Contents (IWMP II)

CHAPTER- 1

METHODOLOGY

INTRODUCTION

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 since 2003. 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 area (IWMP II) programme, a systematic baseline survey has been conducted to know the potentiality of the village. With this view, a baseline survey was conducted in nine micro- watersheds Mohdinpur (2C5G6h8), Nainsukhpura (2C5G6h7), Boria Kamalpur (2C5G6h9), Mandhiya Khurd (2C5G6j5), Dehlawas (2C5G6d8), Hussainpur (2C5G6r5),

Thothwal (2C5G6s1), Jatuwas (2C5G6r7), Jaitrawas (2C5G6c8). 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 cluster (IWMP II) of 9 micro watersheds namely Mohdinpur (2C5G6h8), Nainsukhpura (2C5G6h7), Boria Kamalpur (2C5G6h9), Mandhiya Khurd (2C5G6j5), Dehlawas (2C5G6d8), Hussainpur (2C5G6r5), Thothwal (2C5G6s1), Jatuwas (2C5G6r7), Jaitrawas (2C5G6c8) 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. The methodology adopted was as follows:

1.1.3 Collection of Primary Data

Though the project was sanctioned in September, 2011 the preparatory phase started in 2012. Initially, a meeting was arranged with officials of concerned departments and technical experts located at Mohdinpur, Nainsukhpura, Boria Kamalpur, Mandhiya Khurd, Dehlawas, Hussainpur, Thothwal, Jatuwas, Jaitrawas micro- watersheds. During this meeting, Preliminary Project Report (PPR) 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, employment scenario, agriculture produce and other problems related to the area were assessed. Sarpanches and local people were involved in the discussions and a note of the local needs and scope of watershed works was taken up.

The survey of India toposheets (Survey of India) of the area available on the 1:50000 scales of the project area were procured and all assigned villages were marked on the copies of the toposheets (Survey of India) as well as on the maps prepared by Soil and Land Use Survey of India (SLUSI).

The primary data related to land holding, crop area and production were collected from agriculture and revenue records of the village, the socio economic data of the target villages were procured 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 yield level of fruits and vegetable crops, marketing facilities, fodder production, agro-forestry crops, live stock 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 discussed, debated and recorded. Rainfall data was collected from the Deputy Director Agriculture (PPR).

1.2 PARTICIPATORY RURAL APPRAISAL

The due process of Participatory Rural Appraisal was followed in which village committees were sensitized about 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 meetings were organized at common places and problems with possible solution were debated, discussed and efforts were made to reach an 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 new 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 were thoroughly discussed with the community and to the Watershed Committees (WC) in detail.

1.2.1 Participatory 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 Water Conveyance system, Ramp/Ghat Inlet and Outlet, Dug Out Pond (New/Renovation), Small Earthen Embankment with vegetative support, Roof top rain water recharge structures, Strengthening of Water Conveyance Channel (Water Course in fields) (Water Saving Technology) etc. 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.




Transect walk

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 member's participation in group discussion

1.3 USE OF GIS TECHNOLOGY FOR PLANNING

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

Various maps were prepared such as Base map, Present Land Use, Drainage and Contours, Slope, Soil Classification, Land Capability Classification, Soil Fertility Status, Ground Water Depth and Quality, Proposed and existing activities of works. All Watershed maps (micro- watershed) have been prepared using Soil and Land use Survey of India (SLUSI) maps 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 and project objectives.

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 structure like Water Conveyance system, Ramp/Ghat Inlet and Outlet, Dug Out Pond (New/Renovation), Small Earthen Embankment with vegetative support, Roof top rain water recharge structures, Strengthening of Water Conveyance Channel (Water Course in fields) (Water Saving Technology) etc. 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 projects

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	Yes
	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
	Vermin- compost	Yes
	Bio Fertilizer	Yes

S.No.	Scientific Criteria/input used	Whether Scientific Criteria was used
	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 Additional Deputy Commissioner 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 (IWMP-II) project is falls in Jatusana and Rewari block of Rewari district in Haryana state. The project is a cluster of nine micro- watersheds namely Mohdinpur (2C5G6h8), Nainsukhpura (2C5G6h7), Boria Kamalpur (2C5G6h9), Mandhiya Khurd (2C5G6j5), Dehlawas (2C5G6d8), Hussainpur (2C5G6r5), Thothwal (2C5G6s1), Jatuwas (2C5G6r7), Jaitrawas (2C5G6c8). The total geographical area of the project is **4777 ha** out of which **4570 ha** has been undertaken to be treated under IWMP-II starting from year 2011-2012. 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	Mohdinpur watershed (IWMP II)	Mohdinpur	2C5G6h8	Mohdinpur	Jatusana	Rewari	329	319	38.28	ASCO Rewari
2	Mohdinpur	Nainsukhpura	2C5G6h7	Nainsukhpura	Jatusana	Rewari	747	729	87.48	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
	watershed (IWMP II)			Balawas Jamapur						Rewari
3	Mohdinpur watershed (IWMP II)	Boria Kamalpur	2C5G6h9	Boria Kamalpur Rasooli	Jatusana	Rewari	510	485	58.20	ASCO Rewari
4	Mohdinpur watershed (IWMP II)	Mandhiya Khurd	2C5G6j5	Mandhiya Khurd Gulabpura	Jatusana	Rewari	563	543	65.16	ASCO Rewari
5	Mohdinpur watershed (IWMP II)	Dehlawas	2C5G6d8	Dehlawas Chowki No. 2	Jatusana	Rewari	642	617	74.04	ASCO Rewari
6	Mohdinpur watershed (IWMP II)	Hussainpur	2C5G6r5	Hussainpur Narayanpur	Rewari	Rewari	448	427	51.24	ASCO Rewari
7	Mohdinpur watershed (IWMP II)	Thothwal	2C5G6s1	Thothwal Daliaki Dana Alampur Nangli godha	Rewari	Rewari	556	524	62.88	ASCO Rewari
8	Mohdinpur watershed (IWMP II)	Jatuwas	2C5G6r7	Jatuwas Kharsanki Akbarpur	Rewari	Rewari	499	464	55.68	ASCO Rewari

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
9	Mohdinpur watershed (IWMP II)	Jaitrawas	2C5G6c8	Jaitrawas	Rewari	Rewari	483	462	55.44	ASCO Rewari
				Kharkhari Bhima						
					Grand Total		**4777**	**4570**	**548.40**	

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 rain fed 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)

S. No.	Criteria	Maximum Score	Ranges and Scores			
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)	
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	15	Above 6 micro-watersheds in cluster (15)	4 to 6 micro-watersheds in cluster (10)	2 to 4 micro-watersheds in cluster (5)	

S. No.	Criteria	Maximum Score	Ranges and Scores			
	project)					
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 97.5 concerning these thirteen parameters, a composite ranking was given to Mohdinpur Watershed (IWMP II) project as given in **Table- 3.**

The total numbers of families under BPL are less than the total number of households in the village. Hence a score of 5 was allotted. Rain fed agriculture is more and more than 80 percent and more than 50 % farmers are small and marginal. So the scoring is done 5. The project area comes under Arravalli range and Sahibi basin of Haryana, has no assured irrigation facility, erratic rainfall, deep, poor quality and less ground water discharge, hence the ground water status score is 5. The percentage of schedule castes in this watershed is about 30 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. 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 97.5.

Table- 3: Weightage of the Project

1	2	3	4	5	6	7	8	9													
Sr. No.	District	Name of the project	No. of micro-water-sheds proposed to be covered	Geographical area (ha)	Proposed Area for Development	Type of project (Hilly/ Desert/ Others)	Proposed cost (Rs. In Lakh)	Weightage under the criteria													
								i	ii	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	Total
1.	Rewari	Mohdinpur watershed (IWMP II)	9	4777	4570	others	548.40	5	5	0	5	5	15	15	7.5	5	10	10	15	0	97.5

Table 4: Watershed Information

Name of the Project	No. of Micro-Watersheds to be Treated	Watershed codes	Watershed regime/type/order

Mohdinpur watershed (IWMP II)	9	2C5G6h8, 2C5G6h7, 2C5G6h9, 2C5G6j5, 2C5G6d8, 2C5G6r5, 2C5G6s1, 2C5G6r7, 2C5G6c8	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), Total Sanitation Campaign (TSC), Swarnajaynti Gram Swarojgar Yogna (SGSY) and Indira Awas Yojana (IAY), NWDPRA. The programmes that are active in this area are 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 for year 2013-14 (Job card issued)
1	MGNREGA	Mohdinpur	DRDA, Rewari	To provide assured employment of 100 days in a year to unskilled labour and development of village.	91
2	MGNREGA	Nainsukhpura	DRDA, Rewari	To provide assured employment of 100 days in a year to unskilled labour and development of village.	207
3	MGNREGA	Boria Kamalpur	DRDA, Rewari	To provide assured employment of 100 days in a year to unskilled labour and development of village.	135
4	MGNREGA	Mandhiya Khurd	DRDA, Rewari	To provide assured employment of 100 days in a year to unskilled labour and development of	178

				village.	
5	MGNREGA	Dehlawas	DRDA, Rewari	To provide assured employment of 100 days in a year to unskilled labour and development of village.	208
6	MGNREGA	Hussainpur	DRDA, Rewari	To provide assured employment of 100 days in a year to unskilled labour and development of village.	191
7	MGNREGA	Thothwal	DRDA, Rewari	To provide assured employment of 100 days in a year to unskilled labour and development of village.	109
8	MGNREGA	Jatuwas	DRDA, Rewari	To provide assured employment of 100 days in a year to unskilled labour and development of village.	55
9	MGNREGA	Jaitrawas	DRDA, Rewari	To provide assured employment of 100 days in a year to unskilled labour and development of village.	104

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)

Watershed Area Development Treated/Sanctioned											
1	2	3		4						5	
S. No	**Names of District**	**Total micro watersheds in the District**		**Micro- watersheds covered so far**						**Net watersheds to be covered**	
				Deptt. of Land Resources		**Other Ministries/ Deptt.**		**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	Rewari	402	150678	115	57500	15 (EAS)	7500	130 (221 villages)	65000	181	85678

CHAPTER – 3

BASIC INFORMATION OF THE PROJECT AREA

GEOGRAPHY AND GEOHYDROLOGY

Mohdinpur Watershed (IWMP II) falls in Jatusana and Rewari Block of District Rewari. The area is occupied by Indo- Gangetic alluvium plains and area is traversed and drained by seasonal streams of Sahibi river system. Physiographically, the area is divided Sahibi Basin and depressions. The area of watershed lies in between 28˚08'55''to 28˚20'20'' N Latitude & 76˚28'15'' to 76˚36'35'' east longitude with general elevation varies between 233- 262 m (google earth map) above mean sea level MSL. The average rainfall of district is 702mm. 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, water retention capacity is very low, so area suffers of drought conditions in alternative years. The Contour and Drainage 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 Mohdinpur Watershed (IWMP II)

Sr. No.	Name of Micro Watershed With Code	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	Mohdinpur (2C5G6h8)	Mohdinpur	329	319	288	278	1	40
2	Nainsukhpura (2C5G6h7)	Nainsukhpura	432	425	371	364	0	61
		Balawas Jamapur	315	304	274	263	1	40
3	Boria	Boria Kamalpur	428	413	381	366	0	47

Sr. No.	Name of Micro Watershed With Code	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
	Kamalpur (2C5G6h9)	Rasooli	82	72	69	59	0	13
4	Mandhiya Khurd (2C5G6j5)	Mandhiya Khurd	340	328	298	286	0	42
		Gulabpura	223	215	201	193	0	22
5	Dehlawas (2C5G6d8)	Dehlawas	347	335	317	305	0	30
		Chowki No. 2	295	282	257	244	3	35
6	Hussainpur (2C5G6r5)	Hussainpur	337	325	304	292	1	32
		Narayanpur	111	102	98	89	0	13
7	Thothwal (2C5G6s1)	Thothwal	245	235	214	204	**0**	**31**
		Daliaki	183	173	169	159	0	14
		Dana Alampur	62	57	53	48	0	9
		Nangli godha	66	59	48	41	0	18
8	Jatuwas (2C5G6r7)	Jatuwas	329	315	285	271	10	34
		Kharsanki	93	86	82	75	0	11
		Akbarpur	77	63	70	56	0	7
9	Jaitrawas	Jaitrawas	377	366	343	332	0	34

Sr. No.	Name of Micro Watershed With Code	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
	(2C5G6c8)	Kharkhari Bhima	106	96	95	85	0	11
			4777	**4570**	**4217**	**4010**	**16**	**544**

(Source – District Census Handbook, 2001 Rewari)

3.2 SOIL AND TOPOGRAPHY

The soils of Mohdinpur Watershed are very deep, loamy sand to sandy clay loam, typic ustipssamant/ torripssammant, typic ustorthent/ torriorthent, typic ustifluvents, typic haplustepts and typic haplocambids in the area. The topography of the area ranges from level to nearly level with depression in pockets. Soils are subject to susceptible to moderate water erosion and wind erosion. The slope ranges from 0.5 to 3% most of the area of micro watersheds falls under level to nearly level. In some low lying area small saline patches observed. Slope map is presented in **Annexure IV.**

Table 2. Soil type and Topography

Sr. No.	Name of Micro Watershed	Code	Geographical area (ha)	Major Soil types	Topography
1.	Mohdinpur	(2C5G6h8)	329	Loamy sand to sandy clay loam	Level to nearly level
2.	Nainsukhpura	(2C5G6h7)	747	Loamy sand to sandy clay loam	Level to nearly level
3.	Boria Kamalpur	(2C5G6h9)	510	Loamy sand to sandy clay loam	Level to nearly level

4.	Mandhiya Khurd	(2C5G6j5)	563	Loamy sand to sandy clay loam	Level to nearly level
5.	Dehlawas	(2C5G6d8)	642	Loamy sand to sandy clay loam	Level to nearly level
6.	Hussainpur	(2C5G6r5)	448	Loamy sand to sandy clay loam	Level to nearly level
7.	Thothwal	(2C5G6s1)	556	Loamy sand to sandy clay loam	Level to nearly level
8.	Jatuwas	(2C5G6r7)	499	Loamy sand to sandy clay loam	Level to nearly level
9.	Jaitrawas	(2C5G6c8)	483	Loamy sand to sandy clay loam	Level to nearly level
			4777	Loamy sand to sandy clay loam	Level to nearly level

Source: - Department of Agriculture, Haryana

3.2.1 Flood and Drought Condition

There have been incidences of flood and drought as well in watershed villages. The data collected from the revenue department reveals the instances of temporary flood on an average once in 5- 8 years and drought every or alternative Year. The absence of assured irrigation and drought resulted in low to very low in crop yield.

Table 3. Flood and Drought condition

S.No.	Name of Micro- watersheds	Flood Incidence	Drought Incidence
1.	Mohdinpur	1 time in 5-8 Years	Every or Alternative Year
2.	Nainsukhpura	1 time in 5-8 Years	Every or Alternative Year

3.	Boria Kamalpur	1 time in 5-8 Years	Every or Alternative Year
4.	Mandhiya Khurd	1 time in 5-8 Years	Every or Alternative Year
5.	Dehlawas	1 time in 5-8 Years	Every or Alternative Year
6.	Hussainpur	1 time in 5-8 Years	Every or Alternative Year
7.	Thothwal	1 time in 5-8 Years	Every or Alternative Year
8.	Jatuwas	1 time in 5-8 Years	Every or Alternative Year
9.	Jaitrawas	1 time in 5-8 Years	Every or Alternative Year

3.3 SOILS

3.3.1 Soil Erosion

In the identified nine micro watersheds in twenty villages, it is observed that due to thin 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. Average annual rainfall 702mm of the district falling under these watersheds during heavy storms in rainy season the top soils washed away in the form of runoff which also carries valuable top soil (sheet). Soil erosion in respect of sheet is quite high. Majority of the watershed Community are dependent on rainfed agriculture due to lack of assured irrigation facilities and unsafe ground water conditions. 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 (Salinity ingress):

There is low to moderate soil salinity in the Project and pH is normal and within the limits of 7.10 to 8.50.

Based on the soil samples analysis and reports the village wise distribution of pH is tabulated and shown in Table. 5.

Table 4. Soil pH and Salinity

S.No.	Name of Micro Watersheds	Soil pH	Type of salinity
1.	Mohdinpur	7.15- 8.50	Low to Moderate
2.	Nainsukhpura	7.16- 8.35	Low to Moderate
3.	Boria Kamalpur	7.15- 8.15	Low to Moderate
4.	Mandhiya Khurd	7.17- 8.35	Low to Moderate
5.	Dehlawas	7.15- 8.45	Low to Moderate
6.	Hussainpur	7.10- 8.15	Low to Moderate
7.	Thothwal	7.11- 8.15	Low to Moderate
8.	Jatuwas	7.15- 8.05	Low to Moderate
9.	Jaitrawas	7.20- 8.07	Low to Moderate

3.3.3 SOIL CLASSIFICATION

Major soil associations fall in the watershed are four units. The detailed description of all soil associations are given below. The Soil map is presented in **Annexure V.** The fertility status of the project area, available nitrogen and available 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**.

Soil Mapping Unit- 5 (Berli- Bawal Soil Association)

The Berli soil series is dominated in this soil association and associated soil series is Bawal soil series. The dominant soil is well drained, Loamy sand to Sandy loam to Sandy clay loam, Coarse loamy Mixed hyperthermic Typic Haplustepts, 1st associate soil series is well drained, Loamy sand to Sandy loam, Sandy Mixed hyperthermic Typic Ustipsamments, Berli soil series is non calcareous, very deep, pH 8.40-9.20, dark brown to brown in colour (10YR 4/3-10YR 5/4) developed on Interdunal valley-dune complex/Very gentle sloping/Fine aeolian sand and Bawal soil series is non calcareous, very deep, pH 8.10-8.21, yellowish brown in colour (10YR 5/4-10YR 5/6) developed on Fluvio-aeolian plains/old dry riverbeds.

Soil Mapping Unit- 12 (Jamalpur- Ahrod Soil Association)

The Jamalpur soil series is dominated in this soil association and associated soil series is Ahrod soil series. The dominant soil is excessively drained, sand, Sandy Mixed hyperthermic Typic Ustipsamments, 1st associate soil series is well drained, Loamy sand to Sandy loam to Loam, Coarse loamy Mixed hyperthermic Typic Torriorthents, Jamalpur soil series is non calcareous, very deep, pH 8.00-8.20, dark yellowish brown to yellowish brown in colour (10YR 4/4- 10YR 5/4) developed on Dunal complex/Aeolian over

alluvium and Ahrod soil series is strongly calcareous, very deep, pH 7.90-8.50, dark yellowish brown to yellowish brown in colour (10YR 4/4-10YR 5/4) developed on Very gentle sloping/Undulating in Aeolian plain with Fine medium hard broken dark concretion of calcium carbonate in C horizon.

Soil Mapping Unit- 13 (Bharawas- Sulkha Soil Association)

The Bharawas soil series is dominated in this soil association and associated soil series is Sulkha soil series. The dominant soil is well drained, Sandy loam to Silty loam, Coarse loamy Mixed hyperthermic Typic Haplocambids, 1st associate soil series is excessively drained, loamy sand, Sandy Mixed hyperthermic Typic Torripsamments, Bharawas soil series is non calcareous, very deep, pH 8.50-8.70, dark brown to brown in colour (10YR 4/3-10YR 5/4) developed on Slope of undulating Aeolian plains/Aeolian sand under arid climate with Many calcium carbonate concretions in B and C horizon and Sulkha soil series is moderately strong calcareous, very deep, pH 8.40-8.60, yellowish brown in colour (10YR 5/4-10YR 5/8) developed on Gentle sloping Aeolian plains/Aeolian sand under arid climate with Common medium hard concretions of calcium carbonate in C- horizon.

Soil Mapping Unit- 15 (Rewari- Bawal Soil Association)

The Rewari soil series is dominated in this soil association and associated soil series is Bawal soil series. The dominant soil is well drained, Sandy loam to Loamy sand to Sandy Clay loam, Coarse loamy Mixed hyperthermic Typic Ustifluvents, 1st associate soil series is well drained, Loamy sand to Sandy loam, Sandy Mixed hyperthermic Typic Ustipsamments, Rewari soil series is non calcareous, very deep, pH 7.70-7.80, dark brown to yellowish brown in colour (10YR 3/3-10YR 5/6) developed on Gently sloping Fluvio-Aeolian plain/Alluvium nearer to old river channels and Bawal soil series is non calcareous, very deep, pH 8.10-8.21, yellowish brown in colour (10YR 5/4-10YR 5/6) developed on Fluvio-aeolian plains/old dry riverbeds.

(Source: Received from HARSAC on 1: 50000 scale)

3.3.4 Land Capability Classification

It is an interpretative grouping of soils based on inherent soil characteristics, external land features and environmental factors that limit the use of land. As per land capability classification, class 1 to class IV land is suited to agriculture. Classes V to VIII are not suitable for agriculture. These are used for pastures, forestry, and wildlife and recreation purposes and other industrial and township. Depending upon the degree of limitation and the kind of problems involved in management of soils, the land capability sub classes were indicated by adding the following limitation symbols to the capability classes:

1. Erosion and runoff (e) including risk of erosion and great erosion damage.
2. Excess of water (w) including wetness, high water table, and problem of drainage.
3. Root zone limitation (s) including shallow depth, low water holding capacity, salinity or alkalinity/rockiness.
4. Climate limitation (c).

The soils of the selected Watersheds have been grouped into two 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 very deep, light to coarse loamy/ fine loamy texture located on level to nearly level slope. These soils are well drained, moderately permeable, moderate water holding capacity and moderate to severe erosion hazard.

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

1. Land leveling should be done at 50% subsidy, because farmers are not economically capable to bear the rate of land leveling.
2. Engineering measures like Percolation Embankments and other related measures are to 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.
4. Green manuring should be promoted for increase physical and chemical properties of soil.
5. Masonry structure (outlet) should be constructed with field bandhs and percolation embankments for rills control and insitu moisture conservation.
6. Strengthening of old abandoned water courses.
7. Provide water storage tanks for storage of excess water for using supplementary irrigation during lean period.

Land capability subclass IV e3s3

These soils are very deep, light textured soils nearly level lands. The water holding capacity is poor to very poor and the water erosion hazard is moderate to severe. The wind erosion is also a main cause to create undulating topography.

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

1. Special soil conservation measures should be adopted to check water erosion and increase ground water recharge; soils should be provided permanent vegetation (Agro-forestry) cover to check further deterioration of soils.
2. Soils would be cultivated in suitable crop rotation with adopting dry farming techniques.
3. Masonry structure should be constructed in field bunds and percolation embankment.

4. Land leveling should be done at 50% subsidy, because formers are not economically capable to bear the rate of land leveling.
5. Construction of percolation ponds and embankments for increasing ground water recharge.
6. Construction of small earthen embankments with vegetative support for Sand dunes stabilization.
7. Strengthening of old abandoned water courses.
8. Provide water storage tanks for storage of excess water for using supplementary irrigation during lean period.

3.3.5 Climatic Conditions

The average rainfall of the district is 702 mm (during the past 19 years data). The highest rainfall is 1138 mm during the year 2008. The uneven rainfall distribution is leading to run off soil every year to the depressions to create seasonal water logging conditions in the Watershed. The year wise rainfall from 1994 to 2012 is presented in **Table.5**

Table-5. Rainfall during the years 1994-12

S.No.	Year	Rainfall (in mm)
1	1994	791
2	1995	1087
3	1996	1064
4	1997	589
5	1998	953
6	1999	718
7	2000	479
8	2001	665
9	2002	408

10	2003	1024
11	2004	527
12	2005	889
13	2006	557
14	2007	575
15	2008	1138
16	2009	428
17	2010	625
18	2011	508
19	2012	323
	Average Rainfall	**702**

(Source: - Deputy Director Agriculture, Rewari)

The mean maximum temperature is 41.8˚ C (May and June) and mean minimum is 5.6˚ C (January) of the district.

3.3.6 Physiography and Reliefs

Physiographically, the area slope falls South- West to North- East. The general Elevation in the area belongs to new/old alluvium plains with sand overburden in pockets to make small hummocks in the area. 233-262 m above mean sea level (google earth map). The rain water is drained through field to field and ultimately create temporary water logging in low lying areas to create haphazard condition during rainy season if heavy rain received. The elevation range and percentage slope distribution has been presented in **Table 6.**

Table 6. Physiography and Relief

Project Name	Elevation (MSL)	Slope Range (%)	Major River Basin
Mohdinpur Watershed (IWMP II)	233- 262	0.5 to 3	Sahibi

3.4 LAND AND AGRICULTURE

The land holding pattern of the villages under Mohdinpur Watershed shows that the majority of the land holding is below 5.0 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 Delhi, Gurgaon, Dharuhera, Rewari and Bhiwadi (Rajasthan). This affects directly the demographic profile of the villages.

The major crops Bajra, Gawar, green fodder and pulses in Kharif under rain fed conditions. The major crops during Rabi wheat, mustard, gram, green fodder and seasonal vegetables in rain fed and irrigated conditions. The soil and water conservation measures such as Engineering like Water Conveyance system, Ramp/Ghat Inlet and Outlet, Dug Out Pond (New/Renovation), Small Earthen Embankment with vegetative support, Roof top rain water recharge structures, Strengthening of Water Conveyance Channel (Water Course in fields) (Water Saving Technology) etc. The project would help the farmers to take crop production which will enhance the net production value. 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	Grasses and Shurbs
1	Babool & Australian Babool	Pomegranate	Saccharum munja
2	Black Siris	Ber	Bhroot
3	Jal	Lemon	Jharberi
4	Shisham	Guava	Ker (Tint)

Sr. No.	Trees	Fruits	Grasses and Shurbs
5	Neem	Jamun	
6	Khejri	Amla	
7	Pipal	Papaya	
8	Eucalyptus		

3.4.1 Land Ownership Details

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

Table-8:- Land Ownership Details

GENERAL	OBC	SC	ST	Total owners
448	1849	-----	-----	2297

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	Mohdinpur	Mohdinpur	288	215	195
2	Nainsukhpura	Nainsukhpura	371	306	255

Sr. No.	Name of Micro Watersheds	Village	Land under agriculture use (ha)	Net Sown area (ha)	
				One time	Two times
		Balawas Jamapur	274	225	205
3	Boria Kamalpur	Boria Kamalpur	381	285	265
		Rasooli	69	55	45
4	Mandhiya Khurd	Mandhiya Khurd	298	225	197
		Gulabpura	201	162	143
5	Dehlawas	Dehlawas	317	240	234
		Chowki No. 2	257	207	179
6	Hussainpur	Hussainpur	304	235	215
		Narayanpur	98	76	68
7	Thothwal	Thothwal	214	171	141
		Daliaki	169	138	115
		Dana Alampur	53	45	38
		Nangli godha	48	38	31
8	Jatuwas	Jatuwas	285	225	215
		Kharsanki	82	65	55
		Akbarpur	70	55	49
9	Jaitrawas	Jaitrawas	343	265	255
		Kharkhari Bhima	95	72	63

Sr. No.	Name of Micro Watersheds	Village	Land under agriculture use (ha)	Net Sown area (ha)	
				One time	Two times
			4217	3305	2963

(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 (255 ha) by canal network. The remaining cultivable area is under rainfed 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)		Total
			Availability months	Net area (ha)	Availability months	Net area (ha)	
1	Mohdinpur	Mohdinpur	July to March	72	July to June	216	288
2	Nainsukhpura	Nainsukhpura	July to March	119	July to June	236	355
		Balawas Jamapur	-	-	July to June	252	252
3	Boria Kamalpur	Boria Kamalpur	-	-	July to June	347	347
		Rasooli	-	-	July to June	69	69
4	Mandhiya Khurd	Mandhiya Khurd	-	-	July to June	284	284
		Gulabpura	-	-	July to June	154	154
5	Dehlawas	Dehlawas	-	-	July to June	178	178
		Chowki No. 2	-	-	July to June	283	283
6	Hussainpur	Hussainpur	-	-	July to June	223	223
		Narayanpur	-	-	July to June	98	98
7	Thothwal	Thothwal	-	-	July to June	173	173
		Daliaki	-	-	July to June	98	98
		Dana Alampur	-	-	July to June	38	38

S. No	Name of Micro Watersheds	Name of Villages	Source 1: Canal		Source 2: Groundwater (Tube wells)		Total
			Availability months	Net area (ha)	Availability months	Net area (ha)	
		Nangli godha	-	-	July to June	36	36
8	Jatuwas	Jatuwas	July to March	64	July to June	221	285
		Kharsanki	-	-	July to June	82	82
		Akbarpur	-	-	July to June	59	59
9	Jaitrawas	Jaitrawas	-	-	July to June	234	234
		Kharkhari Bhima	-	-	July to June	79	79
		Total		**255**		**3360**	**3615**

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

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)

S.	Name of	Village	Rabi crops(Wheat)	(Mustard)	(Barley)

			Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.
1	Mohdinpur	Mohdinpur	13	54587	4199	Yes	20	31200	1560	Yes	-	-	-
2	Nainsukhpura	Nainsukhpura	117	485550	4150	Yes	105	163275	1555	Yes	14	37828	2702
		Balawas Jamapur	78	325884	4178	Yes	95	146775	1545	Yes	3	8106	2702
3	Boria Kamalpur	Boria Kamalpur	89	370062	4158	Yes	132	205920	1560	Yes	2	5230	2615
		Rasooli	21	87045	4145	Yes	14	21714	1551	Yes	-	-	-
4	Mandhiya Khurd	Mandhiya Khurd	61	252967	4147	Yes	105	162225	1545	Yes	2	5310	2655
		Gulabpura	74	306878	4147	Yes	52	79820	1535	Yes	2	5356	2678
5	Dehlawas	Dehlawas	111	466089	4199	Yes	98	151704	1548	Yes	3	8106	2702
		Chowki No. 2	51	213639	4189	Yes	26	40560	1560	Yes	2	5376	2688
6	Hussainpur	Hussainpur	51	160038	3138	Yes	123	129519	1053	Yes	-	-	-
		Narayanpur	7	21868	3124	Yes	38	39634	1043	Yes	-	-	-
7	Thothwal	Thothwal	40	125120	3128	Yes	87	90654	1042	Yes	-	-	-
		Daliaki	19	59622	3138	Yes	67	69211	1033	Yes	-	-	-
		Dana Alampur	9	28188	3132	Yes	17	17901	1053	Yes	-	-	-

S. No.	Name of Micro Watersheds	Village	Rabi crops(Wheat)				(Mustard)				(Barley)		
			Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.
		Nangli godha	6	18828	3138	Yes	14	14616	1044	Yes	-	-	-
8	Jatuwas	Jatuwas	85	264690	3114	Yes	92	96416	1048	Yes	1	2987	2987
		Kharsanki	18	55872	3104	Yes	22	23166	1053	Yes	-	-	-
		Akbarpur	15	46500	3100	Yes	16	16384	1024	Yes	-	-	-
9	Jaitrawas	Jaitrawas	70	218260	3118	Yes	136	143208	1053	Yes	-	-	-
		Kharkhari Bhima	23	72174	3138	Yes	24	24432	1018	Yes	-	-	-
			958				**1283**				**29**		

Table 11 B. Crop Details (Kharif)

S. No.	Name of Micro Watersheds	Village	(Bajra)				(Gwar)			
			Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer
1	Mohdinpur	Mohdinpur	140	149380	1067	Yes	23	44850	1950	Nil
2	Nainsukhpura	Nainsukhpura	189	199206	1054	Yes	10	17450	1745	Nil

S. No.	Name of Micro Watersheds	Village	(Bajra)				(Gwar)			
			Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer
		Balawas Jamapur	23	23966	1042	Yes	13	22711	1747	Nil
3	Boria Kamalpur	Boria Kamalpur	126	134442	1067	Yes	-	-	-	-
		Rasooli	32	33408	1044	Yes	-	-	-	-
4	Mandhiya Khurd	Mandhiya Khurd	68	71060	1045	Yes	-	-	-	-
		Gulabpura	82	86510	1055	Yes	-	-	-	-
5	Dehlawas	Dehlawas	49	51352	1048	Yes	-	-	-	-
		Chowki No. 2	175	186725	1067	Yes	19	33250	1750	Nil
6	Hussainpur (2C5G 6r5)	Hussainpur	19	20444	1076	Yes	-	-	-	-
		Narayanpur	4	4272	1068	Yes	-	-	-	-
7	Thothwal	Thothwal	119	128044	1076	Yes	-	-	-	-
		Daliaki	9	9522	1058	Yes	3	5850	1950	Nil
		Dana Alampur	25	26900	1076	Yes	-	-	-	-
		Nangli godha	3	3165	1055	Yes	1	1747	1747	Nil

S. No.	Name of Micro Watersheds	Village	(Bajra)				(Gwar)			
			Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer
8	Jatuwas	Jatuwas	59	61832	1048	Yes	-	-	-	-
		Kharsanki	20	20980	1049	Yes	-	-	-	-
		Akbarpur	20	21520	1076	Yes	-	-	-	-
9	Jaitrawas	Jaitrawas	91	96369	1059	Yes	7	13643	1949	Nil
		Kharkhari Bhima	22	23496	1068	Yes	-	-	-	-
			1275				**76**			

3.4.5 Livestock

Farmers in these villages have already been keeping the milch 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 improve the soil health.

Table 12. Village Wise Distribution of Milk Production in Mohdinpur Watershed (IWMP II)

S. No	Name of Micro Watersheds	Villages	Buffalo(*Lit/per day/annum) for 6 months	Cow(*lit/per day/annum) for 6 months	Sheep	Goat	Camel
1	Mohdinpur	Mohdinpur	660/ 5280/950400 (Lit/annum)	134/737/132660 (Lit/annum)	146	159	-
2	Nainsukhpura	Nainsukhpura	570/ 4560/820800 (Lit/annum)	66/363/65340 (Lit/annum)	380	24	6

S. No	Name of Micro Watersheds	Villages	Buffalo(*Lit/per day/annum) for 6 months	Cow(*lit/per day/annum) for 6 months	Sheep	Goat	Camel
		Balawas Jamapur	502/4016/722880 (Lit/annum)	46/253/45540 (Lit/annum)	-	-	
3	Boria Kamalpur	Boria Kamalpur	435/3480/626400 (Lit/annum)	255/1402.5/252450(Lit/annum)	-	68	8
		Rasooli	38/304/54720 (Lit/annum)	8/44/7920 (Lit/annum)	-	-	1
4	Mandhiya Khurd	Mandhiya Khurd	555/4440/799200 (Lit/annum)	168/924/166320 (Lit/annum)	40	106	4
		Gulabpura	216/1728/311040 (Lit/annum)	4/22/3960 (Lit/annum)	-	14	2
5	Dehlawas	Dehlawas	524/4192/754560 (Lit/annum)	33/ 181.5/32670 (Lit/annum)	64	38	5
		Chowki No. 2	596/4768/858240 (Lit/annum)	116/638/114840 (Lit/annum)	39	67	12
6	Hussainpur	Hussainpur	155/1240/223200 (Lit/annum)	35/192.5/34650 (Lit/annum)	-	21	-
		Narayanpur	118/944/169920 (Lit/annum)	30/165/29700 (Lit/annum)	-	22	-
7	Thothwal	Thothwal	287/2296/413280 (Lit/annum)	51/280.5/50490 (Lit/annum)	-	11	-
		Daliaki	174/1392/250560 (Lit/annum)	39/214.5/38610 (Lit/annum)	-	18	-
		Dana Alampur	0	0	-	-	-
		Nangli godha	398/3184/573120 (Lit/annum)	121/665.5/119790 (Lit/annum)	-	51	-
8	Jatuwas	Jatuwas	829/6632/1193760 (Lit/annum)	75/412.5/74250 (Lit/annum)	192	-	-
		Kharsanki	8/64/11520 (Lit/annum)	4/22/3960 (Lit/annum)	-	-	-
		Akbarpur	175/1400/252000 (Lit/annum)	66/363/65340 (Lit/annum)	-	-	-

S. No	Name of Micro Watersheds	Villages	Buffalo(*Lit/per day/annum) for 6 months	Cow(*lit/per day/annum) for 6 months	Sheep	Goat	Camel
9	Jaitrawas	Jaitrawas	427/3416/614880 (Lit/annum)	67/368.5/66330 (Lit/annum)	35	85	4
		Kharkhari Bhima	29/232/41760 (Lit/annum)	0	-	-	-

(Source: Animal Husbandry, Rewari)

***Average yield of Buffalo is 7-8 lit/day and Average yield of Cow is 3-4 lit/day**

3.4.6 Ground Water Concern

a) Depth to Water

Ground Water Cell of Haryana has fixed hydrograph station scattered in the districts whose monitoring is undertaken during pre and post monsoon season. The water level data 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 8.7 to 27.2 m below ground level. The water level in the micro watershed located in the villages Mohdinpur, Nainsukhpura, Balawas Jamapur and Rasooli varies from 3- 10m whereas a small water logged pocket is in village Mohdinpur having water table below 3m. The micro- watershed located in villages Boria Kamalpur, Mandhiya Khurd, Gulabpura, Dehlawas, Chowki No. 2, Hussainpur, Narayanpur, Jatuwas, Kharsanki, Akbarpur, Jaitrawas and Kharkhari Bhima is within 10-20m depth. In the remaining area of the watershed, the ground water depth varies from 20-30m below ground level. The depth to water level follows the topography of the area. 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 to Water Level of Mohdinpur Watershed (IWMP II)

S. No.	Name of Micro Watersheds	Name of Villages	Source	Pre- Project level (m)
1	Mohdinpur	Mohdinpur	Open wells	9.0
2	Nainsukhpura	Nainsukhpura	Open wells	9.5
		Balawas Jamapur	Open wells	8.7
3	Boria Kamalpur	Boria Kamalpur	Open wells	19.1
		Rasooli	Open wells	10.0
4	Mandhiya Khurd	Mandhiya Khurd	Open wells	19.5
		Gulabpura	Open wells	20.0
5	Dehlawas	Dehlawas	Open wells	19.2
		Chowki No. 2	Open wells	18.2
6	Hussainpur	Hussainpur	Open wells	18.2
		Narayanpur	Open wells	18.3
7	Thothwal	Thothwal	Open wells	27.0
		Daliaki	Open wells	27.2
		Dana Alampur	Open wells	25.7
		Nangli godha	Open wells	26.7

S. No.	Name of Micro Watersheds	Name of Villages	Source	Pre- Project level (m)
8	Jatuwas	Jatuwas	Open wells	17.4
		Kharsanki	Open wells	18.5
		Akbarpur	Open wells	18.2
9	Jaitrawas	Jaitrawas	Open wells	18.9
		Kharkhari Bhima	Open wells	18.5

The source of drinking water supply is through the tube wells as well as canal network in the area. The micro watershed wise quality ranges from fresh to marginal. In most of the areas and occasionally saline. The water quality distribution of villages Mandhiya Khurd, Gulabpura, Dehlawas, Chowki No. 2, Narayanpur (part), Hussainpur (part), Thothwal, Daliaki, Dana Alampur, Nangli godha, Jatuwas, Kharsanki, Kharkhari Bhima and Akbarpur is fresh whereas the area under micro watershed located in villages Mohdinpur, Nainsukhpura, Balawas Jamapur, Boria Kamalpur, Rasooli, Jaitrawas and small pocket of Jaitrawas micro- watershed is under saline. 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. The department of Public Health Engineering is responsible for the water supply for drinking purpose.

b) Water table fluctuation

In reference to the data available from the period June 2007 to June 2012, it is observed that the water table is rising at the rate of 5cm per year.

The seasonal fluctuation i.e. Pre and Post monsoon period is 0.5- 2.1m. The pattern of ground water depletion is almost uniform in the project area.

c) Rain water harvesting and Recharging

The rapid growth of rural population leads to escalation of water demand. Conservation of ground water is important because it takes years to be replenished. In areas where ground water is used, 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 provided 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, Rewari. The details of common property resource in Mohdinpur Watershed (IWMP II) 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)			
		Pvt. Person	Govt.	PRI	Any Other	Pvt. Person	Govt.	PRI	Any Other
Mohdinpur Watershed (IWMP II)	Waste land	---	---	453	---	---	---	16	---
	Pasture	---	---	75	---	---	---	75	---
	Orchards	---	---	---	---	---	---	---	---

	Village wood lot	---	---	62	---	---	---	62	---
	Forest	---	---	59	---	---	---	59	---
	Village ponds, lake	---	---	38	---	---	---	38	---
	Community Buildings	---	14	---	---	---	14	---	---
	Weekly Mkts	---	---	---	---	---	---	---	---
	Permanent Mkts	---	---	---	---	---	---	---	---
	Temples/place of worship	---	---	23	---	---	---	23	---
	Others	---	---	---	---	---	---	---	---

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 The general socio economic condition of the farmers in this area are 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

S. No.	Name of the Micro watershed	Name of villages	Total no. of houses	Total Population			SC			
				Male	Female	Total	Male	Female	Total	%age
1	Mohdinpur	Mohdinpur	445	1105	1040	2145	194	200	394	18
2	Nainsukhpura	Nainsukhpura	445	1181	1081	2262	157	156	313	14
		Balawas Jamapur	224	626	582	1208	93	96	189	15
3	Boria Kamalpur	Boria Kamalpur	426	1086	971	2057	161	147	308	15
		Rasooli	102	265	238	503	11	9	20	4
4	Mandhiya Khurd	Mandhiya Khurd	340	884	858	1742	185	188	373	21
		Gulabpura	240	586	547	1133	159	158	317	28
5	Dehlawas	Dehlawas	318	885	763	1648	184	168	352	21
		Chowki No. 2	349	950	845	1795	136	139	275	15
6	Hussainpur	Hussainpur	440	1097	960	2057	671	597	1268	61
		Narayanpur	111	297	267	564	121	117	238	42
7	Thothwal	Thothwal	110	295	263	558	52	44	96	17
		Daliaki	179	452	372	824	245	206	451	55
		Dana Alampur	39	108	98	206	0	0	0	0
		Nangli godha	217	523	473	996	92	85	177	18

S. No.	Name of the Micro watershed	Name of villages	Total no. of houses	Total Population			SC			
				Male	Female	Total	Male	Female	Total	%age
8	Jatuwas	Jatuwas	329	957	768	1725	172	157	329	19
		Kharsanki	65	163	157	320	0	0	0	0
		Akbarpur	79	216	169	385	0	0	0	0
9	Jaitrawas	Jaitrawas	388	1088	1027	2115	318	314	632	30
		Kharkhari Bhima	80	235	206	441	50	43	93	21
		Total	**4926**	**12999**	**11685**	**24684**	**3001**	**2824**	**5825**	**23**

(Source- District Census 2011)

Table16. Village wise Literacy Rate in Mohdinpur Watershed (IWMP II)

S.No.	Name of the Micro watershed	Name of villages	Total population	Literacy					
				Total Literates	% age	Male	% age	Female	% age
1	Mohdinpur	Mohdinpur	2145	1519	71	902	59	617	41
2	Nainsukhpura	Nainsukhpura	2262	1617	71	956	59	661	41
		Balawas Jamapur	1208	876	72	514	58	362	42
3	Boria Kamalpur	Boria Kamalpur	2057	1504	73	884	58	620	42
		Rasooli	503	366	73	214	58	152	42
4	Mandhiya Khurd	Mandhiya Khurd	1742	1191	68	699	58	492	42

		Gulabpura	1133	819	72	479	58	340	42
5	Dehlawas	Dehlawas	1648	1186	72	721	61	465	39
		Chowki No. 2	1795	1334	74	791	59	543	41
6	Hussainpur	Hussainpur	2057	1363	66	819	60	544	40
		Narayanpur	564	420	74	251	60	169	40
7	Thothwal	Thothwal	558	409	73	241	59	168	41
		Daliaki	824	612	74	377	61	235	39
		Dana Alampur	206	154	74	88	57	66	43
		Nangli godha	996	751	75	450	60	301	40
8	Jatuwas	Jatuwas	1725	1172	68	742	63	430	37
		Kharsanki	320	230	72	132	57	98	43
		Akbarpur	385	279	72	175	63	104	37
9	Jaitrawas	Jaitrawas	2115	1498	71	894	59	604	41
		Kharkhari Bhima	441	318	72	187	59	131	41
			24684	**17618**	**71**	**10516**	**59**	**7102**	**41**

(Source- District Census- 2001)

Table 17. EMPLOYMENT STATUS

S.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	Mohdinpur	Mohdinpur	194	200	174	59	5	3	17	4	206	44
2	Nainsukhpura	Nainsukhpura	157	156	301	183	2	1	3	5	213	198
		Balawas Jamapur	93	96	129	12	12	0	5	5	128	11
3	Boria Kamalpur	Boria Kamalpur	161	147	197	10	0	0	17	2	295	346
		Rasooli	11	9	1	2	0	0	0	0	71	8
4	Mandhiya Khurd	Mandhiya Khurd	185	188	170	144	6	1	4	1	194	106
		Gulabpura	159	158	80	48	1	4	3	0	141	55
5	Dehlawas	Dehlawas	184	168	144	7	3	1	6	9	84	10
		Chowki No. 2	136	139	133	38	33	2	1	12	208	19
6	Hussainpur	Hussainpur	671	597	36	5	2	1	3	3	345	70
		Narayanpur	121	117	26	0	1	0	2	63	81	14
7	Thothwal	Thothwal	52	44	42	2	1	0	0	0	83	15
		Daliaki	245	206	18	0	3	0	4	7	165	17
		Dana Alampur	0	0	32	0	0	0	0	0	14	0
		Nangli godha	92	85	22	1	0	0	6	0	135	16

8	Jatuwas	Jatuwas	172	157	113	102	3	0	1	1	392	82
		Kharsanki	0	0	56	96	0	0	3	0	37	3
		Akbarpur	0	0	50	12	0	0	1	0	40	19
9	Jaitrawas	Jaitrawas	318	314	127	5	21	3	3	7	208	19
		Kharkhari Bhima	50	43	14	1	1	1	2	0	80	7
			3001	**2824**	**1865**	**727**	**94**	**17**	**81**	**119**	**3120**	**1059**

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 Mohdinpur Watershed (IWMP II)

S. No.	Name of 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/ month/person
1	Mohdinpur	Mohdinpur	2145	16	60	Lack of employment opportunity	6500- 10000
2	Nainsukhpura	Nainsukhpura	2262	10	120	Lack of employment opportunity	6500- 10000
		Balawas Jamapur	1208	15	60	Lack of employment opportunity	6500- 10000
3	Boria	Boria	2057	15	90	Lack of employment opportunity	6500- 10000

S. No.	Name of 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/ month/person
	Kamalpur	Kamalpur					
		Rasooli	503	19	60	Lack of employment opportunity	6500- 10000
4	Mandhiya Khurd	Mandhiya Khurd	1742	18	60	Lack of employment opportunity	6500- 10000
		Gulabpura	1133	24	90	Lack of employment opportunity	6500- 10000
5	Dehlawas	Dehlawas	1648	16	60	Lack of employment opportunity	6500- 10000
		Chowki No. 2	1795	19	90	Lack of employment opportunity	6500- 10000
6	Hussainpur	Hussainpur	2057	18	60	Lack of employment opportunity	6500- 10000
		Narayanpur	564	14	120	Lack of employment opportunity	6500- 10000
7	Thothwal	Thothwal	558	12	90	Lack of employment opportunity	6500- 10000
		Daliaki	824	7	60	Lack of employment opportunity	6500- 10000
		Dana Alampur	206	-	-	Lack of employment opportunity	6500- 10000
		Nangli godha	996	-	-	Lack of employment opportunity	6500- 10000
8	Jatuwas	Jatuwas	1725	18	60	Lack of employment opportunity	6500- 10000
		Kharsanki	320	4	60	Lack of employment opportunity	6500- 10000
		Akbarpur	385	4	60	Lack of employment opportunity	6500- 10000

S. No.	Name of 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/ month/person
9	Jaitrawas	Jaitrawas	2115	15	90	Lack of employment opportunity	6500- 10000
		Kharkhari Bhima	441	8	60	Lack of employment opportunity	6500- 10000

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

Table 19. BPL Pattern

S. No.	Name of Micro watersheds	Name of villages	Total houses	Total Household-BPL	% of BPL HH
1	Mohdinpur	Mohdinpur	445	78	17
2	Nainsukhpura	Nainsukhpura	445	79	18
		Balawas Jamapur	224	46	20
3	Boria Kamalpur	Boria Kamalpur	426	108	25
		Rasooli	102	10	10
4	Mandhiya Khurd	Mandhiya Khurd	340	74	22
		Gulabpura	240	38	16
5	Dehlawas	Dehlawas	318	61	19
		Chowki No. 2	349	60	17
6	Hussainpur	Hussainpur	440	149	34

S. No.	Name of Micro watersheds	Name of villages	Total houses	Total Household-BPL	% of BPL HH
		Narayanpur	111	40	36
7	Thothwal	Thothwal	110	17	15
		Daliaki	179	58	32
		Dana Alampur	39	2	5
		Nangli godha	217	54	25
8	Jatuwas	Jatuwas	329	108	33
		Kharsanki	65	3	4
		Akbarpur	79	5	6
9	Jaitrawas	Jaitrawas	388	147	38
		Kharkhari Bhima	80	14	17
			4926	**1151**	**23**

(Source: District Administration Rewari, 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 and have easy access to 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 Micro watersheds	Name of villages	Bank Y/N	Post office Y/N	School Primary/ High/ Sr.Sec	Milk Collection Centre Y/N	Pucca Road to Village Y/N	Health Facility Govt/Private Y/N	Veterinary facility Y/N
1	Mohdinpur	Mohdinpur	Y	N	High School	Y	Y	N	N
2	Nainsukhpura	Nainsukhpura	N	Y	High School	N	Y	N	N
		Balawas jamapur	N	N	Primary School	N	Y	N	N
3	Boria kamalpur	Boria kamalpur	Y	Y	Sr. Sec. School	N	Y	N	N
		Rasooli	N	N	Primary School	N	Y	N	N
4	Mandhiya khurd	Mandhiya khurd	Y	N	Middle School	Y	Y	N	N
		Gulabpura	N	Y	High School	N	Y	N	N
5	Dehlawas	Chowki No. 2	N	N	Middle School	Y	Y	N	N
		Dehlawas	N	Y	High School	Y	Y	N	Y

6	Hussainpur	Hussainpur	N	N	Middle School	N	Y	N	N
		Narayanpur	N	N	Primary School	N	Y	N	N
7	Thothwal	Thothwal	N	N	Primary School	N	Y	N	N
		Daliaki	N	N	Middle School	N	Y	N	N
		Dana alampur	N	N	-	N	Y	N	N
		Nangli godha	N	Y	Sr. Sec. School	N	Y	N	Y
8	Jatuwas	Jatuwas	N	N	Primary School	N	Y	N	N
		Kharsanki	N	N	Primary School	N	Y	N	N
		Akbarpur	N	N	Primary School	N	Y	N	N
9	Jaitrawas	Jaitrawas	N	N	Middle School	N	Y	N	N
		Kharkhari Bhima	N	N	Primary School	N	Y	N	N

FACILITIES/ HOUSEHOLD ASSETS

Table 21. Facilities/ Household assets in Mohdinpur Watershed (IWMP II)

S. No.	Name of micro water sheds	Name of villages	Total no. of Houses	HHs with Safe latrines	HHs with phones		HHs with vehicles		HHs with TV sets	HHs with cooking gas	HHs with drinking water	HHs with fridge
					Landline	Mobile	2 wheelers	4 wheelers				

S. No.	Name of micro water sheds	Name of villages	Total no. of Houses	HHs with Safe latrines	HHs with phones		HHs with vehicles		HHs with TV sets	HHs with cooking gas	HHs with drinking water	HHs with fridge
					Landline	Mobile	2 wheelers	4 wheelers				
1	Mohdinpur	Mohdinpur	445	111	26	222	66	17	71	35.6	445	24
2	Nainsukhpura	Nainsukhpura	445	95	21	115	55	9	62	24	445	19
		Balawas Jamapur	224	56	13	112	33	8	35	17	224	12
3	Boria Kamalpur	Boria Kamalpur	426	106	25	213	63	17	68	34	426	23
		Rasooli	102	25	6	51	15	4	16	8	102	5
4	Mandhiya Khurd	Mandhiya Khurd	340	85	20	170	51	13	54	27	340	18
		Gulabpura	240	60	14	120	36	9	38	19	240	13
5	Dehlawas	Dehlawas	318	79	19	159	47	12	50	25	318	17
		Chowki No. 2	349	87	20	174	52	13	55	27	349	19
6	Hussainpur	Hussainpur	440	110	26	220	66	17.6	70	35	440	24
		Narayanpur	111	27	6	55	16	4	17	8	111	6
7	Thothwal	Thothwal	110	22	3	41	9	2	8	3	110	6
		Daliaki	179	44	10	89	26	7	28	14	179	9

S. No.	Name of micro water sheds	Name of villages	Total no. of Houses	HHs with Safe latrines	HHs with phones		HHs with vehicles		HHs with TV sets	HHs with cooking gas	HHs with drinking water	HHs with fridge
					Landline	Mobile	2 wheelers	4 wheelers				
		Dana Alampur	39	9	2	19	5	1	6	3	39	2
		Nangli godha	217	54	13	108	32	8	34	17	217	11
8	Jatuwas	Jatuwas	329	82	19	164	49	13	52	26	329	18
		Kharsanki	65	16	3	32	9	2	10	5	65	3
		Akbarpur	79	19	4	39	11	3	12	6	79	4
9	Jaitrawas	Jaitrawas	388	97	23	194	58	15	62	31	388	21
		Kharkhari Bhima	80	20	4	40	12	3	12	6	80	4

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 Mohdinpur Watershed (IWMP II)

S. No.	Name of micro watersheds	Name of villages	Agriculture in Rs. P.A	Animal Husbandry in Rs. P.A	Casual labour in Rs. P.A	Others in Rs. P.A	Total in Rs.
1	Mohdinpur	Mohdinpur	22500	18600	5800	4400	51300

S. No.	Name of micro watersheds	Name of villages	Agriculture in Rs. P.A	Animal Husbandry in Rs. P.A	Casual labour in Rs. P.A	Others in Rs. P.A	Total in Rs.
2	Nainsukhpura	Nainsukhpura	20500	17400	4900	5200	48000
		Balawas Jamapur	18400	14400	4200	4900	41900
3	Boria Kamalpur	Boria Kamalpur	21600	18400	5400	4300	49700
		Rasooli	24500	20500	6500	5500	57000
4	Mandhiya Khurd	Mandhiya Khurd	23200	22000	6000	5200	56400
		Gulabpura	22300	20200	6500	4800	53800
5	Dehlawas	Dehlawas	21700	18400	5300	4200	49600
		Chowki No. 2	20400	19400	5300	4900	50000
6	Hussainpur	Hussainpur	24600	22400	6000	5500	58500
		Narayanpur	20300	18400	5400	4600	48700
7	Thothwal	Thothwal	17500	13500	4400	4500	39900
		Daliaki	23400	19200	6200	4000	52800
		Dana Alampur	19800	17800	5600	4300	47500
		Nangli godha	25000	20000	6000	5000	56000
8	Jatuwas	Jatuwas	22300	18500	5700	4700	51200
		Kharsanki	25600	22000	6500	5500	59600
		Akbarpur	26000	23000	6000	5000	60000

S. No.	Name of micro watersheds	Name of villages	Agriculture in Rs. P.A	Animal Husbandry in Rs. P.A	Casual labour in Rs. P.A	Others in Rs. P.A	Total in Rs.
9	Jaitrawas	Jaitrawas	24900	23400	5900	4900	59100
		Kharkhari Bhima	25600	22300	6200	4800	58900

3.5.4 Comparative Status of crop Productivity

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

3.6 REASONS FOR LOW PRODUCTIVITY

- Lack of assured irrigation for agriculture.
- Poor availability and quality of ground water.
- Irregular and erratic rainfall: there is long span between two subsequent rainfalls in the area.
- Sudden change in climate of the area.
- Low organic carbon content.
- Poor physical and chemical properties of the soils are light in texture with boulders in pockets and poor fertility.
- Low water holding/ retention capacity.
- Moderate to rapid permeability.
- Poor phosphorous and medium potash nutrients availability.
- Acceptance of hybrid/ high yielding varieties are nil to negligible.

- Soil erosion.
- Essential micro- nutrient deficiency in the soil.
- Dependence of monsoon.
- Low fertilizer consumption 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.

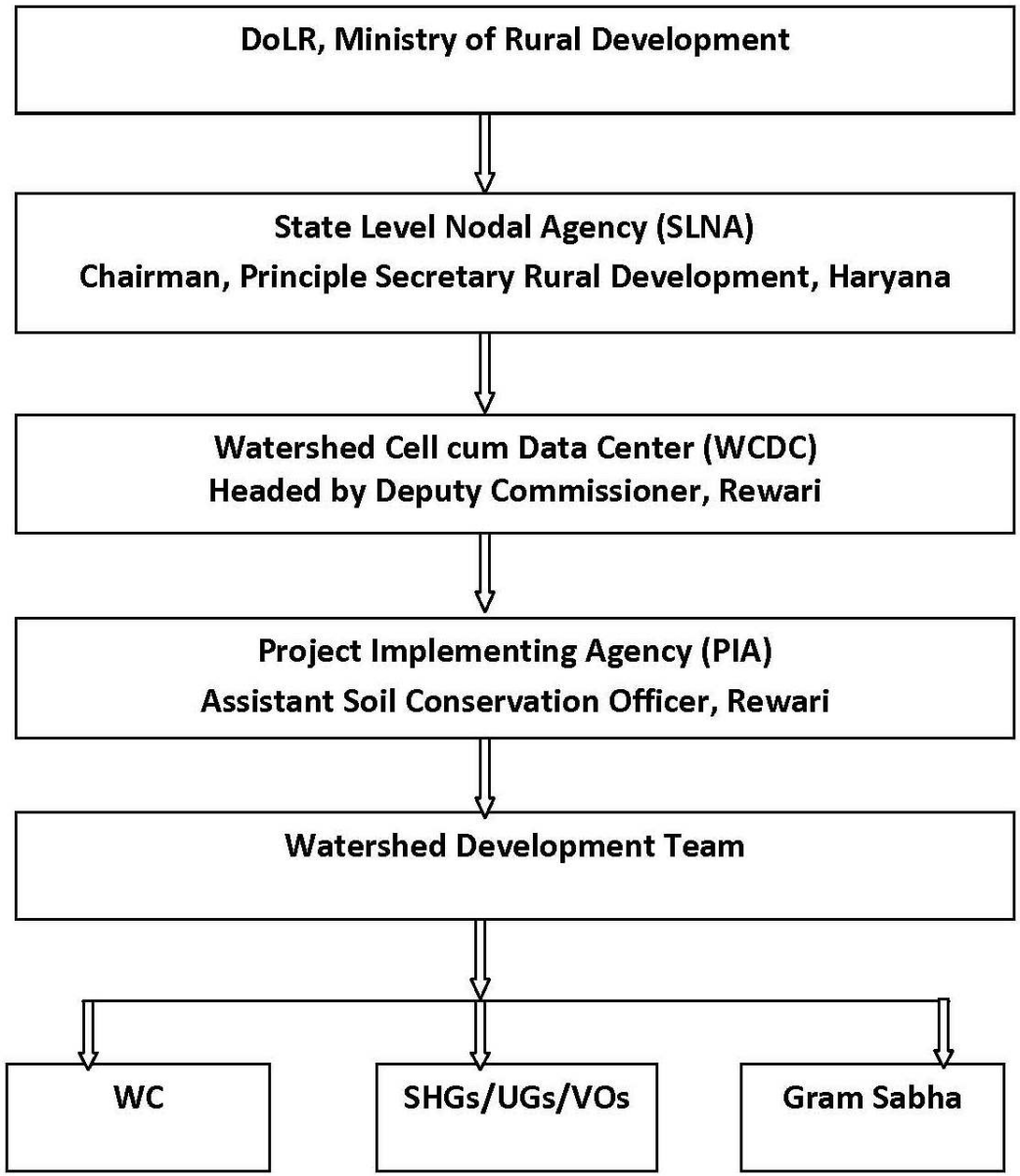
CHAPTER-4

PROJECT MANAGEMENT AGENCIES

4.1 INSTITUTIONAL ARRANGEMENT

Institutions play a major role in managing the projects. Realizing the importance of Community Participation, Decentralized Participatory 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 (Sub 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 the planning stage.

The institutional set up is given below:


DoLR, Ministry of Rural Development
State Level Nodal Agency (SLNA)
Chairman, Principle Secretary Rural Development, Haryana
Watershed Cell cum Data Center (WCDC)
Headed by Deputy Commissioner, Rewari
Project Implementing Agency (PIA)
Assistant Soil Conservation Officer, Rewari
Watershed Development Team
WC
SHGs/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, REWARI

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 Rewari is selected by the State Level Nodal Agency (SLNA) for Integrated Watershed Management Programme (IWMP) in Haryana. In the district Rewari, where the area of development is 25100 ha, a separate dedicated unit, called the Watershed Cell cum Data Centre has been established which is to oversee the implementation of watershed programme. The PIA is responsible for implementation of watershed project. Soil and Water Conservation Department, Rewari, will guide with its 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	Mohdinpur Watershed (IWMP-II)	i) Type of organization	District Level Nodal Agency
		ii) Name of organization	District Watershed Development Unit

		iii) Designation & Address	Assistant Soil Conservation Officer, Rewari
		iv) Telephone	094160- 69536
		v) Fax	01274- 225240
		vi) E-mail	drdarwr@hry.nic.in

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 Rewari 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, Animal Husbandry, 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 Micro Watersheds	Name of Villages	Name of President	Name of Secretary	Name of Members
Mohdinpur	Mohdinpur	Raj Bahadur	Om Prakash	Sushma Devi, Santosh Devi, Shiv Raj, Vinod Kumar, Manju Devi, Sher Singh, Shyam Lal, Om Prakash, Bhoom Singh, Lila
Nainsukhpura	Nainsukhpura	Balbir Singh	Rajpal	Sushma Devi, Santosh Devi, Bhagwan, Sarla Devi, Pirthi Singh, Surender, Rajpal, Naresh, Satbir

Name of Micro Watersheds	Name of Villages	Name of President	Name of Secretary	Name of Members
	Balawas Jamapur	Shushila	Satish	Shushma Devi, Anju Bala, Sher Singh, Raj Bala, Dayal Singh, Gur Dayal, Raghubir, Ashok Kumar, Raj Singh, Mata Deen, Rohtash
Boria Kamalpur	Boria Kamalpur	Kawar Singh	Dharambir	Suman Lata, Anju Bala, Ram Singh, Rajender, Bala Devi, Rati Ram, Surat Singh, Mulchand, Mahavir, Sham Sher, Chandgi
	Rasooli	Ravinder Kumar	Parity Yadav	Anju Bala, Shyam Lata, Rattan Lal, Mamta, Sher Singh, Lal Singh, Om Prakash, Harpal, Raj Singh, Mohan, Bhim Singh
Mandhiya khurd	Mandhiya Khurd	Gopal Yadav	Ran Kal	Anju Bala, Suman Yadav, Moti Ram, Manju, Om Prakash, Rajbir, Raj Kumar, Sanju, Lal Singh, Anil Kumar, Sarjeet
	Gulabpura	Lal Chand	Pardeep Kumar	Parmila Devi, Inderjeet, Ramautar, Shahzad Singh, Munni Devi, Mangni Ram, Om Prakash, Raj Karan, Shawat, Inder Parkash, Balbir
Dehlawas	Dehlawas	Desh Raj	Kuldeep	Parmila Devi, Inderjeet, Bimla Devi, Lal Chand, Lila Devi, Tej Pal, Pahlad, Shiv Lal, Yeshpal, Raj Kumar, Dharambir
	Chowki No. 2	Santosh Devi	Dharmender	Parmila Devi, Manju Kala, Rama Nand, Vijay Kumar, Sakuntla Devi, Kirorimal, Sanjay, Dinesh, Ishwar, Nita Nand, Raja Ram
Hussainpur	Hussainpur	Hari Ram	Phop Singh	Om Prakash, Poonam Devi, Mukesh Devi, Bhagwati, Krishana, Kewal Krishan Sharma, Newal Singh, Chandro

Name of Micro Watersheds	Name of Villages	Name of President	Name of Secretary	Name of Members
				Devi, Sarla Devi, Raj Bala
	Narayanpur	Smt. Amita Devi	Om Prakash	Narender Singh, Kiran Devi, Saroj Devi, Mangesh Devi, Matadeen, Shri Ram, Satbir Singh, Ram Kishan, Sarla Devi, Raj Bala
Thothwal	Thothwal	Ramesh Kumar	Mahesh	Santra, Chandan Singh, Savitri, Kanta Rani, Sish Ram, Partap, Madanpal, Beer Singh, Sarla Devi, Raj Bala
	Daliaki	Pat Ram	Rajjan	Ram Chander, Mukesh Devi, Madhu, Susila, Hari Ram, Rajender, Biraj Mohan, Sarla Devi, Raj Bala
	Dana Alampur	Rajesh Kumar	Mahesh	Santra devi, Chandan Singh, Savitri, Kanta Rani, Shish Ram, Pratap, Madanlal, Rajbala, Sarla Devi, Veera Singh
	Nangli godha	Sachin	Pardeep	Mahipal, Laxmi Devi, Sakuntla Devi, Dharam Kaur, Suraj Bhan, Attar Singh, Satpal, Maan Singh, Sarla, Raj Bala
Jatuwas	Jatuwas	Sandeep Singh	Mahavir	Savitri Devi, Rajwati, Parveen Kumar, Om Prakash, Om Pal, Raj Bala, Vikram, Rajesh, Ranveer, Sunita Devi, Vijay
	Kharsanki & Akbarpur	Harphool Singh	Birender Singh	Kalu Ram, Naresh Kumar, Babli, Santra, Kamla Devi, Vinod Kumar, Mamchand, Sarjeet, Sunita, Rajbala
Jaitrawas	Jaitrawas	Manju Devi	Rahul Kumar	Sumer Singh, Vijay Singh, Basanti, Raj Bala, Hira Lal, Narender, Raj Singh, Om Prakash, Ravinder, Dalbir
	Kharkhari Bhima	Under Process		

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- II MOHDINPUR 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-II

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

Mohdinpur Watershed (IWMP II)	4777	4570	54840000	Administrative costs	548400	548400	1645200	1645200	1096800	5484000
				Monitoring	0	0	0	548400	0	548400
				Evaluation	0	0	0	0	548400	548400
				Entry point activities	2193600	0	0	0	0	2193600
				Institution and capacity building	0	2742000	0	0	0	2742000
				Detailed project report	548400	0	0	0	0	548400
				Watershed development works	0	4387200	8774400	9322800	8226000	30710400
				Livelihood activities for the asset less persons	0	0	1645200	2742000	548400	4935600
				Production system and micro enterprises	0	0	1645200	2193600	1645200	5484000
				Consolidation phase	0	0	0	0	1645200	1645200
				Total	**3290400**	**7677600**	**13710000**	**16452000**	**13710000**	**54840000**
				Percentage of total cost	**6%**	**14%**	**25%**	**30%**	**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: Mohdinpur)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
319	3828000	Administrative costs	38280	38280	114840	114840	76560	382800
		Monitoring	0	0	0	38280	0	38280
		Evaluation	0	0	0	0	38280	38280
		Entry point activities	153120	0	0	0	0	153120
		Institution and capacity building	0	191400	0	0	0	191400
		Detailed project report	38280	0	0	0	0	38280
		Watershed	0	306240	612480	650760	574200	2143680

		development works						
		Livelihood activities for the asset less persons	0	0	114840	191400	38280	344520
		Production system and micro enterprises	0	0	114840	153120	114840	382800
		Consolidation phase	0	0	0	0	114840	114840
		Total	**229680**	**535920**	**957000**	**1148400**	**957000**	**3828000**
		Percentage of total cost	**6%**	**14%**	**25%**	**30%**	**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: Nain Sukhpura)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
729	8748000	Administrative costs	87480	87480	262440	262440	174960	874800
		Monitoring	0	0	0	87480	0	87480
		Evaluation	0	0	0	0	87480	87480
		Entry point activities	349920	0	0	0	0	349920
		Institution and capacity building	0	437400	0	0	0	437400
		Detailed project report	87480	0	0	0	0	87480
		Watershed development works	0	699840	1399680	1487160	1312200	4898880

		Livelihood activities for the asset less persons	0	0	262440	437400	87480	787320
		Production system and micro enterprises	0	0	262440	349920	262440	874800
		Consolidation phase	0	0	0	0	262440	262440
		Total	**524880**	**1224720**	**2187000**	**2624400**	**2187000**	**8748000**
		Percentage of total cost	**6%**	**14%**	**25%**	**30%**	**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: Boria kamalpur)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
485	5820000	Administrative costs	58200	58200	174600	174600	116400	582000
		Monitoring	0	0	0	58200	0	58200
		Evaluation	0	0	0	0	58200	58200
		Entry point activities	232800	0	0	0	0	232800
		Institution and capacity building	0	291000	0	0	0	291000
		Detailed project report	58200	0	0	0	0	58200
		Watershed development works	0	465600	931200	989400	873000	3259200
		Livelihood activities for	0	0	174600	291000	58200	523800

		the asset less persons						
		Production system and micro enterprises	0	0	174600	232800	174600	582000
		Consolidation phase	0	0	0	0	174600	174600
		Total	**349200**	**814800**	**1455000**	**1746000**	**1455000**	**5820000**
		Percentage of total cost	**6%**	**14%**	**25%**	**30%**	**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: Mandia Khurd)

(BUDGET AT A GLANCE)

Effective	Funds	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total

Area	Available							
543	6516000	Administrative costs	65160	65160	195480	195480	130320	651600
		Monitoring	0	0	0	65160	0	65160
		Evaluation	0	0	0	0	65160	65160
		Entry point activities	260640	0	0	0	0	260640
		Institution and capacity building	0	325800	0	0	0	325800
		Detailed project report	65160	0	0	0	0	65160
		Watershed development works	0	521280	1042560	1107720	977400	3648960
		Livelihood activities for the asset less persons	0	0	195480	325800	65160	586440
		Production system and micro enterprises	0	0	195480	260640	195480	651600
		Consolidation phase	0	0	0	0	195480	195480
		Total	**390960**	**912240**	**1629000**	**1954800**	**1629000**	**6516000**
		Percentage of total cost	**6%**	**14%**	**25%**	**30%**	**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: Dehlawas)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
617	7404000	Administrative costs	74040	74040	222120	222120	148080	740400
		Monitoring	0	0	0	74040	0	74040
		Evaluation	0	0	0	0	74040	74040
		Entry point activities	296160	0	0	0	0	296160
		Institution and capacity building	0	370200	0	0	0	370200
		Detailed project report	74040	0	0	0	0	74040
		Watershed development works	0	592320	1184640	1258680	1110600	4146240

		Livelihood activities for the asset less persons	0	0	222120	370200	74040	666360
		Production system and micro enterprises	0	0	222120	296160	222120	740400
		Consolidation phase	0	0	0	0	222120	222120
		Total	**444240**	**1036560**	**1851000**	**2221200**	**1851000**	**7404000**
		Percentage of total cost	**6%**	**14%**	**25%**	**30%**	**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: Hussainpur)

(**BUDGET AT A GLANCE)**

Effective Area	**Funds Available**	**Name of activity**	**1st Year**	**2nd Year**	**3rd Year**	**4th Year**	**5th Year**	**Total**
427	5124000	Administrative costs	51240	51240	153720	153720	102480	512400
		Monitoring	0	0	0	51240	0	51240
		Evaluation	0	0	0	0	51240	51240
		Entry point activities	204960	0	0	0	0	204960
		Institution and capacity building	0	256200	0	0	0	256200
		Detailed project report	51240	0	0	0	0	51240
		Watershed development works	0	409920	819840	871080	768600	2869440
		Livelihood activities for the asset less persons	0	0	153720	256200	51240	461160
		Production system and micro enterprises	0	0	153720	204960	153720	512400
		Consolidation phase	0	0	0	0	153720	153720
		Total	**307440**	**717360**	**1281000**	**1537200**	**1281000**	**5124000**
		Percentage of total cost	**6%**	**14%**	**25%**	**30%**	**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: Tothwal)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
524	6288000	Administrative costs	62880	62880	188640	188640	125760	628800
		Monitoring	0	0	0	62880	0	62880
		Evaluation	0	0	0	0	62880	62880
		Entry point activities	251520	0	0	0	0	251520
		Institution and capacity building	0	314400	0	0	0	314400
		Detailed project report	62880	0	0	0	0	62880
		Watershed development works	0	503040	1006080	1068960	943200	3521280
		Livelihood activities for the asset less persons	0	0	188640	314400	62880	565920
		Production system and micro enterprises	0	0	188640	251520	188640	628800
		Consolidation phase	0	0	0	0	188640	188640

		Total	**377280**	**880320**	**1572000**	**1886400**	**1572000**	**6288000**
		Percentage of total cost	**6%**	**14%**	**25%**	**30%**	**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: Jatuwas)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
464	5568000	Administrative costs	55680	55680	167040	167040	111360	556800

		Monitoring	0	0	0	55680	0	55680
		Evaluation	0	0	0	0	55680	55680
		Entry point activities	222720	0	0	0	0	222720
		Institution and capacity building	0	278400	0	0	0	278400
		Detailed project report	55680	0	0	0	0	55680
		Watershed development works	0	445440	890880	946560	835200	3118080
		Livelihood activities for the asset less persons	0	0	167040	278400	55680	501120
		Production system and micro enterprises	0	0	167040	222720	167040	556800
		Consolidation phase	0	0	0	0	167040	167040
		Total	**334080**	**779520**	**1392000**	**1670400**	**1392000**	**5568000**
		Percentage of total cost	**6%**	**14%**	**25%**	**30%**	**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: Jaitrawas)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
462	5544000	Administrative costs	55440	55440	166320	166320	110880	554400
		Monitoring	0	0	0	55440	0	55440
		Evaluation	0	0	0	0	55440	55440

		Entry point activities	221760	0	0	0	0	221760
		Institution and capacity building	0	277200	0	0	0	277200
		Detailed project report	55440	0	0	0	0	55440
		Watershed development works	0	443520	887040	942480	831600	3104640
		Livelihood activities for the asset less persons	0	0	166320	277200	55440	498960
		Production system and micro enterprises	0	0	166320	221760	166320	554400
		Consolidation phase	0	0	0	0	166320	166320
		Total	**332640**	**776160**	**1386000**	**1663200**	**1386000**	**5544000**
		Percentage of total cost	**6%**	**14%**	**25%**	**30%**	**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). 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 draught, 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 districtlevel, 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 in all six watersheds in Rewari 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 to saline ground water.
- Frequent droughts.

CAPACITY BUILDING- 5%

Rs. 27, 42, 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 subjected 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 47 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 Rewari 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**				
	Rewari	Members of Watershed Committees @ 10 per committee would also include accompanying WDT Members.	770	300-350	2
02	Block Level Functional Programmes for Secretaries of Watershed Committees. **Two Days**				
	Rewari	Secretaries of Village Watershed Committees	77	35-40	2
03	Project Level Sensitization Camps for WC **One Days**				
	Rewari	Members of Watershed Committees @ 10 Persons (Tentative) per WC	770	50	15
04	Village Level Awareness Camps on IWMP at Micro Watershed Level for User Groups **One Day**				
	Rewari	Approximately 50 prospective user groups per micro watershed.	2150	50	43
05	Block Level Functional Programmes for SHGs [Leader, Secretary and Treasurer] under IWMP **One Day**				

	Rewari	Three persons (Leader, Secretary and Treasurer) per Self Help Group @ around one SHG per village.	231	50	5

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	51918

2	Block Level Functional Programmes for Secretaries of Watershed Committees. Two Days	9631
3	Village Level Sensitization Camps for WC One Days	49296
4	Village Level Awareness Camps on IWMP at Micro Watershed Level for Prospective User Groups One Day	63415
5	Block Level Functional Programmes for SHGs [Leader, Secretary and Treasurer] under IWMP One Day	19736
	Total	**193996**

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

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	12600	5	9	6300	700	2100	94500
2	User groups from each micro watershed	NRM, Post Project Management etc. –Exposure	2	12600	5	9	6300	700	2100	94500

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
		Visit								
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	13500	1500	4500	202500
4	Sub watershed Level- PIA Members	Exposure Visit- Within Fundamentals of Watershed, Finance Management, Final Report on WDP etc	2	12600	5	9	6300	700	4500	202500
5	District Level- WDC	Exposure visit to successful watershed/ University.	2	12600	5	9	6300	700	1400	63000

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
6	District Level-Line Deptt., WDC	Exposure visit to successful watersheds within state.	2	12600	5	9	6300	700	1400	63000
7	SLNA and District Level Controlling Officers	Exposure visit to successful watersheds outside state	4	54000	5	9	13500	1500	6000	270000
Total										**990000**

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

S. No.	District	No. Micro watershed	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	2,16,000	10,80,000
2.	Propaganda & Documentation (Puppet show, documentary movies show, video-graphy, Photography, wall Painting, Display Board, pamphlets, leaf lets. Etc)	9	2	18	90	5000	90, 000	4,50,000
3	Contingency charges							28004
	Total							**1558004**

i) **Training Programmes for SLNA, WDT, PIA , Field Functionary , WDC member's , SHG & UG organize by HIRD = Rs. 1,93,996/-**

ii) **Micro Watershed Wise Exposure cum training Visit For SLNA, WDT, PIA , Field Functionary , WDC, SHG & UG Members**
= Rs. 9, 90,000/-

iii) **Farmer's / Beneficiaries training camps with Extension Program's = Rs. 15,58,004/-**

Grand Total = Rs. 27, 42,000/-

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. 21, 93,600/-** 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 Mohdinpur Watershed (IWMP II)

(Rs. In Lacs)

Sr. No.	Block	Name of Project	No. of EPAs Identified	No. of EPAs Completed	Name/Nature of EPA	Location	Expenditure
1.	Jatusana	IWMP II (Mohdinpur Watershed)	20	20	Retaining Wall	Mohdinpur	0.90
					Water Tanki	Mandiya Khurd	1.00
					Ramp/Inlet	Bodia Kamalpur	1.32
					Pacca Nala	Nainsukhpura	0.90
					Water Tanki	Rasooli	1.00
					Retaining Wall	Balawas Jamapur	1.61
					Retaining Wall	Choki No. 2	0.80
					Retaining Wall	Dehlawas	2.09
					Retaining Wall	Gulabpura	1.31
	Rewari				Retaining Wall	Jatuwas	0.30

Sr. No.	Block	Name of Project	No. of EPAs Identified	No. of EPAs Completed	Name/Nature of EPA	Location	Expenditure
					Ramp/Inlet	Narainpur	1.06
					Retaining Wall	Husainpur	1.60
					Pacca Nala	Daliyaki	0.30
					Retaining Wall	Thothwal	1.27
					Retaining Wall	Dhana Alampur	1.32
					Pacca Nala	Nangli Godha	0.30
					Retaining Wall	Kharsanki	1.60
					Pacca Nala	Akbarpur	0.30
					Retaining Wall	Jaitrawas	1.70
					Retaining Wall	Kharkhari Bhima	1.25
						Total	**21.93**

CHAPTER- 7

WORK PHASE

7.1 WATERSHED DEVELOPMENT WORKS - 56%

The Works under the project have been identified after the detailed survey of the Project Area and discussions held with watershed development team members along with officers from other field like Agriculture, Horticulture and Animal Husbandry. 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 Water Conveyance system, Water Channel, Ramp/Ghat Inlet and Outlet, Dug Out Pond (New/Renovation), Small Earthen Embankment with vegetative support, Roof top rain water recharge structures, Strengthening of Water Conveyance Channel (Water Course in fields) (Water Saving Technology) 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 wise.

Natural Resource Management

There are no large/ deep gullies in the area because most of the area is nearly level, however at few places near hillocks or sand dunes where slopes are gentle to steep, small gullies with complex slope have been formed which need specific treatment like construction of check dam (stone masonry) and earthen embankment.

The project area having small or large old ponds which have been silted up and needs strengthening. The land holding is small and any loss of land nearby area would be loss to the farmer. Under the IWDP/ Haryali some works like construction/renovation of farm ponds, small earthen embankments with vegetative support has been undertaken but still at few places inlet of the ponds and outlet needs to be constructed. So there repair and renovation is proposed. During the discussion it was felt to be genuine demand for repair, renovation and capacity enhancement of ponds in the area.

Proposed System: Run-off from upper area shall be reduced by a- forestation and other soil conservation measures which would also recharge the aquifer. As per need, retaining walls are proposed at strategic locations to protect the farm lands and bank of ponds.

Proposed Activity: Renovation and, construction of new ponds. The provision for construction of Water Channel, 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 are proposed, subject to availability of 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 and repairs. Ponds as such are the best source of rainwater conservation and ground water recharge.

Gram Panchayats spend meger money on repair and renovation under different schemes but due to paucity of funds, works are taken up in piece meal and main work of retaining wall is ignored. The stakeholders gave high priority for the construction of retaining walls 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 retaining walls 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.

7.2 Earthen Embankment

In order to conserve the rain water, the provisions of earthen embankment have been provided along the field boundaries across the slope for in-situ moisture conservation.

Suggested Interventions: In a number of villages, sites have been identified for in-situ moisture conservation and construction of embankments where village paths have got converted in to nalas due to severe erosion. The provision of earthen embankments besides being sustained source of water will help in checking further deterioration due to erosion in the project area.

This phase has been started after the completion of the preparatory phase is by and large complete. It is considered as the heart of the program in which the DPR proposals shall be implemented in participatory mode. In this watershed management program, it was planned to rehabilitate the degraded watersheds by the control of runoff and soil loss by biological and masonry works for conservation measures. In this water stressed project area, rainwater harvesting to reduce soil erosion, recharge ground water, and improve moisture regime and use of harvesting water for human and livestock use. This was coupled with land development, production improvement, and promotion of subsidiary occupations for improved livelihoods. Many village ponds are silted, several

are filled with filth and sewage water and giving foul smell. Repair renovation and retaining walls of village ponds has emerged as an important activity. The scope of integrated watershed regeneration/rehabilitation works which emerged from the PRA is now presented.

Sample estimates are as follows:

7.2.1 Activities under NRM (56%) Micro Watershed/Village Wise (IWMP II Rewari) is given below and the proposed action plan/treatment plan map shown in **Annexure-X.**

Name of Project IWMP II **Name of Watershed : Mohdinpur** **Name of Village : Mohdinpur**							
Sr. No.	**Nature of Works**	**Location**	**Unit**	**No. of Works**		**Estimated Cost** Rs**. in Lacs.**	**Objective**
				Unit Cost (Rs. in Lacs)	**Phy**		
1	Water Conveyance system	From bhurthala canal to village pond	Meter	0.007	500	3.50	To insured availability of water during lean period in ponds
2	Ramp/Ghat Inlet and Outlet	South side near School pond	Cum.	0.0326	65	2.12	For the control of soil erosion, in situ moisture conservation.

3	Dug Out Pond (New/Renovation)	West and North side of village	No.	3	2	6.00	For ground water recharging & availability of water for village community animals.
4	Small Earthen Embankment with vegetative support	common Land and undulated Agriculture fields	100 Cum.	0.029	9656	2.80	For the control of soil erosion, in situ moisture conservation.
5	Roof top rain water recharge structure	Govt. School of village	No.	2	1	2.00	For the conservation of water and ground water recharging.
6	Strengthening of Water Conveyance Channel (Water Course in fields)	Agriculture Fields	Rmt.	0.013	500	6.50	Reduce loss of canal water during irrigation
7	Agro forestry	Boundary of Agriculture fields	Ha.	0.15	5	0.75	Increase biomass and additional income to the farmers
8	Rainfed Horticulture	Boundary of Agriculture fields	Ha.	0.25	3	0.75	Proper utilization of uncultivated fields and additional income for farmers.
Total Cost						**24.42**	
Available Fund						**21.45**	
Convergence						**2.97**	

Name of Project IWMP II	Name of Watershed : Mohdinpur	Name of Village : Mandhya Khurd					
Sr. No.	**Nature of Works**	**Location**	**Unit**	**No. of Works**		**Estimated Cost Rs. in Lacs.**	**Objective**
				Unit Cost (Rs. in Lacs)	**Phy.**		
1	Renovation of Pond	South side of Village	No.	3	2	6.00	For ground water recharging & availability of water for village community animals.
2	Ramp/Ghat Inlet and Outlet	South side of Village	Cum.	0.0326	70	2.28	For the control of soil erosion, in situ moisture conservation.
3	Water Conveyance system	From rasooli canal to pond	Meter	0.007	1100	7.70	To insured availability of water during lean period in ponds
4	Roof top rain water recharge	Govt. School of village	No.	2	1	2.00	For the conservation of water and ground water recharging.
5	Small Earthen Embankment with vegetative support	common Land and undulated Agriculture fields	100 Cum.	0.029	12056	3.50	For the control of soil erosion, in situ moisture conservation.
6	Agro Forestry/ Afforestation	Boundary of Agriculture fields	Ha.	0.15	8	1.20	Increase biomass and additional income to the farmers
7	Rainfed Horticulture	Boundary of Agriculture fields	Ha.	0.25	4	1.00	Proper utilization of uncultivated fields and additional income for farmers.

Total Cost	**23.68**	
Available Fund	**22.04**	
Convergence	**1.64**	

Name of Project IWMP II	**Name of Watershed : Mohdinpur**		**Name of Village : Bodia Kamalpur**				
Sr. No.	**Nature of Works**	**Location**	**Unit**	**No. of Works**		**Estimated Cost Rs. in Lacs.**	**Objective**
				Unit Cost (Rs. in Lacs)	**Phy.**		
1	Water Conveyance system	From rasooli canal to pond	Meter	0.007	1000	7.00	To insured availability of water during lean period in ponds
2	Roof top rain water recharge	Govt. School of village	No.	2	1	2.00	For the conservation of water and ground water recharging.
3	Strengthening of Water Conveyance Channel (Water Course in fields)	Agriculture Fields	Rmt.	0.013	450	5.85	Reduce loss of canal water during irrigation
4	Small Earthen Embankment with vegetative support	common Land and undulated Agriculture fields	100 Cum.	0.029	15483	4.49	For the control of soil erosion, in situ moisture conservation.
5	Dug Out Pond (New/Renovation)	West and North side of village	No.	3	2	6.00	For ground water recharging & availability of water for village

							community animals.
6	Ramp/Ghat Inlet and Outlet	West and North side of village	Cum.	0.0326	82	2.67	For the control of soil erosion, in situ moisture conservation.
7	Agro Forestry/ Afforestation	Boundary of Agriculture fields	Ha.	0.15	5	0.75	Increase biomass and additional income to the farmers
8	Rain fed Horticulture	Boundary of Agriculture fields	No.	0.25	3	0.75	Proper utilization of uncultivated fields and additional income for farmers.
Total Cost						**29.51**	
Available Fund						**27.75**	
Convergence						**1.76**	

Name of Project IWMP II Name of Watershed : Mohdinpur Name of Village : Nainsukhpura

Sr. No.	**Nature of Works**	**Location**	**Unit**	**No. of Works**		**Estimated Cost Rs. in Lacs.**	**Objective**
				Unit Cost (Rs. in Lacs)	**Phy.**		
1	Water Conveyance system	From canal to pond from west to east side	Meter	0.007	1100	7.70	To insured availability of water during lean period in ponds
2	Small Earthen Embankment	common Land and undulated	Cum.	0.029	11310	3.28	For the control of soil erosion, in

	with vegetative support	Agriculture fields					situ moisture conservation.
3	Dug Out Pond (New/Renovation)	North side of village	No.	3	2	6.00	For ground water recharging & availability of water for village community animals.
4	Roof top rain water recharge structure	Govt. School	No.	2	1	2.00	For the conservation of water and ground water recharging.
5	Ramp/Ghat Inlet and Outlet	In Village Pond	Cum.	0.0326	89	2.90	For the control of soil erosion, in situ moisture conservation.
6	Strengthening of Water Conveyance Channel (Water Course in fields)	Agriculture Fields	Rmt.	0.013	550	7.15	Reduce loss of canal water during irrigation
7	Agro Forestry/ Afforestation	Boundary of Agriculture fields	Ha.	0.15	5	0.75	Increase biomass and additional income to the farmers
8	Rainfed Horticulture	Boundary of Agriculture fields	Ha.	0.25	3	0.75	Proper utilization of uncultivated fields and additional income for farmers.
Total Cost						**30.53**	
Available Fund						**28.56**	
Convergence						**1.97**	

Name of Project IWMP II	Name of Watershed : Mohdinpur	Name of Village : Rasooli					
Sr. No.	**Nature of Works**	**Location**	**Unit**	**No. of Works**		**Estimated Cost Rs. in Lacs.**	**Objective**
				Unit Cost (Rs. in Lacs)	**Phy.**		
1	Water Conveyance system	From canal to pond from west to east side	Meter	0.007	500	3.50	To insured availability of water during lean period in ponds
2	Small Earthen Embankment with vegetative support	common Land and undulated Agriculture fields	Cum.	0.029	5110	1.48	For the control of soil erosion, in situ moisture conservation.
3	Agro Forestry/ Afforestation	Boundary of Agriculture fields	Ha.	0.15	3	0.45	Increase biomass and additional income to the farmers
4	Rainfed Horticulture	Boundary of Agriculture fields	Ha.	0.25	1	0.25	Proper utilization of uncultivated fields and additional income for farmers.
Total Cost						**5.68**	
Available Fund						**4.84**	
Convergence						**0.84**	

Name of Project IWMP II	Name of Watershed : Mohdinpur	Name of Village : Balawas Jamapur					
Sr. No.	**Nature of Works**	**Location**	**Unit**	**No. of Works**		**Estimated Cost Rs. in**	**Objective**
				Unit Cost	**Phy.**		

				(Rs. in Lacs)		**Lacs.**	
1	Renovation / Dug Out Pond	South side of Village	No.	3	2	6.00	For ground water recharging & availability of water for village community animals.
2	Water Conveyance system	From canal to pond from west to east side	Meter	0.007	800	5.60	To insured availability of water during lean period in ponds
3	Ramp/Ghat Inlet and Outlet	Village pond South side of village	Cum.	0.0326	82	2.67	For the control of soil erosion, in situ moisture conservation.
4	Small Earthen Embankment with vegetative support	common Land and undulated Agriculture fields	100 Cum.	0.029	12621	3.66	For the control of soil erosion, in situ moisture conservation.
5	Roof top rain water recharge structure	Govt. School of village	No.	2	1	2.00	For the conservation of water and ground water recharging.
6	Strengthening of Water Conveyance Channel (Water Course in fields)	Agriculture Fields	Rmt.	0.013	250	3.25	Reduce loss of canal water during irrigation
7	Agro Forestry/ Afforestation	Boundary of Agriculture fields	Ha.	0.15	2	0.30	Increase biomass and additional income to the farmers
8	Rainfed Horticulture	Boundary of Agriculture fields	Ha.	0.25	1	0.25	Proper utilization of uncultivated fields and additional income for farmers.
Total Cost						**23.73**	

Available Fund	**20.43**	
Convergence	**3.30**	

Name of Project IWMP II **Name of Watershed : Mohdinpur** **Name of Village : Chowki No. 2**							
Sr. No.	**Nature of Works**	**Location**	**Unit**	**No. of Works**		**Estimated Cost Rs. in Lacs.**	**Objective**
				Unit Cost (Rs. in Lacs)	**Phy.**		
1	Water Conveyance system	From canal to pond from west to east side	Meter	0.007	1400	9.80	To insured availability of water during lean period in ponds
2	Dug Out Pond (New/Renovation)	East side of village	No.	3	1	3.00	For ground water recharging & availability of water for village community animals.
3	Ramp/Ghat Inlet and Outlet	East side of village	Cum.	0.0326	45	1.47	For the control of soil erosion, in situ moisture conservation.
4	Roof top rain water recharge structure	Govt. School of village	No.	2	1	2.00	For the conservation of water and ground water recharging.
5	Small Earthen Embankment with vegetative support	common Land and undulated Agriculture fields	100 Cum.	0.029	12821	3.72	For the control of soil erosion, in situ moisture conservation.
6	Strengthening of Water Conveyance Channel	Agriculture Fields	Rmt.	0.013	350	4.55	Reduce loss of canal water

	(Water Course in fields)						during irrigation
7	Agro Forestry/ Afforestation	Boundary of Agriculture fields	Ha.	0.15	2	0.30	Increase biomass and additional income to the farmers
8	Rainfed Horticulture	Boundary of Agriculture fields	Ha.	0.25	1	0.25	Proper utilization of uncultivated fields and additional income for farmers.
		Total Cost				**25.09**	
		Available Fund				**22.51**	
		Convergence				**2.58**	

Name of Project IWMP II Name of Watershed : Mohdinpur Name of Village : Dehlawas

Sr. No.	Nature of Works	Location	Unit	No. of Works		Estimated Cost Rs. in Lacs.	Objective
				Unit Cost (Rs. in Lacs)	Phy.		
1	Dug Out Pond (New/Renovation)	South side of village	No.	3	2	6.00	For ground water recharging & availability of water for village community animals.
2	Roof top rain water recharge structure	Govt. School of village	No.	2	2	4.00	For the conservation of water and ground water recharging.
3	Small Earthen Embankment with	common Land and undulated	Cum.	0.029	12173	3.53	For the control of soil erosion, in situ moisture conservation.

	vegetative support	Agriculture fields					
4	Ramp/Ghat Inlet and Outlet	In Village Pond	Cum.	0.0326	78	2.54	For the control of soil erosion, in situ moisture conservation.
5	Strengthening of Water Conveyance Channel (Water Course in fields)	Agriculture Fields	Rmt.	0.013	350	4.55	Reduce loss of canal water during irrigation
6	Agro Forestry/ Afforestation	Boundary of Agriculture fields	Ha.	0.15	5	0.75	Increase biomass and additional income to the farmers
7	Rainfed horticulture	Boundary of Agriculture fields	Ha.	0.25	2	0.50	Proper utilization of uncultivated fields and additional income for farmers.
Total Cost						**21.87**	
Available Fund						**18.95**	
Convergence						**2.92**	

Name of Project IWMP II	**Name of Watershed : Mohdinpur**		**Name of Village : Gulabpura**			
Sr. No.	**Nature of Works**	**Location**	**Unit**	**No. of Works**		**Estimated Cost Rs. in**	**Objective**
				Unit Cost	**Phy.**		

				(Rs. in Lacs)		**Lacs.**	
1	Water Conveyance system	From canal to pond from west to east side/S/Set	Meter	0.007	600	4.20	To insured availability of water during lean period in ponds
2	Dug Out Pond (New/Renovation)	North side of village	No.	3	1	3.00	For ground water recharging & availability of water for village community animals.
3	Ramp/Ghat Inlet and Outlet	In Village Pond	Cum.	0.0326	42	1.37	For the control of soil erosion, in situ moisture conservation.
4	Roof top rain water recharge structure	Govt. School of village	No.	2	1	2.00	For the conservation of water and ground water recharging.
5	Small Earthen Embankment with vegetative support	common Land and undulated Agriculture fields	Cum.	0.029	7173	2.08	For the control of soil erosion, in situ moisture conservation.
6	Strengthening of Water Conveyance Channel (Water Course in fields)	Agriculture Fields	Rmt.	0.013	250	3.25	Reduce loss of canal water during irrigation
7	Agro Forestry/ Afforestation	Boundary of Agriculture fields	Ha.	0.15	2	0.30	Increase biomass and additional income to the farmers
8	Rainfed Horticulture	Boundary of Agriculture fields	Ha.	0.25	1	0.25	Proper utilization of uncultivated fields and additional income for farmers.
Total Cost						**16.45**	

Available Fund	**14.45**	
Convergence	**2.00**	

Name of Project IWMP II Name of Watershed : Mohdinpur Name of Village : Jatuwas

Sr. No.	Nature of Works	Location	Unit	No. of Works		Estimated Cost	Objective
				Unit Cost (Rs. in Lacs)	Phy.	Rs. in Lacs.	
1	Renovation / Dug Out Pond	West side of village	No.	3	3	9.00	For ground water recharging & availability of water for village community animals.
2	Water Conveyance system	Kamalpur minor to village pond	Meter	0.007	550	3.85	To insured availability of water during lean period in ponds
3	Ramp /Ghat Inlet and Outlet	West side of village	Cum.	0.0326	115	3.75	For the control of soil erosion, in situ moisture conservation.
4	Small Earthen Embankment with vegetative support	common Land and undulated Agriculture fields	Cum.	0.0029	9656	0.28	For the control of soil erosion, in situ moisture conservation.
5	Strengthening of Water Conveyance Channel (Water Course in fields)	Agriculture Fields	Rmt.	0.013	350	4.55	Reduce loss of canal water during irrigation
6	Agro	Boundary of Agriculture	Ha.	0.15	5	0.75	Increase biomass and

	Forestry/Afforestation	fields					additional income to the farmers
7	Rainfed Horticulture	Boundary of Agriculture fields	Ha.	0.25	2	0.50	Proper utilization of uncultivated fields and additional income for farmers.
Total Cost						**22.68**	
Available Fund						**21.17**	
Convergence						**1.51**	

Name of Project IWMP II	**Name of Watershed : Mohdinpur**		**Name of Village : Narainpur**				
Sr. No.	**Nature of Works**	**Location**	**Unit**	**No. of Works**		**Estimated Cost Rs. in Lacs.**	**Objective**
				Unit Cost (Rs. in Lacs)	**Phy.**		
1	Ramp /Ghat Inlet and Outlet	Bainwala pond basswala sadhuwala pond South & East side of Village	Cum.	0.0326	35	1.14	For the control of soil erosion, in situ moisture conservation.
2	Renovation / Dug Out Pond	In Village Pond	No.	3	1	3.00	For ground water recharging & availability of water for village

							community animals.
3	Roof top rain water recharge structure	Govt. School of village	No.	2	1	2.00	For the conservation of water and ground water recharging.
4	Small Earthen Embankment with vegetative support	common Land and undulated Agriculture fields	Cum.	0.029	4656	1.35	For the control of soil erosion, in situ moisture conservation.
5	Agro Forestry/Afforestation	Boundary of Agriculture fields	Ha.	0.15	2	0.30	Increase biomass and additional income to the farmers
6	Rainfed Horticulture	Boundary of Agriculture fields	Ha.	0.25	1	0.25	Proper utilization of uncultivated fields and additional income for farmers.
Total Cost						**8.04**	
Available Fund						**6.85**	
Convergence						**1.19**	

Name of Project IWMP II	**Name of Watershed : Mohdinpur**			**Name of Village : Hussainpur**		
Sr.	**Nature of Works**	**Location**	**Unit**	**No. of Works**	**Estimated Cost**	**Objective**

No.				Unit Cost (Rs. in Lacs)	Phy.	Rs. in Lacs.	
1	Dug Out Pond (New/Renovation)	Bainwala pond basswala sadhuwala pond South & East side of Village	No.	3	2	6.00	For ground water recharging & availability of water for village community animals.
2	Ramp /Ghat Inlet and Outlet	Bainwala pond basswala sadhuwala pond South & East side of Village	Cum.	0.0326	103	3.36	For the control of soil erosion, in situ moisture conservation.
3	Roof top rain water recharge structure	Govt. School of village	No.	2	2	4.00	For the conservation of water and ground water recharging.
4	Small Earthen Embankment with vegetative support	common Land and undulated Agriculture fields	Cum.	0.029	8520	2.47	For the control of soil erosion, in situ moisture conservation.
5	Strengthening of Water Conveyance Channel (Water Course in fields)	Agriculture Fields	Rmt.	0.013	450	5.85	Reduce loss of canal water during irrigation
6	Agro Forestry/Afforestation	Boundary of Agriculture fields	Ha.	0.15	5	0.75	Increase biomass and additional income to the farmers
7	Rainfed Horticulture	Boundary of Agriculture fields	Ha.	0.25	2	0.50	Proper utilization of uncultivated fields and additional income for farmers.
Total Cost						**22.93**	

Available Fund	**21.84**	
Convergence	**1.09**	

Name of Project IWMP II	**Name of Watershed : Mohdinpur**		**Name of Village : Daliaki**				
Sr. No.	**Nature of Works**	**Location**	**Unit**	**No. of Works**		**Estimated Cost Rs. in Lacs.**	**Objective**
				Unit Cost (Rs. in Lacs)	**Phy.**		
1	Water Conveyance system	Canal to Bainwala pond West to East side of village	Meter	0.007	500	3.50	To insured availability of water during lean period in ponds
2	Dug Out Pond (New/Renovation)	South side of village	No.	3	1	3.00	For ground water recharging & availability of water for village community animals.
3	Roof top rain water recharge structure	Govt. School of village	No.	2	1	2.00	For the conservation of water and ground water recharging.
4	Small Earthen Embankment with vegetative support	common Land and undulated Agriculture fields	Cum.	0.029	8828	2.56	For the control of soil erosion, in situ moisture conservation.
5	Agro	Boundary of	Ha.	0.15	2	0.30	Increase biomass and additional

	Forestry/Afforestation	Agriculture fields					income to the farmers
6	Rainfed Horticulture	Boundary of Agriculture fields	Ha.	0.25	2	0.50	Proper utilization of uncultivated fields and additional income for farmers.
Total Cost						**11.86**	
Available Fund						**11.63**	
Convergence						**1.23**	

Name of Project IWMP II	**Name of Watershed : Mohdinpur**		**Name of Village : Tothwal**				
Sr. No.	**Nature of Works**	**Location**	**Unit**	**No. of Works**		**Estimated Cost Rs. in Lacs.**	**Objective**
				Unit Cost (Rs. in Lacs)	**Phy.**		
1	Water conveyance system	Bharawas minor to main pond of village	Meter	0.007	800	5.60	To insured availability of water during lean period in ponds
2	Ramp /Ghat Inlet and Outlet	In village pond	Cum.	0.0326	45	1.47	For the control of soil erosion, in situ moisture conservation.
3	Dug Out Pond	In village pond	No.	3	1	3.00	For ground water recharging & availability of water for village

	(New/Renovation)						community animals.
4	Roof top rain water recharge structure	Govt. School of village	No.	2	1	2.00	For the conservation of water and ground water recharging.
5	Small Earthen Embankment with vegetative support	common Land and undulated Agriculture fields	Cum.	0.029	6828	1.98	For the control of soil erosion, in situ moisture conservation.
6	Strengthening of Water Conveyance Channel (Water Course in fields)	Agriculture Fields	Rmt.	0.013	250	3.25	Reduce loss of canal water during irrigation
7	Agro Forestry/Afforestation	Boundary of Agriculture fields	Ha.	0.15	4	0.60	Increase biomass and additional income to the farmers
8	Rainfed Horticulture	Boundary of Agriculture fields	Ha.	0.25	2	0.50	Proper utilization of uncultivated fields and additional income for farmers.
Total Cost						**18.40**	
Available Fund						**15.79**	
Convergence						**2.61**	

Name of Project IWMP II	**Name of Watershed : Mohdinpur**		**Name of Village : Dana Alampur**			
Sr. No.	**Nature of Works**	**Location**	**Unit**	**No. of Works**	**Estimated Cost Rs.**	**Objective**

				Unit Cost (Rs. in Lacs)	**Phy.**	**in Lacs.**	
1	Water conveyance system	Bharawas minor to main pond of village	Meter	0.007	400	2.80	To insured availability of water during lean period in ponds
2	Small Earthen Embankment with vegetative support	common Land and undulated Agriculture fields	Cum.	0.029	5628	1.63	For the control of soil erosion, in situ moisture conservation.
3	Agro Forestry/Afforestation	Boundary of Agriculture fields	Ha.	0.15	2	0.30	Increase biomass and additional income to the farmers
4	Rainfed Horticulture	Boundary of Agriculture fields	Ha.	0.25	1	0.25	Proper utilization of uncultivated fields and additional income for farmers.
Total Cost						**4.98**	
Available Fund						**3.83**	
Convergence						**1.15**	

Name of Project IWMP II	**Name of Watershed : Mohdinpur**		**Name of Village : Nangli Godha**				
Sr. No.	**Nature of Works**	**Location**	**Unit**	**No. of Works**		**Estimated Cost Rs. in Lacs.**	**Objective**
				Phy.	**Unit Cost (Rs. in Lacs)**		
1	Small Earthen Embankment with vegetative support	common Land and undulated Agriculture fields	Cum.	5892	0.029	1.71	For the control of soil erosion, in situ moisture conservation.
2	Dug Out Pond	In village pond	No.	1	3	3.00	For ground water recharging & availability of water for village community animals.
3	Agro Forestry/Afforestation	Boundary of Agriculture fields	Ha.	2	0.15	0.30	Increase biomass and additional income to the farmers
4	Rainfed Horticulture	Boundary of Agriculture fields	Ha.	1	0.25	0.25	Proper utilization of uncultivated fields and additional income for farmers.
Total Cost						**5.26**	
Available Fund						**3.96**	
Convergence						**1.30**	

Name of Project IWMP II	Name of Watershed : Mohdinpur	Name of Village : Kharsanki					
Sr. No.	**Nature of Works**	**Location**	**Unit**	**No. of Works**		**Estimated Cost Rs. in Lacs.**	**Objective**
				Unit Cost (Rs. in Lacs)	**Phy.**		
1	Dug Out Pond (New/Renovation)	In village pond	No.	3	1	3.00	For ground water recharging & availability of water for village community animals.
2	Ramp /Ghat Inlet and Outlet	In village pond	Cum.	0.0326	42	1.37	For the control of soil erosion, in situ moisture conservation.
3	Small Earthen Embankment with vegetative support	common Land and undulated Agriculture fields	100 Cum.	0.029	5492	1.59	For the control of soil erosion, in situ moisture conservation.
4	Agro Forestry/Afforestation	Boundary of Agriculture fields	Ha.	0.15	2	0.30	Increase biomass and additional income to the farmers
5	Rainfed Horticulture	Boundary of Agriculture fields	Ha.	0.25	1	0.25	Proper utilization of uncultivated fields and

							additional income for farmers.
	Total Cost					**6.51**	
	Available Fund					**5.78**	
	Convergence					**0.73**	

Name of Project IWMP II	**Name of Watershed : Mohdinpur**		**Name of Village : Akbarpur**				
Sr. No.	**Nature of Works**	**Location**	**Unit**	**No. of Works**		**Estimated Cost Rs. in Lacs.**	**Objective**
				Unit Cost (Rs. in Lacs)	**Phy.**		
1	Dug Out Pond (New/Renovation)	In village pond	No.	3	1	3.00	For ground water recharging & availability of water for village community animals.
2	Small Earthen Embankment with vegetative support	common Land and undulated Agriculture fields	Cum.	0.029	4492	1.30	For the control of soil erosion, in situ moisture conservation.
3	Agro	Boundary of	Ha.	0.15	1	0.15	Increase biomass and

	Forestry/Afforestation	Agriculture fields					additional income to the farmers
4	Rainfed Horticulture	Boundary of Agriculture fields	Ha.	0.25	1	0.25	Proper utilization of uncultivated fields and additional income for farmers.
Total Cost						**4.70**	
Available Fund						**4.23**	
Convergence						**0.47**	

Name of Project IWMP II **Name of Watershed : Mohdinpur** **Name of Village : Jaitrawas**

Sr. No.	**Nature of Works**	**Location**	**Unit**	**No. of Works**		**Estimated Cost**	**Objective**
				Unit Cost	**Phy.**	**Rs. in Lacs.**	
				(Rs. in Lacs)			
1	Water Conveyance system	Minor to Shiv mandir Pond	Meter	0.007	1000	7.00	To insured availability of water during lean period in ponds

2	Renovation / Dug Out Pond	West side of village near mandir	No.	3	2	6.00	For ground water recharging & availability of water for village community animals.
3	Ramp/ Ghat Inlet and Outlet	Near mandir wala pond	Cum.	0.0326	87	2.84	For the control of soil erosion, in situ moisture conservation.
4	Roof top rain water recharge structure	Govt. School of village	No.	2	1	2.00	For the conservation of water and ground water recharging.
5	Small Earthen Embankment with vegetative support	common Land and undulated Agriculture fields	Cum.	0.029	12069	3.50	For the control of soil erosion, in situ moisture conservation.
7	Strengthening of Water Conveyance Channel (Water Course in fields)	Agriculture Fields	Rmt.	0.013	375	4.88	Reduce loss of canal water during irrigation
8	Agro Forestry/Afforestation / Horticulture	Boundary of Agriculture fields	Ha.	0.15	1	0.15	Increase biomass and additional income to the farmers
9	Rainfed Horticulture	Boundary of Agriculture fields	Ha.	0.25	1	0.25	Proper utilization of uncultivated fields and additional income for farmers.
Total Cost						**26.61**	
Available Fund						**24.60**	
Convergence						**2.01**	

Name of Project IWMP II	Name of Watershed : Mohdinpur	Name of Village : Kharkhari Bhima					
Sr. No.	**Nature of Works**	**Location**	**Unit**	**No. of Works**		**Estimated Cost Rs. in Lacs.**	**Objective**
				Unit Cost (Rs. in Lacs)	**Phy.**		
1	Dug Out Pond (New/Renovation)	In village pond	No.	3	1	3.00	For ground water recharging & availability of water for village community animals.
2	Ramp/Ghat Inlet and Outlet	In Village Pond	Cum.	0.0326	59	1.92	For the control of soil erosion, in situ moisture conservation.
3	Small Earthen Embankment with vegetative support	common Land and undulated Agriculture fields	Cum.	0.029	5069	1.47	For the control of soil erosion, in situ moisture conservation.
4	Agro Forestry/Afforestation	Boundary of Agriculture fields	Ha.	0.15	2	0.30	Increase biomass and additional income to the farmers
5	Rainfed Horticulture	Boundary of Agriculture fields	Ha.	0.25	1	0.25	Proper utilization of uncultivated fields and additional income for farmers.
Total Cost						**6.94**	
Available Fund						**6.45**	
Convergence						**0.49**	

Table. 1. Detail Estimate of Cement Stone Masonry Structure

S.No.	Description	No.	Length (mts)	Breadth (mts)	Height (mts)	Content (cums)
1	**Excavation of earthwork in foundation And plinth H.S.R 6.6**					
	Crest wall with extensions	1	8.00	2.00	1.20	19.20
	Side walls	2	1.50	1.00	1.20	3.60
	Wing walls	2	2.00	1.00	1.20	4.80
	Toe wall with extensions	1	6.00	1.00	1.20	7.20
	Appron	1	4.00	1.50	0.30	1.80
				Total =		**36.60**
2	**Cement concrete work 1 : 4 : 8 in the Foundation and plinth H.S.R 10.39**					
	Crest wall with extensions	1	8.00	1.70	0.20	2.72

S.No.	Description	No.	Length (mts)	Breadth (mts)	Height (mts)	Content (cums)
	Side walls	2	1.50	0.70	0.20	0.42
	Wing walls	2	2.00	0.70	0.20	0.56
	Toe wall with extensions	1	6.00	0.70	0.20	0.84
	Appron	1	4.00	1.50	0.20	1.20
				Total =		**5.74**
3	**Square rubble stone masonry course1: 5 in foundation and plinth H.S.R 12.23**					
	Crest wall with extensions	1	8.00	(1.5+1.0)/2= 1.25	1.00	**10.00**
	Side walls	2	1.50	0.50	1.00	**1.50**
	Wing walls	2	2.00	0.50	1.00	**2.00**
	Toe wall with extensions	1	6.00	0.50	1.00	**3.00**
				Total =		**16.50**
4	**Square rubble stone masonry course1: 5 above G.L. H.S.R 12.23 and 12.31**					
	Crest wall with extensions	1	8.00	(1.0+0.5)/2= 0.75	1.20	7.20
	Side walls	2	(1.5+2.0)/2= 1.75	0.50	(1.7+0.5)/2= 1.1	1.93
	Wing walls	2	2.00	0.50	1.70	3.40
	Toe wall with extensions	1	6.00	0.50	0.20	0.60

S.No.	Description	No.	Length (mts)	Breadth (mts)	Height (mts)	Content (cums)
	Toe wall extensions	1	1.00	0.50	0.50	0.25
				Total =		**13.38**
5	**Cement concrete work 1 : 2 : 4 in the Foundation and plinth H.S.R 10.41**					
	On the top of crest wall	1	4.00	(1.0+0.5)/2= 0.75	0.05	0.15
	On the top of crest wall extensions	2	2.00	0.50	0.05	0.10
	On the top of side walls	2	1.50	0.50	0.05	0.08
	On the top of wing walls	2	2.00	0.50	0.05	0.10
	Toe wall with extensions	1	6.00	0.50	0.05	0.15
	Apron	1	4.00	1.50	0.10	0.60
				Total =		**1.18**
6	**Cement plastering work 1:4 on the**					
	Crest wall both side	2	4.00	_	1.20	9.60
	Crest wall extensions	2 x 2	2.00	_	0.50	4.00
	Side walls	2	(1.5+2.0)/2= 1.75	_	(1.7+0.5)/2= 1.1	3.85
	Wing walls	2	2.00	_	1.70	6.80
	Toe wall with extensions	1	6.00	_	0.20	1.20

S.No.	Description	No.	Length (mts)	Breadth (mts)	Height (mts)	Content (cums)
	Toe wall extensions	2 x 2	1.00	_	0.50	2.00
				Total =		**27.45**

Table. 2. MATERIAL STATEMENT AND COST OF MATERIAL

S.No.	Item of work Quantity		Cement	Sand	Stone blast	Bajri 20 mm	Stone boulders
		(cum)	(bags)	(cum)	(cum)	(cum)	(cum)
1	C.C work 1 : 4 : 8	5.74	19.516	2.7552	5.5104	_	_
2	Sq. stone masonry work	16.50	28.38	4.95	_	_	18.15
	1: 5 in foundation.						
3	Sq. stone masonry work	13.38	23.005	4.0125	_	_	14.7125
	1: 4 above ground level.						
4	C.C work 1 : 2 : 4	1.18	7.4025	0.517	_	1.034	_
5	C. plastering work 1 : 4	27.45 sqm	3.02	0.41	_	_	_
	Total =		**81.323**	**12.64645**	**5.5104**	**1.034**	**32.8625**

	Rates of material	245.00 per bag	950.00 per cum	965.00 per cum	985.00 per cum	945.00 per cum
	Cost of Materials	**19924**	**12014**	**5318**	**1018**	**31055**
	Total Cost of Materials =	**Rupees**	**69329**	**/-only**		

Table. 3. LABOUR COST

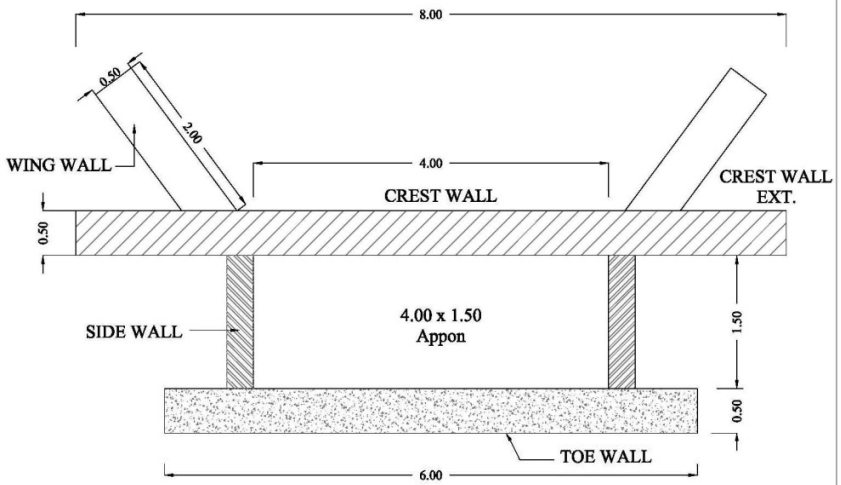
S. No.	**Item of work Quantity**		**Rate**	**Unit**	**Amount**
1	Excavation of earthwork in foundation and plinth H.S.R 6.6	36.60 cum	1108.10 +350% C. Prem. =4986.45	100 cum	**1825.04**
2	Cement concrete work 1 : 8 : 16 in the Foundation and plinth H.S.R 10.39	5.74 cum	64.95 +370% C. Prem. =305.27	cum	**1752.25**
3	Square rubble stone masonry course1: 5 in foundation and plinth H.S.R 12.23	16.50 cum	(160.35+26.00) +250% C. Prem. =652.22	cum	**10761.63**
4	Square rubble stone masonry course1: 5 above G.L. H.S.R 12.23 and 12.31	13.38 cum	(160.35+26.00+27.20) +200% Prem.= 747.42	cum	**9996.74**
5	Cement concrete work 1 : 2 : 4 in the Foundation and plinth H.S.R 10.41	1.18 cum	64.95 +370% C. Prem. =305.27	cum	**358.69**

S. No.	Item of work Quantity		Rate		Unit	Amount
6	Cement plastering work 1:4 on the stone walls H.S.R 15.5	27.45 sqm	5.50 +340 % C. Prem. =24.2		cum	**664.29**
	Total =	29.875 cum				**25358.64525**
					or say Rs.25359/- only	

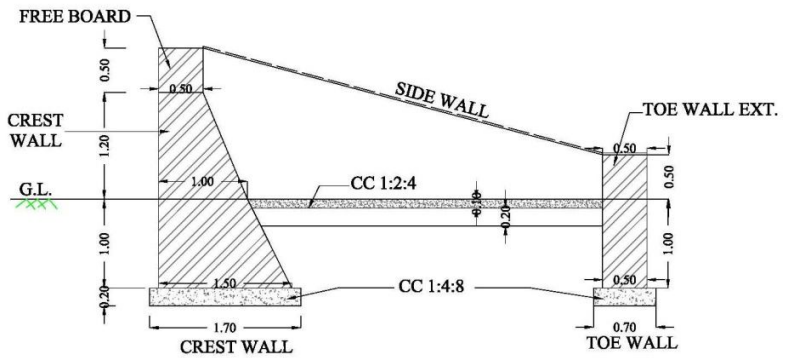
Table. 4. ABSTRACT OF COST

Labour cost	25359.00
Cost of Materials as per detail attached	69329.00
Total =	**94688.00**
Add contingency at the rate of 3%	2841.00
Grand Total =	**97529.00**
Per cum Rate = 97529 /29.88 = 3264.02 or say Rs.3260/- only	

WORK PLAN OF CEMENT STONE MASONRY STRUCTURE



PLAN



X-SECTION

* Not to Scale
*All Dimension in m.

X-section of Masonry Structure

Table. 5. 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. 6. 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. Contigency @2%	**5029.1753**
					Grand Total	**256487.94**
					Or say `	**2.60 Lac**

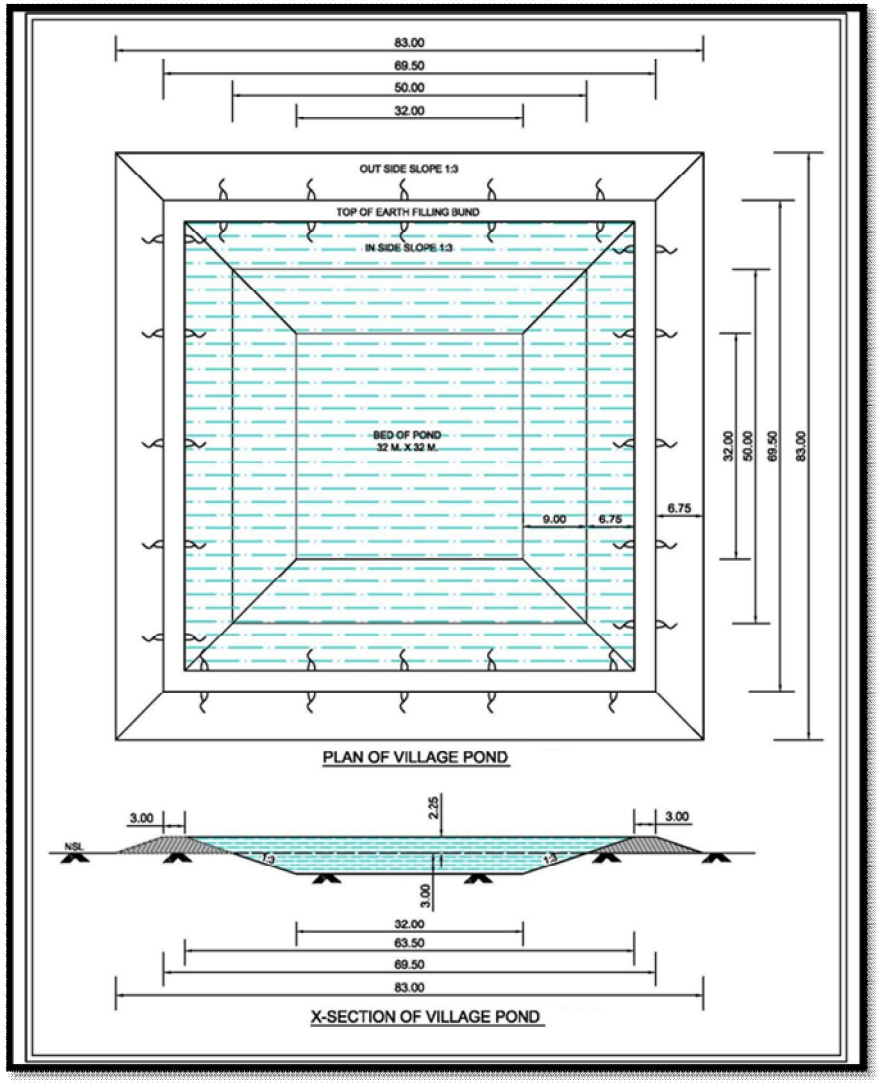

83.00
69.50
50.00
32.00
OUT SIDE SLOPE 1:3
TOP OF EARTH FILLING BUND
IN SIDE SLOPE 1:3
BED OF POND
32 M. X 32 M.
9.00
6.75
6.75
32.00
50.00
69.50
83.00
PLAN OF VILLAGE POND
3.00
2.25
3.00
NSL
1:3
1:3
3.00
32.00
63.50
69.50
83.00
X-SECTION OF VILLAGE POND

Table. 7. Estimate of Orchard Development in the Watersheds Per Hectare (Lemon, Kinnoo)

A. Horticulture

Sr. No.	Particulars	Quantity	Unit	Rate	Amount
1	Soil working 1m x 1m x 1m size pits (390 Nos.) including cost of refilling(At the distance 15'x15')	390.00	cum	36.66	14297.40
2	Application of Farmyard Manure, including cost			L.S.	750.00
3	Cost of fertiliser/ pesticide @250gm/plant			L.S.	750.00
4	Cost of plants (including 15% etc. for mortality) including transportation and planting	450.00	Nos.	15/Plant	6750.00
5	Casualty replacement @ 10% of item No. 4 & 5				465.00
6	Cost of 2 weedings and hoeing			1.00/Pant	540.00
7	Contingency and unforeseen (3%)				492.00
				Total	**24044.40**
				Say `	**24000.00**
	Maintenance cost 2nd year			**L.S.**	**1000.00**
	For next 5 years i.e. , ` 1000 x 5				**5000.00**
				Total	**30000.00**
				Say `	**30000.00**

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/Pant	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**

Table. 8. 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 status of the soil is very poor especially in available nitrogen is low and available phosphorous in the soil is low to medium and the available potash in the soil is medium to high. 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. Well organized marketing system in fruit plants.

Proposed System: The average annual rainfall is 702 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, Ber and Kinnow 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 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 Aravali, 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 9.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

S. No.	Particulars	Contents	No. of micro watersheds	No. of beneficiaries per micro watershed	No. of total beneficiaries	Cost per beneficiaries	Total
1	Agriculture	To introduce Summer Moong or Mash, gwar and groundnut as a third crop in bajra-wheat rotation. Supply of mini- kits to 40 farmers of each micro watershed/year @ Rs.200/ kit as assistance is provided.	9	360(farmers)	1800 (mini kits)	200 per mini kits	360000
	Agriculture	Application of farm inputs like Zinc Sulphate or Sulphur or weedicides or pesticides. 40 farmer of each micro watershed/ year @ Rs.200/ kits as assistance is provided.	9	360(farmers)	1800 (mini kits)	200 per mini kits	360000
	Agriculture	Supplying of Agriculture implements – 15 farmers (average) per micro watershed @ Rs. 1000/ units as assistance is provided.	9	135(farmers)	675	1000	675000
	Agriculture	Agro Forestry: Neem on 50% subsidy @ Rs. 10/ plant as assistance is provided.	9	4500(plants)	22500 plants	Rs. 10 per plant	225000
2	Horticulture	Potential for Grafted Horticulture plants. Supply of plants at 50 % cost share for cultivation of fruits like Citrus fruits, Guava, Amla, Ber floriculture and vegetables (especially, turmeric, garlic, onion and tomato)	9	450 plants	2250 plants	Rs.40 per plant	90000
	Horticulture	Kitchen gardening Packets distributed to 50 farmers in each micro watershed/ year @ Rs.25/ packet.	9	450	2250	Rs. 25 Per packet	56250
	Horticulture	Three units of Bee keeping in each micro watershed @ 3000/ unit as assistance are provided.	9	27	135	3000	405000

S. No.	Particulars	Contents	No. of micro watersheds	No. of beneficiaries per micro watershed	No. of total beneficiaries	Cost per beneficiaries	Total
	Horticulture	One units of Vermi compost in each micro watershed per year @ Rs. 10000 per unit as assistance is provided.	9	9	45	10000	450000
3	Animal Husbandry	Problems being faced due to some diseases in the animals and low yield of milk. Production of free life saving medicines/ minerals for animals – the provision for 40 farmers of each micro watershed/year @ Rs.225 has been provided.	9	360	1800	225	405000
	Animal Husbandry	Livestock Management supply of feed supplements to improve health of cattle's. The provision to benefit 40 farmers of each micro watershed/year @ Rs.225 has been kept in the project proposals.	9	360	1800	225	405000
	Animal Husbandry	Supply of mini- kits of high yielding variety green fodder seeds to 20 farmers in each micro watershed/year @ Rs.200/- mini kits.	9	180(farmers)	900 Seeds of mini kit	200 per mini kit of seeds	180000
4	Joint camps with Line Departments	Two training camps to beneficiaries on Proven technology in agriculture are provided (during pre kharif and rabi season).	9	18	90	20000	1800000
		Contingency					72750

Total: Rs. 5484000/-

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 has 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.

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 de compost 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 vermin 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 form 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 10: 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 side 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 rain fed 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 identified Economic Activities and it is proposed to impart them trainings at Krishi Vigyan Kender (CCSHAU) Rewari 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.

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. Skill Development in Computer

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

Table 11. Revolving Fund Assistance for SHGs

S.No.	Name of micro watersheds	No. of villages	Total SHGs	Amount of RFA per SHG	Total
1	Mohdinpur	1	1	25000	25000
2	Nain sukhpura	2	2	25000	50000
3	Boria kamalpur	2	2	25000	50000
4	Mandia Khurd	2	2	25000	50000
5	Dehlawas	2	2	25000	50000
6	Hussanpur	2	2	25000	50000
7	Tothwal	4	4	25000	100000
8	Jatuwas	3	3	25000	75000
9	Jaitrawas	2	2	25000	50000
		20	**20**		**500000**

Table 12. 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	Mohdinpur	1	1	35000	35000
2	Nain sukhpura	2	2	35000	70000
3	Boria kamalpur	2	2	35000	70000
4	Mandia Khurd	2	2	35000	70000
5	Dehlawas	2	2	35000	70000
6	Hussanpur	2	2	35000	70000
7	Tothwal	4	4	35000	140000
8	Jatuwas	3	3	35000	105000
9	Jaitrawas	2	2	35000	70000
		20	**20**		**700000**

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 13. 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	Mohdinpur	1	10	10000	100000
2	Nain sukhpura	2	10	10000	100000
3	Boria kamalpur	2	10	10000	100000
4	Mandia Khurd	2	10	10000	100000
5	Dehlawas	2	10	10000	100000
6	Hussanpur	2	10	10000	100000
7	Tothwal	4	12	10000	120000
8	Jatuwas	3	10	10000	100000
9	Jaitrawas	2	10	10000	100000
		20	**92**		**920000**

Note: The beneficiaries will contribute 10% as cost sharing of the livelihood support programme Rs. 920000 @ 10% cost sharing.

= 920000- 92000

= 828000/-

Table 14. 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	Mohdinpur	1	10	20000	200000
2	Nain sukhpura	2	10	20000	200000
3	Boria kamalpur	2	10	20000	200000
4	Mandia Khurd	2	10	20000	200000
5	Dehlawas	2	10	20000	200000
6	Hussanpur	2	10	20000	200000
7	Tothwal	4	12	20000	240000

8	Jatuwas	3	10	20000	200000
9	Jaitrawas	2	10	20000	200000
		20	**92**		**1840000**

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. 1840000 @ 10% cost sharing.

= 1840000- 184000

= 1656000/-

Table 15. 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	Mohdinpur	1	1	2	2000	6	12000
2	Nain sukhpura	2	2	4	2000	6	24000
3	Boria kamalpur	2	1	2	2000	6	12000
4	Mandia Khurd	2	2	4	2000	6	24000
5	Dehlawas	2	1	2	2000	6	12000
6	Hussanpur	2	1	2	2000	6	12000
7	Tothwal	4	2	4	2000	6	24000
8	Jatuwas	3	1	2	2000	6	12000
9	Jaitrawas	2	1	2	2000	6	12000
		20	**12**	**24**			**144000**

Total cost for 12 Centres

1. Payment to trainers 144000/-

2. Sewing Machine Cost 60000/- (lump sum)

Table 16. 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	Mohdinpur	1	1	2000	6	12000	1	12000
2	Nain sukhpura	2	2	2000	6	12000	2	24000
3	Boria kamalpur	2	1	2000	6	12000	1	12000
4	Mandia Khurd	2	2	2000	6	12000	2	24000
5	Dehlawas	2	1	2000	6	12000	1	12000
6	Hussanpur	2	1	2000	6	12000	1	12000
7	Tothwal	4	2	2000	6	12000	2	24000
8	Jatuwas	3	1	2000	6	12000	1	12000
9	Jaitrawas	2	1	2000	6	12000	1	12000
		20	**12**					**144000**

Total Cost:

Payment to trainer: Rs.144000/-

Table 17. Livelihood Support

S.No.	Name of micro watersheds	No. of villages	Revolving fund assistance to individuals unemployed youth/ landless, women	
			Dairy Unit	Bee Keeping, Mushroom Cultivation, Vermi compost etc.
1	Mohdinpur	1	1	1
2	Nain sukhpura	2	3	3
3	Boria kamalpur	2	3	3
4	Mandia Khurd	2	3	3
5	Dehlawas	2	3	3
6	Hussanpur	2	2	2
7	Tothwal	4	4	4
8	Jatuwas	3	3	3
9	Jaitrawas	2	2	2
	Total	**20**	**24**	**24**
	Rate (Rs)		**25000**	**10000**
	Cost (Lakh Rs)		**6.00**	**2.40**

Contingency, printing material and other unseen items: Rs. 63600/-

Total funds available under this component are Rs. 4935600/-

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), Rewari

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. 20000/ 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. 35)

Detail of Convergence of IWMP and other schemes

Table 18. 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	Mohdinpur	24.42	21.45	2.97	2.97
2	Nain sukhpura	54.26	48.99	5.27	5.27
3	Boria kamalpur	35.19	32.59	2.6	2.6
4	Mandia Khurd	40.13	36.49	3.64	3.64
5	Dehlawas	46.96	41.46	5.5	5.5
6	Hussanpur	30.97	28.69	2.28	2.28
7	Tothwal	40.5	35.21	5.29	5.29
8	Jatuwas	33.89	31.18	2.71	2.71
9	Jaitrawas	33.55	31.05	2.5	2.5
	Total	**339.87**	**307.11**	**32.76**	**32.76**

- 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 nine 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 34 ha horticulture development programme with the financial assistance of Rs. 8.5 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 Water Conveyance system, Ramp/Ghat Inlet and Outlet, Dug Out Pond (New/Renovation), Small Earthen Embankment with vegetative support, Roof top rain water recharge structures, Strengthening of Water Conveyance Channel (Water Course in fields) (Water Saving Technology) 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	Mohdinpur	319	38,28,000	38,280
2	Nain sukhpura	729	87,48,000	87,480
3	Boria kamalpur	485	58,20,000	58,200
4	Mandia Khurd	543	65,16,000	65,160

5	Dehlawas	617	74,04,000	74,040
6	Hussanpur	427	51,24,000	51,240
7	Tothwal	524	62,88,000	62,880
8	Jatuwas	464	55,68,000	55,680
9	Jaitrawas	462	55,44,000	55,440

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	Mohdinpur	319	38,28,000	38,280
2	Nain sukhpura	729	87,48,000	87,480
3	Boria kamalpur	485	58,20,000	58,200
4	Mandia Khurd	543	65,16,000	65,160
5	Dehlawas	617	74,04,000	74,040
6	Hussanpur	427	51,24,000	51,240
7	Tothwal	524	62,88,000	62,880
8	Jatuwas	464	55,68,000	55,680
9	Jaitrawas	462	55,44,000	55,440

CONSOLIDATION PHASE- 3 %

Consolidation Phase = Rs. 16, 45,200 /-

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: Mohdinpur

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	0.23
2	Preparation of Project completion report	0.06
3	Documentation of success stories	0.06
4	Management of proper utilization of WDF	0.17
5	Mechanism for quality and sustainability issues under the Project	0.06
6	Watershed activities	0.57

Total: 1.15 lacs

Name of Micro watershed: Nain Sukhpura

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	0.52
2	Preparation of Project completion report	0.14
3	Documentation of success stories	0.13
4	Management of proper utilization of WDF	0.39
5	Mechanism for quality and sustainability issues under the Project	0.13
6	Watershed activities	1.31

Total: 2.62 lacs

Name of Micro watershed: Boria kamalpur

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	0.35
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	0.87

Total: 1.75 lacs

Name of Micro watershed: Mandia Khurd

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	0.39
2	Preparation of Project completion report	0.10
3	Documentation of success stories	0.10
4	Management of proper utilization of WDF	0.29
5	Mechanism for quality and sustainability issues under the Project	0.10
6	Watershed activities	0.97

Total: 1.95 lacs

Name of Micro watershed: Dehlawas

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	0.44
2	Preparation of Project completion report	0.12
3	Documentation of success stories	0.11
4	Management of proper utilization of WDF	0.33
5	Mechanism for quality and sustainability issues under the Project	0.11
6	Watershed activities	1.11

Total: 2.22 lacs

Name of Micro watershed: Hussainpur

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	0.31
2	Preparation of Project completion report	0.08
3	Documentation of success stories	0.07

4	Management of proper utilization of WDF	0.23
5	Mechanism for quality and sustainability issues under the Project	0.08
6	Watershed activities	0.77

Total: 1.54 lacs

Name of Micro watershed: Tothwal

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	0.38
2	Preparation of Project completion report	0.10
3	Documentation of success stories	0.09
4	Management of proper utilization of WDF	0.28
5	Mechanism for quality and sustainability issues under the Project	0.09
6	Watershed activities	0.95

Total: 1.89 lacs

Name of Micro watershed: Jatuwas

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	0.33
2	Preparation of Project completion report	0.09
3	Documentation of success stories	0.08
4	Management of proper utilization of WDF	0.25
5	Mechanism for quality and sustainability issues under the Project	0.08
6	Watershed activities	0.84

Total: 1.67 lacs

Name of Micro watershed: Jaitrawas

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	0.33
2	Preparation of Project completion report	0.09
3	Documentation of success stories	0.08
4	Management of proper utilization of WDF	0.25
5	Mechanism for quality and sustainability issues under the Project	0.08

6	Watershed activities	0.83

Total: 1.66 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 4570 ha and the Project Cost is 548.40 lacs covering 9 no. micro watersheds and in all 20 villages. Benefits will be much more than the project cost as detailed below:

With the several interventions under IWMP II 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 shall be benefited. 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 Mohdinpur Watershed II 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. thus limiting them for a single crop, which keeps them partially engaged for 4 to 5 months. Similarly due to lack of fodder animal husbandry does not keep them fully engaged. Thus the people mainly depend upon casual labour either in the villages is in Delhi, Gurgaon, Bhiwadi, Dharuhera Industrial Complex**.**

Table 1. Expected Employment Generation in the Project area

S.No.	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.	Mohdinpur	241	3189	3430	16	223	239	-	-	11	**11**

2.	Nainsukhpura	356	7482	7838	23	334	357	11	-	11	**22**
3.	Boria Kamalpur	211	5004	5215	18	264	282	11	11	-	**22**
4.	Mandhiya Khurd	405	5433	5838	20	290	310	-	11	11	**22**
5.	Dehlawas	432	6202	6634	23	333	356	11	11	-	**22**
6.	Hussainpur	551	4040	4591	19	275	294	11	-	11	**22**
7.	Thothwal	242	5392	5634	20	272	292	11	11	22	**44**
8.	Jatuwas	102	4887	4989	17	236	253	11	11	11	**33**
9.	Jaitrawas	254	4713	4967	18	234	252	11	-	11	**22**
	Total	**2794**	**46342**	**49136**	**174**	**2461**	**2635**	**77**	**55**	**88**	**220**

49136 man days would be generated with the implementation of the project in Mohdinpur Watershed (IWMP II), which means 98 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 Mohdinpur Watershed (IWMP II)

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.	Mohdinpur	16	8	60	30	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
2.	Nainsukhpura	25	12.5	180	90	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
3.	Boria Kamalpur	34	17	150	75	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
4.	Mandhiya Khurd	42	21	150	75	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
5.	Dehlawas	35	17.5	150	75	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
6.	Hussainpur	32	16	180	90	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
7.	Thothwal	19	9.5	150	75	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%

8.	Jatuwas	26	13	180	90	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
9.	Jaitrawas	23	11.5	150	75	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 and Canal water supply in the area. The area is facing scarcity of water during May and June.

Through the ground water table is depleting over the year in the areas underlain by fresh to marginal water quality where the development of tubewells have been undertaken for irrigation purposes. The present water level varies from 8.7 to 27.2m. The water table of such area is depleting from 0.38 m to 0.43 in blocks falling in Jatusana and Rewari respectively. The area comes under over exploited and critical category. The efforts have been made to construct the percolation tanks to check the further fall in water table.

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	Existing pre-project ground water table level (m)	Expected post project conditions
1	Mohdinpur	Mohdinpur	Open wells	9.0	In the areas of falling water table, the provision for rain water harvesting and recharging has been provided in the project proposals through construction of percolation tank/ ponds.
2	Nainsukhpura	Nainsukhpura	Open wells	9.5	
		Balawas Jamapur	Open wells	8.7	
3	Boria Kamalpur	Boria Kamalpur	Open wells	19.1	
		Rasooli	Open wells	10.0	
4	Mandhiya Khurd	Mandhiya Khurd	Open wells	19.5	
		Gulabpura	Open wells	20.0	
5	Dehlawas	Dehlawas	Open wells	19.2	
		Chowki No. 2	Open wells	18.2	
6	Hussainpur	Hussainpur	Open wells	18.2	
		Narayanpur	Open wells	18.3	
7	Thothwal	Thothwal	Open wells	27.0	
		Daliaki	Open wells	27.2	
		Dana Alampur	Open wells	25.7	

S. No.	Name of Micro Watersheds	Name of Villages	Source	Existing pre-project ground water table level (m)	Expected post project conditions
		Nangli godha	Open wells	26.7	
8	Jatuwas	Jatuwas	Open wells	17.4	
		Kharsanki	Open wells	18.5	
		Akbarpur	Open wells	18.2	
9	Jaitrawas	Jaitrawas	Open wells	18.9	
		Kharkhari Bhima	Open wells	18.5	

Source: Ground Water Cell, Haryana

9.4 CROPS

Agriculture primary depends upon water, Due to lack of proper canal system and deeper ground water there is a struggle in irrigating crops all this can change with the integrated land and water management during the watershed project. The planned Water Conveyance system, Ramp/Ghat Inlet and Outlet, Dug Out Pond (New/Renovation), Small Earthen Embankment with vegetative support, Roof top rain water recharge structures, Strengthening of Water Conveyance Channel (Water Course in fields) (Water

Saving Technology) 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 Mohdinpur Watershed (IWMP II)

Name of Micro-Watersheds	Name of Crops	Pre project		Total Production(in Kg)	Total Value Rs (in lacs)	Expected post project		Total Production (in Kg)	Total Value Rs (in lacs)
		Area ha	Average yield kg. Per ha			Area ha	Average yield kg. Per ha		
Mohdinpur	Wheat	13	4199	54587	7.37	14	4535	63490	8.57
	Mustard	20	1560	31200	9.36	22	1638	36036	10.81
	Bajra	140	1067	149380	18.67	154	1131	174174	21.77
Nainsukhpura	Wheat	195	4168	812760	109.72	215	4501	967715	130.64
	Mustard	200	1555	311000	93.30	220	1633	359260	107.78
	Bajra	212	1054	223448	27.93	233	1117	260261	32.53
Boria Kamalpur	Wheat	110	4158	457380	61.75	121	4491	543411	73.36
	Mustard	146	1560	227760	68.33	161	1638	263718	79.12
	Bajra	158	1067	168586	21.07	174	1131	196794	24.60
Mandhiya Khurd	Wheat	135	4147	559845	75.58	149	4479	667371	90.10

	Mustard	157	1538	241466	72.44	173	1615	279395	83.82
	Bajra	150	1045	156750	19.59	165	1108	182820	22.85
Dehlawas	Wheat	162	4199	680238	91.83	178	4535	807230	108.98
	Mustard	124	1548	191952	57.59	136	1625	221000	66.30
	Bajra	224	1048	234752	29.34	246	1111	273306	34.16
Hussainpur	Wheat	58	3138	182004	24.57	64	3389	216896	29.28
	Mustard	161	1053	169533	50.86	177	1106	195762	58.73
	Bajra	23	1076	24748	3.09	25	1141	28525	3.57
Thothwal	Wheat	74	3128	231472	31.25	81	3378	273618	36.94
	Mustard	185	1053	194805	58.44	204	1106	225624	67.69
	Bajra	156	1066	166296	20.79	172	1130	194360	24.30
Jatuwas	Wheat	118	3114	367452	49.61	130	3363	437190	59.02
	Mustard	130	1048	136240	40.87	143	1100	157300	47.19
	Bajra	99	1048	103752	12.97	109	1111	121099	15.14
Jaitrawas	Wheat	93	3118	289974	39.15	102	3367	343434	46.36
	Mustard	160	1053	168480	50.54	176	1106	194656	58.40
	Bajra	113	1059	119667	14.96	124	1123	139252	17.41
Total		**3516**			**1160.97**	**3868**			**1359.40**

Source: Revenue Department and Department of Agriculture, Rewari (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.	Mohdinpur	1	3	4
2.	Nainsukhpura	1.5	4	5.5
3.	Boria Kamalpur	1	4	5
4.	Mandhiya Khurd	2	5	7
5.	Dehlawas	1	3	4
6.	Hussainpur	1	3	4
7.	Thothwal	3	6	9
8.	Jatuwas	2	4	6
9.	Jaitrawas	1	2	3
	Total	**13.5**	**34**	**47.5**

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 cover proposed ha	Total
1.	Mohdinpur	6	5	11
2.	Nainsukhpura	5	7	12
3.	Boria Kamalpur	7	8	15
4.	Mandhiya Khurd	9	10	19
5.	Dehlawas	3	7	10
6.	Hussainpur	4	7	11
7.	Thothwal	7	10	17
8.	Jatuwas	6	8	14
9.	Jaitrawas	5	3	8
	Total	**52**	**65**	**117**

9.7 LIVESTOCK

Table 7. Details of livestock in the project area

S. No.	Name of micro watersheds	Type of Animals	Pre project			Post project			Remarks
			No.	Yield Kg/ day	Income In Rs per day	No.	Yield Kg/ day	Income In Rs per day	
1.	Mohdinpur	Buffalo	660	7-8	238-272	759	8-9	320-360	Increase in milk yield and number of animals by approx. 15%
		Cow	134	3-4	75-100	154	5-6	150-180	Increase in milk yield and number of animals by approx. 15%
2.	Nainsukhpura	Buffalo	1072	7.5- 8.5	255-289	1232	9.5- 10.5	380-420	Increase in milk yield and number of animals by approx. 15%

S. No.	Name of micro watersheds	Type of Animals	Pre project			Post project			Remarks
			No.	Yield Kg/ day	Income In Rs per day	No.	Yield Kg/ day	Income In Rs per day	
		Cow	112	3.5- 4.5	87-112	129	5.5- 6.5	165-195	Increase in milk yield and number of animals by approx. 15%
3.	Boria Kamalpur	Buffalo	473	8-9	272-306	543	10-12	400-480	Increase in milk yield and number of animals by approx. 15%
		Cow	263	4.5- 5.5	87-112	302	6-8	180-240	Increase in milk yield and number of animals by approx. 15%
4.	Mandhiya Khurd	Buffalo	771	7-8	238-272	886	9-11	360-440	Increase in milk yield and number of animals by approx. 15%
		Cow	172	4-5	100-125	197	6.5- 8.5	195-255	Increase in milk yield and number of animals by approx. 15%
5.	Dehlawas	Buffalo	1120	7.5 – 8.5	255-289	1288	10-12	400-480	Increase in milk yield and number of animals by approx. 15%
		Cow	149	4.5- 5.5	87-138	171	6-8	180-240	Increase in milk yield and number of animals by approx. 15%
6.	Hussainpur	Buffalo	273	7-8	238-272	313	8-9	320-360	Increase in milk yield and number of animals by approx. 15%
		Cow	65	3-4	75-100	75	5-6	150-180	Increase in milk yield and number of animals by approx. 15%

S. No.	Name of micro watersheds	Type of Animals	Pre project			Post project			Remarks
			No.	Yield Kg/ day	Income In Rs per day	No.	Yield Kg/ day	Income In Rs per day	
7.	Thothwal	Buffalo	859	7.5- 8.5	255-289	988	9.5- 10.5	380-420	Increase in milk yield and number of animals by approx. 15%
		Cow	211	3.5- 4.5	87-112	243	5.5- 6.5	165-195	Increase in milk yield and number of animals by approx. 15%
8.	Jatuwas	Buffalo	1012	8-9	272-306	1164	10-12	400-480	Increase in milk yield and number of animals by approx. 15%
		Cow	145	4.5- 5.5	87-112	167	6-8	180-240	Increase in milk yield and number of animals by approx. 15%
9.	Jaitrawas	Buffalo	456	7-8	238-272	524	9-11	360-440	Increase in milk yield and number of animals by approx. 15%
		Cow	67	4-5	100-125	77	6.5- 8.5	195-255	Increase in milk yield and number of animals by approx. 15%

9.9 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	Mohdinpur Watershed (IWMP II)	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	Milk collection	Coordinate with lined department	For installation on

		centres	centre in long distance		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/ MineralsDeficit	Coordinate with lined department, to organize camps in watershed area	Animal vitamins feeds Would be promoted

9.9.1 LOGICAL FRAMEWORK ANALYSIS

Table 9. Logical Framework Analysis

Components	Activities	Outputs	Effect	Impact

Components	Activities	Outputs	Effect	Impact
Village Institution Formation	Formation of Watershed Community, 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	• 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	

Components	Activities	Outputs	Effect	Impact
	Strengthen 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		development.	
Fund Management	• Improve management and utilization of UGs and WCs • Prepare communities to	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	

Components	Activities	Outputs	Effect	Impact
	explore other sources of income for UGs and WCs.		sources of income increased	
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,	• 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
	execute and monitor activities. • Identification 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	• 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	• 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.	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
	practices. • Formation of Fodder banks to increase fodder security and 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	structures to be constructed. • Drip irrigation facilities to be distributed among farmers. • Approx 15000 person days of employment to be generated. • Trainings, exposure visits and meetings to be organized for communities, village volunteers.	• Increased availability of water for livestock • Increase in agricultural productivity of land. • Augmentation of drinking water supply.	

Components	Activities	Outputs	Effect	Impact
	exposure visits of communities.			
Women's socio-political and economic empowerment	• Formation and strengthening of women' SHG groups • Capacity building of women folk. • Capacity building of SHG leaders and accountants Linking SHGs with external financial institutions	• Women's SHG groups to be formed. • Federation of Women's SHGs to be formed. • Trainings to be conducted for preparation of woolen products from sheep and goats	• Enhanced capacities of leaders of women's group in taking initiatives to solve problems at different levels. • Improved access to credit for livelihood purposes Increased household income.	• Position of women in household, community, society (politically, socially and economically) as 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 water available 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.