Use, Geo-hydrological, Micro Watershed, Drainage, Contours, Slope, Soil Classification, Land Capability Classification, Soil Fertility, Ground Water Depth and Quality, Proposed and existing activities of works. All Watershed maps (micro- watershed) have been prepared based on the watershed maps made available by Soil and Land use Survey of India (SLUSI) with coding.

1.3.1 Prioritization

With the assistance of Geographical Information System (GIS),various layers were created like Topography(slope), Drainage and contour, Groundwater conditions, Slope, soil and Land Capability classes. All these parameters were given weightage as per the guidelines issued by Govt. of India. The map prepared was used during the field visit for finalization of works.

1.3.2 Planning

Based on the land use and Topographical maps in addition to social maps (PRA) prepared by the participants, analysis was carried out for the planning in micro- watersheds. The action plan was formulated using maps of Drainage pattern, Soil class, Soil erosion, forest, hydrology and present land use. The project proposals were deliberated in the Gram Sabha meetings which were approved with required amendments.

Based on the experience of the experts working in the area and catchment area characteristics each structures like Dug out Pond, Cement Stone Masonry structures (Inlet & Outlet), Roof Top Rain water Harvesting Structures, Small Earthen Embankments (Common land), land leveling (common land), cattle trough, Water conveyance system, Retaining wall,

Plantation &Community Water Storage Tank were provided in consultation with the Gram Sabha Members. However finally only those activities are included which were suggested by the Gram Sabha according to their needs.

1.3.3 Hydrological modeling

The relevant hydrological parameters were used for delineation of micro- watersheds as per the existing drainage system. The works/ activities under drainage line treatment are proposed as per topography, present land use, site conditions and run- off in consultation with WC. These maps were generated as per SLUSI coding system. The maps are produced by developing different layers using GIS technology.

Table 1. Detail of scientific planning and inputs in IWMP - I

S.No.	Scientific Criteria/input used	Whether Scientific Criteria was used
A	**Planning**	
	Cluster approach	Yes
	Hydro-geological survey	Yes
	Contour Mapping	Yes
	Participatory net planning (PNP)	Yes
	Remote sensing data-especially soil	Yes
	Ridge to valley treatment	N.A.
	Online IT connectivity between	Yes
	1. Project and DRDA cell/ZP	Yes

S.No.	Scientific Criteria/input used	Whether Scientific Criteria was used
	2. DRDA and SLNA	Yes
	3. SLNA and DoLR	Yes
	Availability of GIS layers	Yes
	1. Survey of India map/imagery /SLUSI map	Yes
	2. Micro- Watershed Boundary	Yes
	3. Drainage pattern	Yes
	4. Soil (soil fertility status)	Yes
	5. Land use	Yes
	6. Ground water status	Yes
B	Inputs	-
	Bio pesticides	Yes
	Organic manure	Yes
	Vermi- compost	Yes
	Bio Fertilizer	Yes
	Water saving devices	Yes
	Mechanical tools	Yes
	Bio fencing	No
	Nutrient Budgeting	No
	Automatic water level recorder & sedimentation samplers	No

1.4 Preparation of Action Plan and Approval

Based on the need and problems in watershed area; a draft action plan was prepared and placed before the concerned watershed development committee as per schedule circulated by PIA for approval of the Watershed Committees. After detailed deliberations and incorporation of relevant recommendation/ suggestions, the action plan was approved in the meeting of Gram Sabha. The resolution of each village falling in the watershed has been received. The record is available with the PIA and WAPCOS.

CHAPTER – 2

PROJECT BACKGROUND

2.1 PROJECT BACKGROUND

Integrated Watershed Management Programme, Uttawar Sub-Watershed (IWMP I)falls in Hathin block of Palwal district in Haryana state. The project is a cluster of nine micro- watersheds namely Ransika (2C5D4c1), Lakhnala (2C5D4c3), Malai (2C5D3u2), Gohpur (2C3D3u6), Guraksar (2C5E1g4),Rupraka (2C5D3u3), Khilluka (2C5E1g2), Tonka (2C5D3u1), Uttawar (2C5D3t3).The total geographical area of the project is**6551 ha** out of which **4832 ha** has been undertaken to be treated under IWMP I starting from year 2012-2013. The project is divided into nine micro watersheds. The Base map is shown in **Annexure I.**

Table 1: Basic Project Information

Sr. No	Name of the project	Name of the micro watersheds	Code No.	Name of the villages	Block	District	Area of the Project (ha)	Area proposed to be treated (ha)	Total Project cost (Rs lacs)	PIA
1	Uttawar - Watershed (IWMP I)	Ransika	2C5D4c1	Buraka	Hathin	Palwal	597	385	46.20	ASCO
				Ransika						
				Babupur						
2		Lakhnaka	2C5D4c3	Dhiranka			696	480	57.60	ASCO
				Lakhnaka						
				Kukarchati						
				Paharpur						
3		Malai	2C5D3u2	Jalalpur			1169	732	87.84	ASCO
				Bhimseeka						
				Dhakalpur						
				Malai						
4		Gohpur	2C3D3u6	Pachnaka			664	405	48.60	ASCO
				Gohpur						
				Andhrola						
5		Guraksar	2C5E1g4	Guraksar			601	490	58.80	ASCO
				Mohdamka						
6		Rupraka	2C5D3u3	Rupraka (Part)			806	715	85.80	ASCO
7		Khilluka	2C5E1g2	Khilluka			614	451	54.12	ASCO
			2C5E1g2	Jarari						
			2C5E1g2	Bhodpur						
8		Tonka	2C5D3u1	Ghurawali			561	442	53.04	ASCO
			2C5D3u1	Tonka						
9		Uttawar	2C5D3t3	Uttawar (Part)			843	732	87.84	ASCO

Sr. No	Name of the project	Name of the micro watersheds	Code No.	Name of the villages	Block	District	Area of the Project (ha)	Area proposed to be treated (ha)	Total Project cost (Rs lacs)	PIA
Grand Total							**6551**	**4832**	**579.84**	

2.2 NEED OF WATERSHED DEVELOPMENT PROGRAMME

Watershed development programme is prioritized on the basis of thirteen parameters namely;

i. poverty index,
ii. percentage of SC,
iii. actual wages,
iv. percentage of small and marginal farmers,
v. ground water status,
vi. moisture index,
vii. area under rainfed agriculture,
viii. drinking water situation in the area ,
ix. percentage of degraded land,
x. productivity potential of land,
xi. continuity of any other watershed already developed/treated,
xii. cluster approach for plain terrain,
xiii. cluster approach for hilly terrain,

The criteria and weightage of each of the parameters has been given in **Table 2**.

Table 2. Criteria and Weightage for Selection of Watershed

S. No.	Criteria	Maximum Score	Ranges and Scores			
i.	Poverty index (% of poor to population)	10	Above 80 % (10)	80 to 50 % (7.5)	50 to 20 % (5)	Below 20% (2.5)
ii.	% of SC/ST population	10	More than 40 % (10)	20 to 40 % (5)	Less than 20% (3)	
iii.	Actual wages	5	Actual wages are significantly lower than minimum wages (5)	Actual wages are equal to or higher than minimum wages (0)		
iv.	% of small and marginal farmers	10	More than 80 % (10)	50 to 80 % (5)	Less than 50% (3)	
v.	Ground water status	5	Over exploited (5)	Critical (3)	Sub Critical (2)	Safe (0)
vi.	Moisture index/ DPAP/DDP block	15	-66.7 & below (15) DDP block	-33.3 to -66.6 (10) DPAP Block	0 to -33.2 (0) Non DPAP/DDP Block	
Vii	Area under rain fed agriculture	15	More than 90 % (15)	80 to 90 % (10)	70 to 80 % (5)	Below 70 % (Reject)
Viii	Drinking water	10	No source (10)	Problematic village (7.5)	Partially covered (5)	Fully covered(0)
Ix	Degraded land	15	High-above 20 % (15)	Medium-10 to 20 % (10)	Low-less than 10 % of TGA (5)	
X	Productivity potential of the land	15	Lands with low production & where productivity can be significantly enhanced with reasonable efforts (15)	Lands with moderate production & where productivity can be enhanced with reasonable efforts (10)	Lands with high production & where productivity can be marginally enhanced with reasonable efforts (5)	

S. No.	Criteria	Maximum Score	Ranges and Scores			
Xi	Contiguity to another watershed that has already been developed/treated	10	Contiguous to previously treated watershed & contiguity within the micro-watersheds in the project (10)	Contiguity within the micro-watersheds in the project but non contiguous to previously treated watershed (5)	Neither contiguous to previously treated watershed nor contiguity within the micro-watersheds in the project (0)	
Xii	Cluster approach in the plains (More than one contiguous micro-watersheds in the project)	15	Above 6 micro-watersheds in cluster (15)	4 to 6 micro-watersheds in cluster (10)	2 to 4 micro-watersheds in cluster (5)	
Xiii	Cluster approach in the hilly tract (More than one contiguous micro-watersheds in the project)	15	Above 5 micro-watersheds in cluster (15)	3 to 5 micro-watersheds in cluster (10)	2 to 3 micro-watersheds in cluster (5)	
	Total	**150**	**150**	**93**	**37**	**2.5**

Based on above criteria and weightage of 70.5 concerning these thirteen parameters, a composite ranking was given to Uttawar Sub-Watershed (IWMP I) project as given in **Table- 3.**

The total numbers of families under BPL are less thanthe total number of households in the village. Hence, a score of 5 was allotted. Rainfed agriculture is more and more than 70 percent and more than 50 % farmers are small and marginal. So accordingly, scoring was done and has no assured irrigation facility, erratic rainfall, deep, poor quality and less ground water discharge, hence the ground water status score is 3. The percentage of scheduled castes in this watershed area is about 25 percent of the total population, hence 5 score was allotted. Due to high percentage of the poor population i.e. about 70 percent thus the scope of poverty index is 5.0. More than 60 percent of the farmers are small and marginal in

nature. Hence, a composite rank of 5 is allotted. With all the parameters taken together gives the watershed score to be 70.5.

Table- 3: Weightage of the Project

1	2	3	4	5	6	7	8													
S. No.	**District**	**Name of the project**	**No. of micro-watersheds proposed to be covered**	**Proposed project area (ha)**	**Type of project (Hilly/ Desert/ Others)**	**Proposed cost (Rs. in lakh)**	**Weight age under the criteria**													
							i	**ii**	**iii**	**iv**	**v**	**vi**	**vii**	**viii**	**ix**	**x**	**xi**	**xii**	**xiii**	**Total**
1.	Palwal	Uttawar Sub-Watershed (IWMP I)	9	4832	others	579.84	5	5	0	5	3	0	5	7.5	10	15	5	10	0	70.5

Table 4: Watershed Information

Name of the Project	No. of Micro-Watersheds to be Treated	Watershed codes	Watershed regime/type/order
Uttawar Watershed (IWMP I)	9	2C5D4c1, 2C5D4c3, 2C5D3u2, 2C3D3u6, 2C5E1g4, 2C5D3u3, 2C5E1g2, 2C5D3u1 and 2C5D3t3	Others

2.3 OTHER ONGOING DEVELOPMENT PROJECTS / SCHEMES IN THE PROJECT VILLAGES

These villages being backward have been on top priority in number of developmental projects. These programmes are Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS). The micro watershed wise ongoing developmental programme in the project area is tabulated in Table 5.

Table 5. Ongoing Developmental Programs in the Project Area

S. No.	Name of the Program /Project	Name of Micro watersheds	Sponsoring agency	Objective	Estimated number of beneficiaries
1	MGNREGA	Ransika	DRDA, Palwal	To provide assured employment of 100 days in a year to unskilled labour and development of village.	134
2	MGNREGA	Lakhnaka	DRDA, Palwal	To provide assured employment of 100 days in a year to unskilled labour and development of village.	66
3	MGNREGA	Malai	DRDA, Palwal	To provide assured employment of 100 days in a year to unskilled labour and development of village.	46
4	MGNREGA	Gohpur	DRDA, Palwal	To provide assured employment of 100 days in a year to unskilled labour and development of village.	34
5	MGNREGA	Guraksar	DRDA, Palwal	To provide assured employment of 100 days in a year to	147

S. No.	Name of the Program /Project	Name of Micro watersheds	Sponsoring agency	Objective	Estimated number of beneficiaries
				unskilled labour and development of village.	
6	MGNREGA	Rupraka	DRDA, Palwal	To provide assured employment of 100 days in a year to unskilled labour and development of village.	Nil
7	MGNREGA	Khilluka	DRDA, Palwal	To provide assured employment of 100 days in a year to unskilled labour and development of village.	17
8	MGNREGA	Tonka	DRDA, Palwal	To provide assured employment of 100 days in a year to unskilled labour and development of village.	111
9	MGNREGA	Uttawar	DRDA, Palwal	To provide assured employment of 100 days in a year to unskilled labour and development of village.	121

The District Rural Development Agency has undertaken various schemes under watershed development programme and the status is presented in **Table 6.**

Table 6: Previous Watershed Programme in the Project Area (if any)

1	2	3		4						5	
S. No.	Names of Districts	Total micro-watersheds in the District		Micro-watersheds covered so far						Net watersheds to be covered in 12th plan	
				Dept. of Land Resources		Other Ministries/ Depts.		Total watersheds covered			
				Pre-IWMP projects (DPAP +DDP +IWDP)		Any other watershed project					
		No.	Area (ha.)	No.	Area (ha.)	No.	Area (ha.)	No.	Area (ha.)	No.	Area (ha.)
1.	Palwal	143	95130	8	2050	-	-	8	2050	135 (balance) 21	93080 (balance) 11352

Note:- Proposed for the year 2012- 13 : 21 No. of micro- watersheds and Area 11352 ha

CHAPTER – 3

BASIC INFORMATION OF THE PROJECT AREA

GEOGRAPHY AND GEOHYDROLOGY

Uttawar Sub-Watershed (IWMP I) falls in Hathin Block of District Palwal. Physiographically, the area is plain with sand dunes. The area is occupied by active and recent flood plains of river Yamuna. The area of watershed lies in between 27º57'30'' to 28º02'30'' N Latitude & 77º07'30'' to 77º15'00'' E longitude with general elevation varies between 188-195 m (google earth map) above mean sea level (MSL). Annual average rainfall of the district is 491 mm and about 80 percent of its annual rainfall is received in the month of July to September. Intensity of rainfall is scattered and erratic in this area. The Drainage and Contour map is presented in **Annexure II.**

3.1 LAND USE PATTERN

The village wise land use pattern is tabulated in **Table-1.** Land use map is shown in **Annexure-III.**

Table. 1 Land use pattern of Utawar Watershed (IWMP I)

Sr. No.	Name of Micro Watersheds and Codes	Name of Villages	Geographical Area in (ha)	Treatable area of the village(ha)	Land under agriculture use (ha)	Rain fed area (ha)	Wasteland	
							Cultivable	Non-Cultivable
1	Ransika	Buraka	156	105	142	91	0	14
2	Ransika	Ransika	350	215	292	157	0	58
3	Ransika	Babupur	91	65	83	57	0	8
4	Lakhnaka	Dhiranka	117	82	97	62	0	20
5	Lakhnaka	Lakhnaka	390	260	360	230	0	30

Sr. No.	Name of Micro Watersheds and Codes	Name of Villages	Geographical Area in (ha)	Treatable area of the village(ha)	Land under agriculture use (ha)	Rain fed area (ha)	Wasteland	
							Cultivable	Non-Cultivable
6	Lakhnaka	Kukarchati	85	70	79	64	0	6
7	Lakhnaka	Paharpur	104	68	96	60	0	8
8	Malai	Jalalpur	319	215	282	178	7	30
9	Malai	Bhimseeka	187	117	167	97	1	19
10	Malai	Dhakalpur	130	85	116	71	0	14
11	Malai	Malai	533	315	499	281	0	34
12	Gohpur	Pachnaka	212	135	188	111	0	24
13	Gohpur	Gohpur	254	155	231	132	0	23
14	Gohpur	Andhrola	198	115	178	95	0	20
15	Guraksar	Guraksar	454	385	414	345	0	40
16	Guraksar	Mohdamka	147	105	137	95	0	10
17	Rupraka	Rupraka	806	715	712	621	0	94
18	Khilluka	Khilluka	333	255	287	209	11	35
19	Khilluka	Jarari	172	125	156	109	0	16
20	Khilluka	Bhodpur	109	71	101	63	0	8
21	Tonka	Ghurawali	390	315	326	251	0	64
22	Tonka	Tonka	171	127	136	92	25	10
23	Utawar	Utawar	843	732	650	539	0	193
			6551	**4832**	**5729**	**4010**	**44**	**778**

(Source – District Census Handbook, 2011 Palwal)

3.2 SOIL AND TOPOGRAPHY

The texture of soil in Utawar Watershed is sand to loamy sand in the recent flood plains, sandy loam in plains, sandy loam to clay loam in alluvial plains whereas clay loam in low lying depressions. The topography of the area ranges from level to nearly level. The slope ranges from 0.5 to 8% and above most of the area of micro watersheds falls under level to nearly level slopes. Slope map is presented in **Annexure IV.**

Table 2. Soil type and Topography

Sr. No.	Name of Micro Watersheds	Code	Geographical area (ha)	Major Soil types	Topography
1.	Ransika	2C5D4c1	597	Sandy loam to sandy clay loam	Partially undulated to Level lands
2.	Lakhnaka	2C5D4c3	696		
3.	Malai	2C5D3u2	1169		
4.	Gohpur	2C3D3u6	664		
5.	Guraksar	2C5E1g4	601		
6.	Rupraka	2C5D3u3	806		
7.	Khilluka	2C5E1g2	614		
8.	Tonka	2C5D3u1	561		
9	Utawar	2C5D3t3	843		
			6551		

Source: - Department of Agriculture, Haryana

The soils are ustochrepts and haplaquepts (Soils of Haryana publication)

3.2.1 Flood and Drought Condition

There was no incidence of flood recorded and drought as well in watershed villages as per data collected from the revenue department reveals drought conditions is once in ten years and flood conditions are once in five years. The absence of assured irrigation and drought resulted in low to very low yields of the crops.

Table 3. Flood and Drought condition

Sr. No.	Name of Micro- watersheds	Flood Incidence	Drought Incidence
1.	Ransika	Once in 5 year	Once in 10 year
2.	Lakhnaka		
3.	Malai		
4.	Gohpur		
5.	Guraksar		
6.	Rupraka		
7.	Khilluka		
8.	Tonka		
9.	Utawar		

3.3 SOILS

3.3.1 Soil Erosion

In the identified nine micro watersheds in twenty three villages, it is observed that due to thin to moderate vegetative cover to increase the loss of surface soil in the watershed area. This results in degradation of agricultural land and low organic matter contents. The organic carbon content in areas comparatively low to restrict average in agriculture production and degradation of soil physical and chemical properties. Annual average rainfall of the district is 491 mm. Majority of the watershed Community are dependent on rainfed agriculture due to lack of assured irrigation facility. Agriculture suffers due to area being rain fed and due to erratic rains in the region, resulting in further deterioration of socio economic conditions of community.

3.3.2 Soil Salinity/Alkalinity

There is low to moderate soil salinity in the Project and pH is normal and within the limits of 7.10 to 8.45. Based on the soil samples analysis and reports the village wise distribution of pH is tabulated and shown in Table. 4.

Table 4. Soil pH and Salinity

S.No.	Name of the Micro Watersheds	Name of village	Soil pH	Type of Salinity
1	Ranshika	Buraka	8.4	The average conductivity of soil is below 0.8 µmhos/cm
		Ranshika	7.6	
		Babupur	8.0	
2	Lakhnaka	Dhiranki	8.2	
		Lakhnaka	8.4	
		Kukarchati	8.2	
		Paharpur	7.6	
3	Malai	Jalalpur	8.4	
		Bhimseeka	7.8	

		Dhakalpur	7.9	
		Malai	8.2	
4	Gohpur	Panchnaka	7.9	
		Gohpur	8.0	
		Andhrola	7.4	
5	Guraksar	Guraksar	7.2	
		Mohdamka	7.6	
6	Rupraka	Rupraka	7.6	
7	Khilluka	Khilluka	8.0	
		Jarai	7.9	
		Bhodpur	8.2	
8	Tonka	Ghurawali	8.5	
		Tonka	8.1	
9	Uttawar	Uttawar	8.2	

The average conductivity of the soil is not more than 0.80 µmhos /cm and the average pH of the soil is between 6.5 and 8.7.

3.3.3 SOIL CLASSIFICATION

The Soil map is presented in **Annexure V.** The fertility status of the project area, available nitrogen and phosphorus are low. However, the available potash varies from medium to high. The fertility status map of the project area is exhibited in **Annexure-VI**.

3.3.4 Land Capability Classification

Based on the soil characteristics, external land features and environmental factors that limits the use of land. Majority of the land falls under category III and Ranshika and Lakhnaka falls under class four. The land under Tonka and Gurawali falls in the category of V due to water logging and secondary soil salinization.

The soils of the selected Watersheds have been grouped into three land capability classes. A brief description of each capability sub class is given as under and the **Land capability map is exhibited in Annexure-VII.**

Land capability subclass III e2s2

These soils are deep to very deep soils, light to coarse loamy texture located on slight to gentle slope. These soils are well drained, moderately permeable and moderate to severe erosion hazard.

Following recommendations are suggested for the economic use of this sub-class:

1. Land leveling should be subsidized, because farmers are not economically capable to bear the rate of land leveling.
2. Engineering measures like Embankments and Field Bunding be under taken.
3. Agronomic measures like Dry farming, strip& Mixed cropping with other soil conservation measures like agro forestry and rainfed horticulture are recommended.

Land capability subclass IV e3s3 and V (two microwatersheds in Ghurawali and Tonka)

These soils are greatly, light textured soils undulated to nearly level sloping lands. The water holding capacity is poor to very poor and the water erosion hazard is severe to very severe except under water logged soils.

Following recommendations are suggested for the economic use of this sub-class:

1. Soils would be cultivated in suitable crop rotation with adopting dry farming techniques.
2. Masonry structure should be constructed in field bunds and percolation embankment.
3. Land leveling should subsidies, because farmers are not economically capable to bear the rate of land leveling.
4. Land under water logged be managed by providing drainage and is feasible, bio-drainage be adopted.

3.3.5 Climatic Conditions

The climate characteristics of the watershed are dry air, except during monsoon, hot summer and cool winters. The normal rainfall is 491 mm (during the past 10 year's data). About 77% of annual rainfall is received during monsoon months. The highest rainfall is 803 mm during the year 2011 and lowest in 2006 as 181mm. The normal rainy days are 27. The uneven rainfall distribution is leading to run off soil every year to the steams, rivulets and depressed area of the Utawar Watershed (IWMP I). The year wise rainfall from 2004 to 2013 is presented in **Table.5.**

Table 5. Rainfall during the years 2004-13

Sr . no.	**Year**	**Rainfall (in mm)**
1	2004	491
2	2005	396
3	2006	181
4	2007	556
5	2008	718
6	2009	305
7	2010	639
8	2011	803
9	2012	424
10	2013	397
Average Rainfall		**491mm**

(Source: - Deputy Director Agriculture, Palwal)

The temperature reaches up to 45º C. During May and June, the average maximum temperature is 37º C. During winter, the mean daily maximum temperature in January is 21º C and minimum is 7º C.

3.3.6 Physiography and Reliefs

Based on the contour maps, the elevation varies from 188 to 195 m above mean sea level and slope ranges from 0.5 to 5 % and occasionally more in the sand dunal areas.

The major river is Yamuna (along Ujjina drain) which is a perennial river. Annual average rainfall of the district is 491 mm and the water is drained through field to field and ultimately create temporary water logging in low lying areas. The elevation range and percentage slope distribution has been presented in **Table 6.**

Table 6. Physiography and Relief

Project Name	Elevation (MSL)	Slope Range (%)
Utawar Watershed (IWMP I)	188-195 m	0.5-8%

3.4 LAND AND AGRICULTURE

The land holding pattern of the villages under Utawar Watershed shows that the majority of the land holding is about 2.5 ha ranging from 0.5 to 5 ha. The lack of assured irrigation source has forced the majority of the small farmers and landless labours of Watershed to migrate from village to ensure there, employment and livelihood to nearest Industrial towns is Faridabad. This affects directly the demographic profile of the villages.

The major crops Bajra and Gawar in Kharif under rainfed conditions. The major crops during Rabi wheat and mustard, green fodder and seasonal vegetables in rainfed and irrigated conditions. The soil and water conservation measures such as Engineering like Dug out Pond, Roof Top Rain water Harvesting Structures, Small Earthen Embankments (Common land), land leveling (common land), cattle trough, Water conveyance system, Retaining wall, Plantation & Community Water Storage Tank, Drainage in water logged area etc. The increase in production of wheat with the implementation of the project would help to enhance the net production value, thus resulting in improvement of socio economic status. The following plants are commonly observed in the Project Area. The natural vegetation in the project area is exhibited in **Table 7.**

Table 7. NATURAL VEGETATION

Sr. No.	Trees	Fruits	Shrubs & Grasses
1	Babbul	Ber	Kareel
2	Neem	Guava	Green grass
3	Sisam	Pomegranate	Mung (Sarkanda)
4	Pipal	Lemon	
5		Amla	

Deputy Director Horticulture

3.4.1 Land Ownership Details

The Caste wise land owned (in ha) is Tabulated in Table 8.

Table-8:- Land Ownership Details

Sr .No.	Name of micro watershed	Name of village	GENRAL	Meo / OBC	ST	SC	Total owners
1	Ranshika	Buraka	1980	-	-	-	1980
		Ranshika	3561	-	-	102	3663
		Babupur	1429	-	-	-	1429
2	Lakhnaka	Dhiranki	2343	-	-	134	2477
		Lakhnaka	3637	-	-	82	3719
		Kukarchati	923	-	-	-	923
		Paharpur	1366	-	-	-	1366
3	Malai	Jalalpur	2816	-	-	34	2850
		Bhimseeka	2079	-	-	39	2118
		Dhakalpur	1472	-	-	70	1542
		Malai	7910	-	-	80	7990
4	Gohpur	Panchnaka	3179	-	-	39	3218
		Gohpur	2252	-	-	15	2404
		Andhrola	3256	-	-	27	3283
5	Guraksar	Guraksar	5187	-	-	192	5379
		Mohdamka	1418	-	-	-	1418
6	Rupraka	Rupraka	12542	-	-	201	12743
7	Khilluka	Khilluka	3862	-	-	68	3930
		Jarai	2052	-	-	14	2066
		Bhodpur	994	-	-	-	994
8	Tonka	Ghurawali	4427	-	-	81	4508
		Tonka	1416	-	-	5	1421
9	Uttawar	Uttawar	17370	-	-	280	17650

3.4.2 AGRICULTURE/PATTERN

Table 9. Agriculture/ Pattern

Sr. No.	Name of Micro Watersheds	Village	Land under agriculture use (ha)	Net Sown area (ha)	
				One time	Two times
1	Ransika	Buraka	142	123	82
2	Ransika	Ransika	292	251	181
3	Ransika	Babupur	83	72	47
4	Lakhnaka	Dhiranka	97	86	58
5	Lakhnaka	Lakhnaka	360	296	238
6	Lakhnaka	Kukarchati	79	68	48
7	Lakhnaka	Paharpur	96	86	57
8	Malai	Jalalpur	282	238	181
9	Malai	Bhimseeka	167	148	98
10	Malai	Dhakalpur	116	99	73
11	Malai	Malai	499	418	326
12	Gohpur	Pachnaka	188	160	118
13	Gohpur	Gohpur	231	194	145
14	Gohpur	Andhrola	178	159	104
15	Guraksar	Guraksar	414	356	254
16	Guraksar	Mohdamka	137	121	79
17	Rupraka	Rupraka	712	592	468
18	Khilluka	Khilluka	287	249	167
19	Khilluka	Jarari	156	138	93
20	Khilluka	Bhodpur	101	88	61
21	Tonka	Ghurawali	326	279	204
22	Tonka	Tonka	136	121	78
23	Utawar	Utawar	650	548	414
		Total	**5729**	**4890**	**3574**

(Source: Department of Agriculture, Haryana)

3.4.3 IRRIGATION

Lack of Assured Irrigation Facilities

The present source of irrigation is ground water where the area is underlain by fresh to marginal water quality and partially by canal network. The remaining cultivable area is under rain-fed agriculture. The present source of irrigation in the watershed has been tabulated in **Table 10.**

Table 10. Irrigation Pattern.

S.No	Name of Micro Watersheds	Name of Villages	Source 1: Canal		Source 2: Groundwater (Tube wells)	
			Availability months	Net area (ha)	Availability months	Net area (ha)
1	Ransika	Buraka	July to Feb	-	July to June	51
2	Ransika	Ransika	July to Feb	108	July to June	27
3	Ransika	Babupur	July to Feb	-	July to June	26
4	Lakhnaka	Dhiranka	July to Feb	-	July to June	35
5	Lakhnaka	Lakhnaka	July to Feb	-	July to June	130
6	Lakhnaka	Kukarchati	July to Feb	-	July to June	15
7	Lakhnaka	Paharpur	July to Feb	-	July to June	36
8	Malai	Jalalpur	July to Feb	73	July to June	31
9	Malai	Bhimseeka	July to Feb	36	July to June	34
10	Malai	Dhakalpur	July to Feb	-	July to June	45
11	Malai	Malai	July to Feb	-	July to June	218
12	Gohpur	Pachnaka	July to Feb	37	July to June	40
13	Gohpur	Gohpur	July to Feb	-	July to June	99
14	Gohpur	Andhrola	July to Feb	58	July to June	25
15	Guraksar	Guraksar	July to Feb	23	July to June	46
16	Guraksar	Mohdamka	July to Feb	31	July to June	11
17	Rupraka	Rupraka	July to Feb	5	July to June	86
18	Khilluka	Khilluka	July to Feb	37	July to June	41
19	Khilluka	Jarari	July to Feb	-	July to June	47
20	Khilluka	Bhodpur	July to Feb	-	July to June	38
21	Tonka	Ghurawali	July to Feb	12	July to June	63
22	Tonka	Tonka	July to Feb	44	July to June	-

S.No	Name of Micro Watersheds	Name of Villages	Source 1: Canal		Source 2: Groundwater (Tube wells)	
			Availability months	Net area (ha)	Availability months	Net area (ha)
23	Utawar	Utawar	July to Feb	-	July to June	111
		Total		**464**		**1255**

(Source – District Census Handbook Palwal**)**

3.4.4 CROPPING PATTERN (crop details)

Cropping Pattern

The village wise area production and productivity of each crop is tabulated in **Table 11 A and 11 B** (Rabi and Kharif)**.**

Table 11 A. Crop Details (Rabi)

			Wheat				Mustered			
S.No	**Name of the Micro watershed**	**Village**	**Area (ha)**	**Prod. (000'Kg.)**	**Productivity (Kg/ha)Avg.**	**Use of fertilizer**	**Area (ha)**	**Prod.(000'Kg)**	**Productivity (Kg/ha)Avg.**	**Use of fertilizer**
1	Ranshika	Buraka	50	100	2000	D.A.P/ Urea	30	30	1000	Urea/ sulphet
		Ranshika	140	308	2200	D.A.P/ Urea	60	66	1100	D.A.P/ Urea
		Babupur	30	60	2000	D.A.P/ Urea	20	20	1000	D.A.P/ Urea
2	Lakhnaka	Dhiranki	50	100	2000	D.A.P/ Urea	20	20	1000	D.A.P/ Urea
		Lakhnaka	150	330	2200	D.A.P/ Urea	75	82.5	1100	D.A.P/ Urea
		Kukarchati	50	100	2000	D.A.P/ Urea	20	20	1000	D.A.P/ Urea
		Paharpur	50	100	2000	D.A.P/ Urea	10	10	1000	D.A.P/ Urea

3	Malai	Jalalpur	150	330	2200	D.A.P/ Urea	75	82.5	1100	D.A.P/ Urea
		Bhimseeka	70	168	2400	D.A.P/ Urea	30	33	1100	D.A.P/ Urea
		Dhakalpur	50	100	2000	D.A.P/ Urea	20	20	1000	D.A.P/ Urea
		Malai	200	500	2000	D.A.P/ Urea	100	120	1200	D.A.P/ Urea
4	Gohpur	Panchnaka	70	154	2200	D.A.P/ Urea	30	33	1100	D.A.P/ Urea
		Gohpur	100	250	2500	D.A.P/ Urea	40	48	1200	D.A.P/ Urea
		Andhrola	70	168	2400	D.A.P/ Urea	30	33	1100	D.A.P/ Urea
5	Guraksar	Guraksar	250	625	2500	D.A.P/ Urea	100	120	1200	D.A.P/ Urea
		Mohdamka	70	168	2400	D.A.P/ Urea	30	33	1100	D.A.P/ Urea
6	Rupraka	Rupraka	450	1125	2500	D.A.P/ Urea	200	240	1200	D.A.P/ Urea
7	Khilluka	Khilluka	150	390	2600	D.A.P/ Urea	80	104	1300	D.A.P/ Urea
		Jarai	70	168	2400	D.A.P/ Urea	30	33	1100	D.A.P/ Urea
		Bhodpur	50	115	2300	D.A.P/ Urea	18	23.4	1300	D.A.P/ Urea
8	Tonka	Ghurawali	200	520	2600	D.A.P/ Urea	100	130	1300	D.A.P/ Urea
		Tonka	80	200	2500	D.A.P/ Urea	40	48	1200	D.A.P/ Urea
9	Uttawar	Uttawar	400	1080	2700	D.A.P/ Urea	300	420	1400	D.A.P/ Urea

Table 11 B. Crop Details (Kharif)

			Bajra				Jawar			
S.No	**Name of the Micro watershed**	**Village**	**Area (ha)**	**Prod. (000'Kg)**	**Productivity (Kg /ha)Avg.**	**Use of fertilizer**	**Area (ha)**	**Prod.(000'Kg)**	**Productivity (Kg /ha)Avg.**	**Use of fertilizer**
1	Ranshika	Buraka	40	60	1500	Urea	20	Fodder	-	-
		Ranshika	100	160	1600	Urea	40	Fodder	-	-
		Babupur	25	40	1600	Urea	8	Fodder	-	-
2	Lakhnaka	Dhiranki	40	60	1500	Urea	10	Fodder	-	-
		Lakhnaka	100	160	1600	Urea	30	Fodder	-	-
		Kukarchati	40	60	1500	Urea	10	Fodder	-	-
		Paharpur	35	49	1400	Urea	8	Fodder	-	-
3	Malai	Jalalpur	110	154	1400	Urea	40	Fodder +32	800	-
		Bhimseeka	50	70	1400	Urea	15	Fodder	-	-
		Dhakalpur	30	42	1400	Urea	10	Fodder	-	-
		Malai	150	225	1500	Urea	50	Fodder +45	900	-
4	Gohpur	Panchnaka	50	67.5	1350	Urea	15	Fodder	--	-
		Gohpur	60	81	1350	Urea	20	Fodder	-	-
		Andhrola	40	56	1400	Urea	15	Fodder	-	-
5	Guraksar	Guraksar	180	261	1450	Urea	50	Fodder+45	900	-
		Mohdamka	40	56	1400	Urea	15	Fodder	-	-
6	Rupraka	Rupraka	300	450	1500	Urea	100	Fodder+10	100	-
7	Khilluka	Khilluka	100	155	1550	Urea	40	Fodder+32	800	-
		Jarai	40	56	1400	Urea	15	Fodder	-	-
		Bhodpur	30	45	1500	Urea	10	Fodder	-	-
8	Tonka	Ghurawali	140	217	1550	Urea	50	Fodder +40	800	-
		Tonka	50	70	1400	Urea	20	Fodder	-	-
9	Uttawar	Uttawar	320	496	1550	Urea	150	Fodder+120	800	-

3.4.5 Livestock

Farmers in these villages have already been keeping the milk animals; mostly buffalos. The milk production of these animals (local breeds) is low (**Table 12)**. There is a need for the improvement of the local breed through artificial insemination, proper vaccination and nutritive feed. Introduction of cross breed cows and murrah buffalo with better milk production will popularize dairy farming in the area. Also, the farmyard manure procured from these animals will help in improving the soil health.

Table 12. Village Wise Distribution of Milk Production in Utawar Watershed (IWMP I)

S.No.	Name of Micro Watersheds	Name of villages	Buffalo (*lit/per/annum) for 6 months	Cow (*lit/per day annum) for 6 months	Sheep	Goat	Camel/Horse/hens
1	Ranshika	Buraka	513/3846/692213	440/1978/355995	0	150	0
		Ranshika	873/6113/1100295	749/3181/572603	500	400	0
		Babupur	343/2744/493920	294/1397/251370	0	100	0
2	Lakhnaka	Dhiranki	609/4568/822150	522/2088/375840	300	500	0
		Lakhnaka	919/7350/1323000	788/3938/708750	100	600	0
		Kukarchati	242/1751/315158	207/932/167670	0	0	0
		Paharpur	368/2756/496125	315/1496/269325	0	60	12 horse
3	Malai	Jalalpur	761/5900/1061944	653/2610/469800	50	100	0
		Bhimseeka	509/3565/641655	437/2292/412493	200	50	0
		Dhakalpur	385/3080/554400	330/1485/267300	150	150	0
		Malai	2035/15264/2747588	1745/6978/1256040	1000	1200	20 camel
4	Gohpur	Panchnaka	718/5381/968625	615/2460/442800	0	500	2 khichhar
		Gohpur	579/4200/755921	497/2358/424508	100	200	6 camel

		Andhrola	758/6062/1091160	650/3248/584550	0	500	3 horse
5	Guraksar	Guraksar	1397/10474/1885275	1197/4788/861840	100	500	40horse /250 hens
		Mohdamka	368/2848/512663	315/1496/269325	20	400	300hens
6	Rupraka	Rupraka	3066/23762/4277070	2628/13140/2365200	100	500	32hores /20hens
7	Khilluka	Khilluka	1127/7889/1420020	966/4347/782460	600	1000	0
		Jarai	504/3528/635040	432/1944/349920	0	150	500hens
		Bhodpur	264/1982/356738	227/963/173273	0	50	2camel/100 hens
8	Tonka	Ghurawali	1101/8806/1585080	944/4718/849150	180	70	2camel/200hens
		Tonka	303/2271/408713	260/1168/210195	0	50	0
9	Uttawar	Uttawar	4184/31382/5648738	3587/17036/3066458	500	2000	2000hens

(Source: Animal Husbandry, Palwal)

***Average yield of Buffalo is 7- 8 kg/day and Average yield of Cow is 4 - 5.5 kg/day**

3.4.6 Ground Water Concern

a) Depth of Water

Ground Water Cell of Haryana has fixed hydrograph station mostly open well for monitoring purposes. The water level data is observed during pre, post monsoon and during the field visits. The data generated has been analyzed for the purpose of ground water studies in the watershed area. The ground water behavior in the watershed reveals the variation of depth to water level from 2.40 to 27.20 m below ground level (bgl). The village wise water level data has been tabulated in **Table 13.** Depth to water level map has been prepared and presented in the **Annexure VIII.**

Table 13. Village Wise Depth of Water Level of Utawar Watershed (IWMP I)

S.No	Name of Micro watersheds	Name of Villages	Source	Pre-Project level (m)
1	Ranshika	Buraka	Husmat well	9.40
		Ranshika	Kamru ki kothi	3.90

			well	
		Babupur	Drinking well	5.40
2	Lakhnaka	Dhiranki	Panchveer well	10.50
		Lakhnaka	Khade ka well	5.80
		Kukarchati	Badi kothi well	9.20
		Paharpur	Bodha well	9.80
3	Malai	Jalalpur	Gola well	6.00
		Bhimseeka	Tisra well	9.20
		Dhakalpur	School well	7.30
		Malai	Dulaya well	8.20
4	Gohpur	Panchnaka	Khari well	9.70
		Gohpur	Pond well	12.30
		Andhrola	Ladmiya well	8.30
5	Guraksar	Guraksar	Piwane wala well	20.20
		Mohdamka	Johad wala well	8.30
6	Rupraka	Rupraka	Kamla wala well	13.70
7	Khilluka	Khilluka	Naya well	11.80
		Jarai	Johad wala well	27.20
		Bhodpur	Jangal wala well	26.30
8	Tonka	Ghurawali	Bodi ka well	2.80
		Tonka	Gola ka well	2.40
9	Uttawar	Uttawar	Sangra ka well	12.90

The source of drinking water supply is through the canal and tube wells where the quality of ground water is acceptable under shallow aquifer in the area. The water quality analysis data was utilized to prepare using GIS technique. The micro watershed area is underlain by three category of water quality i.e. fresh and marginal. The marginal water quality dominates in the watershed area. The water quality map of the area is presented in **Annexure-IX**. The drinking water

supply is available thought the year but shortage in villages during May and June where the supply is augmented by tankers.

b) Water table fluctuation

From the availability of the data from the period June, 1974 to June, 2010 it is observed that the water table is declining at the rate of 0.91cm per year (Ground Water Cell, Haryana).

The seasonal fluctuation i.e. Pre and Post monsoon period is 1.5- 2.0m. The pattern of ground water depletion is almost uniform in the project area.

c) Rain water harvesting and Recharging

The water table is depleting in the area has come under over exploited zone so conservation of ground water is important in areas where ground water is exploited, care must be taken to replenish with rainwater.

It has been proposed to make rainwater-harvesting by construction of water harvesting structures. The provision of this has been made in the project proposal.

3.4.7 DETAILS OF COMMON PROPERTY RESOURCES: The department of panchayat has maintained the record of common property resources of area under various institutions. The data has been taken has been collected DDPO, Palwal. The details of common property resource in Utawar Watershed (IWMP I) are tabulated in **Table 14.**

Table 14. Detail of Common Property Resources

Name of the Project	CPR Particulars	Total Area, ha (Area owned/ in possession of)					Area available for treatment (ha)				
Utawar		Pvt. Person	Govt.	PRI	Any other	Total	Pvt. Persons	Govt.	PRI	Any other	Total
	Wasteland	622	0	200	0	822	622	0	200	0	822

	Pasture	0	0	0	0	0	0	0	0	0	0
	Orchard	0	0	0	0	0	0	0	0	0	0
	Lot	0	0	0	0	0	0	0	0	0	0
	Forest	0	0	30	0	30	0	0	30	0	30
	Village Ponds , lake	250	0	250	0	500	250	0	250	0	500
	Community Buildings	100	400	200	0	700	0	0	0	0	0
	Weekly Mkts	0	0	0	0	0	0	0	0	0	0
	Permanent Mkts	200	0	100	0	300	0	0	0	0	0
	Temples/ place of workship	200	0	200	0	400	0	0	0	0	0
	Others or agriculture land	0	0	0	4499	4499	0	0	0	3480	3480
	Ground total					7251					4832

3.5 SOCIO ECONOMIC AND LITERACY PROFILE

Land holdings: The area under the project is cultivated by small and marginal farmers. Almost 70 percent of the farmers fall under this category.

Poor economic conditions of farmers: The general socio economic condition of the farmers in this area is quite poor. They cannot use necessary agriculture inputs in a timely fashion due to financial constraints which adversely affects the crop yield.

Village wise household, total population and schedule caste population has been worked out from the census book and is tabulated in **table 15.** The literacy rate of micro watershed wise distribution is also exhibited in **Table 16**.

3.5.1 Demographic Status

Table 15. Demographic Status/ Population Pattern

Sr. No.	Name of the Micro watershed	Name of villages	Total no. of houses	Total Population			SC			
				Male	Female	Total	Male	Female	Total	%age
1	Ransika	Buraka	123	440	388	828	63	73	136	16.4
2	Ransika	Ransika	499	1944	1719	3663	57	45	102	2.8
3	Ransika	Babupur	196	762	667	1429	0	0	0	0.0
4	Lakhnaka	Dhiranka	348	1293	1184	2477	75	59	134	5.4
5	Lakhnaka	Lakhnaka	525	1936	1783	3719	37	45	82	2.2
6	Lakhnaka	Kukarchati	138	508	415	923	0	0	0	0.0
7	Lakhnaka	Paharpur	210	720	646	1366	0	0	0	0.0
8	Malai	Jalalpur	435	1518	1332	2850	17	17	34	1.2
9	Malai	Bhimseeka	291	1118	1000	2118	24	15	39	1.8
10	Malai	Dhakalpur	220	794	748	1542	42	28	70	4.5
11	Malai	Malai	1163	4192	3798	7990	41	39	80	1.0
12	Gohpur	Pachnaka	410	1665	1553	3218	16	23	39	1.2
13	Gohpur	Gohpur	331	1273	1131	2404	86	66	152	6.3
14	Gohpur	Andhrola	433	1769	1514	3283	16	11	27	0.8
15	Guraksar	Guraksar	798	2818	2561	5379	100	92	192	3.6
16	Guraksar	Mohdamka	210	732	686	1418	0	0	0	0.0
17	Rupraka	Rupraka	1752	6651	6092	12743	99	102	201	1.6
18	Khilluka	Khilluka	644	2097	1833	3930	41	27	68	1.7
19	Khilluka	Jarari	288	1051	1015	2066	7	7	14	0.7
20	Khilluka	Bhodpur	151	542	452	994	0	0	0	0.0

Sr. No.	Name of the Micro watershed	Name of villages	Total no. of houses	Total Population			SC			
				Male	Female	Total	Male	Female	Total	%age
21	Tonka	Ghurawali	629	2364	2144	4508	44	37	81	1.8
22	Tonka	Tonka	173	750	671	1421	3	2	5	0.4
23	Utawar	Utawar	2391	9181	8469	17650	151	129	280	1.6
		Total	**12358**	**46118**	**41801**	**87919**	**919**	**817**	**1736**	**2.0**

(Source- District Census 2011)

Table16. Village wise Literacy Rate in Utawar Watershed (IWMP I)

Sr.No.	Name of the Micro watershed	Name of villages	Total population	Literacy					
				Total Literates	% age	Male	% age	Female	% age
1	Ransika	Buraka	828	542	65.46	349	64.39	193	35.61
2	Ransika	Ransika	3663	1462	39.91	1073	73.39	389	26.61
3	Ransika	Babupur	1429	636	44.51	455	71.54	181	28.46
4	Lakhnaka	Dhiranka	2477	983	39.69	757	77.01	226	22.99
5	Lakhnaka	Lakhnaka	3719	1335	35.90	959	71.84	376	28.16
6	Lakhnaka	Kukarchati	923	330	35.75	258	78.18	72	21.82
7	Lakhnaka	Paharpur	1366	568	41.58	409	72.01	159	27.99
8	Malai	Jalalpur	2850	908	31.86	707	77.86	201	22.14
9	Malai	Bhimseeka	2118	935	44.15	685	73.26	250	26.74
10	Malai	Dhakalpur	1542	743	48.18	520	69.99	223	30.01
11	Malai	Malai	7990	3053	38.21	2228	72.98	825	27.02
12	Gohpur	Pachnaka	3218	1494	46.43	984	65.86	510	34.14
13	Gohpur	Gohpur	2404	901	37.48	700	77.69	201	22.31
14	Gohpur	Andhrola	3283	1364	41.55	981	71.92	383	28.08

15	Guraksar	Guraksar	5379	2162	40.19	1467	67.85	695	32.15
16	Guraksar	Mohdamka	1418	604	42.60	441	73.01	163	26.99
17	Rupraka	Rupraka	12743	4920	38.61	3542	71.99	1378	28.01
18	Khilluka	Khilluka	3930	1161	29.54	891	76.74	270	23.26
19	Khilluka	Jarari	2066	764	36.98	520	68.06	244	31.94
20	Khilluka	Bhodpur	994	410	41.25	290	70.73	120	29.27
21	Tonka	Ghurawali	4508	1735	38.49	1270	73.20	465	26.80
22	Tonka	Tonka	1421	593	41.73	429	72.34	164	27.66
23	Utawar	Utawar	17650	4829	27.36	3569	73.91	1260	26.09
		Total	**87919**	**32432**	**36.89**	**23484**	**72.41**	**8948**	**27.59**

(Source- District Census- 2011)

Table 17. EMPLOYMENT STATUS

Sr.No.	Name of Micro Watersheds	Name of villages	Schedule caste		Cultivators		Agricultural labourers		Household industry workers		Other workers	
			Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1	Ransika	Buraka	63	73	103	2	0	0	0	0	39	3
2	Ransika	Ransika	57	45	331	71	26	0	14	0	321	13
3	Ransika	Babupur	0	0	100	42	21	5	1	0	121	5
4	Lakhnaka	Dhiranka	75	59	219	12	50	2	3	0	133	1
5	Lakhnaka	Lakhnaka	37	45	267	72	57	10	19	8	269	17
6	Lakhnaka	Kukarchati	0	0	31	17	4	0	0	1	68	5
7	Lakhnaka	Paharpur	0	0	1	0	135	2	1	0	64	1
8	Malai	Jalalpur	17	17	195	63	125	74	14	6	115	20
9	Malai	Bhimseeka	24	15	111	10	27	0	25	0	255	8
10	Malai	Dhakalpur	42	28	88	0	12	3	2	0	173	14
11	Malai	Malai	41	39	329	12	225	5	21	4	804	37
12	Gohpur	Pachnaka	16	23	111	19	32	1	3	0	408	99

13	Gohpur	Gohpur	86	66	115	65	7	4	7	2	233	15
14	Gohpur	Andhrola	16	11	129	17	8	2	1	0	348	44
15	Guraksar	Guraksar	100	92	354	22	114	20	14	2	410	13
16	Guraksar	Mohdamka	0	0	155	4	0	0	0	0	128	4
17	Rupraka	Rupraka	99	102	302	30	76	8	30	1	939	26
18	Khilluka	Khilluka	41	27	286	14	144	7	18	1	307	157
19	Khilluka	Jarari	7	7	114	61	26	10	14	29	106	38
20	Khilluka	Bhodpur	0	0	133	74	5	2	4	0	22	13
21	Tonka	Ghurawali	44	37	253	3	23	0	2	0	227	9
22	Tonka	Tonka	3	2	69	30	8	0	13	1	82	3
23	Utawar	Utawar	151	129	1370	158	502	237	45	2	1174	132
		Total	**919**	**817**	**5166**	**798**	**1627**	**392**	**251**	**57**	**6746**	**677**

Source: Census 2011

3.5.2 MIGRATION PATTERN

The major reason for migration is lack of employment opportunities, small uneconomical holding, and lack of fodder availability in summer etc. The village wise migration, period, reason for migration and probe able income generation has been compiled and shown in **Table 18.**

Table 18. Migration Pattern in Utawar Watershed (IWMP I)

S.No.	Name of the Micro watersheds	Name of Villages	Total population	No. of persons migrating	No. of days per year of migration	Main reason for migration	Income during migration /person
1	Ranshika	Buraka	1980	100	2 to 3months	Job opportunity/ Agri. Economy poor economy due to low ways /better employment opt. outside	10000 to 12000
		Ranshika	3663	220			
		Babupur	1429	90			
2	Lakhnaka	Dhiranki	2477	175			

		Lakhnaka	3719	225		the native place	
		Kukarchati	923	50			
		Paharpur	1366	85			
3	Malai	Jalalpur	2850	170			
		Bhimseeka	2118	148			
		Dhakalpur	1542	123			
		Malai	7990	480			
4	Gohpur	Panchnaka	3218	190			
		Gohpur	2404	144			
		Andhrola	3283	230			
5	Guraksar	Guraksar	5379	322			
		Mohdamka	1418	114			
6	Rupraka	Rupraka	12743	765			
7	Khilluka	Khilluka	3930	200			
		Jarai	2066	125			
		Bhodpur	994	80			
8	Tonka	Ghurawali	4508	270			
		Tonka	1421	114			
9	Uttawar	Uttawar	17650	880			

POVERTY: The distribution of the BPL and their percentage is presented in table 19.

Table 19. BPL Pattern

S.No.	Name of the Micro watersheds	Name of villages	Total Houses	Total Household -BPL	% of BPL HH
1	Ranshika	Buraka	293	105	35.84
		Ranshika	499	270	54.10
		Babupur	196	73	37.24

2	Lakhnaka	Dhiranki	348	71	20.40
		Lakhnaka	525	201	38.28
		Kukarchati	138	40	28.98
		Paharpur	210	64	30.48
3	Malai	Jalalpur	435	186	42.76
		Bhimseeka	291	83	28.52
		Dhakalpur	220	93	42.27
		Malai	1163	489	42.05
4	Gohpur	Panchnaka	410	22	5.36
		Gohpur	331	86	25.98
		Andhrola	433	111	25.63
5	Guraksar	Guraksar	798	182	22.81
		Mohdamka	210	94	44.76
6	Rupraka	Rupraka	1752	226	12.90
7	Khilluka	Khilluka	644	219	34.00
		Jarai	288	201	69.79
		Bhodpur	191	91	33.77
8	Tonka	Ghurawali	629	131	20.83
		Tonka	173	28	16.18
9	Uttawar	Uttawar	2391	586	24.50

(Source: District Administration Palwal, Haryana)

INFRASTRUCTURE DETAILS

All the villages are well connected by pucca road and primary or middle school exists in all villages. Health facility is available in villages or nearby Health Centers. The village wise details of infrastructure are shown in **Table 20** and the facilities/ household assets in the villages under watershed is shown in **Table 21**.

Table 20. Village Infrastructure

S.No.	Name of the Micro watersheds	Name of villages	Bank Y/N	Post office Y/N	School primary/High/ Sr. Sec	Milk Collection Center Y/N	Pucca Reads to Village Y/N	Health Facility Govt./ private	Veterinary Facility Y/N
1	Ranshika	Buraka	N	N	1, 1,0	N	Y	N	Y
		Ranshika	N	N	1,1,0	N	Y	N	Y
		Babupur	N	N	1,1,0	N	Y	N	N
2	Lakhnaka	Dhiranki	N	N	2,1,0	N	Y	N	N
		Lakhnaka	N	N	1,1,0	Y	Y	N	Y
		Kukarchati	N	N	1,0,0	N	Y	N	N
		Paharpur	N	N	1,0,0	N	Y	N	N
3	Malai	Jalalpur	N	N	1,1,0	N	Y	N	N
		Bhimseeka	N	N	1,1,0	N	Y	N	N
		Dhakalpur	N	N	1,1,0	N	Y	N	N
		Malai	Y	Y	5,1,1	Y	Y	Y	Y
4	Gohpur	Panchnaka	N	N	2,1,0	N	Y	N	N
		Gohpur	N	N	1,2,0	N	Y	Y	Y
		Andhrola	N	N	2,0,0	N	Y	Y	N
5	Guraksar	Guraksar	N	N	3,1,0	Y	Y	N	Y
		Mohdamka	N	N	1,1,0	N	Y	N	N
6	Rupraka	Rupraka	Y	Y	4,1,1	Y	Y	Y	Y
7	Khilluka	Khilluka	N	N	1,1,0	N	Y	N	N
		Jarai	N	N	1,0,0	N	Y	N	N
		Bhodpur	N	N	1,0,0	N	Y	N	N
8	Tonka	Ghurawali	N	N	1,1,0	N	Y	Y	Y
		Tonka	N	N	1,1,0	N	Y	N	N
9	Uttawar	Uttawar	Y	Y	5,2,1/poltechnic-1	Y	Y	Y	Y

FACILITIES/ HOUSEHOLD ASSETS

Table 21. Facilities/ Household assets in Utawar Watershed (IWMP I)

S.No.	Name of micro watersheds	Name of Villages	Total no. of House	HH with Safe Latrines	HH with phones		HH with vehicles		HHs with TV sets	HHs with cooking gas	HHs with drinking water	HHs with fridge
					Landline	Mobile	2 wheelers	4 wheelers				
1	Ranshika	Buraka	293	100	10	250	70	10	100	25	293	50
		Ranshika	499	105	20	300	100	22	250	40	499	60
		Babupur	196	70	5	70	24	2	100	12	196	15
2	Lakhnaka	Dhiranki	348	154	15	200	62	12	105	44	348	55
		Lakhnaka	525	313	33	343	201	16	140	56	525	76
		Kukarchati	138	60	3	50	24	2	5	0	138	4
		Paharpur	210	72	5	150	40	4	15	4	210	20
3	Malai	Jalalpur	435	230	32	289	130	5	26	6	435	42
		Bhimseeka	291	172	22	189	105	7	35	7	291	45
		Dhakalpur	220	155	10	177	82	8	85	9	220	47
		Malai	1163	442	39	804	442	30	456	80	1163	213
4	Gohpur	Panchnaka	410	225	14	310	80	9	112	35	410	45
		Gohpur	331	102	7	243	65	8	98	23	331	56
		Andhrola	433	233	9	236	157	12	96	12	433	45
5	Guraksar	Guraksar	798	412	15	442	397	16	342	14	798	86
		Mohdamka	210	102	3	65	87	9	87	9	210	34
6	Rupraka	Rupraka	1752	864	42	933	872	32	873	105	1752	277
7	Khilluka	Khilluka	644	388	12	400	360	11	234	34	644	67
		Jarai	288	177	0	122	60	0	15	0	288	5
		Bhodpur	191	72	0	55	12	0	3	0	191	0
8	Tonka	Ghurawali	629	355	11	402	280	15	200	25	629	23
		Tonka	173	70	0	100	42	2	40	4	173	8
9	Uttawar	Uttawar	2391	1544	33	1780	1033	43	700	55	2391	260

3.5.3 LIVELIHOOD PATTERN: The livelihood from agriculture, animal husbandry, casual labour and others in the micro watershed (village wise) is shown in table 22.There is no major income from the common property resource to the individuals.

Table 22. Per capita (Household) income Utawar Watershed (IWMP I)

S.No.	Name of the Micro watersheds	Name of Villages	Agriculture in Rs. P.A	Animal Husbandry in Rs. P.A	Casual labours in Rs. P.A	Others in Rs. P.A	Total in Rs. P.A
1	Ranshika	Buraka	20478	7372	7372	4096	39317
		Ranshika	24048	10461	8657	4810	47976
		Babupur	22959	8265	6735	3061	41020
2	Lakhnaka	Dhiranki	14655	5172	5172	2155	27155
		Lakhnaka	20000	6857	4571	2143	33571
		Kukarchati	27174	6522	6957	4348	45000
		Paharpur	22143	6429	5714	3571	37857
3	Malai	Jalalpur	15862	6724	3448	2586	28621
		Bhimseeka	12887	4639	3093	2320	22938
		Dhakalpur	19773	6136	4091	3068	33068
		Malai	12898	3869	3095	1935	21797
4	Gohpur	Panchnaka	15000	7683	4390	2744	29817
		Gohpur	19486	9517	5438	3399	37840
		Andhrola	12125	5196	3464	2598	23383

5	Guraksar	Guraksar	16917	4511	3008	2820	27256
		Mohdamka	15000	4286	2857	3571	25714
6	Rupraka	Rupraka	12842	3596	2397	2140	20976
7	Khilluka	Khilluka	17236	4193	3727	2329	27484
		Jarai	11979	4688	4167	3125	23958
		Bhodpur	19868	7450	7947	7450	42715
8	Tonka	Ghurawali	18601	4293	4388	1669	28951
		Tonka	30347	7803	6936	6936	52023
9	Uttawar	Uttawar	12585	3651	2258	1568	20063
		Average	**18037**	**6057**	**4778**	**3237**	**32109**

Source: Base Line Survey

3.5.4 Comparative Status of crop Productivity

Three major crops namely Wheat, Mustard and Bajra are sown in Watershed villages. Though main crops grown in this area is Wheat, Mustard and Bajra. Compared to rest of the district and the state, the average yield of these crops is quite low.

3.6 REASONS FOR LOW PRODUCTIVITY

- Full dependence on rain Irregular and erratic rainfall: there is long span between two subsequent rainfalls in the area.
- Low organic carbon content.
- Poor phosphorous and medium potash nutrients availability.
- Lack of assured irrigation facility.
- Acceptance of hybrid/ high yielding varieties is very low.
- Sudden change in climate of the area.

- Essential micro- nutrient deficiency in the soil.
- Dependence on monsoon.
- Improper use of fertilizer per unit cropped area.
- Lack of economic condition of farmers.
- Lack of good quality of seeds and fertilizer.
- Lack of post harvesting facilities such as storage and marketing.

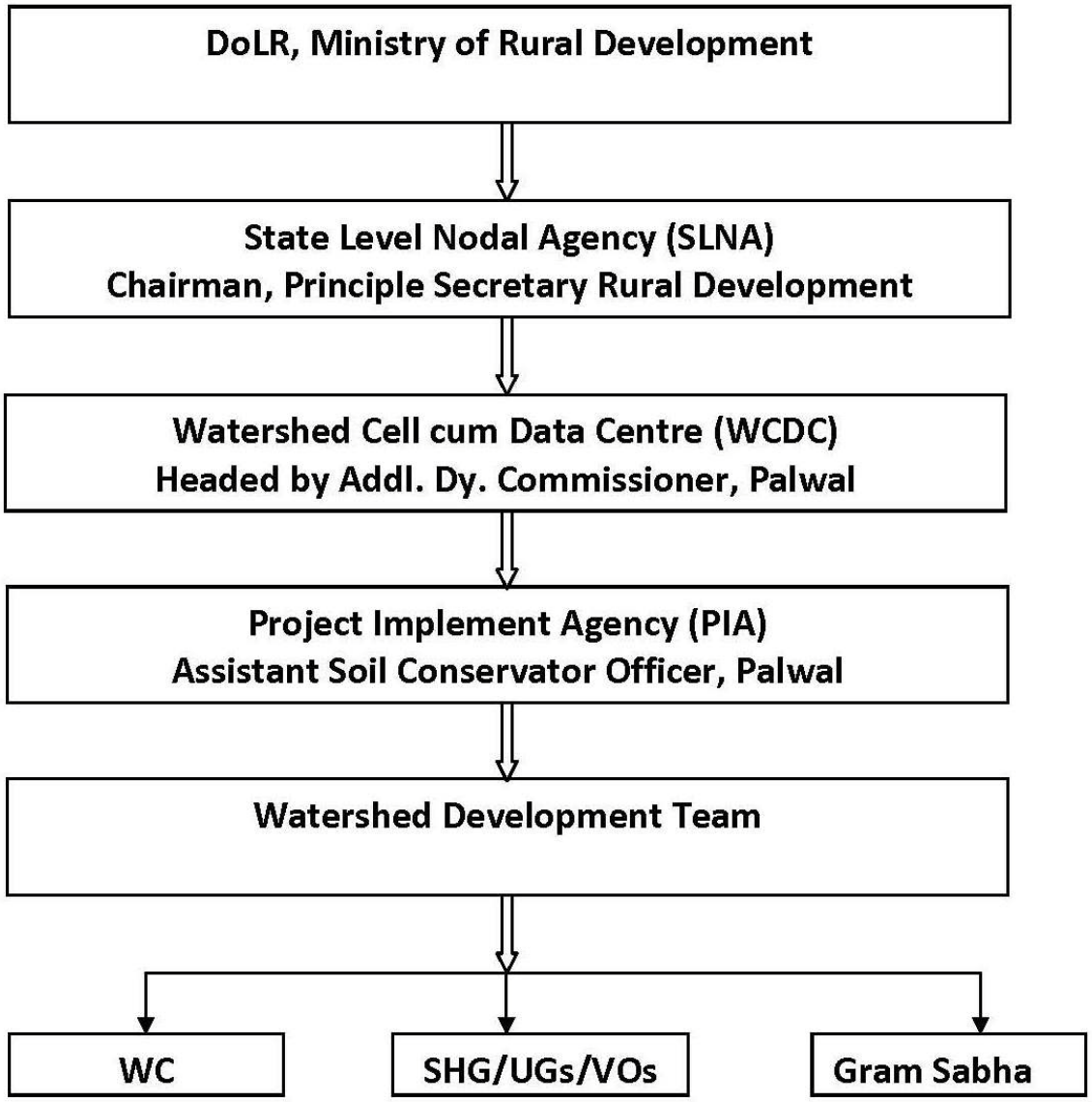
CHAPTER-4

PROJECT MANAGEMENT AGENCIES

4.1 INSTITUTIONAL ARRANGEMENT

Institutions play a major role in managing the projects. Realizing the importance of Community Participation, Decentralized Participatory Rural Approach has been adopted for Watershed Management. Following decentralization and to achieve the objectives, there is a dire need for establishment of Institutional set up from National to Village Level (Micro Watershed Level), including cluster (Watershed Level) and district level. These institutions need to be oriented from time to time and also empowered so that they take up the assigned tasks and work as per their responsibilities from the start of the program to effective management of Project. Considering the prevalent circumstances, these institutions should take decisions at their respective level. The involvement and participation of beneficiaries and other stakeholders is desired to be encouraged right from preparatory and the planning phase.

The institutional set up is given below:


DoLR, Ministry of Rural Development
State Level Nodal Agency (SLNA)
Chairman, Principle Secretary Rural Development
Watershed Cell cum Data Centre (WCDC)
Headed by Addl. Dy. Commissioner, Palwal
Project Implement Agency (PIA)
Assistant Soil Conservator Officer, Palwal
Watershed Development Team
WC
SHG/UGs/VOs
Gram Sabha

4.2 STATE LEVEL NODAL AGENCY, HARYANA

State Level Nodal Agency (SLNA) is headed by Chief Executive Officer and supported by Technical Experts is completely functional. The regular meetings with PIA and other stake holders are held to provide necessary guidance as per the revised, common guidelines, 2011. The main functions of SLNA are:

- ❖ To implement the approved perspective and strategy plan of watershed development for the state.
- ❖ Acts as Nodal Agency at State Level for appraisal and clearance.
- ❖ To establish and maintain a State Level data cell from the funds sanctioned to the State and connect it online with the National Level Data Centre.
- ❖ To provide technical support to Watershed Cell cum Data Centre throughout the state.
- ❖ To approve a list of independent institutions for capacity building of various stakeholders within the state and work out the overall capacity building strategy in consultation with NRAA/Nodal Ministry.
- ❖ To approve project implementing agencies identified/selected by WCDC/District Level Committee by adopting appropriate objective selection criteria and transparent systems.
- ❖ To establish monitoring, evaluation and learning systems at various levels (Internal and external/independent system).
- ❖ To ensure regular and quality online monitoring of watershed projects in the State in association with Nodal Agency at the Central Level and securing feedback by developing partnerships with independent and capable agencies.

4.3 WATERSHED CELL CUM DATA CENTRE, PALWAL

WCDC has been notified by SLNA and the same has been constituted. The team comprises of 3 to 4 subject matter specialists on Agriculture, Water Management, Social Mobilization and Management & Accounts. WCDC is be headed by Deputy Commissioner and Additional Deputy Commissioner has been designated as Project Manager under IWMP. The WCDC members comprise of Technical Expert, Computer Operator and Accountant. As per guideline 3 to 6 full time staff

(3 in district with less than 25000 ha project area and 6 in districts with more than 25000 ha project area) would assist the Project Manager. The Project Manager will prepare well defined annual goals against which the performance will be monitored. The WCDC will be financially supported by the DoLR after review of available staff, infrastructure and actual requirement.

Organization of WCDC and its Objective

The primary objective is successful implementation of watershed programme. The organization bears the responsibility to assist and facilitate PIA from time to time. The broad functions of WCDC are as under:

- Providing technical support in planning and implementation of the project.
- Facilitation in preparation of Annual Action Plan.
- Monitoring and of project activities.
- Co-ordination with allied departments.
- Submission of various reports to SLNA.

4.4 Project Implementation Agency

The project Implementing Agencies (PIA), ASCO Palwal is selected by the State Level Nodal Agency (SLNA) for Integrated Watershed Management Programme (IWMP) in Haryana. In the district Palwal, where the area of development is 25500 ha, a separate dedicated unit, called the Watershed Cell cum Data Centre has been established which will oversee the implementation of watershed programme. The PIA is responsible for implementation of watershed project. Soils and Water Conservation Department, Palwal will guide with its. He has a vast experience in implementing various watershed development Projects.

PIA will put dedicated watershed development team and will provide necessary technical guidance to the Gram Sabha /Watershed Committee for implementation of development plans for the watershed projects through Participatory Rural Appraisal Exercise.

PIA will also undertake:

a) Community Organization,
b) Trainings for the village communities,
c) Supervise Watershed Development Activities,
d) Inspect & authenticate project accounts,
e) Monitor & review the overall project implementation,
f) Set up institutional arrangements for post project operations and
g) Maintenance and further development of the assets created during the project period.

Table 1. PIA/ Project Implementing Agency

S.No.	Name of the Project	Details of PIA	
1	Utawar Watershed (IWMP-I)	i) Type of organization	Government
		ii) Name of organization	Department of Agriculture, Haryana
		iii) Designation & Address	ASCO, Palwal
		iv) Telephone	09896191440
		v) Fax	-
		vi) E-mail	ascopalwal2009@gmail.com

The PIA is well competent to effectively manage this project and has a good rapport with the village community. The watershed committee members are giving them positive response in the preparatory phase. The overall responsibility of the PIA would be to oversee the project progresses well and to provide technical knowhow as when required. PIA has qualified and highly experienced staff to accomplish this task and take this project forward and attain to a logical conclusion. PIA will be assisted by the Watershed Development Team.

4.4.1 Monitoring Level Staff at PIA Head Office

The highly experienced staff is engaged in the monitoring the project. The technical guidance to field staff from time to time is being provided. Meetings are being periodically held by head office with officials from the Palwal district to apprise themselves of the status of ongoing project.

4.5 Watershed Development Team

The watershed development team (WDT) is an integral part of the PIA. WDT would consist of subject specialists such as Agriculture, Horticulture, Soil & Water Management and Forest. One woman member with experience in Social mobilization is also included in WDT. Assistant Soil Conservation Officer would be team leader of the WDTs. Team Leader will coordinate with other WDT members for smooth implementation of the project. One member of the WDT will be departmental official of the rank ADO (Soil Conservation)/ ADO (Agriculture) who will also be responsible for disbursement of funds along with Secretary Watershed Committee.

WDT will guide the watershed committee in the formulation of watershed action plan. An indicative list of the roles and responsibilities of the WDT would include among others, the following.

a) Constitution of Watershed Committee and its functioning,
b) Organizing and strengthening User groups, Self Help Groups,
c) Mobilizing women to ensure that the perspectives and interests of women are adequately reflected in the watershed action plan
d) Conducting Training and Capacity Building,
e) Common property resource management and equitable sharing
f) Preparing detailed resource development plan including Soil & Water Conservation,
g) Undertake engineering surveys,
h) Prepare engineering drawings and cost estimate for structures to be built.
i) Monitoring, checking, assessing, undertaking physical verification and measurements of the work done

j) Facilitating the development of livelihood opportunities for the landless

k) Maintaining project accounts

l) Arranging physical, financial and social audit of the work undertaken

m) Setting up suitable arrangements for post- project operation, maintenance and future development of the assets created during the project period.

4.6 WATERSHED COMMITTEE DETAILS

The process of formation of watershed committees of all villages has been completed and watershed committees have been formed in all villages. The representation on these committees consists of members from- SC, landless, women and members from self help groups and user groups. The committees would be imparted training for smooth management of the activities related to watershed.

Their representation of various groups is as under:

- Minimum of 50% members from SHGs and UGs, SCs, women and landless.
- One member from Watershed Development Team, especially women member (subject matter specialist in Social Science).

The Govt. of Haryana vide department memo No. PO (IWMP)-2012/1479 dated 05.03.2012 has decided to include the following members as members of the Watershed Committees.

- All alive ex-Sarpanches of concerned Gram Panchayats,
- Concerned member of Panchayat Samiti,
- Concerned member of Zila Parishad,

One of the members of Watershed Committees is nominated as Watershed Secretary to perform the following duties:

- ❖ Convening meetings of Watershed Committee, Gram Sabha,
- ❖ Maintaining all records and proceedings of the meetings.
- ❖ Follow up action on all decisions taken in the meetings.
- ❖ Ensuring people's participation.

4.6.1 Formation of Watershed Committees (WC)

The watershed committee has been constituted as per the guidelines para 6.3 (44) after convening a meeting of Gram Sabha. The schedule of the meeting was circulated by the Additional Deputy Commissioner well in advance. The watershed committees were constituted in each village as detailed in **(Table 2).**

Table 2. Watershed Committees (WC) Details

Name of the Micro watersheds	Name of village	Name of president	Name of Secretary	Name of Members
Ranshika	Buraka	Kharun Nisha	Mohmad. Sahun	Jakria,Noor Nisha, Salma, Katula, Asfak, Sarif, Moju, Isab,Ishwar, Jarina ,Amarjeet,Mubin, Smt. Akbari.
	Ranshika	Moh. Rafik	Deen Mohmad	Raju, Habib,Wayra,Roshni, Sher Mohmad, Sahroon, Haji Sehru, Sohan Lal, Amarjeet, Chetram, Kallu, Sahi Ram, Ass Mohmad.
	Babupur	Nasiya	Sadam Hussan	Nijarvi, Kharuna, Moharkhan, Isub, Safikhan, Ayub, Fajri, Noor Mohmad, Israil, Sahbuddin, Bassan, Amarjeet, Safi Mohmad
Lakhnaka	Dhiranki	Jameela	Musa Khan	Amina, Ilyash, Rabeena, Abdul Rahman, Lakhmi Chand, Laxman, Hassan Mohmad, Kanti Prasad, Ajeem, Mubina, Jikir Hussan,Mubeen Smt. Akbari
	Lakhnaka	Moh. Isha Khan	Sajid	Kishan, Anita, Jamsida, Rijwan, Hakam, Susil Kumar, Jakhir Hussan, Sahabuddin, Kanti Prasad, Subeydar, Sahabu, Sarla, Isak
	Kukarchati	Ass Mohmad	Mustak	Rasid, Mudin, Barkati, Anish, Wahid, Ahmed, Ali Mohmad, Bashir, Amarjeet, Mubeen, Smt. Akbari, Abdul Rujja Asmeena
	Paharpur	Abida	Jakhir	Ratiman, Sabnam, Sahid, Jahir, Karim, Ajruddin, Maryam, Ujnavi, Amarjeet, Rasidan, Sakkir, Kaleem, Smt. Akbari
Malai	Jalalpur	Mahram	Aamin	Sajja, Akhtar Hussan, Sabbir, Aamin, Ass Mohmad, Ram Kishan, Jaan Mohmad, Jayda, Amarjeet, Hafizan, Noor Mohmad, Bassi, Subeydar
	Bhimseeka	Rahmat Khan	Muswar Khan	Hassan Mohmad, Ajruddin, Rajjo, Sabbir, Ass Mohmad,Sahidan, Ballu, Amarjeet, Mubina, Ali Mohmad, Subeydar, Sahabuddin
	Dhakalpur	Jatuni	Tahir	Jaan Mohmad, Aasini, Amruddin, Daya Ram, Alim, Kabir, Anish,Saripan,

				Amarjeet, Hanif, Sahabuddin, Srajina, Assu
	Malai	Khurshidan	Harun	Dayawati, Rasid, Rustam, Safid Khan, Ass Mohmad, Nannu, Deenu, Rohsan, Kanti Prasad, Juber, Ikbal, Bassi, Asmina
Gohpur	Panchnaka			
	Gohpur	Shabuddin	Mubarik	Khatuni, Rohsan, Jakhir, Ramchand, Bijender singh, Suresh, Alam, Idrish, Amarjeet, Ganga Devi, Majeed, Farida, Smt. Akbari
	Andhrola	Fatima	Isab	Rahmati, Idrish, Rahmat, Karim Baksh,Kaseem, Alijaan, Abdula, Mahender,Kanti Prasad , Bachkari, Abdul Hanif, Tayab, Smt. Akbari
Guraksar	Guraksar	Ismina	Mustak	Tahir, Islami, Hussan, Sher Mohmad, Haneef, Geeta, Ass Mohmad, Jamila, Kanti Prasad, Kavita, Aman Khan, Tayab, Smt. Akbari
	Mohdamka	Aas Mohmad	Sahid	Akhtar, Islami, Khatuni, Rustam, Abdul, Asgar, Subbo, Mahboob, Kanti Prasad, Asmina, Nasroo, Tayab, Smt. Akbari
Rupraka	Rupraka	Abdul Karim	Sher Singh	Amina, Khariff, Abdul Kayam, Niyaz Mohmad, Aktari, Harun, Lillu, Sirajuddin, Amarjeet, Aslam, Imran, sherbi, Smt. Akbari
Khilluka	Khilluka	Hafizan	Bhuran	Idrish, Anisha, Asru, Ayub, Rahmuddin, Mubina, Lagan Sahha, Ram Singh, Najmin, Israil, Farida, Smt. Akbari
	Jarai	Kamruddin	Mubarik	Maina, Aysha, Rahman, Raghubeer, Idu, Safi Mohmad, Rahmuddin, Lahru, Kanti Prasad, Akhlak, Ilyash, Asri, Smt. Akbari
	Bhodpur	Kamruddin	Mubarik	Maina, Aysha, Rahman, Raghubeer, Idu, Safi Mohmad, Rahmuddin, Lahru, Kanti Prasad, Akhlak, Ilyash, Asri, Smt. Akbari
Tonka	Ghurawali	Rahisan	Jalaluddin	Sherbi, Abdula, Ayub, Sahdev, Kanti Prasad, Ratan Lal, Chav Khan, Allha Din, Umer Mohmad, Umed, Sahabuddin, Hanif Manju
	Tonka	Haleema	Parwaj Aslam	Farhana, Isab, Mahmud, Amin, Resham, Firoj, Rookdin, Jivan, Kanti Prasad, Hanif, Sarif, Dipawali, Sarfudin
Uttawar	Uttawar	Subani	Moh. Afsar	Sehra, Assu, Hassan, Ubhan, Ikbal, Rupa, Samsu, Hamid, Amarjeet, Samina, Dinnu, Maksoodan, Sahabu

As per the Government decision, Sarpanch of the village is the chairman of the watershed committee. The Secretary of the Watershed Committee has been appointed by the Watershed Committee in the meeting of Gram Sabha. The Secretary will be paid honorarium and would be independent from the functioning of Panchayat Secretary. The secretary would be dedicated in the project activities and would take care of the watershed supervision and would be fully responsible for organizing the meeting and maintenance of records. The main responsibilities of secretary are as under:

- Convening the meeting and recording the minutes of WC meeting and will be responsible for follow up the decision taken by the WC Committee.
- The secretary will be responsible for financial transactions of the project and will sign the cheques with WDT nominee on the behalf of WC.
- He will motivate the villagers for voluntary contribution and ensure equitable distribution of resources.

4.7 INSTITUTIONAL SETUP AT WATERSHED LEVEL

4.7.1 Self Help Groups

The formation of the self help group in all the villages is underway. It is proposed to form at least 2 self help group in each village. In each village Self Help Groups consisting of 10 to 15 members having common goal are being formed. The members of SHGs would be drawn from very poor families, BPL families, SC families, Land less families, Small and Marginal farmers SHG would be homogeneous in nature and would work together for their socio-economic up-liftment. SHGs need to be imparted. Under the project, each SHGs would be given revolving fund Rs. 25000 each after 6 months of the date of formation. The income generating activities would be identified. For adopting economic activities would depend upon the decision of Self Help Group. Accordingly the Orientation and Trainings for their skill up gradation would be arranged in the project as activity. It is the responsibility of Watershed Committee to form SHGs in their respective villages under the guidance of Watershed Development Team and Project Implementing Agency.

4.7.2 User Groups

The Watershed Committee will constitute user group in the watershed area with the help of the WDT. In each Watershed village, user groups are also being formed. Members of these groups would be the beneficiaries of the Watershed project. User group are formed to manage the activities and also asset created under the programme on the long term basis. These groups would also be homogeneous in nature. User groups shall be given technical support as and when required by Watershed Committee and Watershed Development Team. During the preparatory stage while discussing with the Gram Sabha member it was decided that each group would formulate certain internal rules and have a feeling of ownership with community spirit. The members would be from various categories like landless, small farmer, marginal farmer and large farmer.

CHAPTER- 5

BUDGETING

MICRO WATERSHED WISE/COMPONENTS AND THEIR YEAR WISE PHASING BUDGET UNDER IWMP

IWMP- I UTAWAR WATERSHED

5.1 BUDGETING

The State Level Nodal Agency will distribute funds to WCDC keeping in view the detailed annual action plan of each micro- watershed. The expenditure under the various component of the project will be carried out as per the guidelines. The activity wise allocations of funds as per the provision of budget components have been work out and exhibited in table. 1. The first step in the budgeting is dividing the cost of project into various components as detailed in the revised common guidelines. It would help the PIA in further identifying activities under different components and allocate appropriate funds.

MICRO WATERSHED WISE / COMPONENT WISE PHASING
YEAR WISE BUDGET PHASING UNDER IWMP I

Area in Hectares and Funds in Rs.

Table 1. Activity wise allocation of funds for Project Village

(BUDGET AT A GLANCE)

Name of the project	Project Area	Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
Utawar Watershed (IWMP I)	6551	4832	57984000	Administrative costs	579840	579840	1739520	1739520	1159680	**5798400**
				Monitoring	0	0	0	579840	0	**579840**
				Evaluation	0	144960	144960	144960	144960	**579840**
				Entry point activities	2319360	0	0	0	0	**2319360**
				Institution and capacity building	0	2899200	0	0	0	**2899200**
				Detailed project report	579840	0	0	0	0	**579840**
				Watershed development works	0	4638720	9277440	9857280	8697600	**32471040**
				Livelihood activities for the asset less persons	0	0	1739520	2899200	579840	**5218560**
				Production system and micro enterprises	0	0	1739520	2319360	1739520	**5798400**
				Consolidation phase	0	0	0	0	1739520	**1739520**
				Total	**3479040**	**8262720**	**14640960**	**17540160**	**14061120**	**57984000**
				Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING
YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and
Funds in Rs.

Table 2. PHASING YEAR WISE (Name of the Micro Watershed: Ransika)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
385	4620000	Administrative costs	46200	46200	138600	138600	92400	**462000**
		Monitoring	0	0	0	46200	0	**46200**
		Evaluation	0	11550	11550	11550	11550	**46200**
		Entry point activities	184800	0	0	0	0	**184800**
		Institution and capacity building	0	231000	0	0	0	**231000**
		Detailed project report	46200	0	0	0	0	**46200**
		Watershed development works	0	369600	739200	785400	693000	**2587200**
		Livelihood activities for the asset less persons	0	0	138600	231000	46200	**415800**
		Production system and micro enterprises	0	0	138600	184800	138600	**462000**
		Consolidation phase	0	0	0	0	138600	**138600**
		Total	**277200**	**658350**	**1166550**	**1397550**	**1120350**	**4620000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING

YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and Funds in Rs.

Table 3. PHASING YEAR WISE (Name of the Micro Watershed: Lakhnaka)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
480	5760000	Administrative costs	57600	57600	172800	172800	115200	**576000**
		Monitoring	0	0	0	57600	0	**57600**
		Evaluation	0	14400	14400	14400	14400	**57600**
		Entry point activities	230400	0	0	0	0	**230400**
		Institution and capacity building	0	288000	0	0	0	**288000**
		Detailed project report	57600	0	0	0	0	**57600**
		Watershed development works	0	460800	921600	979200	864000	**3225600**
		Livelihood activities for the asset less persons	0	0	172800	288000	57600	**518400**
		Production system and micro enterprises	0	0	172800	230400	172800	**576000**
		Consolidation phase	0	0	0	0	172800	**172800**
		Total	**345600**	**820800**	**1454400**	**1742400**	**1396800**	**5760000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING

YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and

Funds in Rs.

Table 4. PHASING YEAR WISE (Name of the Micro Watershed: Malai)
(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
732	8784000	Administrative costs	87840	87840	263520	263520	175680	**878400**
		Monitoring	0	0	0	87840	0	**87840**
		Evaluation	0	21960	21960	21960	21960	**87840**
		Entry point activities	351360	0	0	0	0	**351360**
		Institution and capacity building	0	439200	0	0	0	**439200**
		Detailed project report	87840	0	0	0	0	**87840**
		Watershed development works	0	702720	1405440	1493280	1317600	**4919040**
		Livelihood activities for the asset less persons	0	0	263520	439200	87840	**790560**
		Production system and micro enterprises	0	0	263520	351360	263520	**878400**
		Consolidation phase	0	0	0	0	263520	**263520**
		Total	**527040**	**1251720**	**2217960**	**2657160**	**2130120**	**8784000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING
YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and Funds in Rs.

Table 5. PHASING YEAR WISE (Name of the Micro Watershed: Gohpur)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
405	4860000	Administrative costs	48600	48600	145800	145800	97200	**486000**
		Monitoring	0	0	0	48600	0	**48600**
		Evaluation	0	12150	12150	12150	12150	**48600**
		Entry point activities	194400	0	0	0	0	**194400**
		Institution and capacity building	0	243000	0	0	0	**243000**
		Detailed project report	48600	0	0	0	0	**48600**
		Watershed development works	0	388800	777600	826200	729000	**2721600**
		Livelihood activities for the asset less persons	0	0	145800	243000	48600	**437400**
		Production system and micro enterprises	0	0	145800	194400	145800	**486000**
		Consolidation phase	0	0	0	0	145800	**145800**
		Total	**291600**	**692550**	**1227150**	**1470150**	**1178550**	**4860000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING
YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and
Funds in Rs.

Table 6. PHASING YEAR WISE (Name of the Micro Watershed: Guraksar)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
490	5880000	Administrative costs	58800	58800	176400	176400	117600	**588000**
		Monitoring	0	0	0	58800	0	**58800**
		Evaluation	0	14700	14700	14700	14700	**58800**
		Entry point activities	235200	0	0	0	0	**235200**
		Institution and capacity building	0	294000	0	0	0	**294000**
		Detailed project report	58800	0	0	0	0	**58800**
		Watershed development works	0	470400	940800	999600	882000	**3292800**
		Livelihood activities for the asset less persons	0	0	176400	294000	58800	**529200**
		Production system and micro enterprises	0	0	176400	235200	176400	**588000**
		Consolidation phase	0	0	0	0	176400	**176400**
		Total	**352800**	**837900**	**1484700**	**1778700**	**1425900**	**5880000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING
YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and
Funds in Rs.

Table 7. PHASING YEAR WISE (Name of the Micro Watershed: Rupraka)
(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
715	8580000	Administrative costs	85800	85800	257400	257400	171600	**858000**
		Monitoring	0	0	0	85800	0	**85800**
		Evaluation	0	21450	21450	21450	21450	**85800**
		Entry point activities	343200	0	0	0	0	**343200**
		Institution and capacity building	0	429000	0	0	0	**429000**
		Detailed project report	85800	0	0	0	0	**85800**
		Watershed development works	0	686400	1372800	1458600	1287000	**4804800**
		Livelihood activities for the asset less persons	0	0	257400	429000	85800	**772200**
		Production system and micro enterprises	0	0	257400	343200	257400	**858000**
		Consolidation phase	0	0	0	0	257400	**257400**
		Total	**514800**	**1222650**	**2166450**	**2595450**	**2080650**	**8580000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING

YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and Funds in Rs.

Table 8. PHASING YEAR WISE (Name of the Micro Watershed: Khilluka) (BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
451	5412000	Administrative costs	54120	54120	162360	162360	108240	**541200**
		Monitoring	0	0	0	54120	0	**54120**
		Evaluation	0	13530	13530	13530	13530	**54120**
		Entry point activities	216480	0	0	0	0	**216480**
		Institution and capacity building	0	270600	0	0	0	**270600**
		Detailed project report	54120	0	0	0	0	**54120**
		Watershed development works	0	432960	865920	920040	811800	**3030720**
		Livelihood activities for the asset less persons	0	0	162360	270600	54120	**487080**
		Production system and micro enterprises	0	0	162360	216480	162360	**541200**
		Consolidation phase	0	0	0	0	162360	**162360**
		Total	**324720**	**771210**	**1366530**	**1637130**	**1312410**	**5412000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING
YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and Funds in Rs.

Table 9. PHASING YEAR WISE (Name of the Micro Watershed: Tonka)
(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
442	5304000	Administrative costs	53040	53040	159120	159120	106080	**530400**
		Monitoring	0	0	0	53040	0	**53040**
		Evaluation	0	13260	13260	13260	13260	**53040**
		Entry point activities	212160	0	0	0	0	**212160**
		Institution and capacity building	0	265200	0	0	0	**265200**
		Detailed project report	53040	0	0	0	0	**53040**
		Watershed development works	0	424320	848640	901680	795600	**2970240**
		Livelihood activities for the asset less persons	0	0	159120	265200	53040	**477360**
		Production system and micro enterprises	0	0	159120	212160	159120	**530400**
		Consolidation phase	0	0	0	0	159120	**159120**
		Total	**318240**	**755820**	**1339260**	**1604460**	**1286220**	**5304000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING
YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and Funds in Rs.

Table 10. PHASING YEAR WISE (Name of the Micro Watershed: Utawar) (BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
732	8784000	Administrative costs	87840	87840	263520	263520	175680	**878400**
		Monitoring	0	0	0	87840	0	**87840**
		Evaluation	0	21960	21960	21960	21960	**87840**
		Entry point activities	351360	0	0	0	0	**351360**
		Institution and capacity building	0	439200	0	0	0	**439200**
		Detailed project report	87840	0	0	0	0	**87840**
		Watershed development works	0	702720	1405440	1493280	1317600	**4919040**
		Livelihood activities for the asset less persons	0	0	263520	439200	87840	**790560**
		Production system and micro enterprises	0	0	263520	351360	263520	**878400**
		Consolidation phase	0	0	0	0	263520	**263520**
		Total	**527040**	**1251720**	**2217960**	**2657160**	**2130120**	**8784000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

CHAPTER – 6

PREPARATORY PHASES

During the first year, all activities involved by adopting participatory approach and empowerment of local institutions (WC, SHG, and UG). WDT and WAPCOS team assumed the role of facilitator during this phase. In this phase, the main activities are as follows:

6.1 AWARENESS GENERATION AND MOTIVATION FOR PARTICIPATION

Fortunately, due to the implementation of earlier watershed management projects and operation of various ongoing soil and water conservation schemes, there has been regular interaction of the departmental staff with the community. Because of positive result of earlier projects, people are responsive and are looking forward for projects intervention. The need for the soil and water conservation works have emerged due to persistent drought, which the area is facing. However, production system need lot of improvement and hence the need of awareness generation and motivation for collective efforts to face the malady of recurrent floods and draught.

6.1.1 Collection of Base Line Data and Hydrological Data

As explained earlier, baseline data from all possible sources is collected for the purpose of not only future impact assessment but also to design project intervention. Most of this was done at the PPR and DPR stages, which forms integral part of the preparatory phase. In addition, data on rain fall amount and distribution, weather conditions and frequency of floods and drought was compiled at DPR stage.

6.1.2 Formation of Village Level Institutions

It has been decided by the state that project activities shall be implemented throughout the watershed committees (WCs). In collaboration with the department, the village level WCs were formed by holding well-attended meeting in which all settlement and section of the society were represented. Due representation was given to women, landless and BPL families as per norms issued by DoLR.

The self- Help Groups were formed during earlier projects but most of them are inactive and non – functional. These groups shall be revived and new ones were to be formed depending upon willingness of the interest groups. Considering and understanding the type of activities these groups wish to pursue and their capacity building requirements were given importance and duly noted.

6.1.3 Preparation of DPR

PRA exercise and comprehensive data base have been carried out for DPR preparation. Meetings were held at district level, micro- watershed wise and village wise by involving the concerned departments and members of Gram Sabha on this aspect**.** The Draft Project Report was prepared on the basic information generated from primary and secondary sources. This also includes the outcome of participatory rural appraisal and outcome of transect walk and stakeholders' discussions. A list of scope of works that finally emerged was prepared. Based on the technical survey, detailed cost estimates were prepared for components including resource management, entry point activities and production system. A broad frame work for capacity building at all levels as per the guidelines of DoLR was prepared. The livelihood opportunities which emerged from local product and market facility were analyzed and outlines of the same were included. Since the financial provisions were decided according to the area proposed to be covered, these provisions were distributed across project activities. The project activities are sequenced into three phase's namely preparatory phase,

work phase, consolidation and withdrawal phase. So, the activities were segregated in the sequence and explained in detail. Finally the details about budget and its spilt up into annual action plan were also attempted. Various maps using GIS were created likes Base map, Present Land Use, Geo-hydrological, Micro Watershed, Drainage, Contours, Slope, Soil Classification, Land Capability Classification, Ground Water Depth and Quality, Proposed and existing Activities of works. All the works proposed in the DPR are location specific and are as per the local demand and socio- economic conditions of the watersheds.

Strength, Weakness, Opportunities, Threat (SWOT) analysis of IWMP

A critical analysis of main strength of the proposed project, evident weaknesses, opportunities available for successful implementation and scope of achieving set objectives was made. Attention is also paid to possible threat against which sufficient inbuilt safeguards are provided. Such an analysis was done for the project in hand and summaries of observations were made and are mentioned below for the watersheds in Palwal district.

Strengths

- Moderate rain fall
- Strong linkage with national and state level institutes and KGK for capacity building and technical guidance.
- Most families are engaged in animal husbandry activities.
- Availability of drinking water.
- Good response to earlier watershed management programmes.
- Local residents are active in micro enterprises.

Weaknesses

- Erratic rainfall
- Lack of good quality fodder.
- Lack of advanced cattle breed.
- Low level of milk production.
- Lack of knowledge base regarding scientific cattle management.
- Prevalence of soil erosion
- No organized micro enterprises activities.
- Lack of technical skills.

Opportunities

- Rain Water harvesting/recharging for production.
- Promotion of organic farming.
- Promotion of horticultural activities (dry land plants).
- Provide training on dairy farming and other income generating activities.
- Promotion of nursery raising and pasture development.
- There would be horizontal integration and convergence of development programmes being organized and run by govt.

Threats

There are few negative issues that may have adverse effect

- Unreliable rainfall.
- Absence of assured irrigation.
- Lack of cooperation and contribution from local residents.
- Low literacy rate in the project area.

- ❖ Rapid climate change affecting crops.
- ❖ Lack of awareness of Dairy farming as a commercial activity.
- ❖ The area is underlain by marginal ground water.
- ❖ Declining Water Table by use of Ground Water for irrigation.
- ❖ Frequent droughts.

CAPACITY BUILDING- 5%
Rs. 28, 99, 000/-

6.2 Capacity Building

1. Introduction

Watershed development is conceived as a strategy for protecting livelihoods of people inhabiting fragile ecosystems, which over period of time have become subject to multidimensional land degradation. Main stress has been to ensure availability of water for drinking and irrigation to support agro-horti-forestry operation vis-à-vis raise income level and provide adequate employment opportunities for communities living in such areas of concerns. As an intervention Integrated Wasteland Development is nearly 20 years old. The initiatives have been subject to periodic reviews by expert committees with a broader view to improve upon its strategy and components as well as match with the growing socio-ecological requirements

Para 9.VIII of common guidelines necessitate capacity building and training of all functionaries and stakeholders involved watershed programme on a war footing with definite action plan, requisite professionalism and all round competence.

2. Vision

A sincere effort to provide required professionalism and competence to the stakeholders associated with planning and implementation of IWMP in the state. This would include organisation development, human resource development, cooperation and network development and institutional development, all seen as a continuous process enabling functionaries to enhance their knowledge and skills and to develop the required orientation and perspectives thereby becoming more effective in discharging their roles and responsibilities.

3. Need

The term Capacity Development is understood as the development of people, organizations and society capability to manage resources effectively and efficiently in order to realize their own goals on a sustainable basis. In this context, four dimensions have to be distinguished:

- The development of the human resource or personnel development.
- The strengthening of the effectiveness and efficiency of organization or organizational development.
- The strengthening of cooperation between organizations and network development.
- The promotion of institutional frameworks for development.

Further, 47 projects have already been sanctioned in 2011-2012 in the state covering around 248 micro watersheds measuring 179531 hectares of area. The implementation of these new projects under the umbrella of common guidelines is reported to be in the initial stage under preparatory phase. The establishment of desired institutional setup at all levels, required level of awareness for ensuring effectiveness of all institutions and community participation is therefore necessitated for conclusive participation by all.

This also necessitates a comprehensive package to provide appropriate knowledge for speedy implementation of the projects in the state particularly in the districts.

4. Rationale

Para 81 of common guidelines for watershed development lays special emphasis on the following key elements of Capacity building strategy.

- Dedicated & decentralized institutional support & delivery mechanism

- Annual Action Plan for Capacity Building
- Pool of resource persons
- Well prepared training modules and reading materials
- Mechanism for effective monitoring and follow-up.

Keeping in firsthand experience of the state in launching 47 projects under IWMP and current state of planning and implementation under preparatory phase is to primarily prepared and build the capacity of different principal stakeholders of projects to speed up further implementation and also lay a strong foundation for subsequent phases.

5. Objectives

The main objectives of the current action plan for ongoing 13 projects are outlined as follows:-

- Create common understanding on different features and provisions of common guidelines as well as instructions directions issued from time to time by Central and State Governmental agencies.
- Develop proper conceptual understanding about integrated participatory watershed management including other issues such as equity, environmental and social sustainability among all implementing agencies at project and village levels, PRIs and local communities (**KNOWLEDGE**).
- Build necessary and required skills and managerial competence of all stakeholders about planning, implementation and management of various project activities using participatory approach (**SKILLS**).
- Help institutional growth of watershed committees at GP level.
- Strengthening community participation, ensuring positive involvement of communities and improvement of socio economic conditions in watershed areas (**ATTITUDES**).

Table 1. Statement of Targets under Proposed Training Action Plan at Micro Watershed Level to be conducted by WDT members of Palwal District

Sl. No.	Title of Training Programme and Duration	Level of Participants	Total persons	Trainees Per Programme	Number of Programmes
01	District Level Sensitization Workshop for Watershed Committees. **One Day**				
	Palwal	Members of Watershed Committees @ 15 per committee would also include accompanying WDT Members.	570	150-250	2
02	Block Level Functional Programmes for Secretaries of Watershed Committees. **Two Days**				
	Palwal	Secretaries of Village Watershed Committees	38	15-45	1
03	Project Level Sensitization Camps for WC **One Days**				
	Palwal	Members of Watershed Committees @ 15 Persons (Tentative) per WC	570	50	12
04	Village Level Awareness Camps on IWMP at Micro Watershed Level for User Groups **One Day**				
	Palwal	Approximately 50 prospective user groups per micro watershed.	1900	50	38
05	Block Level Functional Programmes for SHGs [Leader, Secretary and Treasurer] under IWMP **One Day**				
	Palwal	Average of at least one SHG per village is taken and 15 persons per self help groups are proposed for training (1 SHG x 15 members x 1 village= 2700].	570	50	11

Note: Training programmes under Sl. No. 01 are proposed to be conducted by HIRD in collaboration with SLNA and WCDCs.

6. Training Methods

A group of selected Watershed Development Team members would be trained on various methods to ensure that they are able to conduct the proposed interventions effectively with the help of some of the following methods.

- Interactive learning.
- Experience Sharing.
- Experimental Learning.
- Presentation of case studies.
- Classroom deliberations.
- Group [structured] exercises and discussions.

7. Tools

- Projectors
- Flip Charts
- Electronic films
- Print Material
- Other IEC material.

8. Resource Persons

8.1. Internal

Around two persons per WDT identified from the initial training activities by HIRD, Nilokheri would be trained on various aspects for designing and conducting the training programmes. It is expected that each WDT members would be required to function as a internal resource person for the proposed training programmes. Technical experts from each WCDC and PIA would also function as facilitators in the proposed training activities.

8.2. External

Further, in order to make the proposed interventions meaningful for achieving the broader objectives efforts would be made to liaison with various experts from district level line departments, agencies and state level institutions including HIRD as per the need of the programme.

9. Fund Requirement

The **approved revised norms for training for PRIs and RD functionaries" by MoRD, GoI in 2010** have been strictly used [for fixed and variable costs].

Table 2. Statement showing funds Requirement for training on IWMP in Haryana (Preparatory Phase – District Level)

Sr. No	Training Programmes for SLNA, WDT, PIA , Field Functionary , WDC member's , SHG & UG organize by HIRD	Total Funds
1	District Level Sensitization Workshop(s) for Watershed Committees	68968
2	Block Level Functional Programmes for Secretaries of Watershed Committees. Two Days	12794
3	Village Level Sensitization Camps for WC One Days	65485
4	Village Level Awareness Camps on IWMP at Micro Watershed Level for Prospective User Groups One Day	84241
5	Block Level Functional Programmes for SHGs [Leader, Secretary and Treasurer] under IWMP One Day	26218
	Total	**257706**

Table 3. Micro Watershed Wise Exposure cum training Visit for SLNA, WDT, PIA , Field Functionary , WDC, SHG & UG Members of IWMP I (Palwal)

S. No.	Target Group	Training Topics	No. of days	Budget per camp	No. of Camps	No. of Participants per camp	Cost for all participants per day	Cost per participant/ per day	Cost per person	Total Budget
1	Self Help Groups- 2 SHGs- micro watershed level	Orientation on IWMP, SHGs cum Exposure Visit	2	18000	5	9	45000	1000	2000	90000
2	User groups from each micro watershed	NRM, Post Project Management etc. – Exposure Visit	2	18000	5	9	45000	1000	2000	90000
3	Sub watershed Level- WDT Members	Part II-Module I to V- Exposure Visit Outside State- Conceptual, Technical, Social, Management of Finance, Monitoring and Evaluation.	4	54000	5	9	67500	1500	6000	270000
4	Sub watershed Level- PIA Members	Exposure Visit- Within Fundamentals of Watershed, Finance Management, Final Report	2	27000	5	9	67500	1500	3000	135000

S. No.	Target Group	Training Topics	No. of days	Budget per camp	No. of Camps	No. of Participants per camp	Cost for all participants per day	Cost per participant/ per day	Cost per person	Total Budget
		on WDP etc								
5	District Level-WDC	Exposure visit to successful watershed/ University.	2	18000	5	9	45000	1000	2000	90000
6	District Level-Line Deptt., WDC	Exposure visit to successful watersheds within state.	2	18000	5	9	45000	1000	2000	90000
7	SLNA and District Level Controlling Officers	Exposure visit to successful watersheds outside state	4	54000	5	9	67500	1500	6000	270000
Total										**1035000**

Table 4. Farmer's / Beneficiaries training camps with Extension Programmes of IWMP I (Palwal)

S. No.	District	No. Micro watersheds	No. of Camps/ Year/ Micro watershed	Total No. of camps per Year	Total No. of camps for 5 Year's	Amount of per Camp	Amount per Micro watershed	Total Budget
1.	Farmer Training Camp in each season	9	2	18	90	12,000	120000	1080000
2.	Propaganda & Documentation (Puppet show, documentary movies show, video-graphy, Photography, wall Painting, Display Board, pamphlets, leaf lets. Etc)	9	2	18	90	5000	50000	450000
3	Contingency charges							76494
	Total							**1606494**

i) **Training Programmes for SLNA, WDT, PIA , Field Functionary , WDC member's , SHG & UG organize by HIRD = 2,57,706/-**

ii) **Micro Watershed Wise Exposure cum training Visit For SLNA, WDT, PIA , Field Functionary , WDC, SHG & UG Members**
= 10, 35,000/-

iii) **Farmer's / Beneficiaries training camps with Extension Program's = 16,06,494/-**

Grand Total = 28,99,200/-

6.2.1. EXPECTED OUTCOME OF CAPACITY BUILDING

- All principal stakeholders would be covered under proposed training interventions by March, 2013.
- The knowledge level of different stakeholders on various provisions of Common Guidelines will increase to a significant level.
- The skill level of the principal stakeholders will be improved in managing watershed projects in consonance with the provisions of common guidelines and state government instructions.
- The programmes will help in ensuring that all stakeholders/agencies/institutions work with positive attitudes in order to utilize the benefit of the projects in fulfilling the objectives set forth.
- Programmes will create a sense of responsible partnership amongst various stakeholders.
- The programmes will also help in further identifying areas for future interventions.
- Improved participation of different stakeholders leading to speedy implementation of watershed development work phase.
- Experiences would help in consolidating other gaps for better planning and management of Capacity Building and Training interventions under new projects in future.

6.3 Entry Point Activities 4%

EPA activities are taken up under the watershed to build rapport with village community at the beginning of the project, generally certain important works which are in urgent demand of the local community are taken up. A group discussion was conducted in the Gram Sabha meeting/watershed committee regarding EPA activities. It was conveyed to the Gram Sabha that an amount of **Rs. 22, 42,080/-** was provided for EPA. The provision of IEC material for community will be met under EPA. The stake holders discussed the various activities which they felt is important but after the discussion the following activities were finalized. The convergence with the other project can also be undertaken.

Table 5. Entry Point Activities in Utawar Watershed (IWMP I)

(Rs. In Lacs)

S. No.	Block	Name of Project	No. of EPAs Identified	No. of EPAs Completed	No. of EPAs in Progress	Name/Nature of EPA	Location	Expenditure Rs. In Lacs
1	Hathin	Uttawar IWMP-I	23	18	---	Retaining Wall	Ranshika	1.13
						Cattle through	Babupur	0.398
						Cattle through	Buraka	0.398
						Cow ghat	Lakhnaka	1.94
						Cattle through	Dhiranki	0.398
						Construction of retaining wall	Malai	2.02
						Cattle through	Malai	1.393
						Cow ghat	Gohpur	1.04
						Construction of Cow ghat	Panchkula	0.38
						Cattle through	Andhrola	0.592
						Cow ghat	Guraskar	0.52
						Construction of Retaining wall	Guraskar	1.83
						Construction of Retaining wall	Rupraka	3.430
						Retaining wall of pond	Khilluka	1.215
						Retaining wall of pond	Jarari	0.920
						Construction of Retaining wall	Ghurawali	1.32
						Open channel	Ghurawali	0.784
						Construction of Retaining wall	Uttawar	3.51
Total								**23.22**

Total project Cost @ 4%= Rs. 23,22,000/-

CHAPTER- 7

WORK PHASE

7.1 WATERSHED DEVELOPMENT WORKS - 56%

The Works identified after the detailed investigation and survey of the Project Area and identified works were discussed with the team of experts comprising of PIA associated with the field officers working in the area, Hydrologist and supported by Experts from Livelihood, Agriculture and Horticulture. Participatory approach has been adopted to identify the activities under the project. The detailed discussions were held with watershed committees and works identified along with villagers after making visits to identified sites. The works mainly relate to soil and water conservation activities like Dug out Pond, Cement Stone Masonry Structures (Inlet & Outlet), Roof Top Rain water Harvesting Structures, Small Earthen Embankments (Common land), land leveling (common land), cattle trough, Water conveyance system, Retaining wall, Plantation & Community Water Storage Tank etc. The proposed project proposals were presented in the Gram Sabha meeting as per the schedule and were approved with certain changes. The works thus identified are given in the attached sheets along with estimates – micro watershed/village wise.

Proper publicity about the proposed project proposal through brochure , pamphlet, wall writing at common place must be carried out in the project areas.

Conservation Measure

Construction of Retaining Wall/Land Leveling

The project area is level to nearly level and needs some protection from the existing channels for which the provisions of retaining wall along banks have been provided in the project area. There are some pockets of undulated areas which restrict to field operations to stabilized agriculture fields/ habitation located along the water bodies. The necessary provision of land leveling has been provided in the project proposals.

Renovation for capacity enhancement and construction of new Ponds

Existing System: There is an acute scarcity of water for livestock as village ponds dry out in summer months. Most ponds are silted up and need desiltation. Some are leaking from sides and water is lost quickly. Most of ponds do not have proper inlets, out lets and ramps for water disposal. There is genuine demand for renovation for capacity enhancement construction of new ponds in the area.

7.2 Proposed Activity: Renovation for capacity increase and construction of new pond. The provision for construction of inlet, outlet, ramp and retaining walls are the basic need by project stakeholders which has been provided. In some villages, the construction of new ponds is proposed, subject to availability of land and funds. In summer months, it is widely held that buffaloes must spend 3 to 4 hours in pond for cooling which save the animal from heat stress. Hence, there was much demand of ponds renovation for increase pondage capacity. Ponds as such are the best source of rainwater conservation and ground water recharge.

Gram Panchayat spend much money on renovation under different schemes but due to paucity of funds, works are taken up in piece meal and main works of protection measures are ignored. The stakeholders gave high priority for the construction of protection measures as lot of water was leaking from sides and cutting of banks by waves and animal intervention to reduce capacity of pond. In most villages, the first priority of the entire community is the construction of

protection measures of the ponds as these are considered sacred due to the presence of historic village temples nearby. Some of the works had been covered under entry point activities. It is also stressed to use the labor component from MGNREGA and material from provision from the IWMP so that maximum amount of rainwater is harvested.

Construction of Open Channels and Under Ground Pipeline (UGPL)

Various pockets have been seen under water-logged conditions. The stake holders have desired the construction of open channel in order to drain the stagnant water to avoid the further degradation of lands. Similarly, there are losses in the conveyance system. The necessary provision of Under Ground Pipe Line has provided to save the water and enhance the irrigated area.

Construction of Rain Water Harvesting System

Run-off capturing and its recycling for irrigation holds the key to stable and sustainable development of rain water agriculture. Based on the successful pilot project results, the provision for the rain water harvesting system has been provided in the project proposals.

Sample estimates are as follows:

7.2.1 Activities under NRM (56%) Micro Watershed Wise (IWMP I Palwal) is given below and the proposed Action Plan/ Treatment Plan map shown in **Annexure X.**

Village wise distribution of 56% developments works under Uttawar Watershed Project (IWMP-1)

Table 1: Name of the Project: IWMP I		Name of watershed Uttawar watershed							Name of village Ranshika	
Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work			Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)	1. Capacity in cum 2. Catchment area 3. Command area		
1	Open channel	Village periphery to stock pond	28 02.499’ 28 02.371’	077 09.041’ 077 08.911’	M	1500	500	11200 20 hect 10 hect.	7.50	To avoid mud and water logging and to enhance irrigation area for crop production
2	Community conveyance system for filling of pond and user group	conveyance system from Garage to mankaki road system (Mainar) and Bambey to fajru(domka)	28 02.201’	077 08.950’	m	2500	300(6”pipe dia’)	11200 20 hect. 10hect/10 farmer	7.50	To provide drinking water to animals bird purpose and irrigation purpose for user group
Total cost									15.00	
Available fund									14.44	
Convergence									0.56	

Table 2: Name of the Project: IWMP I		Name of watershed Uttawar watershed						Name of village Buraka	
Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work		1. Capacity in cum 2. Catchment area 3. Command area	Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)			
1	Water conveyance system	Utawar distributaries to pond	28 02.347’ 28 02.285’	077 13.003 077 12.943’	M	1000	500(8”pipe dia)	5600 10 hect 5 hect.	5.00	Saving of conveyance losses and enhance the irrigation area
2	Community land leveling,field bunding	Kabristan area and panchayat land	28 02.414’	077 09. 990’	Ha	2	0.50	11200 20 hect. 10hect/10 farmer	1.00	To check the soil erosion enhancing water retention capacity.
3	Water Conveyance system link to injection well	East side of village periphery	28 02.554’	077 12.695’	No	1	3.00	-- -- --	3.00	Recharging rain water to improve water quality and increase water table
Total cost									9.00	
Available fund									7.06	
Convergence									1.94	

Table 3: Name of the Project: IWMP I			Name of watershed Uttawar watershed					Name of village Babupur	
Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work		1. Capacity in cum 2. Catchment area 3. Command area	Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)			
1	Covence system for filling of pond	Ladmaki minor to school pond	28 01.800’ 28 01.100’	077 12.211’ 077 11.200’	M	1000	500(8”pipe dia)	5600 10 hect 5 hect.	5.00	To provide drinking water for live stock and recharging ground water table, improve water quality.
Total cost									5.00	
Available fund									4.37	
Convergence									0.63	

Table 4:Name of the Project: IWMP I		Name of watershed Uttawar watershed				Name of village lakhnaka				
Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work		1. Capacity in cum 2. Catchment area 3. Command area	Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)			
1	I. Deepening of pond remolding and construction of ramp /inlet, outlet	Harijan colony khadana wali pond Dargha wali pond	28 00.906' 28 01.200'	077 10.031' 077 10.403'	No	2	7.00	8400 cum 15 hect 7.50hect./10 farmer 16800 30hect 10hect/10 farmer	14.00	Enhance the poundage capacity
	II. Water covence system	Jalalpur Mahatma Gandhi basti to Harijan colony khadana wali pond	28 00.906'	077 10.031'	M	1000	300(6"pipe dia)	---- --- ---	3.00	To provide drinking water to live stock, recharging ground water table.
2	Land leveling * and filed bunding	Panchayat land	28 00.906'	077 10.031'	Ha	7	0.40	11200 20 hect. 10hect/10 farmer	2.80	To check soil and water erosion, enhancing water retention capacity
Total cost									19.80	
Available fund									17.47	
Convergence									2.33	

* **Before executing detail topographic survey and assessment must be carried out before implementation.**

Table 5: Name of the Project: IWMP I			Name of watershed Uttawar watershed						Name of village Dhiranki	
Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work		1. Capacity in cum 2. Catchment area 3. Command area	Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)			
1	Water conveyance system	Kot minor to village pond	28 01.821’ 28 01.701’	077 13.111 077 11.766’	M	1500	300(6”pipe dia)	11200 20 hect. 10hect /10 farmer	4.50	To provide drinking water for live stock and recharging of water table and improve water quality
2	Water conveyance system	Community land and user group	28 01.800’	077 12.211’	M	1000	300(6”pipe dia)	--- --- 15hect/15 farmer	3.00	To irrigate non-irrigated area of crop, increase crop production
Total cost									7.50	
Available fund									5.51	
Convergence									1.99	

Table 6: Name of the Project: IWMP I			Name of watershed Uttawar watershe						Name of village kukarchati
Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work		1. Capacity in cum 2. Catchment area 3. Command area	Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)			
1	Water conveyance system	Ladmaki minor to school pond	28 01.900’ 28 01.307’	077 11.351’ 077 11.620’	M	1200	300 (6”pipe dia)	8400 15 hect. 7.50hect /10 farmer	3.60	filling of pond to provide drinking water for live stock , enhancing recharging capacity
2	Water covence system	Community land and user group	28 01.307’	077 11.620’	M	1000	300 (6”pipe dia)	--- --- 15hect/15 farmer	3.00	To irrigate desert area. To increase crop production.
Total cost									6.60	
Available fund									4.70	
Convergence									1.90	

Table 7: Name of the Project: IWMP I			Name of watershed Uttawar watershed					Name of village Pahadpur	
Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work		1. Capacity in cum 2. Catchment area 3. Command area	Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)			
1	Water conveyance system	Ladmaki minor to village pond And user group	28 02.800’ 28 01.125’	077 11.300’ 077 11.039’	M	2000	300(6”pipe dia)	8400 15 hect. 7.50hect /10 farmer	6.00	Filling of pond to provide drinking water to live stock, enhancing recharging capacity.
Total cost									6.00	
Available fund									4.57	
Convergence									1.43	

Table 8: Name of the Project: IWMP I		Name of watershed Uttawar watershed							Name of village Malai	
Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work		1. Capacity in cum 2. Catchment area 3. Command area	Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)			
1	I. Water conveyance system for filling of pond	Bhimseeka rajwaha to pond near bus stand	28 00.923’ 28 00.293’	077 08.656’ 077 09.646’	M	2000	500 (8” pipe dia)	14100 cum 25 ha 12ha /12 farmer	10.00	To provide drinking water for live stock and enhancing recharging capacity
	II. Water convece system link to pond	Pond to panchayat land	28 00.064’	077 09.995’	M	800	500 (8” pipe dia)	--- 5 ha 5 ha/5 farmer	4.00	To irrigate panchayat dry land and increase crop production
2	Community land leveling * and field bunding	Community land	28 00.064’	077 09.995’	Ha	5	0.50	--- --- ----	2.50	To check soil and water erosion, enhancing water retention capacity
3	Roof rain water recharging system	Govt. senior sec. boys and girls	28 00.373’	077 09. 158’	No	2	3.00	--- ---	6.00	Recharging of rain water to soil increase water table and improve quality of water
Total cost									22.50	
Available fund									21.17	
Convergence									1.33	

*** Before executing detail topographic survey and assessment must be carried out before implementation.**

Table 9: Name of the Project: IWMP I		Name of watershed Uttawar watershed							Name of village Jalalpur
Sr.	Nature of work	Location	Latitude	Longitude	Unit	No. of work	1. Capacity in	Estimate	Objective

No.			N	E		Phy.	Unit cost (Rs.)	cum 2. Catchment area 3. Command area	Cost Rs. In Lacs	
1	Deepening of pond and construction of ramp	Mahatma Gandhi Basti pond	28 01.276’	077 10.055’	No	1	6.00	22400 40 hect. 15hect /15 farmer	6.00	Enhance the poundage capacity
2	Water conveyance system	Malai rajwaha to Aam wali and Mahatma Gandi Basti pond	28 01.131’ 28 01.276’	077 09.401’ 077 10.055’	M	2400	500(8”pipe dia)	28100 50 hect. 20 hect/20 farmer	12.00	Providing drinking water to live stock, recharging ground water table.
Total cost									18.00	
Available fund									14.45	
Convergence									3.55	

Table 10:Name of the Project: IWMP I		Name of watershed Uttawar watershed								Name of village Bhimseeka
Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work		1. Capacity in cum 2. Catchment area 3. Command area	Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)			
1	Water convece system	Bhimseeka canal o village pond and community land user group	28 00.418’ 28 00.400’	077 08.752’ 077 08.863’	M	1500	500(8”pipe dia)	5600 10 hect. 5hect /5 farmer	7.50	To provide water for animals and control soil erosion, to increase water table and irrigation area for crop production
2	Land levling *and field bunding	Community land	28 00.023’	077 08.752’	Ha	5	0.40	28100 50 hect. 20 hect/20 farmer	2.00	To check soil and water erosion, enhancing water retention capacity
Total cost									9.50	
Available fund									7.86	
Convergence									1.64	

*** Before executing detail topographic survey and assessment must be carried out before implementation.**

Table 11:Name of the Project: IWMP I		Name of watershed Uttawar watershed							Name of village Dhakalpur	
Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work		1. Capacity in cum 2. Catchment area 3. Command area	Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)			
1	Earthen embankment around path	Village periphery to Alawalpur seem	27 59.182’	077 09.417’	M	1000	500	--- --- ---	5.00	To avoid mud and standing water from village to field katcha road. To provide facility for farmer regular visit to their fields.
2	Water conveyance system	User group	27 59.182’	077 09.417’	M	800	300(6”pipe dia)	--- 10 hect. 5 hect/5 farmer	2.40	To increase irrigated area for crop production.
Total cost									7.40	
Available fund									5.71	
Convergence									1.69	

Table 12: Name of the Project: IWMP I		Name of watershed Uttawar watershed							Name of village Gohpur	
Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work		1. Capacity in cum 2. Catchment area 3. Command area	Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)			
1	Land levling * and field bunding	Panchayat land	28 00.991’	077 12.510’	Ha	4	0.50	--- --- ---	2.00	To check soil erosion and increase water holding capacity
2	I. Water conveyance system	Gohpur rajwaha to Panchayat land and dehar wali pond	28 00.895’ 28 00.991’	077 12.709’ 077 12.510’	M	1200	300(6”pipe dai)	5600 10 hect. 5 hect/5 farmer	3.60	To provide suitable field surface for controlling flow of water and check soil erosion
	II. Water conveyance system	From dehar to village pond	28 00.895’	077 12.709’	M	800	500(8”pipe dai)	5600 10 hect. 5 hect/5 farmer	4.00	---do---
3	Plantation	Community land and school, kabristand under boundry line	28 00.710’	077 12.670’	Ha	2.50	0.50	---	1.25	To increase biomass cover
Total cost									10.85	
Available fund									10.42	
Convergence									0.43	

*** Before executing detail topographic survey and assessment must be carried out before implementation.**

Table 13:Name of the Project: IWMP I		Name of watershed Uttawar watershed				Name of village Panchanka				
Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work			Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)	1. Capacity in cum 2. Catchment area 3. Command area		
1	Deepening of pond and construction of ramp	Pathe wali pond	28 01.464’	077 12.876’	No	1	4.00	10100 18hect. 9 hect/9 farmer	4.00	To provide drinking water for live stock
2	Water conveyance system for filling pond	Utawar rajwaha to panchanka pond khari wali	28 00.895’ 28 01.244’	077 12.709’ 077 13.358’	M	1600	500(8”pipe dia)	10100 18hect. 9 hect/9 farmer	8.00	To provide drinking water for animals, birds and enhance the ground water level
Total cost									12.00	
Available fund									9.07	
Convergence									2.93	

Table 14: Name of the Project: IWMP I			Name of watershed Uttawar watershed						Name of village Andhrola	
Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work		1. Capacity in cum 2. Catchment area 3. Command area	Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)			
1	Digging of new pond	Kheda wali pond	28 01.035’	077 14.617’	No	1	3.00	11200 20hect. 10hect/9 farmer	3.00	To provide water for animals and controlling soil erosion and irrigation for crop production
2	Water conveyance system	For community land and user group	28 01.573’	077 14.126’	M	1000	300	--- 15 hect. 7hect/7farmer	3.00	To enhance irrigation system or crop production
3	Renovation of old dug well/ injection well	Community land	28 01.719’	077 14.299’	No	1	2.00	-- -- --	2.00	For water recharging
Total cost									8.00	
Available fund									7.73	
Convergence									0.27	

Table 15: Name of the Project: IWMP I		Name of watershed Uttawar watershed							Name of village Gurasker
Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work		1. Capacity in cum 2. Catchment area 3. Command area	Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)			
1	Deepening of pond and construction of ramp	Village pond (large pond)	28 00.439’	077 13.426’	No	1	7.50	16800 30hect. 15hect/15 farmer	7.50	Enhancement of ponged capacity and water harvesting recharging system
2	Water conveyance system	Mohdamka canal to chohdi pond,big pond and user group	28 00.600’ 28 00.571’ 28 00.439’	077 14.355’ 077 13.621’ 077 13.426’	M	3200	500 (8”pipe dia)	16800 30hect. 15hect/15 farmer	16.00	Recharging of ground water table and provide water for animals, birds and use for irrigation.
3	Land leveling *and field bunding	Panchayat land	28 00.787’	077 13.507’	Ha	8	0.50	-- -- --	4.00	To provide suitable field surface for controlling flow of water and check soil erosion and conservation of moisture
4	Horticulture	User group	28 00.571’	077 13.595’	Ha	4	0.50	-- --- --	2.00	To increase biomass and fruit production
Total cost									29.50	
Available fund									25.87	

Convergence	3.63	

*** Before executing detail topographic survey and assessment must be carried out before implementation.**

Table 16: Name of the Project: IWMP I Name of watershed Uttawar watershed Name of village Mohdamka

Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work		1. Capacity in cum 2. Catchment area 3. Command area	Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)			
1	Land leveling*	Panchayat land	28 00.406’	077 14.910’	Ha	6	0.50	-- -- --	3.00	To provide suitable field surface of controlling flow of water and check soil erosion
2	Deepening of pond and construction ramp	Panchayat land	28 00.406’	077 14.910’	No	1	6.00	11200 20 hect. 8hect/8farmer	6.00	Enhancement of pondage capacity and conveyance system to save water losses and increase irrigation for crop production
Total cost									9.00	
Available fund									7.06	
Convergence									1.94	

*** Before executing detail topographic survey and assessment must be carried out before implementation.**

Table 17:Name of the Project: IWMP I Name of watershed Uttawar watershed Name of village Roopraka

Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work		1. Capacity in cum 2. Catchment area 3. Command area	Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)			
1	Water conveyance system	Utawar disributry to big pond, tanki wala pond	28 00.240’ 27 59.728’ 27 59.884’	077 12.096’ 077 12.231’ 077 11.851’	M	5000	500(8”pipe dai)	28100 50hect. 25hect/25 farmer	25.00	To fill up the pond for drinking of animals, bird and water table recharging and irrigation for farmers
2	Digging of new pond and deepening bara johar consruction of ramp	Bas wali pond and bara johar (panchayat land)	28 00.398’ 27 59.728’	077 11.167’ 077 12.231’	No	2	7.50	28100 50hect. 25hect/25 farmer	15.00	Enhancing pondage capacity to provide drinking water for live stock and recharging ground water table
3	Roof rain water recharging system	Senior sec. school boys and middle school girls	27 59.884’ 27 59.728’	077 11.891’ 077 12.231’	No	2	3.00	-- --- --	6.00	To check mud and standing water in the school boundry and recharging rain water , to improvedrinking water quality
4	Renovation of open well / injection well	Panchayat well	28 00.471’	077 13.495’	No	1	2.00	-- --- --	2.00	Recharging excess rain water
5	Land levling *and filed bunding	Panchayat land	28 00.105’	077 11.096’	Ha	10	0.50	-- -- --	5.00	To provide suitable field surface for controlling flow of water and check soil erosion
6	Plantation	Panchayat land	28 00.105’	077 11.096’	Ha	4	0.50	-- -- --	2.00	To increase biomass and check soil and water erosion

Total cost	55.00	
Available fund	48.05	
Convergence	6.95	

*** Before executing detail topographic survey and assessment must be carried out before implementation.**

Table 18:Name of the Project: IWMP I		Name of watershed Uttawar watershed						Name of village Khilluka		
Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work		1. Capacity in cum 2. Catchment area 3. Command area	Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)			
1	I. Digging of pond and construction of ramp both side	Agwan wali pond	27 59.711’	077 13.469’	No	1	10.00	28100 50 hect 20 hect/ 20 farmer	10.00	Enhancement Of pondage capacity and irrigation area for crop production
	II. Water conveyance system	Kot minor to Agwan wali pond	27 59.782’ 27 59.711’	077 14.003’ 077 13.469’	M	3000	300(6”pipe dia)	28100 50 hect 20 hect/ 20 farmer	9.00	To provide drinking water for live stock or recharging water capacity and improve water quality.
2	Land leveling *and field bunding	Panchayat land	27 59.711’	077 13.469’	Ha	4	0.50	-- -- --	2.00	To provide suitable field surface for controlling flow of water and check soil erosion
3	Horticulture	User group	27 59.659’	077 13.351’	Ha	2	0.50	--	1.00	To increase fruit production
Total cost									22.00	
Available fund									17.14	
Convergence									4.86	

*** Before executing detail topographic survey and assessment must be carried out before implementation.**

Table 19: Name of the Project: IWMP I		Name of watershed Uttawar watershed							Name of village Jarali	
Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work		1. Capacity in cum 2. Catchment area 3. Command area	Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)			
1	Water conveyance system for filling pond	Mithka canal to kabristan wali pond and user group	27 59.043’ 27 59.136	077 13.549’ 077 12.459’	M	2500	300(6” pipe dia)	11200 20hect. 10 hect/10 farmer	7.50	To provide drinking water for animals, birds and enhance the ground water level
2	Plantation	Panchayat land , kabristan in under boundry line	27 59.136	077 12.459’	Ha	4	0.50	-- -- --	2.00	To check soil and water erosion
Total cost									9.50	
Available fund									8.40	
Convergence									1.10	

Table 20:Name of the Project: IWMP I		Name of watershed Uttawar watershed							Name of village Bhoodpur	
Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work		1. Capacity in cum 2. Catchment area 3. Command area	Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)			
1	Water conveyance system for filling pond	Khilluka minor to village pond	27 59.782’ 27 59.579’	077 14.003’ 077 12.681’	M	2500	300	5600 10hect. 5hect/5 farmer	7.50	To provide drinking water for animals, birds and enhance the ground water level
Total cost									7.50	
Available fund									4.77	
Convergence									2.73	

Table 21: Name of the Project: IWMP I			Name of watershed Uttawar watershed					Name of village Tonka	
Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work		1. Capacity in cum 2. Catchment area 3. Command area	Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)			
1	Water conveyance system for filling pond	Tonka minor to user group and panchayat land	27 58.039’ 27 57.659’	077 09.305’ 077 08.926’	M	1000	300(6”pipe dai)	-- -- --	3.00	Conveyance system to save water losses and irrigation purpose
2	Deepening of pond and construction of retaining wall	Kai wala dabra pond	27 57.798’	077 09.355	No	1	5.00	6700 12hect. 6hect/6 farmer	5.00	To save of water increase recharging of water and drinking water for animals and birds.
3	Plantation	School boundry and kabristan	27 58.039’	077 09.305’	Ha	2	0.50	-- -- --	1.00	To check soil and water erosion
Total cost									9.00	
Available fund									8.53	
Convergence									0.47	

Table 22: Name of the Project: IWMP I		Name of watershed Uttawar watershed								Name of village Ghurawali
Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work		1. Capacity in cum 2. Catchment area 3. Command area	Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)			
1	Water conveyance system for filling pond	Tonka minor to user group and panchayat land	27 58.039’	077 09.305’	M	3000	300(6”pipe dia)	-- -- --	9.00	To provide drinking water for live stock , enhancing water recharging capacity
2	Reclamation of water logged area and degraded soil	Private land and user group land	27 57.278’	077 09.147’	Ha	40	0.20	-- -- --	8.00	To avoid water logging/ standing water area reclamation of saline and alkaline soil
3	Plantation	Idh gaha and kabristan and panchayat land	--	--	Ha	2	0.50	-- -- --	1.00	To check soil and water erosion
4	Small embankment	Community /private land	27 57.265’	077 09.476’	M	500	400	-- -- --	2.00	To check flow of water
5	Horticulture	User group	--	--	Ha	5	0.50	-- -- --	2.50	To increase biomass cover and fruits availability
Total cost									22.50	
Available fund									21.17	
Convergence									1.33	

Table 23: Name of the Project: IWMP I		Name of watershed Uttawar watershed						Name of village Uttawar		
Sr. No.	Nature of work	Location	Latitude N	Longitude E	Unit	No. of work		1. Capacity in cum 2. Catchment area 3. Command area	Estimate Cost Rs. In Lacs	Objective
						Phy.	Unit cost (Rs.)			
1	Water conveyance system for filling pond	Gurgaon canal to Community land and user group and karwada pond	27 58.039' 27 58.439'	077 09.305' 077 11.438'	M	4000	500(8"pipe dia)	28100 50 hect 20 hect/20 farmer	20.00	To provide drinking water for live stock, for fish...etc , enhancing water recharging capacity
2	Land leveling * and field bunding	Panchayat land pahadi wali	27 58.543'	077 10.378'	Ha	20	0.50	-- -- --	10.00	To provide suitable field surface for controlling flow of water check soil erosion
3	Water conveyance system	Panchayat land pahadi wali	27 58.543'	077 10.378'	M	2000	500	-- -- --	10.00	To increase irrigated area for crop production
4	I. Renovation of open dug well / injection well	Karwada johad and khardi wai masjid	27 58.479' 27 58.562'	077 11.449 077 11.410'	No	2	2.00	-- -- --	4.00	Enhancing water recharging capacity
	II. Roof rain water recharging system	Primary school and high school	27 58.725' 27 58.748'	077 11.151' 077 11.830'	No	2	3.00	-- -- --	6.00	To check flood area and water harvesting

5	Horticulture	User group	--	---	Ha	6	0.50	-- -- --	3.00	To increase fruit production
Total cost									53.00	
Available fund									49.19	
Convergence									3.81	

*** Before executing detail topographic survey and assessment must be carried out before implementation.**

Cost Sharing: During the PRA exercise and meeting with the stake holders from time to time, the beneficiaries agreed to contribute in form of material, labour and cash to 10% of structure cost. The watershed development funds and pattern of utilization would be decided by the UGs/ WDT and PIA during implementation programme.

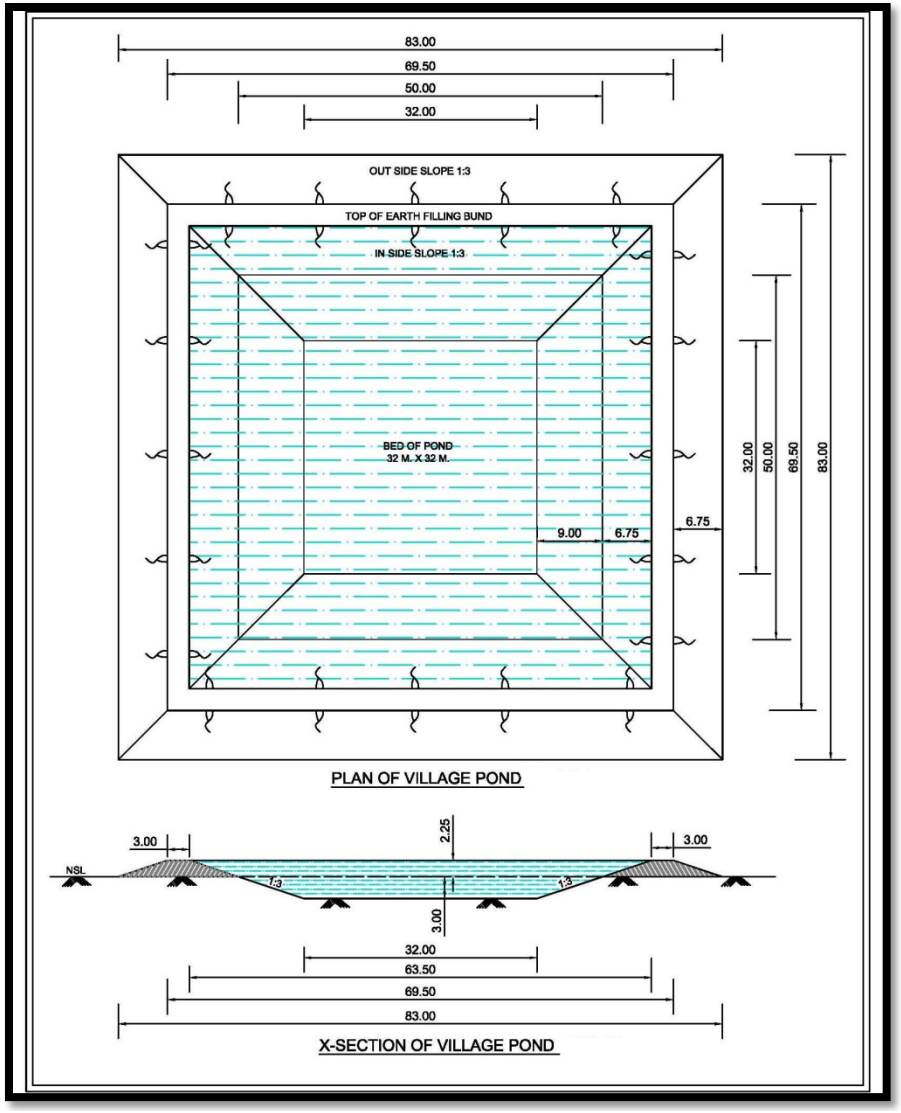
Table. 24. Detailed estimate of Pond

Detail Estimate of village Pond					
	Volume of Pond	=	A+AB+C x D		
			6		
		=	(50x50)+4(41x41)+(32x32)	X 3.00	
			6		
		=	5124 cum		
	Volume of Stone Pitching	=	Area X Depth/ Height		
		=	3824 X 0.15		
		=	423.60 cum		
			or say - 1461.55 cft.		
Leads Statement					
	Horizontal Leads	=	(length/2) +(cross section area/2 x 0.60)		

			=	80/2 + {(16.50 + 3)/2 x 2.25}/2 x0.60			
			=	61.94 mtr.			
	Vertical Leads		=	(Depth + Height) x 0.4 x 10			
			=	21.00 mtr.			
	Total Leads		=	{(61.94 + 21.00) - 15.00}/7.5			
			=	9 Leads			

Table. 25. Abstract of cost of estimate for Digging Village Pond

S.No.	Particulars	H.S.R. No.	Quantity	Rates	Unit	Amount
1	Excavation of earth work for digging of the vill. Pond	6.2 (b)	5124.00	2243.75	100 cum	114969.75
2	Extra for every 7.50 mtr. Additional lead upto 60 mtr. For 6 No. leads	6.2 (c')(i)	5124.00	496.29	100 cum	25429.90
3	Extra for admixture of shingle or Kanker upto 30%-40%		5124.00	1218.45	100 cum	62433.38
4	Extra for compaction in 25 cm layers but excluding rolling	6.2 (g_(i)	5124.00	260.48	100 cum	13347.00
5	Extra for watering in 25 cm layers as per specifications for compaction	6.2 (g_(ii)	5124.00	286.88	100 cum	14699.73
6	Extra for rolling in 25 cm layers as per specifications by sheep foot roller	6.2 (g)(v)	5124.00	401.62	100 cum	20579.01
					Total	**251458.76**
					Add. Contingency @2%	**5029.1753**
					Grand Total	**256487.94**
					Or say `	**2.60 Lac**

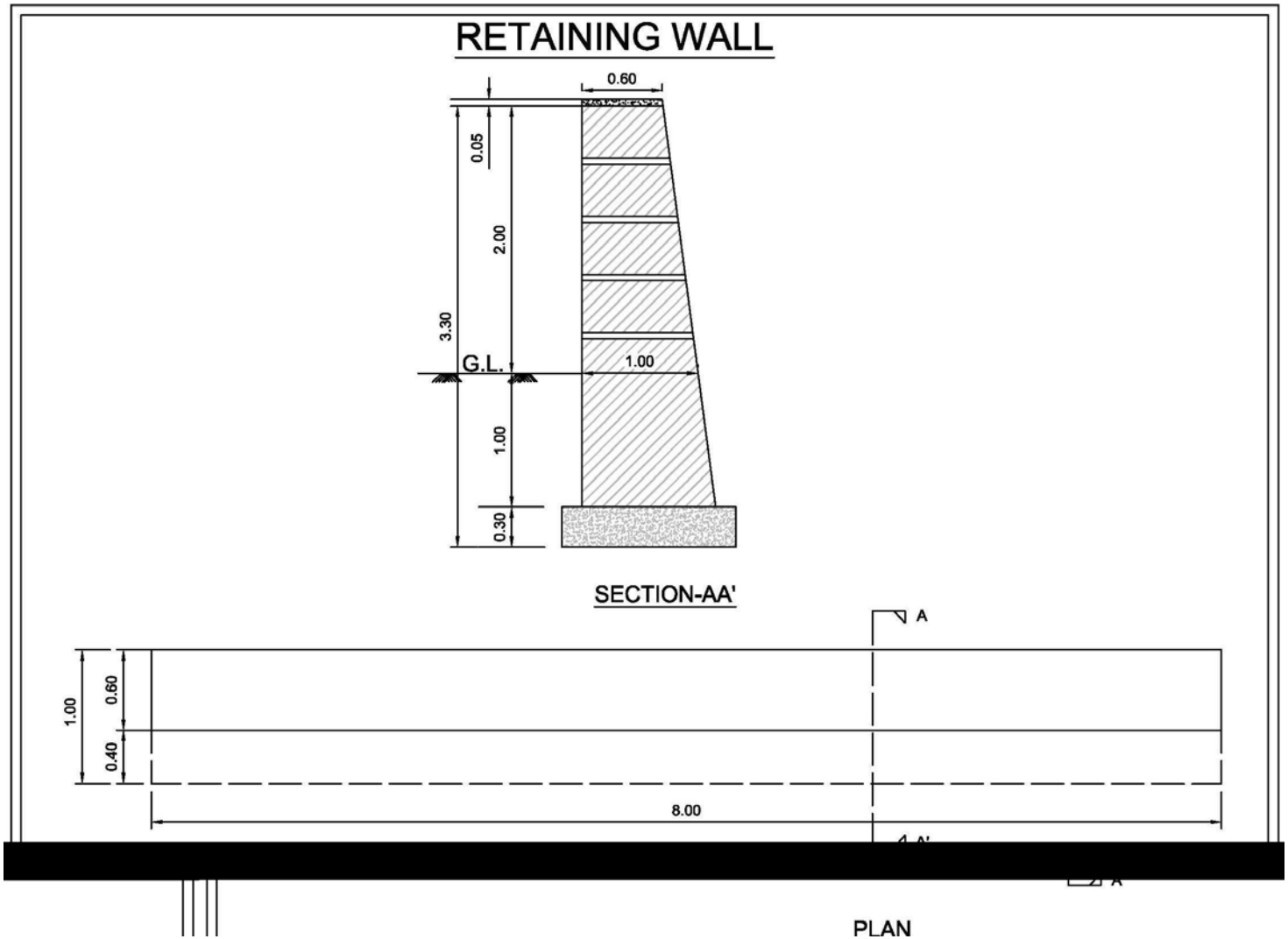

83.00
69.50
50.00
32.00
OUT SIDE SLOPE 1:3
TOP OF EARTH FILLING BUND
IN SIDE SLOPE 1:3
BED OF POND
32 M. X 32 M.
9.00
6.75
6.75
32.00
50.00
69.50
83.00
PLAN OF VILLAGE POND
3.00
NSL
2.25
3.00
1:3
1:3
3.00
32.00
63.50
69.50
83.00
X-SECTION OF VILLAGE POND

Work Detail Estimate For Retaining Wall

Sr. No.	Particulars	No.	L	B	D	Contents	Unit
1	Earth Work Excavtion for R/wal	1	8.00	1.00	1.30	10.40	cum.
2	C.C. 1:3:6 in foundation	1	8.00	1.00	0.30	2.40	cum.
3	Sq. Rubble Masonary work 1:4 For R/wall	1	8.00	0.80	3.00	19.20	cum.
4	C.C. 1:2:4	1	8.00	1.00	0.05	0.40	cum.
5	20 mm Thick plaster 1:3						
i	R/wall outer side	1	8.00	--	3.00	24.00	sqm.
Material Statement							
Sr. No.	**Particulars**	**Qty.**	**Cement**	**Sand**	**Concrete**	**Gatka**	**Stone**
1	C.C. 1:3:6 in foundation	240	10.56	1.10	--	2.20	--
2	Masonry work in 1:4	19.2	41.28	5.76	--	--	21.12
3	C.C. 1:2:4	0.24	1.51	0.10	0.20	--	--
4	20 mm Thick Plaster in 1:3	24.00 Sqm.	6.00	0.36	--	--	--
	Total		**59.35**	**7.32**	**0.20**	**2.20**	**21.12**
	Rate		340/- P/bag	1400/- P/cum	1500/- Per cum.	1450/- Per cum.	
	Total		**21539.00**	**10248.00**	**300.00**	**3190.00**	
	Grand Total		**35298.12**				

Abstract Cost of Retaining Wall

Sr. No.	Particular	Qty.	Rate	Unit	Amount
1	Earth work excavation in foundation and trench with pick and jumper HSR 7.2	10.40 cum	1745+400% = 8725	Per 100 cum	907.40
2	C.C. 1:3:6 in foundation per HSR 10.40	2.40 cum	64.85+550% = 422.18	per cum	1013.23
3	Sq. Rubble masonry work in 1:4 HSR 12.23+12.31	19.20 cum	(160.35+27.20)+300% = 750.20	per cum	14403.84
4	C.C. 1:2:4 on top as per HSR 10.41	0.24 cum	64.95+550% = 422.18	per cum	101.32
5	20mm. Thick plaster work in 1:3 as HSR 10.41	40 sqm.	8.15 + 500% = 48.90	Per sq.m.	1956.00
6	Collection the stone by donkey load upto 1 qtl. 'and distance upto 10 km excluding donkey man HSR. 5.3(a)	21.12 x 23.20 = 489.00	8.00 + 200% = 24.00	each	11736.00
7	Donkeies as HSR. 5.3 (b)	489.98/6	20.52+200% = 61.56	each	5027.19
8	Tipping work of Crate as HSR. 23.33	7.20 cum	11.10+450% = 61.05	Per cum	439.56
				Total	**35584.55**
				Cost of material as per detail attached	**35494.00**
				G. Total	**71078.55**
				or Say Rs. =	**71100.00**


RETAINING WALL
0.60
0.05
2.00
3.30
G.L.
1.00
1.00
0.30
SECTION-AA'
A
1.00
0.60
0.40
8.00
A'
A
PLAN

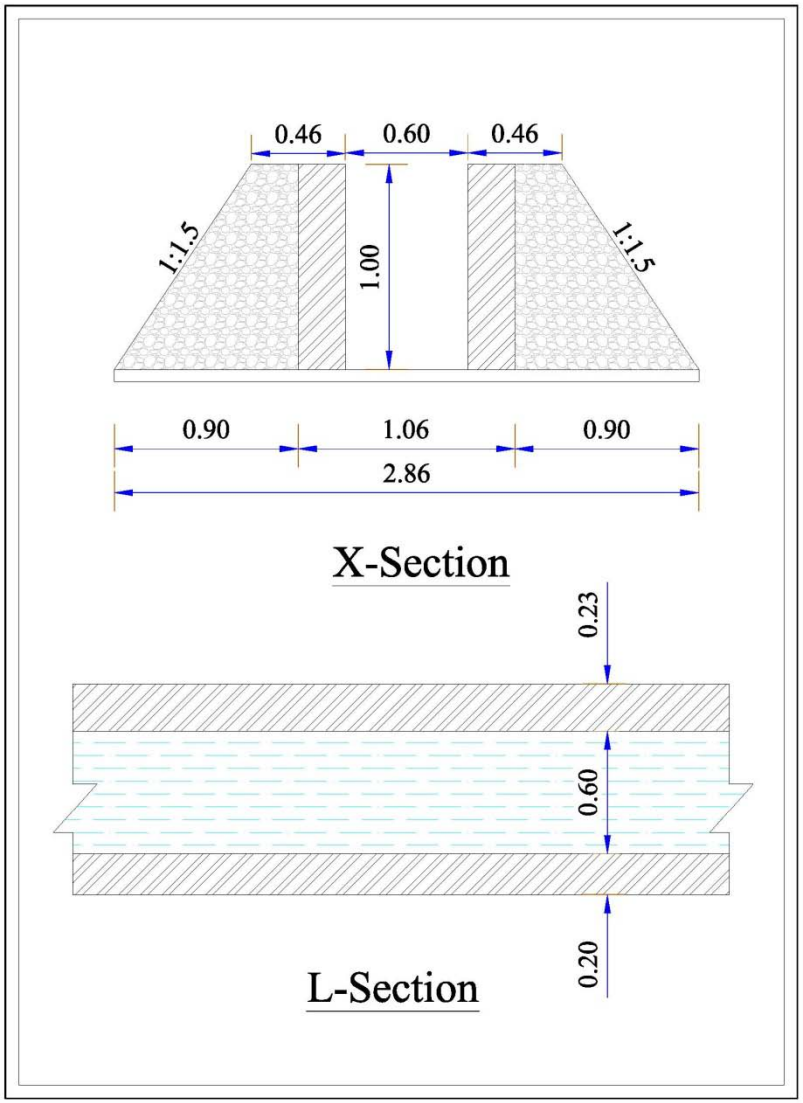
Estimate of Open Channel

Abstract cost of Pucca Disposal open channel in

Detail estimate of Pucca disposal open channel

Sr. No.	Particular	No.	L	B	D/H	Quantity
1	Earth work of excavation in ordinary 2016 1(a)	1	100 m	1.20 m	0.54	64.8m^3
2	Flat brick laid over a bed of 6 mm thick CSM HSR 14-24	1	100 m	1.06 m		106m^2
3	First Class bricks work CSM 3.5 in foundation, plinth Nos. 12.23	2	100 m	0.225	0.45	20.25m^3
4	Plaster on bed in 1.4 CSM 12 MM thick HSR 15.5	1	100	0.60		60m^2
5	Plaster 14.12 mm thick side wall HSR 15.5 inside	2	100		0.45m	90m^2
6	Providing field Gola 14 HSR 15.5	2	100	0.117		23.4m^2
7	Topping 25 mm thick on top CWC HSR 14.8	2	100	0.225		45m^2
8	Earth work for wall protection	2	100	0.565	0.23 + 0.90/2 = 0.45	50.85m^3

Sr. No.	Particular	Quantity	Rate	Unit	Amount
1	Excavation of earth work in ordinary soil as per HSR 6.1(a)	64.8 m3	415.50-15% +425% =1854.16	100 m³	1201.49
2	Flat bricks laid in bed HSR 14.24	106 m2	520-15%+600% = 296.60	m²	3279.64
3	First class bricks works land in CSM 1.5 HSR 11.23	20.25 m3	49.85 + 15% + 600% =296.60	m³	6339.62
4	Plaster bed 1.4 12 mm thick 15.5 HSR	60 m2	5.5 + 15% + 500% = 28.05	m²	1683.00
5	Plaster 14 m side wall 15.5 HSR	90 m2	5.5 + 15% + 500% = 28.05	m²	2574.50
6	Field Gota 1.4 HSR 15.5	23.4 m2	5.5 + 15% + 500% = 28.05	m²	656.37
7	Topping 25 mm thick on top of wall HSR 14.8	46 M2	8.60+15% + 600% = 51.17	m²	2302.65
8	E/work for wall protection HSR 6.1 (a)	85.50 M3	415.50 +15% + 500%	100 m³	1077.53
			Total labour cost		**18596.64**
			Material cost		**98783.00**
			Total		**117379.64**
			Contingency 2%		**2347.59**
			Grand total		**49929.23**



Pucca disposal open channel

Estimate of Orchard Development in the Watersheds Per Hectare (Guava ,Amla & Ber)

A. Horticulture

Sr. No.	Particulars	Quantity	Unit	Rate	Amount
1	Soil working 1m x 1m x 1m size pits (225 Nos.) including cost of refilling(At the distance 20'x20')	225.00	cum	36.66	8248.50
2	Application of Farmyard Manure, including cost			L.S.	450.00
3	Cost of fertiliser/ pesticide @250gm/plant			L.S.	450.00
4	Cost of plants (including 15% etc. for mortality) including transportation and planting	260.00	Nos.	30/Plant	7800.00
5	Casualty replacement @ 10% of item No. 4 & 5				465.00
6	Cost of 2 weedings and hoeing			1.00/Plant	540.00
7	Contingency and unforeseen (3%)				492.00
				Total	**18445.50**
				Say `	**18500.00**
8	Maintenance cost 2nd year			L.S.	**1000.00**
	For next 5 years i.e. , ` 1000 x 5				**5000.00**
				Total	**24500.00**
				Say `	**24500.00**

Estimate of Agro- Forestry/ Afforestation

Plantation Model						
Cost statement of 1 Ha. Of activities of Plantation for 1st year (wage rate Rs. 94.13/-)						
Sr. No.	**Item of work**	**Unit**	**Qty.**	**SOR**	**Man days**	**Cost**
B	**Nursery**					
i	Raising of Plants in nursery	Nos.	660	18	5601.00	**11880.00**
C	**Carriage**					
i	Loading/ Unloading of plants up to 100 mtr.	Nos.	605	21.18	1.36	128.139
ii	Multistage carriage of plants					
a)	By tractor up to 10 km.	Nos.	605	18.83	12.10	1139.22
c)	By manual labour in plantation area	Nos.	605	42.36	2.72	256.28
					Total	**1523.63**
D	**Planting**					
ii	Soil working for patch sowing	M3	31.25	61.18	20.31	1911.88
	500 x 0.50 x 0.50 x 0.25					
iii	Planting of seeding including 10% replacement 20 x 30 cm.	Nos.	550	188.26	10.99	1035.43
					Total	**2947.31**
E	**Cultural operations & chemical treatment**					
i	Fertilizer application	Nos.	500	9.41	0.50	47.05
ii	Insecticide application	Nos.	500	9.41	0.50	47.05
iii	First Weeding & hoeing	Nos.	500	141.2	7.5	706.00
vi	Subsequent weeding & hoeing two time	Nos.	1000	94.13	10.00	941.30
					Total	**1741.40**

G	Material					
ii	Spade and pick axes	----	----	----	----	135.00
iii	Basket/Bucket	----	----	----	----	135.00
v	Fertilizer	----	----	----	----	135.00
vi	Insecticide	----	----	----	----	270.00
					Total	**675.00**

	G. Total =	**18767.34**
	or Say =	**18767.00**

PRODUCTION SYSTEM- 10%

7.3 PRODUCTION SYSTEM

7.3.1 Crop Production

Present Status: Agriculture is the mainstay of the inhabitants of the project area which is mainly rainfed and people gamble with the uncertain rains. The fertility of the soil is very poor especially in nitrogen and phosphorous because the organic carbon contained in the soil is very low and the available potash in the soil is medium. Mustard, Wheat and Bajra are the main crops. Due to frequent droughts, crop failures are common, and yield levels are low. Farmers maintain fodder plants on the field bunds. Because of extensive damage by wildlife, farmers are gradually shifting towards dairy farming. But there is acute shortage of green and dry fodder. Still traditional farm practices are followed such as manual weeding and hoeing, use of desi ploughs and bullock power in tillage operations. The systematic and regular soil testing has not been done. Only farm yard manure is added to maintain yield levels. Food grains are hardly sufficient for 6 to 8 months with small farmers. Post-harvest gain storage, food processing and value addition techniques are not prevalent.

Scope of Improvement: There appears tremendous scope in improving production systems of the project area. The following practices are suggested for better harvests:-

- Conservation farming concept based on getting highest yield per drop of water shall be introduced.
  This would also include better tillage practices for in-situ rain water conservation.
- Weather related contingent crop planning shall be introduced to reduce the impact of droughts.
- The varieties of wheat are old and shall be replaced with latest varieties.
- There is a good scope of introducing hybrid varieties of bajra. Intercropping of moong and urad is suggested with bajra.

- The application of fertilizers on soil test basis and minimum use of chemicals for weed and disease control shall be promoted.
- Farmers would be linked to farm advisory services and Krishi Vigyan Kendras.
- The dry land farming techniques should be adopted for better production.
- Agro-forestry with integration of trees like Neem, Acacia, Shisham would be promoted on large scale.
- Leguminous crops mainly Moong and mash short duration varieties needs to be introduced

7.3.2 Horticulture

Existing System: Ber, Amla and Guava are the most preferred fruit crop of the farmers and scattered plants of local citrus fruits are seen in farm lands. Some farmers have started raising Guava and Kinnow where irrigation facilities are available. Citrus fruits also raised but mostly for domestic use. There is no well organized marketing system in fruit plants.
Proposed System: The average annual rainfall is 366 mm in the project area. The project areas are well connected by roads and the economic condition of the locals can be improved by introducing improved cultural practices of fruit plants coupled with rain water harvesting and efficient use of water. Large number of farmers are interested to increase area under Guava and Kinnow and requested for supply of good quality nursery raised plants. Several families have shown interest in raising Citrus fruits and amla. The following activities are proposed to promote horticulture in the area.

- Supply of quality seedlings arranged from approved nurseries as per choice of farmers.
- Soil testing up to a depth of 180 cm depth to ensure suitability of soil for fruit plants.
- Proper back up of technical support on orchard management by involving HAU Farm Advisory Service and department of horticulture.
- Appropriate safeguards from wildlife damage, frost damage and wind breaks.
- Arrangements for limited irrigation at least for first few years.

- Organizing SHGs around horticulture and joint purchase of inputs and marketing.

7.3.3 Vegetable cultivation

Present status: Vegetable cultivation as such for market purpose is not followed mainly because of the limitation of irrigation facilities. Most farmers raise vegetable crops in back yards for domestic use. Some poly houses have come up in the area with financial support from National Horticulture Mission and have started commercial cultivation of off season vegetables.

7.3.4 Promotion of Farm Forestry and Agro-forestry

Most of the privately owned non-arable the area is under mix of trees and bushes. Lantana, sarkanda and parthenium, the most obnoxious weeds have invaded such area.

- Planting of improved cultivars of Neem in the project as single rows on field bunds and also as blocks has been proposed to promote agro-forestry as an alternate source of income.

7.3.5 Livestock Improvement Including Fodder Production

Livestock rearing is the most important subsidiary occupation of the project villagers. In addition to selling milk for regular daily income, farm yard manure is most needed to maintain fertility and moisture retention of soils. Even landless families also maintain few numbers of animals. The animal breed improvement work was initiated in these villages under Arravali, DDP, DPAP projects and it is a regular program of the Animal Husbandry Department. However, the availability of animal health services at the door step is grossly lacking. The programs proposed under the project for livestock improvement include:

- In order to promote animal health care camps shall be organized and medicines for de-worming, mineral mixture shall be supplied in addition to awareness generation about prevention of animal diseases.
- Provision of quality seed of fodder crops and demonstration.

7.3.6 Marketing Arrangements and Proposal for Improvement

There is no organized system of marketing although market surplus is limited. The marketing of Wheat, Mustard and Bajra is not a problem because of fixed prices and government controlled procurement system. There is no organized system of marketing of vegetables and milk though both are source of income with many families.

The efforts through the project are made towards diversification of agriculture to include fruit and vegetable crops and dairy development. The transfer of area to these high value crops would depend on development of irrigation facilities, facilitation in input supplies, transfer of production technology, easy credit and market linkages. Efforts have been made to reactivate the non-functional SHGs and UGs. New watershed committees have been formed in each village. Farmers have shown interest in joint management of resources and join hands for processing, value addition and marketing.
Fortunately, the involvement of Rural Development Department means regular interaction with the district administration whose good offices would be used to involve rural banking institutions in funding support for SHGs, User Groups and other interest groups.

7.3.7 Detail of production system to be promoted

Based on the discussions during PRA, the scope of production systems was worked out and as per the provision of funds @ 10% of the budget, the following activities were finalized.

Table 26.Detail of Production System proposed to be promoted in the project village

S. No.	Particulars	Contents	No. of micro watersheds	No. of beneficiaries per micro watershed	No. of total beneficiaries	Cost per beneficiaries	Total
1	Vermi Compost	Vermi compost is organic matter that is decomposed and recycled, used as fertilizer for soil amendment which is a key ingredient in organic farming. Under IWMP, financial assistance of 25% of total cost of Rs. 24000/- is provided.	8/23	10	230	6000	1380000
2	Green Manuring	Addition of organic matter required, which is deficient in project area. Under IWMP, financial assistance @ Rs. 500 for 20 Kg.s per farmer for 2 Acre (0.8 ha) holding is provided.	8/23	25	575	500	287500
3	Bio-fertilizers	For integrated nutrient management (combination of chemical fertilizers, organic manure, crop residue and nitrogen fixing. Under IWMP, financial assistance @ Rs. 40 per farmer for 2 Acre (0.8 ha) holding is provided.	8/23	50	1150	40	46000
4	Pest-Management	For integrated pest Management, the bio control technique has been reported eco-friendly for control of pests. A provision of Azadirachtin bio pesticide @ Rs. 250/lit. per farmer is provided.	8/23	50	1150	250	287500
5	Sprinkler irrigation	Sprinkler irrigation is a method of applying irrigation water which is similar to natural rainfall. Under IWMP, financial assistance @ 25% of Rs. 30000/- or price fixed by agriculture department is	8/23	10	230	7500	1725000

S. No.	Particulars	Contents	No. of micro watersheds	No. of beneficiaries per micro watershed	No. of total beneficiaries	Cost per beneficiaries	Total
		provided.					
6	Drip Irrigation	Drip Irrigation is an irrigation method that saves water and fertilizer by allowing water to drip slowly to the roots of plants. Under IWMP, financial assistance @ 10% of Rs. 58000 per ha for horticulture fixed by Agriculture Department is provided.	8/23	10	230	5800	1334000
7	Lazer Leveling	Lazer Leveling is one such proven technology that is highly useful in conversation of irrigation water. Under IWMP, financial assistance @ 30% of Rs. 1075 per farmer is provided	8/23	50	1150	322.5	370875
8	Kitchen Gardening	To facilitate with inputs, seeds and equipments etc., for development of Kitchen Gardening. Under IWMP, financial assistance @ Rs. 50 per farmer per season (Rs. 100 per year) is provided.	8/23	50	1150	100	115000
9	Horticulture	Potential for Grafted Horticulture plants. Supply of plants @ Rs. 40/- per plant under IWMP 50 % cost share for cultivation of fruits like Citrus fruits, Guava, Amla, Ber floriculture and vegetables (especially, turmeric, garlic, onion and tomato)	8/23	40	920(9200 plants)	Rs.20 per plant	184000
	Total						5729875
	Contingency, printing material other unforeseen items						68025

Total: Rs. 5798400/-

The provision of additional subsidy component under IWMP would be utilized by linking with the line department.

Note. The development of Horticulture, Animal Husbandry and Agro forestry has limited scope because of scattered & small land holding, wild life problems and drought conditions. The National Horticulture Mission is already implementing various schemes in the project area. The beneficiaries are taking advantages under their ongoing schemes.

In order to manage the fodder scarcity the latest rain fed varieties of fodder crop will be introduced on the recommendation of experts of Haryana Agriculture University and Central Soil and Water Conservation Research Institute, Chandigarh. Necessary provision for organizing the various training programme / exposure visits has been provided in the Capacity Building activity.

Under Agro forestry, tree species commonly planted is Neem. The impacts of such type's plantation have given extra source of income.

7.3.8. Vermin Compost

The vermin compost is one of the very useful organic manure. The vermin compost prepared by induction of various types worms (Earth Worm), to de compost and converted from raw animal dung to well decomposed highly nutritive organic manure.

One of the important occupations of villagers is the animal husbandry. At present, the animal wastes are not being used by the villagers. This waste can be utilized as vermin- compost on the farm where the productivity and physical condition of the soil can be increased manifold. The animal waste can be used for preparation of vermin- compost. The available nutrients in vermin- compost are higher than country type farmyard manure. As per NHM guideline, the installation cost of structure of 1 vermi compost unit (size) 500 Sq. ft., the total cost of the unit would be is Rs. 60000/-. Out of this the 50% subsidy i.e. Rs.30000/- is met from the ongoing programme of horticulture department. The additional amount i.e. Rs. 10000/- will be forme under IWMP Programme. The nutrition value of vermin compost is more than Farm Yard Manure and compost i.e. nitrogen- 1.2 to 1.6%, Phosphorous 1.5 to 1.8%, Potash 1.2 to 2% are just double.

Table 27: Model/ Estimate for a Vermin Compost Unit

Sr. No	Component	Expenditure to be incurred
1	Construction of shed of size 500 Sq. ft.@ Rs. 100 per Sq. ft. with pacca floor, beds and coverings etc.	50000/-
2	Cost on breeding material and purchase of worms etc.	8000/-
3	Tools and equipments etc.	2000/-
	Total	**60000/-**

Components of Vermin Compost Unit

1. **Shed**

Due to the high temperature in summer, shed structure is needed for vermin compost unit. It can be made by use of bricks/ concrete pillars. While designing the shed adequate room has to be left around the beds for easy movements of labours attending to the filling and harvesting the beds.

2. **Vermin- beds**

Scientific bed size depending upon the provision of filtered for drainage of excess water is prepared of about 75- 90 cm thick. The whole bed should be above the ground, the proper bed width to be not more than 1.5 m to allow easy access to the centre of the bed is constructed.

3. **Land**

About 125 sq. m. land is required to set up the vermin compost production. It should have 2- 3 sheds each of 180- 200 sq. ft. Good watering arrangement is required as the moisture is very essential for vermin compost production.

4. **Seed Stock**

This is important because worms multiply at the rate of 350 worms per cubic meter of bed space over a period of six months in a year.

5. **Machinery**

Farm machinery and implements are required for cutting the raw material in small pieces, conveying shredded raw material to the out sheds, loading, unloading, collection of compost, loosening of beds for aeration, shifting of the compost. Costs of providing necessary implements and the machinery have to be included in the project cost.

LIVELIHOOD ACTIVITIES FOR THE ASSET LESS PERSONS-9%

7.4 LIVELIHOOD SUPPORT TO SHG'S

The key issue of inclusion of this chapter is that about 70% of the population in the proposed villages depends on agriculture and allied activities, but it rarely provides sufficient means of survival to small and marginal farmers. During the base line survey, this aspect was discussed with the existing Self Help Group/ Gram Sabha members. The representative of WAPCOS, Sociologist of the team held comprehensive discussions on the possibilities of livelihood in the rainfed areas. The main objectives of these discussions were:

1. Assure one livelihood option to poor families.
2. Assured livelihood for at least 300 days in a year including MGNREGA.
3. At least one daily job per family mainly SCs/BPL/very poor families.

SHGs would be imparted Skill Training on HSRLM pattern and it is proposed to impart them trainings at Krishi Vigyan Kender (CCSHAU) Palwal and Haryana Institute of Rural Development, Nilokheri. Agriculture University, Hisar, Central Soil and Water Research and Training Institute, Chandigarh. It is proposed to lend revolving fund of Rs. 25000/- to each SHG/individual formed in the watershed villages. Since the members from SHGs/landless are very poor, they do not have resources to start micro enterprises, it is envisaged that they should be assisted and given loan of this amount in the shape of Revolving Fund Assistance (RFA) so that they do not get trapped by money lenders. Funds thus given on loan are recoverable from SHGs/individuals in easy installments. It is also proposed to impart skill training to at least 10 unemployed youth from each village and give them trainings of their choice so that they establish some small enterprises. It is further proposed to give them interest free loan of Rs. 12000/- each as Revolving Fund Assistance to meet their urgent needs of funds for establishing micro enterprises. Such funds recovered could either be given back to SHGs/individual or some other SHGs/individuals depending upon assessment of their respective needs. It is proposed to

form 2 SHGs in each village and identify at least 10 youths in each village for imparting training and giving Revolving Fund.

The scheme would be implemented in phased manner in the project area and the project implementation agency will co-ordinate with the Community Resource Persons(CRP) already posted at the grass root level under Haryana State Rural Livelihood Mission(HSRLM). The SHG should follow five Sutras i.e.

1. Regular Meetings
2. Financial saving in the meetings
3. Internal Lending
4. Regular Recovery.
5. Proper maintenance of Account books.

Based on the above five Sutras, grading of SHG should be done.

The following activities are proposed in consultation with the Watershed committees.

7.4.1 Activities those are likely to be taken up by SHGs/individuals

1. Cutting and Tailoring
2. Embroidery
3. Mushroom cultivation
4. Plumbing
5. Carpentry
6. Bee keeping
7. Animal husbandry

8. Vermi composting
9. Cattle rearing and selling milk
10. Household wiring, Motor winding
11. Backyard poultry
12. Floriculture

The details of funds proposed to be utilized under this component are as under:

Table 28. Revolving Fund Assistance for SHGs

S.No.	Name of micro watersheds	No. of villages	Total SHGs	Amount of RFA per SHG	Total
1	Ransika	3	3	25000	75000
2	Lakhnaka	4	4	25000	100000
3	Malai	4	4	25000	100000
4	Gohpur	3	3	25000	75000
5	Guraksar	2	2	25000	50000
6	Rupraka	1	1	25000	25000
7	Khilluka	3	3	25000	75000
8	Tonka	2	2	25000	50000
9	Utawar	1	1	25000	25000
	Total	**23**	**23**		**575000**

Table 29. Skill Trainings/Skill up gradation for SHGs

S.No.	Name of micro watersheds	No. of villages	Total SHGs	Amount of Training per SHG	Total
1	Ransika	3	3	35000	105000
2	Lakhnaka	4	4	35000	140000

3	Malai	4	4	35000	140000
4	Gohpur	3	3	35000	105000
5	Guraksar	2	2	35000	70000
6	Rupraka	1	1	35000	35000
7	Khilluka	3	3	35000	105000
8	Tonka	2	2	35000	70000
9	Utawar	1	1	35000	35000
	Total	**23**	**23**		**805000**

Note: This training cost includes Travel, boarding/lodging, cost of training and faculty support for different discipline e.g. Bakery Product, Soap and detergent making, fisheries, Bee keeping, Vermi Compost, Domestic poultry, Mushroom cultivation, Plumbing, Carpentry, Food Processing, Animal Husbandry, Product Processing etc.

Table 30. Computer Training (6 months) for unemployed youth above 12th passed male and female both recommended by Watershed Development Committee

S.No.	Name of micro watersheds	No. of villages	No. of Persons in micro watershed	Amount of Training per trainee for 6 month	Total
1	Ransika	3	15	10000	150000
2	Lakhnaka	4	20	10000	200000
3	Malai	4	20	10000	200000
4	Gohpur	3	15	10000	150000
5	Guraksar	2	10	10000	100000
6	Rupraka	1	5	10000	50000
7	Khilluka	3	15	10000	150000
8	Tonka	2	10	10000	100000
9	Utawar	1	5	10000	50000

	Total	**23**	**115**		**1150000**

Note: The beneficiaries will contribute 10% as cost sharing of the livelihood support programme Rs.1150000 @ 10% cost sharing.

= 1150000- 115000
= 1035000/-

Table 31. One time assistance as Revolving Fund to unemployed youth who have successfully completed Computer Training for setting up a computer centre

S. No.	Name of micro watersheds	No. of villages	No. of Persons in micro watershed	Amount of Training per Trainee	Total
1	Ransika	3	3	25000	75000
2	Lakhnaka	4	4	25000	100000
3	Malai	4	4	25000	100000
4	Gohpur	3	3	25000	75000
5	Guraksar	2	2	25000	50000
6	Rupraka	1	1	25000	25000
7	Khilluka	3	3	25000	75000
8	Tonka	2	2	25000	50000
9	Utawar	1	1	25000	25000
	Total	**23**	**23**		**575000**

Note: This training cost includes Travel, boarding/lodging, cost of training and faculty support.
Note: The beneficiaries will contribute 10% as cost sharing of the livelihood support programme Rs. 575000 @ 10% cost sharing.

= 575000- 57500
= 517500/-

Table 32. Cutting and Tailoring Centre for female beneficiaries

S. No.	Name of micro watersheds	No. of villages	No. of centre's	Requirement for sewing machines per village (2 No.)	Payment to trainer per months	Period of training for each centre	Total payment to trainer
1	Ransika	3	3	6	2000	6	36000
2	Lakhnaka	4	4	8	2000	6	48000
3	Malai	4	4	8	2000	6	48000
4	Gohpur	3	3	6	2000	6	36000
5	Guraksar	2	2	4	2000	6	24000
6	Rupraka	1	1	2	2000	6	12000
7	Khilluka	3	3	6	2000	6	36000
8	Tonka	2	2	4	2000	6	24000
9	Utawar	1	1	2	2000	6	12000
	Total	**23**	**23**	**46**			**276000**

Total cost for 23 Centres

1. Payment to trainers 276000/-
2. Sewing Machine Cost 276000/- @ Rs 6000 per machine
3. Total 552000/-

Table 33. Embroidery Centre for female beneficiaries

S.No.	Name of micro watersheds	No. of villages	No. of centers	Payment to Trainer per Month	Period months	Payment to trainer for 6 months @ Rs. 2000 p.m	Total trainers	Grand Total
1	Ransika	3	3	2000	6	12000	3	36000

2	Lakhnaka	4	4	2000	6	12000	4	48000
3	Malai	4	4	2000	6	12000	4	48000
4	Gohpur	3	3	2000	6	12000	3	36000
5	Guraksar	2	2	2000	6	12000	2	24000
6	Rupraka	1	1	2000	6	12000	1	12000
7	Khilluka	3	3	2000	6	12000	3	36000
8	Tonka	2	2	2000	6	12000	2	24000
9	Utawar	1	1	2000	6	12000	1	12000
	Total	**23**	**23**				**23**	**276000**

Payment to trainer: Rs.276000/-

Cost of Machine: Rs. 460000/- @ Rs. 20000 per machine

Total Cost: Rs. 736000/-

Table 34. Livelihood Support

S.No.	Name of micro watersheds	No. of villages	Revolving fund assistance to individuals unemployed youth/ landless, women		
			Dairy Farming	Bee Keeping	Mushroom Cultivation
1	Ransika	3	9	12	3
2	Lakhnaka	4	12	16	4
3	Malai	4	12	16	4
4	Gohpur	3	9	12	3
5	Guraksar	2	6	8	2
6	Rupraka	1	3	4	1
7	Khilluka	3	9	12	3
8	Tonka	2	6	8	2
9	Utawar	1	3	4	1
	Total	**23**	**69**	**92**	**23**

	Rate (Rs)		**2400**	**2400**	**24000**
	Cost (Lakh Rs)		**1.656**	**2.208**	**5.52**

Contingency, printing material and other unseen items: Rs. 59660/-

Total funds available under this component are Rs. 5218560/-

In addition to HAU, the following institutions are also identified for imparting trainings:

i. HIRD, Nilokheri
ii. Agriculture, Technology and Extension, Hisar Agriculture University
iii. Central Soil and Water research and training Institute, Chandigarh
iv. Mushroom Training Centre, Sonipat and Solan
v. NIRD, Hyderabad
vi. Krishi Vigyan Kender (CCSHAU), Palwal

There appears to be great potential for these activities and these activities are likely to generate income of Rs. 2000/- to Rs. 2500/- per member per month. However no activities would be forced upon on any SHGs and they would be free to decide the activity they would like to opt for their additional income. The PIA can take up the activities as per the need and approval of the Watershed Committee. Based on their choice, Project report for the specified activity would be prepared and revolving fund of Rs. 25000/- per SHG would be given for running their respective micro enterprise. If need arises for more funds for their Income Generation Activities at later stage, they would be assisted in getting loan from banks. SHGs thus formed would be provided all possible assistance to uplift for their Socio- Economic conditions.

CONVERGENCE

7.5 INTRODUCTION

The National Rural Employment Guarantee Act (NREGA), notified on September 7, 2005, marked a paradigm shift from the previous wage employment programmes with its rights-based approach that makes the Government legally accountable for providing employment to those who demand it. The act aims at enhancing livelihood security households in rural areas of the country by providing at least one hundred days of guaranteed wage employment in a financial year to every household whose audit members volunteer to do unskilled manual work. Such Inter sectoral convergence becomes instrumental towards.

- Establishing synergy among different government programmes in planning and implementation to optimize use of public investments
- Enhancing economic opportunities
- Strengthening democratic Processes
- Mitigating the effects of Climate Change
- Creating conditions for sustainable development.
- One of the significant areas for convergence is the Watershed Management Programme of the Dept. of Land Resources (DoLR) in the Ministry of Rural Development (MoRD),
- Convergence is an evolving process and while broad principles can be laid out at the centre, the actual contours of convergence will be determined by the resources at the Central, State, District and the project level. Also, to

fully identify the possibilities of convergence, it may be necessary to make a beginning with select programmes, so that the experience of implementation may further inform and refine strategies for convergence.

7.5.1 Convergence between MGNREGA and Watershed Programmes

Most of the activities under watershed development are covered under MGNREGA and there is a need for convergence to meet gap in requirement under IWMP. The labour component would be met out of funds made available under MGNREGA. The village wise details of the fund requirement are exhibited below (table. 36)

Detail of Convergence of IWMP and other schemes

Table 35. GAPS IN FUNDS REQUIREMENT – MICRO WATERSHED WISE

S.No	Name of micro watersheds	Total cost requirement for works	Total funds available under IWMP for works	Gap in funds requirement for works	Convergence with MGNREGA
1	Ransika	29.00	25.87	3.13	3.13
2	Lakhnaka	39.90	32.25	7.65	7.65
3	Malai	57.40	49.19	8.21	8.21
4	Gohpur	30.85	27.22	3.63	3.63
5	Guraksar	38.50	32.93	5.57	5.57
6	Rupraka	55.00	48.05	6.95	6.95
7	Khilluka	39.00	30.31	8.69	8.69
8	Tonka	31.50	29.70	1.80	1.80
9	Utawar	53.00	49.19	3.81	3.81
	Total	**374.15**	**324.71**	**49.44**	**49.44**

- Under NREGA almost all the activities required for watershed development are permitted. Convergence between NREGA and Watershed Programmes of DoLR will be mutually beneficial for rain fed areas.

7.5.2 Non-Negotiable for works executed under MGNREGA

- Only Job Card holders to be employed for MGNREGA component.

- Muster rolls will be maintained on work site, with copies in the Gram Panchayat and to be electronically maintained on nrega.nic.in
- Wage payments will be through no-frills accounts in banks/post offices.

Need for Convergence: Since more than 56% of activities related to Watershed development are covered under MGNREGA, there is need for convergence to meet gap in Funds requirements under IWMP. Detailed survey had been conducted in Watershed villages and it has emerged that there is need for more funds to augment and strengthen the activities under IWMP. All six micro watersheds need more funds to meet the gap. Therefore, some of the works are proposed to be converged with MGNREGA. The labour component would be met out of funds made available under MGNREGA.

7.5.3 Convergence with Forest Department

The unit cost of agro- forestry component for 1 ha area (1100 plant) for plantation and other activity is Rs. 18767/-. The provision of Rs. 15000/- per ha has given in IWMP programme. The rest amount of Rs. 3767/- will be convergent from lined department from departmental schemes or MGNREGA.

7.5.4 Convergence with Horticulture Department

National Horticulture Mission is implementing the horticulture development programme which includes construction of water harvesting structures, drip and sprinkler irrigation activities which would be undertaken in convergence with the horticulture department. Under this activity 23.75 ha horticulture development programme with the financial assistance of Rs. 9.50 lakh has been provided in the project proposals. This would also be undertaken by convergence with the horticulture department.

7.5.5 Convergence with Agriculture Department

The activities under NRM like Dug out Pond, Cement Stone Masonry structures (Inlet & Outlet), Roof Top Rain water Harvesting Structures, Earthen Embankment with pucca outlet, Small Earthen Embankments, Water conveyance system, Dry stone Masonary structures, Silt Detention Dam, Community Water Storage Tank etc. where the machinery and material component is required and the unit cost exceeds for completion exceeds to the project provision, the same will be met in convergence with the similar activities of the agriculture.

7.5.6 Convergence with Animal Husbandry Department

The watershed falls in the water deficit conditions for production of fodder and depends upon the rain. The rainfall pattern is erratic. There is deficiency of green fodder and nutrients for the animals. The provision has been kept for providing mini kits for of life saving medicines/ mineral mixture, concentrate feed and fodder seeds. Since the provision of these kits is less than the required, hence this would be met with the lined department who has a provision under their ongoing programmes.

CHAPTER – 8

QUALITY AND SUSTAINABILITY

8.1 Monitoring and Evaluation

8.1.1 Plans for Monitoring and Evaluation:

Web based GIS system is being developed for Monitoring and Evaluation at various stages of project while in progress and post project stage. The satellite imageries are also helpful in monitoring all activities of the watershed area (Pre project, during project and post project). All the details relating to Watershed Activities would be available on website. The system is very useful to know the progress of the project at the click of the button. The higher officials would be able to monitor the progress and could generate the desired reports. The system would also help beneficiaries to know the area of importance, already treated area/ area to be treated. The system would serve an aiding tool to the planners and evaluators for judging the efficacy of the project.

8.1.2 Monitoring

Regular Monitoring of the project will have to be carried out at each stage to monitor the progress of the project. Different streams of monitoring are proposed as under:

1. Internal Monitoring by PIA/ WCDC
2. Progress and Process monitoring
3. GIS/ On line Monitoring

4. Sustainability monitoring
5. Self Monitoring by communities
6. Social Audits
7. Independent and external monitoring

Monitoring of watershed related activities will be carried out after completion of each phase. 1% amount of the project is earmarked under this component. Micro Watershed wise details are given below:

Table 1. Micro Watershed wise details

S.no	Name of the Micro Watersheds	Effective Area	Total Cost	Monitoring 1%
1	Ransika	385	46,20,000	46,200
2	Lakhnaka	480	57,60,000	57,600
3	Malai	732	87,84,000	87,840
4	Gohpur	405	48,60,000	48,600
5	Guraksar	490	58,80,000	58,800
6	Rupraka	715	85,80,000	85,800
7	Khilluka	451	54,12,000	54,120
8	Tonka	442	53,04,000	53,040
9	Utawar	732	87,84,000	87,840

8.2 EVALUATION

Each evaluation will include physical, financial, and social audit of all work done. The objective of evaluation of the project is to assess the status of watershed related interventions in the project. The evaluation will be taken up in three stages of the project. The Evaluation will be done by agencies empanelled on SLNA.

1% amount of the project is earmarked under this component. Micro Watershed wise details were as under:

Table 2. Micro Watershed wise details

S.no	Name of the Micro Watersheds	Effective Area	Total Cost	Evaluation 1%
1	Ransika	385	46,20,000	46,200
2	Lakhnaka	480	57,60,000	57,600
3	Malai	732	87,84,000	87,840
4	Gohpur	405	48,60,000	48,600
5	Guraksar	490	58,80,000	58,800
6	Rupraka	715	85,80,000	85,800
7	Khilluka	451	54,12,000	54,120
8	Tonka	442	53,04,000	53,040
9	Utawar	732	87,84,000	87,840

CONSOLIDATION PHASE- 3 %

Consolidation Phase = Rs. 17, 39,520 /-

8.3 CONSOLIDATION PHASE

This is another important activity under the project. In this phase, the resources augmented and economic plans developed in Phase II are made the foundation to create new nature based, sustainable livelihoods and raise productivity levels. There needs to be some mechanism at Watershed Level for the following crucial Activities as detailed below:

I. Managing/upgrading of all activities taken up under the Project.

II. Preparation of Project completion report and

III. Documentation of success stories

IV. Management of proper utilization of WDF

V. Mechanism for Quality and sustainability issues under the Project.

VI. Mechanism for fixation and collection of User Charges.

VII. Consolidation of works

VIII. Building the capacity of community based organizations to carry out the new agenda – post project period.

IX. Intensification of farm production systems/off farm livelihoods

X. Project Management related aspects

To take up these activities, it is proposed In the DPR as under:

Name of Micro watershed: Ransika

Table 3. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.28
2	Preparation of Project completion report	0.07
3	Documentation of success stories	0.07
4	Management of proper utilization of WDF	0.21
5	Mechanism for quality and sustainability issues under the Project	0.07
6	Watershed activities	0.69

Total: 1.39 lacs

Name of Micro watershed: Lakhnaka

Table 4. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.35
2	Preparation of Project completion report	0.08
3	Documentation of success stories	0.09
4	Management of proper utilization of WDF	0.26
5	Mechanism for quality and sustainability issues under the Project	0.09
6	Watershed activities	0.86

Total: 1.73 lacs

Name of Micro watershed: Malai

Table 5. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)

1	Managing/ upgrading of all activities taken up under the project	0.53
2	Preparation of Project completion report	0.13
3	Documentation of success stories	0.13
4	Management of proper utilization of WDF	0.40
5	Mechanism for quality and sustainability issues under the Project	0.13
6	Watershed activities	1.32

Total: 2.64 lacs

Name of Micro watershed: Gohpur

Table 6. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.29
2	Preparation of Project completion report	0.08
3	Documentation of success stories	0.07
4	Management of proper utilization of WDF	0.22
5	Mechanism for quality and sustainability issues under the Project	0.07
6	Watershed activities	0.73

Total: 1.46 lacs

Name of Micro watershed: Guraksar

Table 7. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.35

2	Preparation of Project completion report	0.09
3	Documentation of success stories	0.09
4	Management of proper utilization of WDF	0.26
5	Mechanism for quality and sustainability issues under the Project	0.09
6	Watershed activities	0.88

Total: 1.76 lacs

Name of Micro watershed: Rupraka

Table 8. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.51
2	Preparation of Project completion report	0.13
3	Documentation of success stories	0.13
4	Management of proper utilization of WDF	0.38
5	Mechanism for quality and sustainability issues under the Project	0.13
6	Watershed activities	1.29

Total: 2.57 lacs

Name of Micro watershed: Khilluka

Table 9. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.33
2	Preparation of Project completion report	0.08

3	Documentation of success stories	0.08
4	Management of proper utilization of WDF	0.24
5	Mechanism for quality and sustainability issues under the Project	0.08
6	Watershed activities	0.81

Total: 1.62 lacs

Name of Micro watershed: Tonka

Table 10. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.32
2	Preparation of Project completion report	0.08
3	Documentation of success stories	0.08
4	Management of proper utilization of WDF	0.24
5	Mechanism for quality and sustainability issues under the Project	0.08
6	Watershed activities	0.79

Total: 1.59 lacs

Name of Micro watershed: Utawar

Table 11. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.53
2	Preparation of Project completion report	0.13
3	Documentation of success stories	0.13

4	Management of proper utilization of WDF	0.40
5	Mechanism for quality and sustainability issues under the Project	0.13
6	Watershed activities	1.32

Total: 2.64 lacs

As per the common guideline the management of developed natural resources would involve the following features:

- Improving the sustainability of various structures and equitable distribution. The watershed committee will fix the charges of water and the funds generated would be utilized O & M Structures. These users charges account will be maintained separately.
- Involvement of Gram Panchayat for repair, maintenance and protection of created structures.

CHAPTER – 9

EXPECTED OUTCOME

EXPECTED OUTCOMES

The effective area is 4832 ha and the Project Cost is 579.84 lacs covering 9 no. micro watersheds and in all 23 villages. Benefits will be much more than the project cost as detailed below:

With the several interventions under IWMP I project such as Livelihood support, Farm production system, various types of activities relating to soil conservation measures for diversification of crops, Protection to field by constructing the structures etc, it is expected that these Watershed villages will gain a lot. This intervention will have multiple benefits available to communities in terms of employment, check in migration, improvement in water table, more area under agriculture and horticulture, check in soil loss and decrease in Flood and drought incidences, improvement in crop yield, milk yield, check in degradation of land etc. The benefits thus accrued would be short term and long term. With the judicious use of funds available under IWMP and with convergence from MGNREGA and other schemes of Departments, this project of Utawar Watershed I will prove to be very beneficial in improving socio – economic status of people residing in Project villages.

Expected outcomes as mentioned above are given in the following tables:

9.1 EMPLOYMENT

Employment has always been a problem in the village. The principal occupations of the people are rain fed agriculture, animal husbandry and casual labour work. However, rainfall being limited and erratic, agriculture suffers, i.e. best they can take only single crop, which keeps them partially engage 4 to 5 months. Similarly due to lack of fodder animal husbandry does not keep them engage full time.

Table 1. Expected Employment Generation in the Project area

S.N.	Name of micro watersheds	Wage employment						Self employment			
		No. of man days			No. of Beneficiaries			No. of Beneficiaries			
		SC	Others	Total	SC	Others	Total	SC	Others	Women	Total
1	Ranshika	800	3200	4000	20	80	100	10	20	5	35
2	Lakhnaka	900	3900	4800	30	130	160	20	30	10	60
3	Malai	1200	5400	6600	40	120	160	20	30	10	60
4	Gohpur	800	3200	4000	20	80	100	10	20	5	35
5	Guraksar	1000	4000	5000	25	95	120	12	21	4	37
6	Rupraka	1800	5400	7200	60	180	240	25	40	10	75
7	Khilluka	900	3600	4500	30	120	150	15	20	7	42
8	Tonka	900	3600	4500	30	120	150	15	20	7	42

9	Uttawar	1500	5500	7000	50	180	230	25	40	10	75
	Total	**9800**	**37800**	**47600**	**305**	**1105**	**1410**	**152**	**241**	**68**	**461**

47600 man days would be generated with the implementation of the project in Utawar Watershed (IWMP I), which means 95 person for 100 days per year would be employed for the period of five years. In addition to this cropped area/ productivity would be increased and will also generate employment.

9.2 MIGRATION PATTERN

Table 2. Pre and Post Migration in Utawar Watershed (IWMP I)

S. No	Name of micro watersheds	No. of persons migrating		No. of days per year of migration		Comments
		Pre Project	Expected post project	Pre Project	Expected post project	
1	Ransika	410	205	60-90	30-45	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
2	Lakhnaka	535	268	60-90	30-45	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
3	Malai	921	461	60-90	30-45	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
4	Gohpur	564	282	60-90	30-45	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
5	Guraksar	436	218	60-90	30-45	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%

6	Rupraka	765	383	60-90	30-45	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
7	Khilluka	405	203	60-90	30-45	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
8	Tonka	384	192	60-90	30-45	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
9	Utawar	880	440	60-90	30-45	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%

A comparison of above table with expected migration of table 19 of the Chapter 3 reveals that there will be about 50% reduction in the migration.

9.3 GROUND WATER TABLE (Drinking Water)

The Drinking Water supply is managed by Public health Department by Installing Tube well in the area the project is expected to augment the ground water resources with the proposed water harvesting structure. Through the ground water table is depleting over the years and presently stands 2.30 to 27.50 m.

Table 3. Detail of average pre- post ground water table depth in the project area (in meters)

S.No	Name of Micro watersheds	Name of Villages	Source	Pre-Project level (m)
1	Ranshika	Buraka	Husmat well	9.40
		Ranshika	Kamru ki kothi well	3.90
		Babupur	Drinking well	5.40
2	Lakhnaka	Dhiranki	Panchveer well	10.50
		Lakhnaka	Khade ka well	5.80
		Kukarchati	Badi kothi well	9.20

		Paharpur	Bodha well	9.80
3	Malai	Jalalpur	Gola well	6.00
		Bhimseeka	Tisra well	9.20
		Dhakalpur	School well	7.30
		Malai	Dulaya well	8.20
4	Gohpur	Panchnaka	Khari well	9.70
		Gohpur	Pond well	12.30
		Andhrola	Ladmiya well	8.30
5	Guraksar	Guraksar	Piwane wala well	20.20
		Mohdamka	Johad wala well	8.30
6	Rupraka	Rupraka	Kamla wala well	13.70
7	Khilluka	Khilluka	Naya well	11.80
		Jarai	Johad wala well	27.20
		Bhodpur	Jangal wala well	26.30
8	Tonka	Ghurawali	Bodi ka well	2.80
		Tonka	Gola ka well	2.40
9	Uttawar	Uttawar	Sangra ka well	12.90

Source: Ground Water Cell, Haryana

9.4 CROPS

Agriculture primary depends upon water, but this is availability of this is lacking without existence of canal network and deeper ground water conditions. All this can change with the integrated land and water management during the watershed project. The planned Dug out Pond, Cement Stone Masonry structures (Inlet & Outlet), Roof Top Rain water Harvesting Structures, Small Earthen Embankments (Common land), land leveling (common land), cattle trough, Water conveyance system, Retaining wall, Plantation & Community Water Storage Tank etc. can preserve sub moisture in the soil. This will help in additional area coming under cultivation and increasing productivity too. The crop yield pre project and expected and post project is presented in table 4**.**

Table 4. Increase in Expected Yield in Utawar Watershed (IWMP I)

Name of Micro watersheds	Name of crops	Pre project		Total production (in Qtl)	Total value Rs. (in lacs)	Expected post project		Total production (in Qtl)	Total value Rs. (in lacs)
		Area (ha)	Averge yield Qtl. per. ha			Area (ha)	Averge yield Qtl. per. ha		
Ranshika	Wheat	220	21	4680	63.18	250	23	5750	77.62
	Mustered	110	11	1160	31.32	150	12	1800	48.60
	Bajra	165	16	2600	23.40	200	17	3400	30.60
Lakhnaka	Wheat	300	20.5	6300	85.05	330	22	7260	98.01
	Mustered	125	10.5	1325	35.77	140	12	1680	45.36
	Bajra	225	15	3290	29.61	250	16	4000	36.00
Malai	Wheat	470	21.5	10980	148.23	500	23	11500	155.25
	Mustered	225	11	2555	68.98	250	12	3000	81.00
	Bajra	340	14.25	4910	44.19	360	15	5400	48.60
Gohpur	Wheat	240	23.60	5720	77.22	260	25	6500	87.75
	Mustered	100	11.50	1140	30.78	125	12.50	1562.50	42.19
	Bajra	150	13.67	2045	18.40	175	14	2450	22.05
Guraksar	Wheat	320	24.50	7930	107.05	350	26	9100	122.85
	Mustered	130	11.50	1530	41.31	150	12.50	1875	50.62
	Bajra	220	14.25	3170	28.53	250	15	3750	33.75
Rupraka	Wheat	450	25	11250	151.87	500	26	13000	175.50
	Mustered	200	12	2400	64.80	225	13	2925	78.97
	Bajra	300	15	4500	40.50	340	15.5	5270	47.43
	Wheat	270	24.33	6730	85.45	300	25	7500	101.25

Khilluka	Mustered	128	12.33	1604	43.31	140	13	1820	49.14
	Bajra	170	15	2560	23.04	200	15.5	3100	27.90
Tonka	Wheat	280	25.50	7200	97.20	300	26	7800	105.30
	Mustered	140	12.50	1780	48.06	150	13	1950	52.65
	Bajra	190	14.75	2870	25.83	200	15	3000	27.00
Uttawar	Wheat	400	27	10800	145.80	450	27.5	12375	167.06
	Mustered	300	14	4200	113.40	330	15	4950	133.65
	Bajra	320	15.50	4960	44.64	320	16	5120	46.08
		6488		120189	1716.92	7195		137837.5	1992.18

Source: Revenue Department and Department of Agriculture, Palwal (Haryana)

9.5 HORTICULTURE

Table 5. Pre and post project area under Horticulture

S.No.	Name of Micro watersheds	Existing area under horticulture (ha)	Additional area under horticulture proposed to be covered through IWMP	Total area in Ha post project
1	Ranshika	1.4	1.6	3
2	Lakhnaka	0.4	0.6	1

3	Malai	2.8	2.2	5
4	Gohpur	0	2	2
5	Guraksar	0.4	1.6	2
6	Rupraka	0	2	2
7	Khilluka	0	1.5	1.5
8	Tonka	0.4	1.6	2.0
9	Uttawar	1.0	1.0	2.0

9.6 AFFORESTATION/ VEGETATIVE COVER

Table 6. Pre and post project forest and vegetative cover

S.No.	Name of Micro watersheds	Existing area under tree covered (ha)	Area under tree proposed ha.	Total
1	Ranshika	3.2	4.0	7.2
2	Lakhnaka	2.6	2.6	5.2
3	Malai	4.0	5.0	9.0
4	Gohpur	0.6	3.4	4.0
5	Guraksar	3.0	5.0	8.0
6	Rupraka	5.0	5.0	10.0
7	Khilluka	3.5	5.5	9.0
8	Tonka	2.0	3.5	5.5
9	Uttawar	5.0	12.0	17.0

9.7 LIVESTOCK

Table 7. Details of livestock in the project area

S.No.	Name of watersheds	Types of Animals	Pre project			Post project			Remarks
			No.	Yield Ltr /day	Income in Rs. Per day	No.	Yield ltr./ day	Income in Rs. In lacs Per day	
1	Ranshika	Buffalo	3600	7-8	224-256	4000	9-10	342-380	Increase in milk yield and number of animals by approx. 15%
		Cow	1577	3-4	78-104	1600	5-6	150-180	Increase in milk yield and number of animals by approx. 15%
2	Lakhnaka	Buffalo	3760	7.5-8.5	240-272	4000	9.5-10.5	361-399	Increase in milk yield and number of animals by approx. 15%
		Cow	1025	3.5-4.5	91-117	1100	5.5-6.5	165-195	Increase in milk yield and number of animals by approx. 15%
3	Malai	Buffalo	6800	7.5-8.5	240-272	7000	9.5-10.5	361-399	Increase in milk yield and number of animals by approx. 15%
		Cow	2055	3-4	78-104	2100	5-6	150-180	Increase in milk yield and number of animals by approx. 15%
4	Gohpur	Buffalo	2100	7-8	224-256	2300	9-10	342-380	Increase in milk yield and number of animals by approx. 15%
		Cow	122	3.5-4.5	91-117	150	5.5-6.5	165-195	Increase in milk yield and number of animals by approx. 15%
5	Guraksar	Buffalo	2750	7.5-8.5	240-272	3000	9.5-10.5	361-399	Increase in milk yield and number of animals by approx. 15%
		Cow	230	3-4	78-104	250	5-6	150-180	Increase in milk yield and number of animals by approx. 15%
6	Rupraka	Buffalo	2000	7.5-8.5	240-272	2200	9.5-10.5	361-399	Increase in milk yield and number of animals by approx. 15%
		Cow	100	3-4	78-104	120	5-6	150-180	Increase in milk yield and number of animals by approx. 15%
7	Khilluka	Buffalo	2450	7-8	224-256	2700	9-10	342-380	Increase in milk yield and number of animals by approx. 15%
		Cow	310	3.5-4.5	91-117	330	5.5-6.5	165-195	Increase in milk yield and number of animals by approx. 15%

8	Tonka	Buffalo	2765	7-8	224-256	3000	9-10	342-380	Increase in milk yield and number of animals by approx. 15%
		Cow	145	3-4	78-104	160	5-6	150-180	Increase in milk yield and number of animals by approx. 15%
9	Uttawar	Buffalo	10000	7.5-8.5	240-272	12000	9.5-10.5	361-399	Increase in milk yield and number of animals by approx. 15%
		Cow	1000	3.5-4.5	91-117	1100	5.5-6.5	165-195	Increase in milk yield and number of animals by approx. 15%

9.8 LINKAGES

The direct livelihood activities need good forward and backward support system. The activities may fail to deliver the desired results. These linkages would involve credit, machinery, input supply, marketing etc.

The backward forward linkages will involved the extension services which are brought available in the project proposal as capacity building and the provision have been kept. 20 kits of agriculture implement have been provided. Milk and other collection centre would be constituted with increased milk production under the project.

Table 8: Backward-Forward Linkages

Sr. No.	Project	Type of Marketing Facility	Pre-Project (no.)	During the Project (no.)	Post-project (no.)
1	Utawar Watershed (IWMP I)	Backward linkages	-	-	-
		Seed certification	Moderate	Extension and Training	Improved
		Seed supply system	Moderate	Extension and Training	Improved
		Fertilizer supply system	Moderate	Extension and Training	Improved
		Pesticide supply system	Moderate	Extension and Training	Improved
		Credit institutions	Banks	Coordinate to lead banks	Bank intensity increased
		Water supply for irrigation	Scarcity	Promote rain water harvesting	Would be promoted
		Extension services	KGK& Agriculture deptt.	Extension & Training in village level	Improved
		Nurseries	Horticulture and forest	To be promoted	Improved

		Tools/ machinery suppliers	Subsides	Educate by Extension & Training	Supplies would be improved
		Price support system	Major crops	-	Needs for all crops
		Labour	-	Employment generate through works activities	Migration reduce
		Any other (please specify)	-	-	-
		Road network	Available	Coordinate with lined department	Would be strengthen
		Transport facilities	Moderate	Coordinate with lined department	Would be promoted
		Markets / Mandies	Exists	Coordinate with lined department	Intensity would be increased
		Agro and other industries	-	Coordinate with lined department to establish Cottage industries (Kutir Udyog) for landless and unemployed youth	Would be strengthen
		Milk and other collection centres	Milk collection centre in long distance	Coordinate with lined department	For installation on nearest door steps
		Any other (please specify)	-	-	-
			Vermi-compost unit	Convergence with NHM (Horticulture) department	To be increased
			Mushroom Cultivation	Convergence with NHM (Horticulture) department	To be increased
			Animal vitamins/ Minerals Deficit	Coordinate with lined department, to organize camps in watershed area	Animal vitamins feeds Would be promoted

9.8.1 LOGICAL FRAMEWORK ANALYSIS

Table 9. Logical Framework Analysis

Components	Activities	Outputs	Effect	Impact
Village Institution Formation	Formation of Watershed committee, User Groups	• Watershed Committee each village • Number of user groups depending on the coverage of particular intervention	Project can be implemented and managed in a democratic and Participatory way ensuring equity and transparency.	• Unity and prosperity in the village management. • People's Participation and positive perception towards the programme.
Strengthening Village operations	• Organizing training and awareness programme for village institutions (I.E.C. Activities). • Capacity Building workshops and exposure visits for User Group and Watershed Community • Facilitating and monitoring the functioning of UGs and WCs Strengthen	• Awareness camps to be organized • Trainings and exposure visits UGs and WCs to be held Capacity building workshops to be organized one. • Federations of UGs and WC to be formed.	• Quality of management of common resources improved. • Quality of distribution of benefits between people improved. • Increased awareness amongst women about village resources • Women participation enhanced in decision-making of GVCs. • Involvement of youth and children in village development.	

Components	Activities	Outputs	Effect	Impact
	linkages between UGs and WCs and Panchayat Institutions • Gender sensitization of UGs and WCs to increase inclusiveness of Samuh (Joint) decision making. • Sensitize Village communities to involve children and youth in development			
Fund Management	• Improve management and utilization of UGs and WCs • Prepare communities to explore other sources of income for UGs	UGs and WCs operating bank account and managing resources on their own.	• Purpose, frequency and volume of use of the fund enhanced • Volume of funds generated for UGs and WCs from other sources of income increased	

Components	Activities	Outputs	Effect	Impact
	and WCs.			
Ecological restoration	• Protection, Treatment and regeneration of common and private lands. • Protection, treatment and regeneration of forest lands. • Plantation of fruits and forest species. • Input trainings, conduct meetings and organize exposure visits for communities, village volunteers and staff to effectively plan, execute and monitor activities. • Identification	• Common and private lands to be brought under new plantations and agro-horti- forestry like Neem, Adussa, prosopis, Banyan and Peepul. • Forest lands to be brought under new plantations and protection. • Trainings, exposure visits and meetings to be organized for communities, village volunteers and staff. • Income generation intervention promoted	• Fodder availability from common and private land increased. • Accessibility to common and forest lands increased with removal of encroachments and resolution of conflicts	• Better Ecological order in the area. • Increase in the proportion of households having more security of fodder. • Reduction in drudgery of fodder and fuel collection, especially women

Components	Activities	Outputs	Effect	Impact
	and promotion of non-timber forest produce based income generation activities.			
Rainfed Area Development	• Treatment of land through improved soil and moisture conservation practices on watershed basis. • Promotion of good agricultural practices- horticulture, improved crop and vegetable. • Promotion of organic farming practices. • Formation of Fodder banks to increase fodder security and	• Land to be brought under improved soil moisture conservation practices. • Good agricultural practices to be promoted. • Organic farming to be promoted. Fodder banks to be established. • Agriculture based livelihood income generation activities to be promoted • Water harvesting structures to be constructed. • Drip irrigation facilities to be distributed among	• Improved productivity of treated land. • Increased availability of water in cells. • Increase in annual agricultural production. • Farmers adopt organic farming practices. • Fodder security of farmers enhanced. • Increased availability of water for 9 to12 months. • Increased availability of water for livestock • Increase in agricultural productivity of land. • Augmentation of	Increase in proportion of households having more security of food Increase in contribution of agricultural income to the household income

Components	Activities	Outputs	Effect	Impact
	promote dairy development among communities. • Identification and promotion of agri-produce based income generation activities like grading, processing and packaging. • Promotion of better irrigation practices like drip irrigation • Impart trainings, conduct meetings and organize exposure visits of communities.	farmers. • Approx 15000 person days of employment to be generated. • Trainings, exposure visits and meetings to be organized for communities, village volunteers.	drinking water supply.	
Women's socio-political and economic empowerment	• Formation and strengthening of women' SHG groups • Capacity building	• Women's SHG groups to be formed. • Federation of Women's SHGs to be formed.	• Enhanced capacities of leaders of women's group in taking initiatives to solve problems at	• Position of women in household, community, society (politically, socially and economically) as

Components	Activities	Outputs	Effect	Impact
	of women folk. • Capacity building of SHG leaders and accountants Linking SHGs with external financial institutions	• Trainings to be conducted for preparation of woolen products from sheep and goats	different levels. • Improved access to credit for livelihood purposes Increased household income.	perceived by women and community at large. • Performance enhancement of SHGs in terms of participation, decision-making, leadership and fund management. • Equality and equity in gender relations at home (decision making, expenditure, children's education, health)

The adoption of soil and water management practices, renovation of village ponds and plantations not only improve productivity but also improve village environment. The investments made in water resources development would ease shortage of water both for domestic use and livestock and also make available water for supplemental irrigation.

The introduction of improved production technologies would stabilize crop production, save crops from adverse impacts of droughts and raise income level of farmers. The increased fodder availability and animal health care, the milk production would increase. There would be increased cash flows from subsidiary occupations. The increased awareness, operations through SHGs and easy availability of finance would make the communities more vibrant and enterprising.