Contents (IWMP II)

	Annexure IV	Slope map	
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CHAPTER- 1

METHODOLOGY

INTRODUCTION

The Government of India (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 Thirteen micro- watersheds Mundahera (part) (2C5G2c8), Birar (2C5G2r6), Jhamri (2C5G2t1), Sasroli (2C5G2s 4), Jharli (2C5G2s5), Sundrehti (part) (2C5G2s2), Khanpur Khurd (part) (2C5G2n9), Khanpur Kalan (2C5G2n9), Mohanbari (2C5G2n3), Bahu (Part) (2C5G2p3), Goria (part) (2C5G2n4), Bazidpur Tappa Birohar (2C5G2s5) + Khera Tharu (2C5G2p1), BhuriaWas(2C5G2c4). 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 13 micro watersheds namely Mundahera (part) (2C5G2c8), Birar (2C5G2r6), Jhamri (2C5G2t1), Sasroli (2C5G2s4), Jharli (2C5G2s5), Sundrehti (part) (2C5G2s2), Khanpur Khurd (part) (2C5G2n9), Khanpur Kalan (2C5G2n9), Mohanbari (2C5G2n3), Bahu (Part) (2C5G2p3), Goria (part) (2C5G2n4), Bazidpur Tappa Birohar (2C5G2s5) + Khera Tharu (2C5G2p1), BhuriaWas(2C5G2c4) 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

The project was sanctioned in 30th Steering committee meeting for IWMP on 30.01.2013 and the preparatory phase started in 2013. Initially, a meeting was arranged with officials of concerned departments and technical experts located at Mundahera , Birar, Jhamri, Sasroli, Jharli, Sundrehti, Khanpur Khurd, Khanpur Kalan, Mohanbari, Bahu, Goria, Bazidpur Tappa Birohar, Khera Tharu, BhuriaWas 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 production of crops and seasonal vegetable, marketing facilities, fodder production, agro-forestry crops, livestock and milk production, status of self help groups, previous watershed schemes and works undertaken under MGNREGA etc. was gathered with the help of a designed Performa. Additional information was gathered by group and individual discussions with women groups, landless and other poor sections of the society. The issues concerning water availability, use of common property resources, fuel and fodder availability, wage employment opportunity and other major concerns were discussed, debated and recorded.

1.2 PARTICIPATORY RURAL APPRAISAL

The due process of Participatory Rural Appraisal was followed in which village committees were sensitized about project activities. An ap praisal of l and r esources, w ater r esources, f orest and pasture l and r esources, co mmon p roperty resources, pr oduction system and l ivestock resources was carried out by collecting data f rom pr imary and se condary sources. Group meeting were organized at common places and problem and possible solution were debated, discussed and efforts were made to reach agreement on activities required under the projects. This was followed by transect walks across the entire area of the village and sp ots indicated by the community. The Tech nical possibilities were discussed and measurements were recorded for jointly agreed activities. Similarly, discussions were held on proposed entry point activities and t echno-feasible works were finalized ke eping i n view t he ava ilability of f unds in t he pr oject. Feasibl e proposals on production act ivities and t echniques to i mprove crop, f ruit a nd m ilk production were hel d. The w omen groups were sensitized about income generating activities and skill improvement by various types of trainings. The field staff facilitated the process of participation at the planning stage. The roles and responsibilities of all stake holders as per guidelines , the mechanism of fund flows, cost sharing arrangement in different components and operational mechanism of the projects was thoroughly discussed with the community and Watershed Committees (WC).

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 syst em, D ug O ut P ond (New/Renovation), R amp/Ghat I nlet and O utlet, R oof t op r ain w ater r echarge

structures 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, 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

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

Various maps were prepared such as Base map, Present Land Use, Geo-hydrological, Micro Watershed, Drainage, Contours, Slope, Soil Classification, Land Capability Classification, Soil Fertility, Ground Water Depth, Water Quality and proposed works. The base map prepared by Soil and Land use Survey of India (SLUSI) with coding have been used for the purpose on demarcation of micro-watershed boundaries.

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, Soil fertility and Land Capability classes. All these parameters were given weightage as per the guidelines issued by Govt. of India. The map prepared was used during the field visit for finalization of works.

1.3.2 Planning

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

Based on the experience of the experts working in the area and catchment area characteristics each structure like Water conveyance system, Dug Out Pond (New/Renovation), Ramp/Ghat Inlet and Outlet, Roof top rain water recharge structures 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	N.A.
	Online IT connectivity between	Yes
	1. Project and DRDA cell/ZP	Yes
	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

S.No.	Scientific Criteria/input used	Whether Scientific Criteria was used
	6. Ground water status	Yes
B	Inputs	-
	Bio pesticides	Yes
	Organic manure	Yes
	Vermin- compost	Yes
	Bio Fertilizer	Yes
	Water saving devices	Yes
	Mechanical tools	Yes
	Bio fencing	No
	Nutrient Budgeting	No
	Automatic water level recorder & sedimentation samplers	No

1.4 Preparation of Action Plan and Approval

Based on the need and problems in watershed area; a draft action plan was prepared and placed before the concerned watershed development committee as per schedule circulated by 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 Sahlawas and Matenhail block of Jhajjar district in Haryana state. The project is a cluster of thirteen micro- watersheds namely watersheds Mundahera (part) (2C5G2c8), Birar (2C5G2r6), Jhamri (2C5G2t1), Sasroli (2C5G2s 4), Jharli (2C5G2s5), Sundrehti (part) (2C5G2s2), Khanpur Khurd (part) (2C5G2n9), Khanpur Kalan (2C5G2n9), Mohanbari (2C5G2n3), Bahu (Part) (2C5G2p3), Goria (part) (2C5G2n4), Bazidpur Tappa Birohar (2C5G2s5) + Khera Tharu (2C5G2p1), BhuriaWas(2C5G2c4). The total geographical area of the project is **8024 ha** out of which **6154 ha** has been undertaken to be treated under IWMP-II starting from year 2012-2013. The project is divided into nine micro watersheds. The Base map is shown in **Annexure I.**

Table 1: Basic Project Information

Sr. No	Name of the project	Name of the micro watersheds	Code No.	Name of the villages	Block	District	Area of the Project (ha)	Area proposed to be treated (ha)	Total Project cost (Rs lacs)	PIA
1	Matanhail	Mundahera (part)	2C5G2c8	Mundahera (part)	Sahlawas	Jhajjar	508	410	49.2	ASCO, Jhajjar
2		Birar	2C5G2r6	Birar	Sahlawas	Jhajjar	550	495	59.4	
3		Jhamri	2C5G2t1	Jhamri	Matenheil	Jhajjar	643	490	58.8	
4		Sasroli (part)	2C5G2s	Sasroli (part)	Matenheil	Jhajjar	696	475	57	
5		Jharli	2C5G2s5	Jharli	Matenheil	Jhajjar	652	495	59.4	

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
6		Sundrehti (part)	2C5G2s2	Sundrehti (part)	Matenheil	Jhajjar	611	485	58.2	
7		Khanpur Khurd (part)	2C5G2n9	Khanpur Khurd (part)	Matenheil	Jhajjar	593	490	58.8	
8		Khanpur Kalan (Part)	2C5G2n9	Khanpur Kalan (Part)	Matenheil	Jhajjar	642	494	59.28	
9		Mohan Beri (Part)	2C5G2n3	Mohan Beri (Part)	Matenheil	Jhajjar	518	490	58.8	
10		Bahu (Part)	2C5G2p3	Bahu (Part)	Matenheil	Jhajjar	775	490	58.8	
11		Goria(Part)	2C5G2n4	Goria(Part)	Matenheil	Jhajjar	663	505	60.6	
12		Bazedpur Tapa Birhor+ Khera Tharu	2C5G2s5+ 2C5G2p1	Bazedpur Tapa Birhor+ Khera Tharu	Matenheil	Jhajjar	597	425	51	
13		BhuriaWas(Part)	2C5G2c4	BhuriaWas(Part)	Sahlawas	Jhajjar	576	410	49.2	
					Grand Total		8024	6154	738.48	

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	

S. No.	Criteria	Maximum Score	Ranges and Scores			
vii	Area under rain fed agriculture	15	More than 90 % (15)	80 to 90 % (10)	70 to 80 % (5)	Below 70 % (Reject)
viii	Drinking water	10	No source (10)	Problematic village (7.5)	Partially covered (5)	Fully covered(0)
ix	Degraded land	15	High-above 20 % (15)	Medium-10 to 20 % (10)	Low-less than 10 % of TGA (5)	
x	Productivity potential of the land	15	Lands with low production & where productivity can be significantly enhanced with reasonable efforts (15)	Lands with moderate production & where productivity can be enhanced with reasonable efforts (10)	Lands with high production & where productivity can be marginally enhanced with reasonable efforts (5)	
xi	Contiguity to another watershed that has already been developed/treated	10	Contiguous to previously treated watershed & contiguity within the micro-watersheds in the project (10)	Contiguity within the micro-watersheds in the project but non contiguous to previously treated watershed (5)	Neither contiguous to previously treated watershed nor contiguity within the micro-watersheds in the project (0)	
xii	Cluster approach in the plains (More than one contiguous micro-watersheds in the project)	15	Above 6 micro-watersheds in cluster (15)	4 to 6 micro-watersheds in cluster (10)	2 to 4 micro-watersheds in cluster (5)	
xiii	Cluster approach in the hilly tract (More	15	Above 5 micro-watersheds in cluster (15)	3 to 5 micro-watersheds in cluster (10)	2 to 3 micro-watersheds in	

S. No.	Criteria	Maximum Score	Ranges and Scores			
	than one contiguous micro-watersheds in the project)				cluster (5)	
	Total	**150**	**150**	**93**	**37**	**2.5**

Based on above criteria and weightage of 75.5 concerning these thirteen parameters, a composite ranking was given to Matanheil Watershed (IWMP II) project as given in **Table- 3.**

Rain fed agriculture is more than 70 per cent but less than 80%, hence a score of 5 is awarded. Small and marginal farmers are in the range of 50-80%. So the score of 5 is awarded. The percentage of schedule castes in this watershed is less than 20 percent of the total population, hence score of 3 was allotted. Due to high percentage of the poor population i.e. about 70 per cent thus the scope of poverty index is 7.5. With all the parameters taken together gives the watershed score to be 75.5.

Table- 3: Weightage of the Project

S. No.	District	Name of the project	No. of micro-watersheds proposed to be covered	Proposed project area (ha)	Type of project (Hilly/ Desert/ Others)	Proposed cost (Rs. in lakh)	Weight-age under the criteria												
							i	ii	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	Total
1	Jhajjar	Matanhail Sub-Watershed (IWMP II)	14	6154	Semi Arid	738.48	7.5	3	0	5	5	15	5	5	10	10	0	10	0	75.5

Table 4: Watershed Information

Name of the Project	No. of Micro-Watersheds to be Treated	Watershed codes	Watershed regime/type/order
Matanheil Watershed (IWMP II)	13	2C5G2c8, 2C 5G2r6, 2C 5G2t1, 2C5G2s, 2C 5G2s5, 2C 5G2s2, 2C5G2n9, 2C 5G2n9, 2C 5G2n3, 2C5G2n4, 2C 5G2s5, 2C5G2p1 and 2C5G2c4	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 2012-13
1	MGNREGA	Mundahera (Part)	DRDA, Jhajjar	To provide assured employment of 100 days in a year to unskilled labour and development of village.	119
2	MGNREGA	Birar	DRDA, Jhajjar	To provide assured employment of 100 days in a year to unskilled labour and development of village.	117

3	MGNREGA	Jhamri	DRDA, Jhajjar	To provide assured employment of 100 days in a ye ar t o u nskilled l abour an d development of village.	---Nil--
4	MGNREGA	Sasroli (Part)	DRDA, Jhajjar	To provide assured employment of 100 days in a ye ar t o u nskilled l abour an d development of village.	91
5	MGNREGA	Jharli	DRDA, Jhajjar	To provide assured employment of 100 days in a ye ar t o u nskilled l abour an d development of village.	---Nil---
6	MGNREGA	Sundrehti (Part)	DRDA, Jhajjar	To provide assured employment of 100 days in a ye ar t o u nskilled l abour an d development of village.	161
7	MGNREGA	Khanpur Khurd (Part)	DRDA, Jhajjar	To provide assured employment of 100 days in a ye ar t o unskilled l abour an d development of village.	---Nil--
8	MGNREGA	Khanpur Kalan (Part)	DRDA, Jhajjar	To provide assured employment of 100 days in a ye ar t o u nskilled l abour an d development of village.	31
9	MGNREGA	Mohan Beri (Part)	DRDA, Jhajjar	To provide assured employment of 100 days in a ye ar t o u nskilled l abour an d development of village.	17
10	MGNREGA	Bahu (Part)	DRDA, Jhajjar	To provide assured employment of 100 days in a ye ar t o u nskilled l abour an d development of village.	---Nil--
11	MGNREGA	Goria (Part)	DRDA, Jhajjar	To provide assured employment of 100 days in a ye ar t o u nskilled l abour an d development of village.	---Nil--
12	MGNREGA	Bazedpur Tapa Birhor + Khera Tharu	DRDA, Jhajjar	To provide assured employment of 100 days in a ye ar to u nskilled l abour an d development of village.	239
13	MGNREGA	Bhuriawas (Part)	DRDA, Jhajjar	To provide assured employment of 100 days in a ye ar t o u nskilled l abour an d development of village.	136

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											
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 ot her watershed project**					
		No.	**Area (ha)**	**No.**	**Area (ha)**	**No.**	**Area (ha)**	**No.**	**Area (ha)**	**No.**	**Area (ha)**
1	Jhajjar	323	177460	121	62393	0	0	121	62393	202 (balance) 34	115067 (balance) 14819

CHAPTER – 3

BASIC INFORMATION OF THE PROJECT AREA

GEOGRAPHY AND GEOHYDROLOGY

Matanheil Watershed (IWMP II) falls in Sahlawas and Matenhail Block of District Jhajjar. 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 214- 247 m (google earth map) above mean sea level MSL. The average rainfall of district is 455 mm. About 80 percent of its annual rainfall is received in the month of July to September. 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 Matanheil Watershed (IWMP II)

Sr. No.	Name of Micro Watersheds 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	Mundahera (part)	Mundahera (part)	508	410	413	315	-	95
2	Birar	Birar	550	495	474	419	11	65
3	Jhamri	Jhamri	643	490	604	451	-	39
4	Sasroli (part)	Sasroli (part)	696	475	595	379	4	97
5	Jharli	Jharli	652	495	536	394	17	99

Sr. No.	Name of Micro Watersheds 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
6	Sundrehti (part)	Sundrehti (part)	611	485	497	386	19	95
7	Khanpur Khurd (part)	Khanpur Khurd (part)	593	490	456	353	50	87
8	Khanpur Kalan (Part)	Khanpur Kalan (Part)	642	494	344	196	161	137
9	Mohan Beri (Part)	Mohan Beri (Part)	518	490	422	394	2	94
10	Bahu (Part)	Bahu (Part)	775	490	662	377	13	100
11	Goria(Part)	Goria(Part)	663	505	493	366	2	168
12	Bazedpur Tapa Birhor+ Khera Tharu	Bazedpur Tapa Birhor+ Khera Tharu	597	425	573	335	-	24
13	BhuriaWas(Part)	BhuriaWas(Part)	576	410	465	299	40	71
			8024	**6154**	**6534**	**4664**	**319**	**1171**

(Source – District Census Handbook, 2001 Jhajjar)

3.2 SOIL AND TOPOGRAPHY

The soils of Matanheil Watershed are very deep, sandy loam and sandy clay loam & clay loam found in low lying depressions. Coarse loamy to fine loamy, Typic and udic haplocambids and typic haplustepts 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. The slope ranges from 0.5 to 3%. In some low lying areas suffer from seasonal water logging due to absence of natural drainage system and canal seepage. Slope map is presented in **Annexure IV.**

Table 2. Soil type and Topography

Sr. No.	Name of Micro Watersheds	Code	Geographical area (ha)	Major Soil types	Topography

1.	Mundahera (part)	2C5G2c8	808	Loamy sand to sandy loam	Level to gentle slope
2.	Birar	2C5G2r6	550		Level to gentle slope
3.	Jhamri	2C5G2t1	643		Level to gentle slope
4.	Sasroli (part)	2C5G2s	1178		Level to gentle slope
5.	Jharli	2C5G2s5	948		Level to gentle slope
6.	Sundrehti (part)	2C5G2s2	1211		Level to gentle slope
7.	Khanpur Khurd (part)	2C5G2n9	1093		Level to nearly level slope
8.	Khanpur Kalan (Part)	2C5G2n9	642		Level to nearly level slope
9.	Mohan Beri (Part)	2C5G2n3	518		Level to nearly level slope
10.	Bahu (Part)	2C5G2p3	1575		Level to nearly level slope
11.	Goria(Part)	2C5G2n4	1463		Level to nearly level slope
12.	Bazedpur Tapa Birhor+ Khera Tharu	2C5G2s5+2C5G2p1	597		Level to nearly level slope
13.	BhuriaWas(Part)	2C5G2c4	1051		Level to nearly level slope

Source: - Department of Agriculture, Haryana

3.2.1 Flood and Drought Condition

There has been incidence of flood and drought in the watershed villages. The data collected from the revenue department reveals the instances of flood occur once in five Years and drought once in a five Year. The absence of assured irrigation and drought resulted in low to very low yields of the crops.

Table 3. Flood and Drought condition

Sr.	Name of Micro- watersheds	Flood Incidence	Drought Incidence

No.			
1.	Mundahera (part)	Once in 5 years	Once in a 5 years
2.	Birar		
3.	Jhamri		
4.	Sasroli (part)		
5.	Jharli		
6.	Sundrehti (part)		
7.	Khanpur Khurd (part)		
8.	Khanpur Kalan (Part)		
9.	Mohan Beri (Part)		
10.	Bahu (Part)		
11.	Goria(Part)		
12.	Bazedpur Tapa Birhor+ Khera Tharu		
13.	BhuriaWas(Part)		

3.3 SOILS

3.3.1 Soil Erosion

In the identified thirteen micro watersheds, 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. Some times in rainy season the intensity of rainfall is quite high to increase 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 rain-fed agriculture. Agriculture suffers due to

area being rain fed and due to erratic rains and absence of assured irrigation facility and poor soil fertility status 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 7.5 to 9.2.

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.	Mundahera	9.0,9.2,8.1, 8.2,	Saline and water logged
2.	Birar	8.8, 7.9, 8.0, 8.02, 7.6, 7.9,	Saline and water logged
3.	Jhamri	-	-
4.	Sasroli	7.9, 8.0, 8.1	Medium to Safe
5.	Jharli	-	-
6.	Sunderheti	8.3, 8.4, 7.9,8.4, 7.7, 8.2	Medium to Safe
7.	Khanpur khurd	7.8, 7.5, 7.9,7.6,7.7	Medium to Safe
8.	Khanpur kla	7.9,8.0,7.8,7.5,7.9	Medium to Safe
9.	Mohanbari	-	-
10.	bahu	7.9 ,8.0,7.8, 7.9	Medium to Safe
11.	Goria	7.8,8.0,7.9,7.8,	Medium to Safe
12.	Bazidpur tappa	-	-
13.	Khera thru	7.9, 8.1, 7.7, 8.1, 7.8	Medium to Safe
14.	Bhurawas	8.2,7.8,8.1,8.2	Medium to Safe

3.3.3 SOIL CLASSIFICATION

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 is high. The fertility status map of the project area is exhibited in **Annexure-VI**.

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 I 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. Agronomic measures like Dry farming, strip& Mixed cropping with other soil conservation measures like agro forestry and rainfed horticulture are recommended.
3. Green manuring should be promoted for increase physical and chemical properties of soil.
4. Masonry structure (outlet) should be constructed with field bandhs and percolation embankments for rills control and insitu moisture conservation.
5. Strengthening of old abandoned water courses.
6. 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. Land leveling should be done at 50% subsidy, because formers are not economically capable to bear the rate of land leveling.
4. Construction of percolation ponds and embankments for increasing ground water recharge.
5. Construction of small earthen embankments with vegetative support for Sand dunes stabilization.
6. Strengthening of old abandoned water courses.
7. 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 455 mm (during the past 10 years data). The highest rainfall is 902 mm during the year 2003. 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 2003 to 2012 is presented in **Table.5**

Table-5. Rainfall during the years 1994-12

S.No.	Year	Rainfall (in mm)
1	2003	902
2	2004	440
3	2005	556
4	2006	353
5	2007	270
6	2008	711
7	2009	460
8	2010	501
9	2011	239
10	2012	121
	Average Rainfall	**455**

(Source: - Deputy Director Agriculture, Jhajjar)

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

The general Elevation in the area belongs to new/old alluvium plains with sand overburden in pockets to make small hummocks in the area. 214-247 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 (%)
Matanheil Watershed (IWMP II)	214-247 m	0.5-1%

3.4 LAND AND AGRICULTURE

The land holding pattern of the villages under Matanheil Watershed shows that the majority of the land holding is below 3.0 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 Bahadurgarh and NCR area. 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 Water conveyance system, Dug Out Pond (New/Renovation), Ramp/Ghat Inlet and Outlet, Roof top rain water recharge structures 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	Peepal	Ber	Bathua
2	Jand	Guava	Sarkanda
3	Safeda	Jamun	Bui
4	Keekar	Mango	Kharsana
5	Neem		Bhankri

Sr. No.	Trees	Fruits	Grasses and Shurbs
6	Shisham		
7	Bur		

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
4014	1262	50	-	5326

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	Mundahera (part)	Mundahera (part)	413	351	263
2	Birar	Birar	474	395	304
3	Jhamri	Jhamri	604	502	391
4	Sasroli (part)	Sasroli (part)	595	493	388
5	Jharli	Jharli	536	449	342
6	Sundrehti (part)	Sundrehti (part)	497	417	318
7	Khanpur Khurd (part)	Khanpur Khurd (part)	456	393	294
8	Khanpur Kalan (Part)	Khanpur Kalan (Part)	344	296	214

Sr. No.	Name of Micro Watersheds	Village	Land under agriculture use (ha)	Net Sown area (ha)	
				One time	Two times
9	Mohan Beri (Part)	Mohan Beri (Part)	422	357	261
10	Bahu (Part)	Bahu (Part)	662	558	424
11	Goria(Part)	Goria(Part)	493	419	310
12	Bazedpur Tapa Birhor+ Khera Tharu	Bazedpur Tapa Birhor+ Khera Tharu	573	483	363
13	BhuriaWas(Part)	BhuriaWas(Part)	465	396	291
		Total	**6534**	**5509**	**4163**

(Source: Department of Agriculture, Haryana)

3.4.3 IRRIGATION

Lack of Assured Irrigation Facilities

The present source of irrigation is ground water where the area is underlain by fresh to marginal water quality and partially by canal n etwork. The r emaining cultivable area i s under r ainfed agriculture. The pr esent so urce of i rrigation i n t he watershed has been tabulated in **Table 10.**

Table 10. Irrigation Pattern.

S. No	Name of Micro Watersheds	Name of Villages	Source 1: Canal		Source 2: Groundwater (Tube wells)	
			Availability months	Net area (ha)	Availability months	Net area (ha)
1	Mundahera	Mundahera	July to June	31	July to June	67

S. No	Name of Micro Watersheds	Name of Villages	Source 1: Canal		Source 2: Groundwater (Tube wells)	
			Availability months	Net area (ha)	Availability months	Net area (ha)
2	Birar	Birar	July to June	14	July to June	41
3	Jhamri	Jhamri	-	-	July to June	153
4	Sasroli	Sasroli	-	-	July to June	216
5	Jharli	Jharli	July to June	4	July to June	138
6	Sunderheti	Sunderheti	July to June	10	July to June	101
7	Khanpur khurd	Khanpur khurd	-	-	July to June	103
8	Khanpur kla	Khanpur kla	-	-	July to June	148
9	Mohanbari	Mohanbari	-	-	July to June	28
10	Bahu	Bahu	July to June	141	July to June	144
11	Goria	Goria	July to June	37	July to June	90
12	Bazidpur tappa	Bazidpur tappa	-	-	July to June	168
13	Khera thru	Khera thru	July to June	8	July to June	62
14	Bhurawas	Bhurawas	July to June	63	July to June	103
		Total		**308**		**1562**

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

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)

Sr.	Name of	Village	Wheat	Mustard

No	Micro Watersheds		Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer
1	IWMP -II	Mundahera	242	9680	40	DAP/ Urea	332	3984	12	Urea/ sulphar
2		Birar	226	90400	40	DAP/ Urea	175	2100	12	Urea/ sulphar
3		Jhamri	170	7310	43	DAP/ Urea	165	1980	12	Urea/ sulphar
4		Sasroli	375	14000	40	DAP/ Urea	228	2208	11	Urea/ sulphar
5		Jharli	378	14776	42	DAP/ Urea	170	2210	13	Urea/ sulphar
6		Sunderheti	457	18280	40	DAP/ Urea	271	2981	11	Urea/ sulphar
7		Khanpur khurd	160	6800	45	DAP/ Urea	360	4320	12	Urea/ sulphar
8		Khanpur kla	142	5964	42	DAP/ Urea	230	2530	11	Urea/ sulphar
9		Mohanbari	144	6316	44	DAP/ Urea	36	396	11	Urea/ sulphar
10		Bahu	482	20726	43	DAP/ Urea	849	10188	12	Urea/ sulphar
11		Goria	308	13552	44	DAP/ Urea	689	7579	11	Urea/ sulphar
12		Bazidpur tappa	88	3520	40	DAP/ Urea	58	638	11	Urea/ sulphar
13		Khera thru	174	7308	42	DAP/ Urea	66	726	11	Urea/ sulphar
14		Bhurawas	320	13760	43	DAP/ Urea	368	4416	12	Urea/ sulphar

Table 11 B. Crop Details (Kharif)

Sr. No	Name of Micro Watersheds	Village	Bajra				Jawar		
			Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.
1	IWMP -II	Mundahera	80	800	10	Urea	2	Fodder	0
2		Birar	42	420	10	Urea	34	Fodder+500	10
3		Jhamri	385	4620	12	Urea	2	Fodder	0
4		Sasroli	655	7860	12	Urea	3	Fodder	0
5		Jharli	365	4745	13	Urea	5	Fodder	0
6		Sunderheti	321	3210	10	Urea	23	Fodder	0
7		Khanpur khurd	205	2460	12	Urea	9	Fodder	0
8		Khanpur kla	295	3180	12	Urea	2	Fodder	2
9		Mohanbari	145	1450	10	Urea	8	Fodder	I
10		Bahu	219	2628	12	Urea	22	Fodder+108	9
11		Goria	435	5655	13	Urea	57	Fodder+400	10
12		Bazidpur tappa	150	1500	10	Urea	6	Fodder	0
13		Khera thru	211	2100	10	Urea	11	Fodder+68	8.5
14		Bhurawas	157	1727	11	Urea	83	Foddrer+600	10

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 Matanheil Watershed (IWMP II)

Sr. No.	Name of Micro Watershed	Village	Buffalo(* Lit/per day/annum6 months)	Cow (* Lit/per day/annum6 months)	Sheep	Goat	Camel
1	Mundahera	Mundahera	1194/7761/1396980	139/486/87570	0	30	6
2	Birar	Birar	798/4788/861840	102/306/55080	0	0	0
3	Jhamri	Jhamri	246/1845/332100	133/598/107730		6	7
4	Sasroli	Sasroli	1921/13447/2420460	346/1384/249120	0	39	5
5	Jharli	Jharli	805/5232/941850	77/269/48510	0	105	0
6	Sunderheti	Sunderheti	1130/7910/1423800	288/1152/207360	15	76	2
7	Khanpur khurd	Khanpur khurd	1019/7642/1375650	215/752/135450	0	14	0
8	Khanpur kla	Khanpur kla	542/3252/585360	84/252/45360	0	44	3
9	Mohanbari	Mohanbari	256/1792/322560	25/100/18000	55	24	0
10	bahu	bahu	1190/8925/1606500	295/1327/238950	72	185	0
11	goria	goria	1305/7830/1409400	137/411/73980	100	34	2
12	Bazidpur tappa	Bazidpur tappa	190/1235/222300	12/42/7560	0	0	0
13	Khera thru	Khera thru	286/2002/360360	43/172/30960	0	105	1
14	Bhurawas	Bhurawas	1184/7696/1385280	227/794/143010	117	57	1

(Source: Animal Husbandry, Jhajjar)

***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 1.8 m to 17.4 m below ground level. The water level in the micro watershed located in the villages Goria and Bhurawas is below

5 m. The water level in the villages Khanpur Kallan, Jhamri, Mohan Beri and Mundahera varies from 5-10 m. In the remaining areas, water level is more than 10 m. 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 Matanheil Watershed (IWMP II)

Sr. No.	Name of micro Watershed	Name of village	Source	Pre- project (m)
1	Mundahera	Mundahera	Wells	1.9
2	Birar	Birar	Wells	-
3	Jhamri	Jhamri	Wells	-
4	Sasroli	Sasroli	Wells	17.4
5	Jharli	Jharli	Wells	12.1
6	Sunderheti	Sunderheti	Wells	7.1
7	Khanpur Khurd	Khanpur Khurd	Wells	6.1
8	Khanpur Kalan	Khanpur Kalan	Wells	4.0
9	Mohanbari	Mohanbari	Wells	
10	Bahu	Bahu	Wells	11.5
11	Goria	Goria	Wells	3.3
12	Bazidpur Tappa	Bazidpur Tappa	Wells	-
13	Khera Thru	Khera Thru	Wells	-
14	Bhurawas	Bhurawas	Wells	1.8

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 saline. The water quality distribution of villages Khanpur Kallan and Mohan Beri is fresh and marginal in the rest of the area except a small pocket of Sasroli which is saline under shallow aquifers. The deeper aquifers are saline in the project area.The water quality map of the area is presented in **Annexure-IX**.

b) Water table fluctuation

In reference to the data available from the period June 1974 to June 2014, it is observed that the water table is rising at the rate of 7 cm per year.
The average seasonal fluctuation i.e. Pre and Post monsoon period is 40 cm.

c) Rain water harvesting and Recharging

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 in areas where minor irrigation unit i.e. shallow tubewell units are installed for irrigation minor.
It has been proposed to make rainwater-harvesting/recharging by construction of water harvesting/recharging structures in the areas where the water table is declining due to the exploitation of ground water.

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, Jhajjar. The details of common property resource in Matanheil Watershed (IWMP II) are tabulated in **Table 14.**

Table 14. Detail of Common Property Resources

Data not available

3.5 SOCIO ECONOMIC AND LITERACY PROFILE

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

Poor economic conditions of farmers: The general socio economic condition of the farmers in this area 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	Mundahera	Mundahera	743	1818	1707	3525	209	188	397	11.3
2	Birar	Birar	450	1131	1069	2200	128	125	253	11.5
3	Jhamri	Jhamri	421	1213	1121	2334	67	62	129	5.5
4	Sasroli	Sasroli	714	2079	1867	3946	463	415	878	22.3
5	Jharli	Jharli	639	1758	1588	3346	552	453	1005	30.0
6	Sunderheti	Sunderheti	536	1411	1243	2654	448	358	806	30.4
7	Khanpur Khurd	Khanpur Khurd	1726	5461	2183	7644	641	368	1009	13.2
8	Khanpur Kalan	Khanpur Kalan	324	849	771	1620	114	102	216	13.3
9	Mohanbari	Mohanbari	261	691	618	1309	225	196	421	32.2
10	Bahu	Bahu	1341	3746	3249	6995	898	769	1667	23.8
11	Goria	Goria	881	2449	2141	4590	290	233	523	11.4
12	Bazidpur	Bazidpur Tappa	47	139	116	255	0	0	0	0.0

S. No.	Name of the Micro watershed	Name of villages	Total no. of houses	Total Population			SC			
				Male	Female	Total	Male	Female	Total	%age
	Tappa									
13	Khera Thru	Khera Thru	132	346	318	664	5	3	8	1.2
14	Bhurawas	Bhurawas	730	1998	1816	3814	372	329	701	18.4
			8945	25089	19807	44896	4412	3601	8013	17.8

(Source- District Census 2011)

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

Sr. No.	Name of Microwatersheds	Name of villages	Total population	Literacy					
				Total Literates	% age	Male	% age	Female	% age
1	Mundahera	Mundahera	3525	2525	71.6	1484	58.8	1041	41.2
2	Birar	Birar	2200	1534	69.7	887	57.8	647	42.2
3	Jhamri	Jhamri	2334	1544	66.2	923	59.8	621	40.2
4	Sasroli	Sasroli	3946	2533	64.2	1505	59.4	1028	40.6
5	Jharli	Jharli	3346	2208	66.0	1305	59.1	903	40.9
6	Sunderheti	Sunderheti	2654	1699	64.0	1010	59.4	689	40.6
7	Khanpur Khurd	Khanpur Khurd	7644	5735	75.0	4456	77.7	1279	22.3
8	Khanpur Kalan	Khanpur Kalan	1620	1109	68.5	655	59.1	454	40.9
9	Mohanbari	Mohanbari	1309	919	70.2	550	59.8	369	40.2
10	Bahu	Bahu	6995	4570	65.3	2747	60.1	1823	39.9
11	Goria	Goria	4590	3179	69.3	1920	60.4	1259	39.6
12	Bazidpur Tappa	Bazidpur Tappa	255	176	69.0	113	64.2	63	35.8
13	Khera Thru	Khera Thru	664	463	69.7	272	58.7	191	41.3
14	Bhurawas	Bhurawas	3814	2552	66.9	1509	59.1	1043	40.9

			44896	30746	68.5	19336	62.9	11410	37.1

(Source- District Census- 2001)

Table 17. EMPLOYMENT STATUS

Sr. No.	Name of Micro-watersheds	Name of villages	Schedule caste		Cultivators		Agricultural labourers		Household industry workers		Other workers	
			Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1	Mundahera	Mundahera	209	188	327	103	28	7	6	0	320	64
2	Birar	Birar	128	125	293	28	4	0	6	0	104	27
3	Jhamri	Jhamri	67	62	335	11	4	1	13	4	109	15
4	Sasroli	Sasroli	463	415	500	276	121	12	1	1	278	93
5	Jharli	Jharli	552	453	296	7	80	2	3	0	418	75
6	Sunderheti	Sunderheti	448	358	314	166	190	70	12	0	149	64
7	Khanpur Khurd	Khanpur Khurd	641	368	349	10	3	1	6	0	3407	112
8	Khanpur Kalan	Khanpur Kalan	114	102	246	31	39	10	0	3	78	47
9	Mohanbari	Mohanbari	225	196	129	8	46	0	1	0	98	12
10	Bahu	Bahu	898	769	472	19	83	11	33	1	859	48
11	Goria	Goria	290	233	432	20	12	1	2	0	396	49
12	Bazidpur Tappa	Bazidpur Tappa	0	0	56	6	0	0	0	0	2	0
13	Khera Thru	Khera Thru	5	3	96	8	0	0	0	0	42	14
14	Bhurawas	Bhurawas	372	329	371	192	108	11	9	5	275	100
			4412	3601	4216	885	718	126	92	14	6535	720

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 probable income generation has been compiled and shown in **Table 18.**

Table 18. Migration Pattern in Matanheil Watershed (IWMP II)

Sr. No.	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	Mundahera (Part)	--	--	--	--	--
2	Birar	5000	--	--	--	--
3	Jhamri	2600	50	6 months	--	3500
4	Sasroli (Part)	4032	50	6 months	--	4500
5	Jharli	2448	--	--	--	--
6	Sundrehti (Part)	3200	40	6 months	--	5500
7	Khanpur Khurd (Part)	--	--	--	--	--
8	Khanpur Kalan (Part)	1800	60	6 months	--	4200
9	Mohan Beri (Part)	2000	--	--	--	--
10	Bahu (Part)	10500	--	--	--	--
11	Goria (Part)	6000	--	--	--	--
12	Bazedpur Tapa Birhor + Khera Tharu	1000	--	--	--	--
13	Bhuriawas (Part)	4980	50	6 months	--	5000

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

Table 19. BPL Pattern

Sr. No.	Name of villages	Total houses	Total Household-BPL	% of BPL HH
1	Mundahera (Part)			
2	Birar	510	90	17.6%
3	Jhamri	610	49	8.0%
4	Sasroli (Part)	704	38	5.4%
5	Jharli	408	93	22.8%
6	Sundrehti (Part)	685	52	7.6%
7	Khanpur Khurd (Part)			
8	Khanpur Kalan (Part)	350	28	8.0%
9	Mohan Beri (Part)	400	28	7.0%
10	Bahu (Part)	2500	208	8.3%
11	Goria (Part)	1100	68	6.2%
12	Bazedpur Tapa Birhor + Khera Tharu	125	6	4.8%
13	Bhuriawas (Part)	1120	282	25.2%

(Source: District Administration Jhajjar, 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

Sr. No.	Name of villages	Bank Y/N	Post office	School	Milk Collection Centre Y/N	Pucca Road to Village	Health Facility (Govt/Private)	Veterinary facility

			Y/N	Primary/ High/ Sr.Sec		Y/N	Y/N	Y/N
1	Mundahera							
2	Birar	N	Y	Y M	Y (P)	Y	Y	
3	Jhamri	N	Y	Y	Y	Y	N	N
4	Sasroli	Y	Y	Y	Y	Y	Y	Y
5	Jharli	Y	Y	Y	Y (Private)	Y	N	N
6	Sunderheti	N	N	Y	Y	Y	Y	y
7	Khanpur khurd	Y	Y	Y	N	Y	y	Y
8	Khanpur kla	N	N	Y	Y (M)	Y	N	Y
9	Mohanbari	N	N	Y (pri)	N	Y	N	N
10	Bahu	Y	Y	Y	Y	Y	Y	Y
11	Goria	N	Y	Y	Y	Y	N	Y
12	Bazidpur tappa	N	N	Y (pri)	N	Y	N	N
13	Khera thru	N	N	Y	N	Y	N	N
14	Bhurawas	N	Y	3+1	2(P)	Y	N	Y

FACILITIES/ HOUSEHOLD ASSETS

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

Sr. No.	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	Mundahera (Part)	125	100	2	300			100	50	125	20

Sr. No.	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				
2	Birar	510	385	--	1000	250	6 & (42 Tractors)	380	450	--	250
3	Jhamri	610	480	--	1000	125	8 & (60 Tractors)	450	385	--	165
4	Sasroli (Part)	704	300	5	1200	100	4 & (75 Tractors)	490	500	300	50
5	Jharli	408	300	--	1000	200	4 & (38 Tractors)	280	15	408	95
6	Sundrehti (Part)	685	350	--	600	70	1 & (60 Tractors)	400	250	250	150
7	Khanpur Khurd (Part)										
8	Khanpur Kalan (Part)	350	--	12	1200	100	15 (Tractor 35)	327	300	280	150
9	Mohan Beri (Part)	400	350	--	1000	350	5 & (10 Tractor)	350	300	400	350
10	Bahu (Part)	2500	2050	35	2200	20	4 & (Tractor 20)	1800	135	1250	225
11	Goria (Part)	3150	100	20	3200		12 & (50 Tractor	1025			

Sr. No.	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)				
12	Bazedpur Tapa Birhor + Khera Tharu	125	100	2	300	--	3	100	50	125	20
13	Bhuriawas (Part)	1120	700	10	1650	450	10 & (115 Tractors)	200	800	--	600

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 Matanheil Watershed (IWMP II)

Sr. No.	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 income Rs.
1	Mundahera (Part)	-	-	-	-	-
2	Birar	12500	5200	3050	--	20750
3	Jhamri	13200	7500	3000	--	23700
4	Sasroli (Part)	15000	4500	4200	--	23700
5	Jharli	15500	15000	6000	--	36500
6	Sundrehti (Part)	18800	5000	4000	--	27800

Sr. No.	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 income Rs.
7	Khanpur Khurd (Part)					
8	Khanpur Kalan (Part)	18000	8000	5000	--	31000
9	Mohan Beri (Part)	14500	4500	4500	--	23500
10	Bahu (Part)	16800	4200	3500	--	24500
11	Goria (Part)	16500	7200	4200	--	27900
12	Bazedpur Tapa Birhor + Khera Tharu	14800	5200	3500	--	23500
13	Bhuriawas (Part)	16000	4000	5000	--	25000

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.

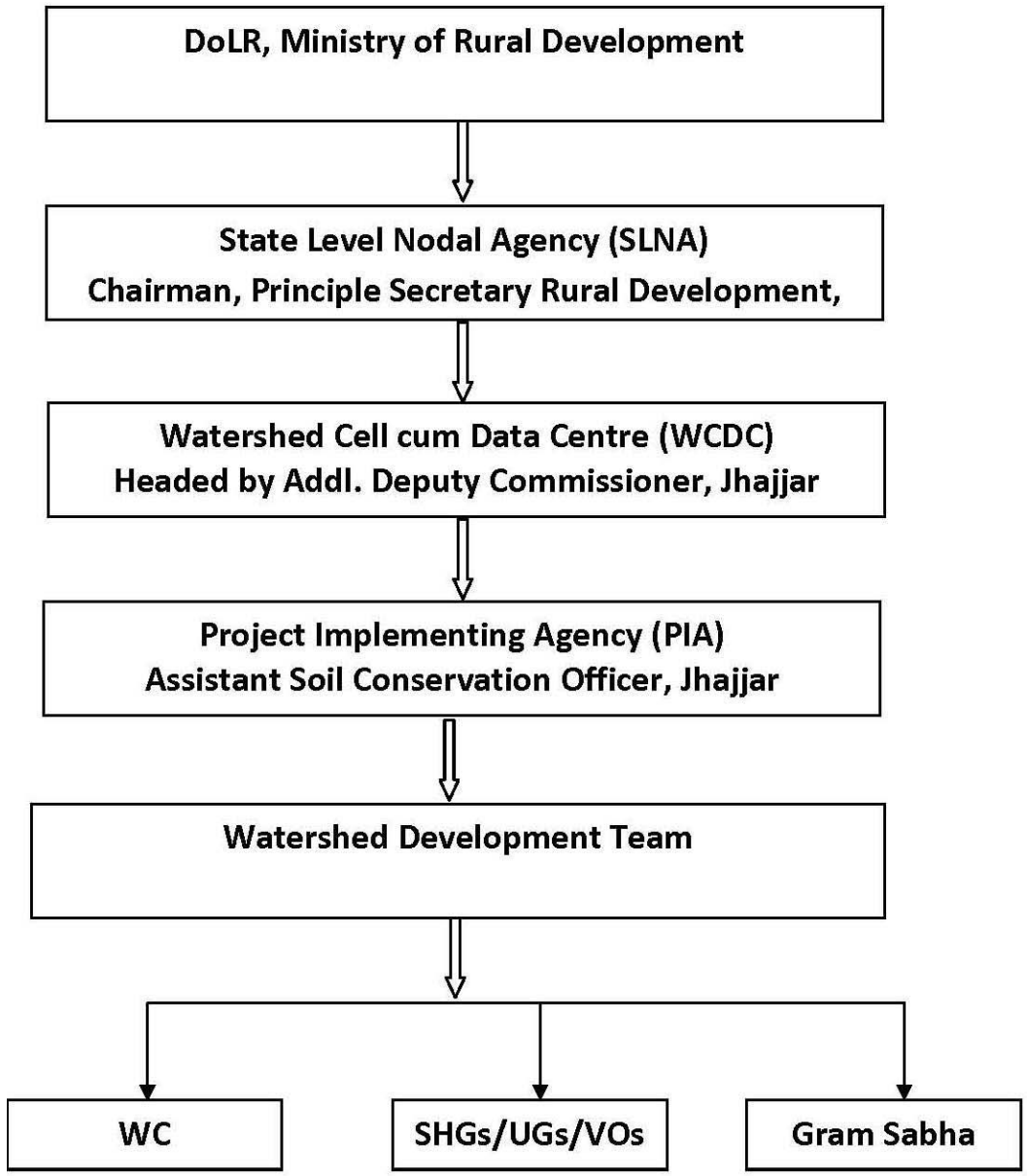
CHAPTER-4

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 (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,
Watershed Cell cum Data Centre (WCDC)
Headed by Addl. Deputy Commissioner, Jhajjar
Project Implementing Agency (PIA)
Assistant Soil Conservation Officer, Jhajjar
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, JHAJJAR

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 Jhajjar is selected by the State Level Nodal Agency (SLNA) for Integrated Watershed Management Programme (IWMP) in Haryana. In the district Jhajjar, where the area of development is 14819 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, Jhajjar, 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	Matanheil 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, Jhajjar
		iv) Telephone	-
		v) Fax	-
		vi) E-mail	ascojhajjar@gmail.com

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

4.4.1 Monitoring Level Staff at PIA Head Office

The highly experienced staff is engaged in the monitoring the project. The technical guidance to field staff from time to time is being provided. Meetings are being periodically held by head office with officials from the Jhajjar 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 Villages	Name of President	Name of Members
Mundahera	Sh. Subhash Yadav	Sh. Surajbhan, Smt. Sheela Devi, Smt. Geeta, Sh. Ram Kisan, Sh. Hawa Singh, Sh. Sumer, Sh. Satbir, Sh. Ram Niwas, Sh. Ranbir, Sh. Om Parkash And Sh. Vikram
Sasroli	Smt. Suresh Devi	Smt. Kavita, Sh. Sher Singh, Sh. Mantar Devi, Sh.Pawan, Sh.Daluram, Sh. Zile Singh, Sh. Surender, Smt. Munni, Sh. Sunil Kumar, Sh. Bijender, Sh. Ramphal And Sh. Pardeep Kumar
Jharli	Sh. Bheem Singh	Smt. Vidya Devi, Sh.Nand Kishor, Smt. Pushpa, Sh. Mahavir, Sh. Kundan, Sh. Chanderbhan, Smt. Nirmala, Sh. Rakesh, Sh. Sandeep, Smt. Santra, Sh. Karambir And Sh. Bharpur
Sunderheti	Smt. Sunita	Smt. Sumitra, Sh. Dayanand, Smt. Babli, Sh. Sushil, Smt. Krishna, Sh. Chander Singh, Sh. Surrender, Smt. Munni Devi, Sh. Sudesh, Sh. Umed, Sh. Bahrat Singh, Sh. Jai Karan
Khanpur khurd		
Khanpur kla	Barhmanand	Sukhbir, Ram avtar, Vidyavati, Phoolpati, Jagdish, Ram kumar, Ompati, Balbir, Bala devi, Jagdish, Rakesh, Omparkash and Ramesh
Mohanbari	Savitri	Amit kuamr, Surrender, Sushil, satyawan
Bahu	Phool Singh	Ajay, Sakuntala, Ramkisan, Bajrang, Bharat singh, Raklesh, Mamta, Sushila Luxmi and Veena
Goria	Rajesh	Seema Devi, Omparkash, Parmod devi, Jai parkash, Ombir, Ramphal, Santra, Parvinder, Chajjuram, Sutar and Ramesh
Bazidpur tappa +Khera thru	Gunvanti	Rajender singh, Leelavati, Radhe shaym, Roshan lal, Dev karan, Ved vanti, Rakesh, Annar singh, Jagdish, Pawan devi and Khajani
Bhurawas	Santosh	Vijay, Prem devi, Omli, Mala devi, Azad singh, Onbir, Puransingh, Rewati, Mukesh, Manoj and Ajit

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
Matanheil Watershed (IWMP II)		6154	73848000	Administrative costs	738480	738480	2215440	2215440	1476960	**7384800**
				Monitoring	0	0	0	738480	0	**738480**
				Evaluation	0	184620	184620	184620	184620	**738480**
				Entry point activities	2953920	0	0	0	0	**2953920**
				Institution and capacity building	0	3692400	0	0	0	**3692400**
				Detailed project report	738480	0	0	0	0	**738480**
				Watershed development works	0	5907840	11815680	12554160	11077200	**41354880**
				Livelihood activities for the asset less persons	0	0	2215440	3692400	738480	**6646320**
				Production system and micro enterprises	0	0	2215440	2953920	2215440	**7384800**
				Consolidation phase	0	0	0	0	2215440	**2215440**
				Total	**4430880**	**10338720**	**18462000**	**22154400**	**18462000**	**73848000**
				Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

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

Area in Hectares and
Funds in Rs.

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

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
410	4920000	Administrative costs	49200	49200	147600	147600	98400	**492000**
		Monitoring	0	0	0	49200	0	**49200**
		Evaluation	0	19800	19800	19800	19800	**49200**
		Entry point activities	196800	0	0	0	0	**196800**
		Institution and capacity building	0	246000	0	0	0	**246000**
		Detailed project report	49200	0	0	0	0	**49200**
		Watershed development works	0	393600	787200	836400	738000	**2755200**
		Livelihood activities for the asset less persons	0	0	147600	246000	49200	**442800**
		Production system and micro enterprises	0	0	147600	196800	147600	**492000**
		Consolidation phase	0	0	0	0	147600	**147600**
		Total	**295200**	**688800**	**1230000**	**1476000**	**1230000**	**4920000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

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

Area in Hectares and
Funds in Rs.

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

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
495	5940000	Administrative costs	59400	59400	178200	178200	118800	**594000**
		Monitoring	0	0	0	59400	0	**59400**
		Evaluation	0	14850	14850	14850	14850	**59400**
		Entry point activities	237600	0	0	0	0	**237600**
		Institution and capacity building	0	297000	0	0	0	**297000**
		Detailed project report	59400	0	0	0	0	**59400**
		Watershed development works	0	475200	950400	1009800	891000	**3326400**
		Livelihood activities for the asset less persons	0	0	178200	297000	59400	**534600**
		Production system and micro enterprises	0	0	178200	237600	178200	**594000**
		Consolidation phase	0	0	0	0	178200	**178200**
		Total	**356400**	**831600**	**1485000**	**1782000**	**1485000**	**5940000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING

YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and

Funds in Rs.

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

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
490	5880000	Administrative costs	58800	58800	176400	176400	117600	**588000**
		Monitoring	0	0	0	58800	0	**58800**
		Evaluation	0	14700	14700	14700	14700	**58800**
		Entry point activities	235200	0	0	0	0	**235200**
		Institution and capacity building	0	294000	0	0	0	**294000**
		Detailed project report	58800	0	0	0	0	**58800**
		Watershed development works	0	470400	940800	999600	882000	**3292800**
		Livelihood activities for the asset less persons	0	0	176400	294000	58800	**529200**
		Production system and micro enterprises	0	0	176400	235200	176400	**588000**
		Consolidation phase	0	0	0	0	176400	**176400**
		Total	**352800**	**823200**	**1470000**	**1764000**	**1470000**	**5880000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

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

Area in Hectares and Funds in Rs.

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

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
475	5700000	Administrative costs	57000	57000	171000	171000	114000	**570000**
		Monitoring	0	0	0	57000	0	**57000**
		Evaluation	0	14250	14250	14250	14250	**57000**
		Entry point activities	228000	0	0	0	0	**228000**
		Institution and capacity building	0	285000	0	0	0	**285000**
		Detailed project report	57000	0	0	0	0	**57000**
		Watershed development works	0	456000	912000	969000	855000	**3192000**
		Livelihood activities for the asset less persons	0	0	171000	285000	57000	**513000**
		Production system and micro enterprises	0	0	171000	228000	171000	**570000**
		Consolidation phase	0	0	0	0	171000	**171000**
		Total	**342000**	**798000**	**1425000**	**1710000**	**1425000**	**5700000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

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

Area in Hectares and Funds in Rs.

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

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
495	5940000	Administrative costs	59400	59400	178200	178200	118800	**594000**
		Monitoring	0	0	0	59400	0	**59400**
		Evaluation	0	14850	14850	14850	14850	**59400**
		Entry point activities	237600	0	0	0	0	**237600**
		Institution and capacity building	0	297000	0	0	0	**297000**
		Detailed project report	59400	0	0	0	0	**59400**
		Watershed development works	0	475200	950400	1009800	891000	**3326400**
		Livelihood activities for the asset less persons	0	0	178200	297000	59400	**534600**
		Production system and micro enterprises	0	0	178200	237600	178200	**594000**
		Consolidation phase	0	0	0	0	178200	**178200**
		Total	**356400**	**831600**	**1485000**	**1782000**	**1485000**	**5940000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

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

Area in Hectares and
Funds in Rs.

Table 7. PHASING YEAR WISE (Name of the Micro Watershed: Sundrehti)
(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	14550	14550	14550	14550	**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 the asset less persons	0	0	174600	291000	58200	**523800**
		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%**	**25.25%**	**30.25%**	**24.25%**	**100%**

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

Area in Hectares and
Funds in Rs.

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

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
490	5880000	Administrative costs	58800	58800	176400	176400	117600	**588000**
		Monitoring	0	0	0	58800	0	**58800**
		Evaluation	0	14700	14700	14700	14700	**58800**
		Entry point activities	235200	0	0	0	0	**235200**
		Institution and capacity building	0	294000	0	0	0	**294000**
		Detailed project report	58800	0	0	0	0	**58800**
		Watershed development works	0	470400	940800	999600	882000	**3292800**
		Livelihood activities for the asset less persons	0	0	176400	294000	58800	**529200**
		Production system and micro enterprises	0	0	176400	235200	176400	**588000**
		Consolidation phase	0	0	0	0	176400	**176400**
		Total	**352800**	**823200**	**1470000**	**1764000**	**1470000**	**5880000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

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

Area in Hectares and
Funds in Rs.

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

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
494	5928000	Administrative costs	59280	59280	177840	177840	118560	**592800**
		Monitoring	0	0	0	59280	0	**59280**
		Evaluation	0	14820	14820	14820	14820	**59280**
		Entry point activities	237120	0	0	0	0	**237120**
		Institution and capacity building	0	296400	0	0	0	**296400**
		Detailed project report	59280	0	0	0	0	**59280**
		Watershed development works	0	474240	948480	1007760	889200	**3319680**
		Livelihood activities for the asset less persons	0	0	177840	296400	59280	**533520**
		Production system and micro enterprises	0	0	177840	237120	177840	**592800**
		Consolidation phase	0	0	0	0	177840	**177840**
		Total	**355680**	**829920**	**1482000**	**1778400**	**1482000**	**5928000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

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

Area in Hectares and
Funds in Rs.

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

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
490	5880000	Administrative costs	58800	58800	176400	176400	117600	**588000**
		Monitoring	0	0	0	58800	0	**58800**
		Evaluation	0	14700	14700	14700	14700	**58800**
		Entry point activities	235200	0	0	0	0	**235200**
		Institution and capacity building	0	294000	0	0	0	**294000**
		Detailed project report	58800	0	0	0	0	**58800**
		Watershed development works	0	470400	940800	999600	882000	**3292800**
		Livelihood activities for the asset less persons	0	0	176400	294000	58800	**529200**
		Production system and micro enterprises	0	0	176400	235200	176400	**588000**
		Consolidation phase	0	0	0	0	176400	**176400**
		Total	**352800**	**823200**	**1470000**	**1764000**	**1470000**	**5880000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

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

Area in Hectares and
Funds in Rs.

Table 11. PHASING YEAR WISE (Name of the Micro Watershed: Bahu)
(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
490	5880000	Administrative costs	58800	58800	176400	176400	117600	**588000**
		Monitoring	0	0	0	58800	0	**58800**
		Evaluation	0	14700	14700	14700	14700	**58800**
		Entry point activities	235200	0	0	0	0	**235200**
		Institution and capacity building	0	294000	0	0	0	**294000**
		Detailed project report	58800	0	0	0	0	**58800**
		Watershed development works	0	470400	940800	999600	882000	**3292800**
		Livelihood activities for the asset less persons	0	0	176400	294000	58800	**529200**
		Production system and micro enterprises	0	0	176400	235200	176400	**588000**
		Consolidation phase	0	0	0	0	176400	**176400**
		Total	**352800**	**823200**	**1470000**	**1764000**	**1470000**	**5880000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

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

Area in Hectares and
Funds in Rs.

Table 12. PHASING YEAR WISE (Name of the Micro Watershed: Goria)
(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
505	6060000	Administrative costs	60600	60600	181800	181800	121200	**606000**
		Monitoring	0	0	0	60600	0	**60600**
		Evaluation	0	15150	15150	15150	15150	**60600**
		Entry point activities	242400	0	0	0	0	**242400**
		Institution and capacity building	0	303000	0	0	0	**303000**
		Detailed project report	60600	0	0	0	0	**60600**
		Watershed development works	0	484800	969600	1030200	909000	**3393600**
		Livelihood activities for the asset less persons	0	0	181800	303000	60600	**545400**
		Production system and micro enterprises	0	0	181800	242400	181800	**606000**
		Consolidation phase	0	0	0	0	181800	**181800**
		Total	**363600**	**848400**	**1515000**	**1818000**	**1515000**	**6060000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

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

Area in Hectares and
Funds in Rs.

Table 13. PHASING YEAR WISE (Name of the Micro Watershed: Bazidpur Tappa Birohar and Khera Tharu)
(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
425	5100000	Administrative costs	51000	51000	153000	153000	102000	**510000**
		Monitoring	0	0	0	51000	0	**51000**
		Evaluation	0	12750	12750	12750	12750	**51000**
		Entry point activities	204000	0	0	0	0	**204000**
		Institution and capacity building	0	255000	0	0	0	**255000**
		Detailed project report	51000	0	0	0	0	**51000**
		Watershed development works	0	408000	816000	867000	765000	**2856000**
		Livelihood activities for the asset less persons	0	0	153000	255000	51000	**459000**
		Production system and micro enterprises	0	0	153000	204000	153000	**510000**
		Consolidation phase	0	0	0	0	153000	**153000**
		Total	**306000**	**714000**	**1275000**	**1530000**	**1275000**	**5100000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

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

Area in Hectares and
Funds in Rs.

Table 14. PHASING YEAR WISE (Name of the Micro Watershed: BhuriaWas)
(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
410	4920000	Administrative costs	49200	49200	147600	147600	98400	**492000**
		Monitoring	0	0	0	49200	0	**49200**
		Evaluation	0	12300	12300	12300	12300	**49200**
		Entry point activities	196800	0	0	0	0	**196800**
		Institution and capacity building	0	246000	0	0	0	**246000**
		Detailed project report	49200	0	0	0	0	**49200**
		Watershed development works	0	393600	787200	836400	738000	**2755200**
		Livelihood activities for the asset less persons	0	0	147600	246000	49200	**442800**
		Production system and micro enterprises	0	0	147600	196800	147600	**492000**
		Consolidation phase	0	0	0	0	147600	**147600**
		Total	**295200**	**688800**	**1230000**	**1476000**	**1230000**	**4920000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

CHAPTER – 6

PREPARATORY PHASES

During the first year, all activities involved by adopting participatory approach and empowerment of local institutions (WC, SHG, and UG). 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 district level, micro-watershed wise and village wise by involving the concerned departments and members of Gram Sabha on this aspect**.** The Draft Project Report was prepared on the basic information generated from primary and secondary sources. This also includes the outcome of participatory rural appraisal and outcome of transect walk and stakeholders' discussions. A list of scope of works that finally emerged was prepared. Based on the technical survey, detailed cost estimates were prepared for components including resource management, entry point activities and production system. A broad frame work for capacity building at all levels as per the guidelines of DoLR was prepared. The livelihood opportunities which emerged from local product and market facility were analyzed and outlines of the same were included. Since the financial provisions were decided according to the area proposed to be covered, these provisions were distributed across project activities. The project activities are sequenced into three phase 's namely preparatory phase, work phase, consolidation and withdrawal phase. So, the activities were segregated in the sequence and

explained in detail. Finally the details about budget and its spilt up into annual action plan were also attempted. Various maps using GIS were created likes Base map, Present Land Use, Geo-hydrological, Micro Watershed, Drainage, Contours, Slope, Soil Classification, Land Capability Classification, Ground Water Depth and Quality, Proposed and existing Activities of works. All the works proposed in the DPR are location specific and areas 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 Jhajjar 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. 36,92,400/-

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 13 projects are outlined as follows:-

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

Table 1. Statement of Targets under Proposed Training Action Plan at Micro Watershed Level to be conducted by WDT members of Jhajjar 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**				
	Jhajjar	Members of Watershed Committees @ 10 per committee would also include accompanying WDT Members.	330	150-200	2
02	Block Level Functional Programmes for Secretaries of Watershed Committees. **Two Days**				
	Jhajjar	Secretaries of Village Watershed Committees	33	15-45	1
03	Project Level Sensitization Camps for WC **One Days**				
	Jhajjar	Members of Watershed Committees @ 10 Persons (Tentative) per WC	330	50	7
04	Village Level Awareness Camps on IWMP at Micro Watershed Level for User Groups **One Day**				
	Jhajjar	Approximately 50 prospective user groups per micro watershed.	1650	50	33
05	Block Level Functional Programmes for SHGs [Leader, Secretary and Treasurer] under IWMP **One Day**				
	Jhajjar	Three persons (Leader, Secretary and Treasurer) per Self Help Group @ around one SHG per village.	99	50	2

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	74762
2	Block Level Functional Programmes for Secretaries of Watershed Committees. Two Days	13869
3	Village Level Sensitization Camps for WC One Days	70986
4	Village Level Awareness Camps on IWMP at Micro Watershed Level for Prospective User Groups One Day	91317
5	Block Level Functional Programmes for SHGs [Leader, Secretary and Treasurer] under IWMP One Day	28420
	Total	**279354**

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

S. No.	Target Group	Training Topics	No. of days	Budget per camp	No. of Camps	No. of Participants per camp	Cost f or all participants per day	Cost per participant/ per day	Cost per person	Total Budget
1	Self He lp Groups- 2 SHGs- micro watershed level	Orientation on IWMP, S HGs cum Exposure Visit	2	26000	5	13	65000	1000	2000	130000
2	User gr oups from each m icro watershed	NRM, Po st Project Management etc. – Exposure Visit	2	26000	5	13	65000	1000	2000	130000
3	Sub w atershed Level- WDT Members	Part II-Module I to V - Exposure Visit O utside State- Conceptual, Technical, Social, Management of Fi nance, Monitoring and Evaluation.	4	78000	5	13	195000	1500	6000	390000
4	Sub w atershed Level- PIA	Exposure Visit- Within	2	12600	5	9	6300	700	4500	202500

S. No.	Target Group	Training Topics	No. of days	Budget per camp	No. of Camps	No. of Participants per camp	Cost f or all participants per day	Cost per participant/ per day	Cost per person	Total Budget
	Members	Fundamentals of W atershed, Finance Management, Final R eport on WDP etc								
5	District L evel-WDC	Exposure visit to su ccessful watershed/ University.	2	26000	5	13	65000	1000	2000	130000
6	District L evel-Line D eptt., WDC	Exposure visit to su ccessful watersheds within state.	2	26000	5	13	65000	1000	2000	130000
7	SLNA and District L evel Controlling Officers	Exposure visit to su ccessful watersheds outside state	4	78000	5	13	195000	1500	6000	390000
Total										**1495000**

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

S. No.	District	No. M icro watershed	No. of Camps/ Y ear/ Micro watershed	Total No. of cam ps per Year	Total No. of cam ps for 5 Year's	Amount of per Camp	Amount per M icro watershed	Total Budget
1.	Farmer Tr aining C amp i n each season	13	2	26	130	12,000	120000	1560000
2.	Propaganda & Documentation (Puppet show, documentary movies show, vid eo-graphy, Photography, wall Painting, Display Board, pam phlets, leaf lets. Etc)	13	1	13	65	5000	25000	325000
3	Contingency charges							33046
	Total							**1918046**

i) **Training Programmes for SLNA, WDT, PIA , Field Functionary , WDC member's , SHG & UG organize by HIRD = Rs. 279354/-**

ii) **Micro Watershed Wise Exposure cum training Visit For SLNA, WDT, PIA , Field Functionary , WDC, SHG & UG Members**
= Rs. 1495000/-

iii) **Farmer's / Beneficiaries training camps with Extension Program's = Rs. 1918046/-**

Grand Total = Rs. 3692400/-

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 Matanhail Watershed (IWMP II)

(Rs. In Lacs)

Sr. No.	Block	Name of Project	No. of EPA Identified	No. of EPAs not yet started	No. of EPA in-progress	No. of EPAs Completed	Nature of EPA	Location Village	Expenditure	Remarks
1	**Matanhail**	**IWMP-II/ 2012-13**	**18**	**1**	5	12	2 no.UGPL+ Water tanki + Cattle trough	Sasroli	1,43,328/-	Completed
2							Diversion Channel for waste water	Birar	1,99,099/-	Under Progress
3							Ramp inlet	Khanpur kalan	1,87,841/-	Completed
4							R/wall	Jhamri	2,06,027/-	Completed
5							2 no. Cattle Trough & 2no. Cattle Crush+ floor	Mohanbari	1,16,624/-	Completed
6							R/wall	Jharli	1,88,258/-	Completed
7							2 no.UGPL+Cattle trough	Sundrehti	1,46,840/-	Completed
8							Water tanki with shed+ RO+ water cooler	Khanpur Khurd	75,490/-	Under Progress
9							Ramp inlet	Bahu	2,01,380/-	Under Progress
10							Ramp inlet	Goria	-	Not started

11	**Sahalawas**	**IWMP-II/ 2012-13**					Water tanki with shed+ water cooler	Bazitpur Tappa & Birohar	35,990/-	Under Progress
12							Diversion Channel for waste water	Khera Tharu	87,850/-	Under Progress
13							-	Mundahera	-	W/C not constitute
14							Diversion Channel for waste water	Bhurawash	1,62,235/-	Completed
								Total	**17,50,962/-**	

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 deve lopment t eam members along w ith of ficers from ot her f ield l ike Agriculture, Horticulture and A nimal 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 t o so il and water co nservation act ivities like Water co nveyance sy stem, D ug O ut P ond (New/Renovation), R amp/Ghat I nlet and Outlet, R oof t op r ain w ater r echarge st ructures etc. The pr oposed pr oject 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.

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

Natural Resource Management

The project area is having small or large old ponds which have been silted up and needs strengthening. The land holding is small a nd any l oss of l and nearby area w ould be l oss t o t he f armer. U nder t he I WDP/ H aryali so me w orks like

construction/renovation of farm ponds, 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 is proposed. 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, construction of new ponds has been 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 meager 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.

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

Name of the Project: IWMP-II		Name of the watershed: Matanhail (IWMP-II)					Name of the village: Mohan Bari	
Sr. no	Nature of work	Location	Catchment area, storage capacity, Submergence area and command area	Unit	No. of Work		Estimate Cost Rs. In Lakh	Objectives
					Phy.	Unit cost (Rs. In Lakh)		
1	Retaining wall	Bichli wala pond N28°27'821" E076°23'506"	-	M	100	9000 Rs. Per m	9.00	To check soil erosion and pr otection of banks.
2	Deepening of pond	Bichli wala pond N28°27'794" E076°23'548"	18 ha 7700 cum 5100 sqm 13 ha	No	1	5.00	5.00	To Enhance Pondage capacity.
3	Roof Rain water harvesting structure	Primary School N28°28'072" E076°23'707"		No	1	3.00	3.00	Harvesting of r ain water to make its use for domestic pur pose as w ell as i rrigation i s kitchen p lantation etc and al so for recharging purpose.
4	Plantation	Panchyati land		Ha	2	0.50	1.00	To i ncreases bi omass covers an d pr ovide proper flow of water to facilitate tr ansportation and c onservation of natural resources.
5	Uprooting/leveling *	Panchyati land		No	2	1.00	1.00	Development of wasteland to increase area under c ultivation to c heck s oil er osion as well as to conservation soil moister
6	Water conveyance	Mohan badi minor		M	2000	500 Per m	10.00	For pucca water channel for i rrigation

	System							purpose
7	Other soil and moisture conservation works	In Micro Water Shed Area		Ha	2	2.00	4.00	Conservation of natural resources
Total							33.00	
Available							32.93	
Convergence							0.07	

***Before executing Land Leveling, Topographical Survey indicating levels be carried out.**

Name of the Project: IWMP-II			Name of the watershed: Matanhail (IWMP-II)				Name of the village: Jharli	
Sr. no	Nature of work	Location	Catchment area, storage capacity, Submergence area and command area	Unit	No. of Work		Estimate Cost Rs. In Lakh	Objectives
					Phy.	Unit cost (Rs. In Lakh)		
1	Retaining wall deepening of Pond	Khadhi Johd N28°29'437' E076°24'022" Village Pond N28°29'57.3" E076°22'59.4"	 31 ha 13300 cum 8900 sqm 21 ha	M	100 2	9000 Rs. Per m 4	9.00 8.00	To c heck s oil er osion and protection of banks.
2	Uprooting + leveling*	Shamshanghat and panchyati land		no	5	1.00	5.00	Development of wasteland to increase area under cultivation to check soil erosion as well as to c onservation s oil moister
3	Roof Rain Water H'Structure	Middle School	0.05 ha 21.5 cum	No	1	4.00	4.00	Harvesting of rain water to make its use for domestic purpose as well as irrigation is kitchen plantation etc and also for recharging purpose.
4	Ramp inlet- out let	Khadhi Jhod Village Pond N28°29'892" E076°22'685"		no	2	2.50	5.00	To c heck s oil erosion and pr otection of bank s as w ell as safe pas sage for c attle which i s al so helpful i n p rotect of th e bank erosion.
Total							31.00	
Available							33.26	
Convergence							-	

***Before executing Land Leveling, Topographical Survey indicating levels be carried out.**

Name of the Project: IWMP-II		Name of the watershed: Matanhail (IWMP-II)					Name of the village: Sunderheti	
Sr. no	Nature of work	Location	Catchment area, storage capacity, Submergence area and command area	Unit	No. of Work		Estimate Cost Rs. In Lakh	Objectives
					Phy.	Unit cost (Rs. In Lakh)		
1	Deepening of Pond	ShamSaan Ghat Wala Pond N28°31'158" E076°24'784" Mandir Wala Pond 1,2 N28°30'59" E076°24'797"	29 ha 12500 cum 8300 sqm 18 ha	No	2	4.00	8.00	To E nhance P ondage capacity.
2	Culvert	Near Sehlanga Minor N28°30'657" E076°24'109"		M	2	0.50	1.00	To Conservation of the Natural Recourses and provide proper flow of water to fac ilitate transportation.
3	Retaining Wall Of Pond Shamsaan Gaat	Shamsaan Ghaat & Mandir wala Pond		No	110	9000/M	9.90	To c heck s oil er osion and protection of banks.
4	Uprooting +leveling* +Earthen Embankment	Near mandir		No	1	2.50	2.50	Development of w asteland to i ncrease ar ea u nder cultivation to check s oil erosion as w ell as to conservation soil moister
5	Ramp inlet- out let	Shamsaan Ghaat Wala and Mandir Wala		No	2	2.50	5.00	To check soil erosion and protection of banks as well as safe passage for cattle which is also helpful in protect of the bank erosion.
6	Roof Rain Water H'Structure	Primary School	0.04 ha 17.25 cum	No	1	3.00	3.00	Harvesting of rain water to make its use for domestic

								purpose as well as irrigation is kitchen plantation etc and also for recharging purpose.
7	Water conveyance system (UGPL)	Shelanga Minor to ShamSaan Ghaat Johd		No	2500	400/M	10.00	To enhance efficiency of irrigation water and produce water management aspect
Total							39.40	
Available							32.59	
Convergence							6.81	

***Before executing Land Leveling, Topographical Survey indicating levels be carried out.**

Name of the Project: IWMP-II			Name of the watershed: Matanhail (IWMP-II)				Name of the village: Sasroli	
Sr. no	Nature of work	Location	Catchment area, storage capacity, Submergence area and command area	Unit	No. of Work		Estimate Cost Rs. In Lakh	Objectives
					Phy.	Unit cost (Rs. In Lakh)		
1	Deepening of Pond	Mandir Wala N28°31'391" E076°23'769"	14 ha 6100 cum 4100 sqm 8 ha	no	1	3.00	3.00	To E nhance Pondage capacity
2	Water conveyance system (UGPL)	Rawli Pond N28°31'355" E076°23'776"		no	3000	500 Rs per m	15.00	To enhance efficiency of irrigation water and produce water management aspect
3	Plantation	Common Land		ha	2	0.50	1.00	To i ncreases biomass c overs and provides pr oper fl ow of w ater to fac ilitate transportation and conservation of natural resources.
4	Ramp inlet- out let	Mandir Wala and Rawli		No	2	2.50	5.00	To check soil erosion and protection of banks as well as safe passage for cattle which is also helpful in protect of the bank erosion.
5	Uprooting +Earthen Earth Embankment	Common Land		no	4	0.75	3.00	Development of wasteland to increase ar ea under cultivation to c heck soil er osion as w ell as to c onservation

								soil moister
6	Field Bunding	To Sehlanga Road		Ha	1	8	8.00	Development of wasteland to increase area under cultivation to check soil erosion as well as to conservation soil moister
Total							35.00	
Available							31.92	
Convergence							3.08	

Name of the Project: IWMP-II		Name of the watershed: Matanhail (IWMP-II)					Name of the village: Bhurawas	
Sr. no	Nature of work	Location	Catchment area, storage capacity, Submergence area and command area	Unit	No. of Work		Estimate Cost Rs. In Lakh	Objectives
					Phy.	Unit cost (Rs. In Lakh)		
1	Deepening of Pond	Pond behind Bus Stand	27 ha 11600 cum 7700 sqm 19 ha	No.	1	8	8.00	To E nhance P ondage capacity
2	Retaining wall Of Pond	Pond Behind Bus Stand N28°28'012" E076°29'204" Shiv Mandir Wala N28°28'314" E076°29'575"		No	90 90	9000/M	16.20	To c heck soil er osion and protection of banks
3	Ramp Inlet/Outlet	Pond behind Bus stand and mandir wala		No	2	2.5	5	To c heck soil er osion and pr otection of bank s as well as safe passage for c attle w hich i s al so helpful i n pr otect of the bank erosion.
4	Roof rain water harvesting Structures	High School	0.05 ha 21.5 cum	Ha	1	2.50	2.50	Harvesting of r ain w ater to m ake i ts us e for domestic pur pose as well as i rrigation i s kitchen pl antation etc and al so fo r r echarging purpose.
5	Field Bunding	To Bithla canal		Ha	1	4.00	4.00	Development of wasteland to increase area under cultivation to check soil er osion a s well as to conservation soil moister

6	Other soil and moisture conservation works	In Micro Water Shed Area		Ha	1	2.50	2.50	Other soil and moisture conservation works
Total							38.20	
Available							27.55	
Convergence							10.65	

Name of the Project: IWMP-II			Name of the watershed: Matanhail (IWMP-II)				Name of the village: Khanpur khurd	
Sr. No	Nature of work	Location	Catchment area, storage capacity, Submergence area and command area	Unit	No. of Work		Estimate Cost Rs. In Lakh	Objectives
					Phy.	Unit cost (Rs. In Lakh)		
1	Retaining wall	Mandliya wala pond N28°27'995" E076°30'005"	-	No	100	9000/M	9.00	To check soil erosion and protection of banks
2	Ramp inlet- out let	Mandliya wala pond N28°27'995" E076°30'005"	-	M	2	3	6.00	To check soil erosion and protection of banks as well as safe passage for cattle which is also helpful in protect of the bank erosion.
3	Plantation	Common Land	-	Ha	2	2	4.00	To increases biomass covers and provide proper flow of water to facilitate transportation and conservation of natural resources.
4	Uprooting + leveling* + Field bunding	Panchyat Land	-	Ha	2	2.50	5.00	Development of wasteland to increase area under cultivation to check soil erosion as well as to conservation soil moister
5	Roof Rain Water harvesting Structure	High School	0.05 ha 21.5 cum	Ha	1	6	6.00	Harvesting of rain water to make its use for domestic purpose as well as irrigation is kitchen plantation etc and also for recharging purpose.
Total							30.00	

Available	32.93	
Convergence	Nil	

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

Name of the Project: IWMP-II		Name of the watershed: Matanhail (IWMP-II)						Name of the village: Khanpur Kallan
Sr. no	Nature of work	Location	Catchment area, storage capacity, Submergence area and command area	Unit	No. of Work		Estimate Cost Rs. In Lakh	Objectives
					Phy.	Unit cost (Rs. In Lakh)		
1	Deepening of pond	Tumba wali pond N28°28'269" E076°20'056" Guga Peer wala pond N28°28'064" E076°20'468"	32 ha 13800 cum 9200 sqm 13 ha	no	2	5	10.00	To Enhance Pondage capacity
2	Retaining wall	Tumba wali pond N28°28'13.5" E076°19'55.4" Guga Peer wala pond N28°28'064" E076°20'468"		m	130	9000 Rs per m	11.70	To c heck soil er osion and protection of banks
3	Ramp inlet-outlet	Tumba wali pond N28°28'13.5" E076°19'55.4" Guga Peer wala pond N28°28'064" E076°20'468"		No	2	3	6.00	To c heck soil er osion and protection of banks as w ell as s afe passage for cattle which i s al so hel pful i n protect of the ban k erosion.
4	Roof Rain water H'Structure	Sr. Sec. School	0.07 ha 30.25 cum	No	1	5	5.00	Harvesting of rain water to make its use for dom estic pur pose as w ell as irrigation i s kitchen pl antation etc and al so for r echarging purpose.
5	Plantation + field bunding	Pond to canalLand		Ha	4	2.50	10.00	To i ncreases bi omass covers and provide

								proper flow of water to facilitate transportation and conservation of natural resources.
Total							42.70	
Available							33.20	
Convergence							9.50	

Name of the Project: IWMP-II Name of the watershed: Matanhail (IWMP-II) Name of the village Khera Tharu and Bazedpur tappa Birhor								
Sr. no	Nature of work	Location	Catchment area, storage capacity, Submergence area and command area	Unit	No. of Work		Estimate Cost Rs. In Lakh	Objectives
					Phy.	Unit cost (Rs. In Lakh)		
1	Deepning of pond Bazedpur tappa birhor	Kama Wala Pond N28°26'291" E076°18'222" Hind wala jhod N28°25'955" E076°18'177" New pond N28°29'567" E076°21'104"	23 ha 9900 cum 6600 sqm 14 ha 12 ha 5100 ha 3400 ha 7 ha	no	2 1	4 4	8.00 4.00	To E nhance Pondage capacity
2	Retaining wall of pond Bazedpur tappa birhor	Kama Wala Pond N28°26'291" E076°18'222" Hind wala jhod N28°25'955" E076°18'177 N28°29'567" E076°21'104"		no	85 80 70	9000/M 9000/M	14.85 6.30	To check soil erosion and protection of banks
3	Ramp (inlet/outlet) of pond	Kama Wala Pond N28°26'291" E076°18'222" Hind wala jhod N28°25'955" E076°18'177		No	2	3.00	6.00	To check soil erosion and protection of banks as w ell as s afe passage for c attle which is also helpful in protect of

	Bazedpur tappa birhor	N28°29'567" E076°21'104"			1	3.00	3.00	the bank erosion.
4	Plantation	Common Land			2	2	4.00	To increases biomass covers and provide proper flow of water to facilitate transportation and conservation of natural resources.
7	Roof Rain Water H'Structure	Middle School	0.05 ha 21.5 cum	No	1	4	4.00	Harvesting of rain water to m ake i ts use for domestic purpose as well as irrigation is kitchen plantation e tc and also for recharging purpose.
Total							50.15	
Available							28.56	
Convergence							21.59	

Name of the Project: IWMP-II	Name of the watershed: Matanhail (IWMP-II)					Name of the village: Bahu	
Sr. no	Nature of work	Location	Unit	No. of Work		Estimate Cost Rs. In Lakh	Objectives
				Phy.	Unit cost (Rs. In Lakh)		
1	Retaining wall of pond	Rawala pond N28°27'159" E076°19'452"	no	90M	9000/m	8.10	To check soil erosion and protection of banks
2	Ramp outlet /inlet	Rawala pond N28°27'159" E076°19'452"	no	2	3	6.00	To check soil erosion and protection of banks as well as safe passage for cattle which is also helpful in protect of the bank erosion.
3	Water conveyance system (UGPL)	Phd to middle school N28°27'507" E076°19'706"	m	1100	1200 Rs. Per m	13.20	To enhanc e effi ciency of irrigation w ater and pr oduce water management aspect
4	Field Bunding+ Plantation + land leveling*	Shamsaan Ghaat to khorda road	No	2	4	8.00	To increases biomass covers and pr ovide pr oper flow of w ater to fac ilitate transportation and conservation of n atural resources.
Total						35.03	
Available						32.93	
Convergence						2.10	

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

Name of the Project: IWMP-II		Name of the watershed: Matanhail (IWMP-II)					Name of the village: Jhamri
Sr. no	Nature of work	Location	Unit	No. of Work		Estimate Cost Rs. In Lakh	Objectives
				Phy.	Unit cost (Rs. In Lakh)		
1	Retaining wall	Mandir wala pond N28°29'915" E076°20'180"	M	90	9000/M	8.10	To check soil erosion and protection of banks
2	Ramp inlet-outlet	Mandir wala pond N28°29'915" E076°20'180"	No	2	3.50	7.00	Enhancement P ondage capacity to c heck s oil erosion an d pr otection of banks for safe pas sage of cattle.
3	Water conveyance system (UGPL)	Mandir wala pond	ha	1200	500	6.00	To enhanc e effi ciency of irrigation w ater and pr oduce water management aspect
4	Roof Rain water harvesting structure	High school N28°29'236" E076°22'387"	No	1	4	4.00	Harvesting of r ain w ater to make i ts us e for dom estic purpose as well as i rrigation is k itchen pl antation etc and also for recharging purpose.
5	leveling* +Field Bunding	Near mandir	No	1	8	8.00	To increases biomass covers and provide proper flow of water to facilitate transportation and conservation of natural resources.
Total						33.10	
Available						32.93	
Convergence						0.17	

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

Name of the Project: IWMP-II		Name of the watershed: Matanhail (IWMP-II)						Name of the village: Birar
Sr. no	Nature of work	Location	Catchment area, storage capacity, Submergence area and command area	Unit	No. of Work		Estimate Cost Rs. In Lakh	Objectives
					Phy.	Unit cost (Rs. In Lakh)		
1	Deepening of pond	Teerth wala pond N28°29'013" E076°28'213"	18 ha 7700 cum 5100 sqm 11 ha	no	1	5	5.00	To Enhance Pondage capacity
2	Ramp inlet -out let	Teerth wala pond N28°29'013" E076°28'213" Rehan wala pond N28°29'913" E076°28'341"		No	2	3	6.00	Enhancement Pondage capacity to c heck s oil erosion and protection of banks for safe passage of cattle.
3	Retaining Wall	Teerth wala pond N28°29'013" E076°28'213" Rehan wala pond N28°29'913" E076°28'341"		no	120/ M	9000	10.80	To check soil erosion and protection of banks
5	Open drainage channel	To Shamsaan Ghaat Road N28°29'100" E076°34'427"		No	120	1200	1.44	Drain out waste/stagnant to check w ater l ogging and for improvement in sanitation and to av oid mud formation in street and paths and for irrigation purpose also.
6	Roof rain water harvesting structure	Middle school	0.06 ha 26 cum	No	1	5.00	5.00	Harvesting of rain water to make its use for dom estic pur pose as w ell as irrigation i s kitchen pl antation etc and al so for recharging

								purpose.
7	Field Bunding+ Plantation + leveling*	PWD road		No	2	4	8.00	To provide suitable field surface for controlling flow of water to check soil erosion. Better surface drainage and conservation of moisture
Total							36.24	
Available							33.26	
Convergence							2.98	

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

Name of the Project: IWMP-II		Name of the watershed: Matanhail (IWMP-II)					Name of the village: Goria	
Sr. no	Nature of work	Location	Catchment area, storage capacity, Submergence area and command area	Unit	No. of Work		Estimate Cost Rs. In Lakh	Objectives
					Phy.	Unit cost (Rs. In Lakh)		
1	Deepening of pond	Near swami Basti N28°27'166" E076°22'518"	21 ha 9100 cum 6100 cum 13 ha	No	1	6	6.00	To Enhance Pondage capacity
2	Retaining wall	Chirori wala pond N28°27'119" E076°22'511"		No	110/ M	9000/M	9.90	To check soil erosion and protection of banks
3	Ramp inlet-outlet	Chirori wala pond N28°27'119" E076°22'511"		Ha	1	4	4.00	Enhancement Pondage capacity to check soil erosion and protection of banks for safe passage of cattle.
5	Uprooting+	To goria border		No	2	4	8.00	Development of

	leveling *+field Bunding							wasteland to increase area under cultivation to check soil erosion as well as to c onservation s oil moister
6	Plantation	Near mandir & shamSaan Ghaat		No	2	2.00	4.00	To increases biomass covers and provide proper flow of water to facilitate transportation and conservation of natural resources.
7	Roof rain water harvesting structure	High school	0.04 ha 17.5 cum	No	1	3	3.00	Harvesting of rain water to make its use for domestic purpose as well as irrigation is kitchen plantation etc and also for recharging purpose.
Total							34.90	
Available							33.94	
Convergence							0.96	

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

Table. 1. 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		=	Area X Depth/ Height			

Pitching							
			=	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.2. 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**

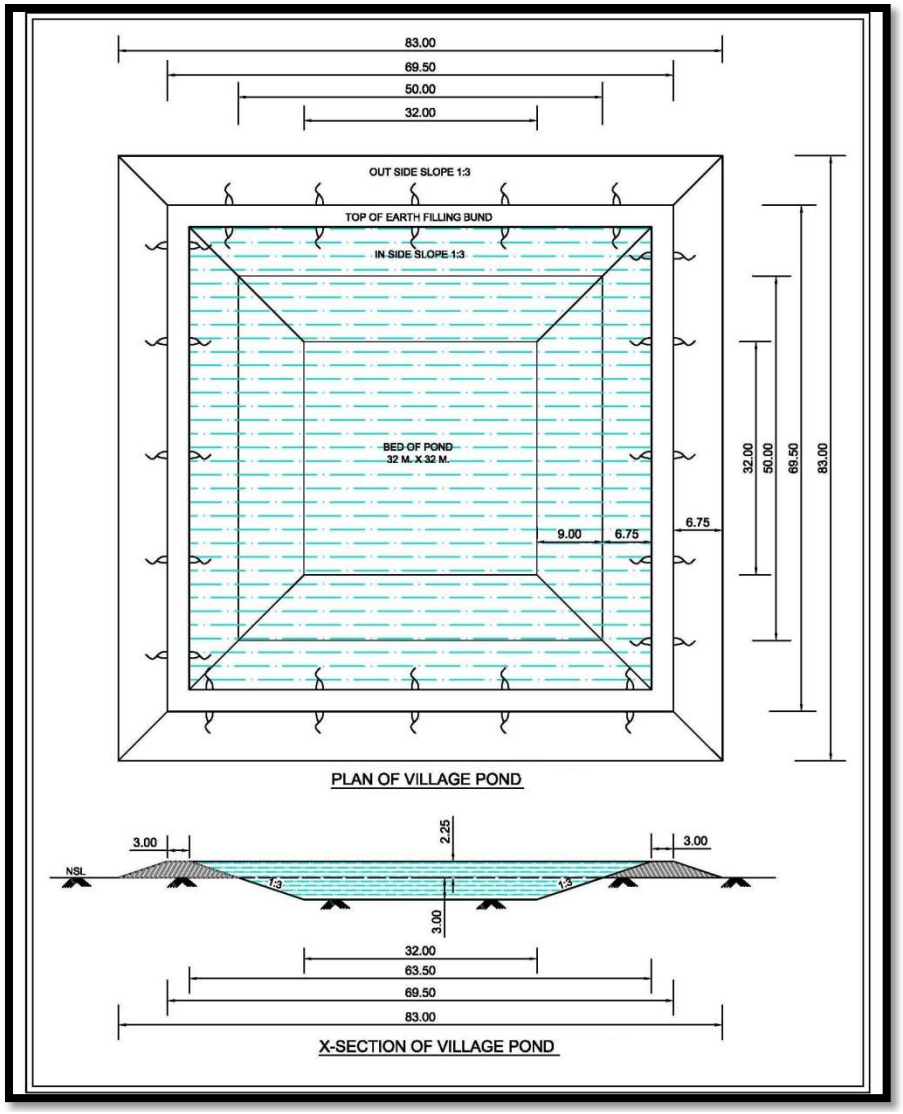

83.00
69.50
50.00
32.00
OUT SIDE SLOPE 1:3
TOP OF EARTH FILLING BUND
IN SIDE SLOPE 1:3
BED OF POND
32 M. X 32 M.
9.00
6.75
6.75
32.00
50.00
69.50
83.00
PLAN OF VILLAGE POND
3.00
2.25
3.00
NSL
1:3
1:3
3.00
32.00
63.50
69.50
83.00
X-SECTION OF VILLAGE POND

Table: Estimate of Open Channel

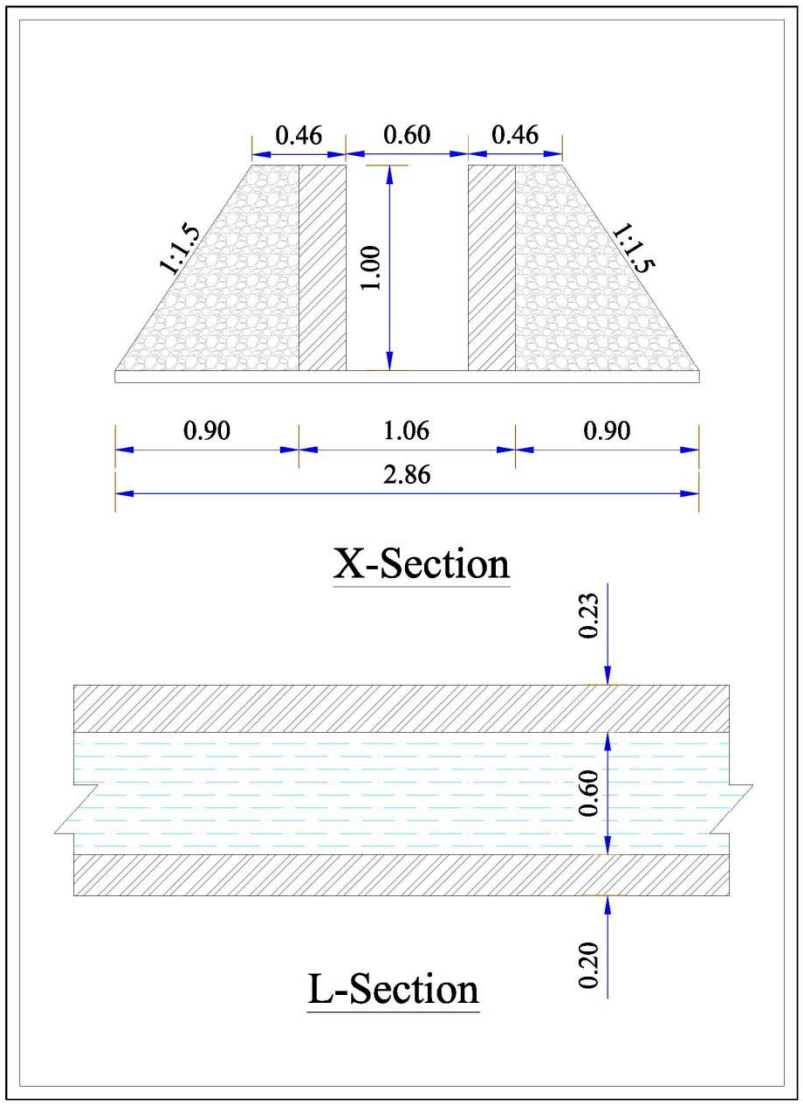
Abstract cost of Pucca Disposal open channel in

Detail estimate of Pucca disposal open channel

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

Sr. No.	Particular	Quantity	Rate	Unit	Amount
1	Excavation of earth work in	64.8 m3	415.50-15%	100 m^3	1201.49

	ordinary soil as per HSR 6.1(a)		+425% =1854.16		
2	Flat bricks laid in bed HSR 14.24	106 m2	520-15%+600% = 296.60	m^2	3279.64
3	First class bricks works land in CSM 1.5 HSR 11.23	20.25 m3	49.85 + 15% + 600% =296.60	m^3	6339.62
4	Plaster bed 1.4 12 mm thick 15.5 HSR	60 m2	5.5 + 15% + 500% = 28.05	m^2	1683.00
5	Plaster 14 m side wall 15.5 HSR	90 m2	5.5 + 15% + 500% = 28.05	m^2	2574.50
6	Field Gota 1.4 HSR 15.5	23.4 m2	5.5 + 15% + 500% = 28.05	m^2	656.37
7	Topping 25 mm thick on top of wall HSR 14.8	46 M2	8.60+15% + 600% = 51.17	m^2	2302.65
8	E/work for wall protection HSR 6.1 (a)	85.50 M3	415.50 +15% + 500%	100 m^3	1077.53
			Total labour cost		**18596.64**
			Material cost		**98783.00**
			Total		**117379.64**
			Contingency 2%		**2347.59**
			Grand total		**49929.23**



Pucca disposal open channel

Table. 8. 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 pi ts (390 N os.) 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 pl ants (including 15% et c. f or m ortality) 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)

B. 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. 9. 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 procesing 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 455 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

Particulars	Contents	No. of micro watersheds	No. of beneficiaries per micro watershed	No. of total beneficiaries	Providing assistance under IWMP per beneficiaries	Total
Vermi Compost	Vermi compost is organic matter that is decomposed and recycled, used as fertilizer for soil amendment which is a key ingredient in organic farming. Under IWMP, financial assistance of 25% of total cost of Rs. 24000/- is provided.	13	20	260	6000	1560000
Green Manuring	Addition of organic matter required, which is deficient in project area. Under IWMP, financial assistance @ Rs. 500 for 20 Kg.s per farmer for 2 Acre (0.8 ha) holding is provided.	13	100	1300	500	650000
Bio-fertilizers	For integrated nutrient management (combination of chemical fertilizers, organic manure, crop residue and nitrogen fixing. Under IWMP, financial assistance @ Rs. 40 per farmer for 2 Acre (0.8 ha) holding is provided.	13	200	2600	40	104000

Pest-Management	For integrated pest Management, the bio control t echnique has been r eported eco-friendly for co ntrol of pest s. A provision of Azadirachtin bio pesticide @ Rs. 250/lit. per farmer is provided.	13	150	1950	250	487500
Sprinkler irrigation	Sprinkler irrigation is a m ethod o f applying i rrigation w ater w hich i s sim ilar to natural rainfall. Under IWMP, financial assistance @ 25% of R s. 30 000/- or price f ixed by agriculture depar tment i s provided.	13	20	260	7500	1950000
Drip Irrigation	Drip Irrigation is an irrigation method that saves water and f ertilizer by allowing water to d rip slow ly to the roots of pl ants. U nder I WMP, f inancial assistance @ 10% o f Rs. 58000 per ha for hor ticulture f ixed by Agriculture Department is provided.	13	15	195	5800	1131000
Lazer Leveling	Lazer Lev eling i s one su ch pr oven technology t hat i s highly useful i n conversation of i rrigation w ater. U nder IWMP, f inancial ass istance @ 30% of Rs. 1075 per farmer is provided	13	150	1950	322.5	628875
Kitchen Gardening	To f acilitate wit h inputs, se eds and equipments etc., f or deve lopment of Kitchen G ardening. U nder I WMP, financial assistance @ Rs. 50 per farmer per se ason (Rs. 1 00 per y ear) i s provided.	13	350	4550	100	455000

Horticulture	Potential for Grafted Horticulture plants. Supply of plants @ Rs. 40/- per plant under IWMP 50 % cost share for cultivation of fruits like Citrus fruits, Guava, Amla, Ber f loriculture and vegetables (especially, turmeric, garlic, onion and tomato)	13	135	1755(17550 plants)	Rs.20 per plant	351000
Total						**7317375**
Contingency, printing material other unforeseen items						**67425**
Total fund available under this component						**7384800**

Total: Rs. 7384800/-

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

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

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

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

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

Based on the above five Sutras, grading of SHG should be done.
The following activities are proposed in consultation with the Watershed committees.

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

1. Cutting and Tailoring
2. Embroidery
3. Mushroom cultivation
4. Plumbing
5. Carpentry

6. Bee keeping
7. Animal husbandry
8. Vermi composting
9. Cattle rearing and selling milk
10. Household wiring, Motor winding
11. Backyard poultry
12. 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	Mundahera	1	2	25000	50000
2	Birar	1	2	25000	50000
3	Jhamri	1	2	25000	50000
4	Sasroli	1	2	25000	50000
5	Jharli	1	2	25000	50000
6	Sundrehti	1	2	25000	50000
7	Khanpur Khurd	1	2	25000	50000
8	Khanpur Kalan	1	2	25000	50000
9	Mohan Beri	1	2	25000	50000
10	Bahu	1	2	25000	50000
11	Goria	1	2	25000	50000
12	Bazedpur Tapa Birhor+ Khera Tharu	1	2	25000	50000
13	BhuriaWas	1	2	25000	50000
		13	**26**		**650000**

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	Mundahera	1	1	35000	35000
2	Birar	1	1	35000	35000
3	Jhamri	1	1	35000	35000
4	Sasroli	1	1	35000	35000
5	Jharli	1	1	35000	35000
6	Sundrehti	1	1	35000	35000
7	Khanpur Khurd	1	1	35000	35000
8	Khanpur Kalan	1	1	35000	35000
9	Mohan Beri	1	1	35000	35000
10	Bahu	1	1	35000	35000
11	Goria	1	1	35000	35000
12	Bazedpur Tapa Birhor+ Khera Tharu	1	1	35000	35000
13	BhuriaWas	1	1	35000	35000
		13	**13**		**455000**

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	Mundahera	1	5	10000	50000
2	Birar	1	5	10000	50000
3	Jhamri	1	5	10000	50000
4	Sasroli	1	5	10000	50000
5	Jharli	1	5	10000	50000
6	Sundrehti	1	5	10000	50000
7	Khanpur Khurd	1	5	10000	50000
8	Khanpur Kalan	1	5	10000	50000
9	Mohan Beri	1	5	10000	50000
10	Bahu	1	5	10000	50000
11	Goria	1	5	10000	50000
12	Bazedpur Tapa Birhor+ Khera Tharu	1	5	10000	50000
13	BhuriaWas	1	5	10000	50000
		13	**65**		**650000**

Note: The beneficiaries will contribute 10% as cost sharing of the livelihood support programme Rs. 650000 @ 10% cost sharing.

= 650000- 65000
= 585000/-

Table 14. One time assistance as Revolving Fund to unemployed youth who have successfully completed Computer Training for setting up a computer centre

S.	Name of micro	No. of villages	No. of Persons in	Amount of Training	Total

No.	watersheds		micro watershed	per Trainee	
1	Mundahera	1	2	25000	50000
2	Birar	1	2	25000	50000
3	Jhamri	1	2	25000	50000
4	Sasroli	1	2	25000	50000
5	Jharli	1	2	25000	50000
6	Sundrehti	1	2	25000	50000
7	Khanpur Khurd	1	2	25000	50000
8	Khanpur Kalan	1	2	25000	50000
9	Mohan Beri	1	2	25000	50000
10	Bahu	1	2	25000	50000
11	Goria	1	2	25000	50000
12	Bazedpur Tapa Birhor+ Khera Tharu	1	2	25000	50000
13	BhuriaWas	1	2	25000	50000
		13	**26**		**650000**

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. 650000 @ 10% cost sharing.

= 650000- 65000
= 585000/-

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	Total payment to trainer

						centre	
1	Mundahera	1	1	2	2000	6	12000
2	Birar	1	1	2	2000	6	12000
3	Jhamri	1	1	2	2000	6	12000
4	Sasroli	1	1	2	2000	6	12000
5	Jharli	1	1	2	2000	6	12000
6	Sundrehti	1	1	2	2000	6	12000
7	Khanpur Khurd	1	1	2	2000	6	12000
8	Khanpur Kalan	1	1	2	2000	6	12000
9	Mohan Beri	1	1	2	2000	6	12000
10	Bahu	1	1	2	2000	6	12000
11	Goria	1	1	2	2000	6	12000
12	Bazedpur Tapa Birhor+ Khera Tharu	1	1	2	2000	6	12000
13	BhuriaWas	1	1	2	2000	6	12000
		13	**13**	**26**			**156000**

Total cost for 13 Centres

1. Payment to trainers Rs. 156000/-

2. Sewing Machine Cost Rs. 156000/- @ Rs. 6000 per machine

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	Mundahera	1	1	2000	6	12000	1	12000
2	Birar	1	1	2000	6	12000	1	12000
3	Jhamri	1	1	2000	6	12000	1	12000
4	Sasroli	1	1	2000	6	12000	1	12000
5	Jharli	1	1	2000	6	12000	1	12000
6	Sundrehti	1	1	2000	6	12000	1	12000
7	Khanpur Khurd	1	1	2000	6	12000	1	12000
8	Khanpur Kalan	1	1	2000	6	12000	1	12000
9	Mohan Beri	1	1	2000	6	12000	1	12000
10	Bahu	1	1	2000	6	12000	1	12000
11	Goria	1	1	2000	6	12000	1	12000
12	Bazedpur Tapa Birhor+ Khera Tharu	1	1	2000	6	12000	1	12000
13	BhuriaWas	1	1	2000	6	12000	1	12000
		13	**13**					**156000**

Payment to trainer: Rs.156000/-

Machine Cost Rs. 260000/- @ Rs. 20000 per machine

Total Cost: Rs. 416000/-

Table 17. Livelihood Support

S.No.	Name of m icro watersheds	No. of villages	Revolving fund assistance to individuals unemployed youth/ landless, women		
			Dairy Unit	Bee Keeping	Mushroom Cultivation

1	Mundahera	1	10	10	1
2	Birar	1	9	10	1
3	Jhamri	1	10	10	1
4	Sasroli	1	9	10	1
5	Jharli	1	10	10	1
6	Sundrehti	1	9	10	1
7	Khanpur Khurd	1	10	10	1
8	Khanpur Kalan	1	10	10	1
9	Mohan Beri	1	9	10	1
10	Bahu	1	10	10	1
11	Goria	1	9	10	1
12	Bazedpur Tapa Birhor+ Khera Tharu	1	10	10	1
13	BhuriaWas	1	10	10	1
	Total	**13**	**125**	**130**	**13**
	Rate (Rs)		**2400**	**2400**	**24000**
	Cost (Lakh Rs)		**3.0**	**3.12**	**3.12**

Contingency, printing material and other unseen items: Rs. 19320/-

Total funds available under this component are Rs. 6646320/-

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), Jhajjar

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. 19)

Detail of Convergence of IWMP and other schemes

Table 19. 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	Mundahera				
2	Birar	36.24	33.26	2.98	2.98
3	Jhamri	33.1	32.93	0.17	0.17
4	Sasroli	35	31.92	3.08	3.08
5	Jharli	31	33.26	-	-
6	Sunderhti	39.4	32.59	6.81	6.81
7	Khanpur Khurd	30	32.93	-	-
8	Khanpur Kallan	42.7	33.2	9.5	9.5
9	Mohan Beri	33	32.93	0.07	0.07
10	Bahu	35.03	32.93	2.1	2.1
11	Goria	34.9	33.94	0.96	0.96
12	Bazedpur Tappa Birhor and Khera Thru	50.15	28.56	21.59	21.59
13	Bhurawas	38.2	27.55	10.65	10.65
	Total	**438.72**	**386.00**	**57.91**	**57.91**

- 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, Dug Out Pond (New/Renovation), Ramp/Ghat Inlet and Outlet, Roof top rain water recharge structures 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	Mundahera	410	49,20,000	49,200
2	Birar	495	59,40,000	59,400
3	Jhamri	490	58,80,000	58,800
4	Sasroli	475	57,00,000	57,000
5	Jharli	495	59,40,000	59,400
6	Sundrehti	485	58,20,000	58,200
7	Khanpur Khurd	490	58,80,000	58,800
8	Khanpur Kalan	494	59,28,000	59,280
9	Mohan Beri	490	58,80,000	58,800
10	Bahu	490	58,80,000	58,800
11	Goria	505	60,60,000	60,600
12	Bazedpur Tapa Birhor+ Khera Tharu	425	51,00,000	51,000
13	BhuriaWas	410	49,20,000	49,200

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	Mundahera	410	49,20,000	49,200
2	Birar	495	59,40,000	59,400
3	Jhamri	490	58,80,000	58,800
4	Sasroli	475	57,00,000	57,000
5	Jharli	495	59,40,000	59,400
6	Sundrehti	485	58,20,000	58,200
7	Khanpur Khurd	490	58,80,000	58,800
8	Khanpur Kalan	494	59,28,000	59,280
9	Mohan Beri	490	58,80,000	58,800
10	Bahu	490	58,80,000	58,800
11	Goria	505	60,60,000	60,600
12	Bazedpur Tapa Birhor+	425	51,00,000	51,000

	Khera Tharu			
13	BhuriaWas	410	49,20,000	49,200

CONSOLIDATION PHASE- 3 %
Consolidation Phase = Rs. 22, 15,440/-

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: Mundahera

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	0.30
2	Preparation of Project completion report	0.07
3	Documentation of success stories	0.08
4	Management of proper utilization of WDF	0.22
5	Mechanism for quality and sustainability issues under the Project	0.07
6	Watershed activities	0.74

Total: 1.48 lacs

Name of Micro watershed: Birar

Table 4. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.35
2	Preparation of Project completion report	0.09
3	Documentation of success stories	0.09
4	Management of proper utilization of WDF	0.27
5	Mechanism for quality and sustainability issues under the Project	0.09
6	Watershed activities	0.89

Total: 1.78 lacs

Name of Micro watershed: Jhamri

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	0.88

Total: 1.76 lacs

Name of Micro watershed: Sasroli

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	0.34
2	Preparation of Project completion report	0.09
3	Documentation of success stories	0.08
4	Management of proper utilization of WDF	0.26
5	Mechanism for quality and sustainability issues under the Project	0.08
6	Watershed activities	0.86

Total: 1.71 lacs

Name of Micro watershed: Jharli

Table 7. Consolidated Phase

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

1	Managing/ upgrading of all activities taken up under the project	0.35
2	Preparation of Project completion report	0.09
3	Documentation of success stories	0.09
4	Management of proper utilization of WDF	0.27
5	Mechanism for quality and sustainability issues under the Project	0.09
6	Watershed activities	0.89

Total: 1.78 lacs

Name of Micro watershed: Sundrehti

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	0.35
2	Preparation of Project completion report	0.09
3	Documentation of success stories	0.08
4	Management of proper utilization of WDF	0.26
5	Mechanism for quality and sustainability issues under the Project	0.09
6	Watershed activities	0.88

Total: 1.75 lacs

Name of Micro watershed: Khanpur Khurd

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	0.35
2	Preparation of Project completion report	0.09
3	Documentation of success stories	0.09
4	Management of proper utilization of WDF	0.26
5	Mechanism for quality and sustainability issues under the Project	0.09
6	Watershed activities	0.88

Total: 1.76 lacs

Name of Micro watershed: Khanpur Kalan

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	0.35
2	Preparation of Project completion report	0.09
3	Documentation of success stories	0.09
4	Management of proper utilization of WDF	0.27
5	Mechanism for quality and sustainability issues under the Project	0.09
6	Watershed activities	0.89

Total: 1.78 lacs

Name of Micro watershed: Mohan Beri

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	0.35
2	Preparation of Project completion report	0.09
3	Documentation of success stories	0.09
4	Management of proper utilization of WDF	0.26
5	Mechanism for quality and sustainability issues under the Project	0.09
6	Watershed activities	0.88

Total: 1.76 lacs

Name of Micro watershed: Bahu

Table 12. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.35
2	Preparation of Project completion report	0.09
3	Documentation of success stories	0.09
4	Management of proper utilization of WDF	0.26
5	Mechanism for quality and sustainability issues under the Project	0.09
6	Watershed activities	0.88

Total: 1.76 lacs

Name of Micro watershed: Goria

Table 13. Consolidated Phase

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

1	Managing/ upgrading of all activities taken up under the project	0.36
2	Preparation of Project completion report	0.10
3	Documentation of success stories	0.09
4	Management of proper utilization of WDF	0.27
5	Mechanism for quality and sustainability issues under the Project	0.09
6	Watershed activities	0.91

Total: 1.82 lacs

Name of Micro watershed: Bazedpur Tapa Birhor+ Khera Tharu

Table 14. 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	0.76

Total: 1.53 lacs

Name of Micro watershed: BhuriaWas

Table 15. Consolidated Phase

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

1	Managing/ upgrading of all activities taken up under the project	0.30
2	Preparation of Project completion report	0.07
3	Documentation of success stories	0.08
4	Management of proper utilization of WDF	0.22
5	Mechanism for quality and sustainability issues under the Project	0.07
6	Watershed activities	0.74

Total: 1.48 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 t he f unds gener ated w ould be ut ilized O & M S tructures. The se use rs charges account w ill be m aintained separately.
- Involvement of Gram Panchayat for repair, maintenance and protection of created structures.

CHAPTER – 9
EXPECTED OUTCOME

EXPECTED OUTCOMES

The effective area is 6154 ha and the Project Cost is Rs. 738.48 lacs covering 13 no. micro watersheds. 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 Matanhail 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 or in Industrial Complex of Bahadurgarh and NCR area.

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.	Mundahera	498	3910	4408	62	489	551	11	-	11	**22**
2.	Birar	612	4710	5322	77	589	665	11	11	-	**22**
3.	Jhamri	290	4978	5268	36	622	659	11	11	-	**22**
4.	Sasroli	1139	3968	5107	142	496	638	-	11	11	**22**
5.	Jharli	1597	3725	5322	200	466	665	11	-	11	**22**
6.	Sundrehti	1585	3630	5215	198	454	652	-	11	11	**22**
7.	Khanpur Khurd	695	4573	5268	87	572	659	11	-	11	**22**
8.	Khanpur Kalan	706	4605	5311	88	576	664	11	11	-	**22**
9.	Mohan Beri	1696	3572	5268	212	447	659	-	11	11	**22**
10.	Bahu	1254	4014	5268	157	502	659	11	-	11	**22**

11.	Goria	619	4811	5430	77	601	679	-	11	11	**22**
12.	Bazedpur Tapa Birhor+ Khera Tharu	55	4515	4570	7	564	571	-	11	11	**22**
13.	BhuriaWas	811	3597	4408	101	450	551	11	-	11	**22**
	Total	**11557**	**54608**	**66165**	1445	6826	8271	**88**	**88**	**110**	**286**

66165 man days would be generated with the implementation of the project in Matanhail Watershed (IWMP II), which means about 130 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 Matanhail 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.	Mundahera	--	--	--	--	No. of persons migrating will be reduced and also no. of days would be r educed by over 50%
2.	Birar	--	--	--	--	No. of persons migrating will be reduced and al so n o. of days would be r educed by over 50%
3.	Jhamri	50	25	6 months	3 months	No. of persons migrating will be reduced and al so n o. of days would be r educed

						by over 50%
4.	Sasroli	50	25	6 months	3 months	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
5.	Jharli	--	--	--	--	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
6.	Sundrehti	40	20	6 months	3 months	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
7.	Khanpur Khurd					No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
8.	Khanpur Kalan	60	30	6 months	3 months	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
9.	Mohan Beri	--	--	--	--	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
10.	Bahu	--	--	--	--	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
11.	Goria	--	--	--	--	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
12.	Bazedpur Tapa Birhor+ Khera Tharu	--	--	--	--	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
13.	Bhuria Was	50	25	6 months	3 months	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.

The ground water behavior in the watershed reveals the variation of depth to water level from 1.8 m to 17.4 m below ground level. The water level in the micro watershed located in the villages Goria and Bhurawas is below 5 m. The water level in the villages Khanpur Kallan (part), Jhamri, and Mohan Beri varies from 5-10 m. In the remaining areas, water level is more than 10 m.

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

Sr. No.	Name of micro Watershed	Name of village	Source	Pre- project (m)
1	Mundahera	Mundahera	Wells	1.9
2	Birar	Birar	Wells	-
3	Jhamri	Jhamri	Wells	-
4	Sasroli	Sasroli	Wells	17.4
5	Jharli	Jharli	Wells	12.1
6	Sunderheti	Sunderheti	Wells	7.1
7	Khanpur Khurd	Khanpur Khurd	Wells	6.1
8	Khanpur Kalan	Khanpur Kalan	Wells	4.0
9	Mohanbari	Mohanbari	Wells	-
10	Bahu	Bahu	Wells	11.5

11	Goria	Goria	Wells	3.3
12	Bazidpur Tappa	Bazidpur Tappa	Wells	-
13	Khera Thru	Khera Thru	Wells	-
14	Bhurawas	Bhurawas	Wells	1.8

Source: Ground Water Cell, Haryana

9.4 CROPS

To enhance the productivity, the integrated land and water management are important in the watershed area. The planned Water conveyance system, Dug Out Pond (New/Renovation), Ramp/Ghat Inlet and Outlet, Roof top rain water recharge structures etc. can preserve 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 Matanhail Watershed (IWMP II)

Name of Micro-Watersheds	Village	Name of Crops	Pre project		Total Production (in Qtl)	Total Value Rs (in lacs)	Expected post project		Total Production (in Qtl)	Total Value Rs (in lacs)
			Area ha	Average yield Qtl. Per ha			Area ha	Average yield Qtl. Per ha		
Mundahera	Mundahera	Wheat	242	40	9680	143.2	286	42	12012	180.18
		Musturd	332	12	3984	87.64	364	13	4732	164.1
		Bajra	80	10	800	9.6	88	12	1056	12.67
Birar	Birar	Wheat	226	40	9040	135.6	248	41	16168	152.52

		Musturd	175	12	2100	46.2	193	13	2509	55.19
		Bajra	42	10	420	50.4	46	13	598	71.76
Jhamri	Jhamri	Wheat	170	43	7310	110.96	182	45	80190	122.85
		Musturd	165	12	1980	43.56	182	12	2184	48.04
		Bajra	385	12	4620	57.84	425	13	5525	66.3
Sasroli	Sasroli	Wheat	375	40	14000	210.6	413	41	16933	253.99
		Musturd	228	11	2508	195.57	250	12	11400	250.8
		Bajra	665	12	7860	94.56	754	13	9800	117.62
Jharli	Jharli	Wheat	378	42	14076	211.5	418	43	17974	269.61
		Musturd	170	13	2210	48.62	187	14	2618	52.59
		Bajra	365	13	4745	56.34	425	14	5950	71.4
Sunderheti	Sunderheti	Wheat	457	46	18280	393.2	506	47	28012	420.18
		Musturd	271	11	2981	69.68	298	12	3576	78.68
		Bajra	321	10	3810	45.72	353	11	3883	46.59
Khanpur khurd	Khanpur khurd	Wheat	160	45	6800	102	198	47	9306	139.59
		Musturd	360	12	4320	93.04	420	13	5460	120.12
		Bajra	205	12	2460	29.52	225	13	2925	35.1
Khanpur kala	Khanpur kala	Wheat	142	42	364	95.76	156	43	6708	100.62
		Musturd	230	11	2530	55.6	253	12	3036	67.79
		Bajra	295	12	3180	38.16	315	13	4095	99.43
Mohanbari	Mohanbari	Wheat	144	44	6316	94.76	158	45	7110	106.62
		Musturd	36	11	396	8.91	40	12	480	10.56
		Bajra	145	10	1450	17.4	159	11	1749	20.98

Bahu	Bahu	Wheat	482	43	20726	310.8	532	45	23940	368
		Musturd	849	12	10188	223.69	924	13	12012	264.26
		Bajra	219	12	2628	31.53	240	13	3120	37.4
Goria	Goria	Wheat	308	44	13552	203.28	340	45	15300	229.5
		Musturd	689	11	7579	177.73	779	12	9348	205.65
		Bajra	435	13	5655	67.96	490	14	6860	82.32
Bazidpur tappa and Khera tharu	Bazidpur tappa	Wheat	88	40	3520	53.8	96	42	4032	60.98
		Musturd	58	11	438	9.43	65	12	780	17.16
		Bajra	150	10	1500	18	165	11	1815	21.78
	Khera tharu	Wheat	174	42	7308	86.82	191	43	6213	93.19
		Musturd	666	11	726	159.6	756	12	9272	199.58
		Bajra	211	10	2110	26.42	232	11	2552	30.62
Burawas	Burawas	Wheat	320	43	13760	205.8	352	45	15840	237.6
		Musturd	368	12	4416	97.15	405	13	5265	115.83
		Bajra	157	11	1727	20.84	173	12	2076	24.91
			11938		**234053**	**4238.79**	**13282**		**384414**	**5124.66**

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

9.5 HORTICULTURE

Table 5. Pre and post project area under Horticulture

S.No.	Name of villages	Existing area under horticulture (ha)	Additional Area under horticulture proposed to be covered through IWMP	Total area in ha – Post Project
1.	Mundahera	1	-	1.00

2.	Birar	-	0.80	0.80
3.	Jhamri	1	2.70	3.70
4.	Sasroli	-	0.72	0.72
5.	Jharli	-	0.65	0.65
6.	Sunderheti	50	6.25	56.25
7.	Khanpur khurd	-	2.15	2.15
8.	Khanpur kla	-	1.10	1.10
9.	Mohanbari	-	1.15	1.15
10.	bahu	1	0.9	1.90
11.	Goria	-	2.90	2.90
12.	Bazidpur tappa	-	-	-
13.	Khera thru	-	-	-
14.	Bhurawas	1	4.55	5.55
		54	**23.87**	**77.87**

9.6 AFFORESTATION/ VEGETATIVE COVER

Table 6. Pre and post project forest and vegetative cover

S.No.	Name of villages	Existing area under tree covered, ha	Area under tree cover proposed ha	Total
1.	Mundahera	3.2	1.75	4.95
2.	Birar	1.89	1.2	3.09
3.	Jhamri	1.1	1.3	2.40
4.	Sasroli	1.92	1.28	3.20
5.	Jharli	2.35	1.35	3.70
6.	Sunderheti	1.2	1.75	2.95
7.	Khanpur khurd	3.35	1.85	5.20
8.	Khanpur kalan	1.1	0.9	2.00
9.	Mohanbari	1.3	0.85	2.15

10.	bahu	3.3	1.1	4.40
11.	Goria	2.8	1.1	3.90
12.	Bazidpur tappa	1.85	-	1.85
13.	Khera thru	1.45	-	1.45
14.	Bhurawas	3.55	1.45	5.00
	Total	**30.36**	**15.88**	**46.24**

9.7 LIVESTOCK

Table 7. Details of livestock in the project area

Sr. No.	Village	Type of animal	Pre Project			Post Project			Remarks
			No.	Yield Kg/day	Income in Rs per day	No.	Yield Kg/day	Income in Rs per day	
1	Mundhera	Buffalo	1194	8-10	320-400	1433	10-12	420-504	Increase in milk yield and number of animals by approx. 15%
		Cow	139	6-7	90-105	166	8-9	160-180	
2	Birar	Buffalo	798	10-11	400-440	958	12-13	504-546	
		Cow	102	5-6	75-90	122	7-8	140-160	
3	Jhamri	Buffalo	1040	8-10	320-400	1308	10-12	420-504	
		Cow	133	6-7	90-105	160	8-9	160-180	
4	Sasroli	Buffalo	1921	10-11	400-440	2305	12-13	504-546	
		Cow	346	5-6	75-90	422	7-8	140-160	
5	Jharli	Buffalo	805	11-12	440-480	966	13-14	546-588	
		Cow	77	6-7	90-105	92	8-9	160-180	
6	Sunderheti	Buffalo	1130	11-12	440-480	1356	13-14	546-588	
		Cow	288	6-7	90-105	346	8-9	160-180	
7	Khanpur Khurd	Buffalo	1019	10-11	400-440	1222	12-13	504-546	

		Cow	215	5-6	75-90	258	7-8	140-160
8	Khanpur Kalan	Buffalo	542	8-10	320-400	650	10-12	420-504
		Cow	84	6-7	90-105	101	8-9	160-180
9	Mohanbari	Buffalo	256	10-11	400-440	307	12-13	504-546
		Cow	25	5-6	75-90	30	7-8	140-160
10	Bahu	Buffalo	1190	11-12	440-480	1428	13-14	546-588
		Cow	295	6-7	90-105	354	8-9	160-180
11	Goria	Buffalo	1305	11-12	440-480	1566	13-14	546-588
		Cow	137	6-7	90-105	164	8-9	160-180
12	Bazidpur Tappa Biror	Buffalo	190	10-11	400-440	288	12-13	504-546
		Cow	12	5-6	75-90	14	7-8	140-160
13	Khrea Tharu	Buffalo	286	11-12	440-480	343	13-14	546-588
		Cow	41	6-7	90-105	49	8-9	160-180
14	Bhurawas	Buffalo	1184	10-11	400-440	1421	12-13	504-546
		Cow	227	5-6	75-90	271	7-8	140-160

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	Matanhail 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 centres	Milk collection centre in long distance	Coordinate with lined department	For installation on nearest door steps
		Any other (please specify)	-	-	-
			Vermi-compost unit	Convergence with NHM (Horticulture) department	To be increased
			Mushroom Cultivation	Convergence with NHM (Horticulture) department	To be increased

			Animal vitamins/ 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
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	• 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	• Quality of management of common resources improved. • Quality of distribution of benefits between people improved. • Increased awareness amongst	

Components	Activities	Outputs	Effect	Impact
	workshops and exposure visit s for U ser G roup and W atershed Community • Facilitating and monitoring t he functioning of UGs and W Cs Strengthen linkages between U Gs and W Cs and Panchayat Institutions • Gender sensitization of UGs and W Cs to i ncrease inclusiveness of Samuh (Joint) decision making. • Sensitize Village communities to involve ch ildren	formed.	women about village resources • Women participation enhanced i n decision-making of GVCs. • Involvement of youth and ch ildren in vi llage development.	

Components	Activities	Outputs	Effect	Impact
	and youth in development			
Fund Management	• Improve management and utilization of UGs and WCs • Prepare communities to explore other sources of income for UGs and WCs.	UGs and WCs operating bank account and managing resources on their own.	• Purpose, frequency and volume of use of the fund enhanced • Volume of funds generated for UGs and WCs from other sources of income increased	
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	• 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	• 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
	meetings and organize exposure visit s for communities, village volunteers and staff to effectively plan, execute and monitor activities. • Identification and pr omotion of non -timber forest produce based i ncome generation activities.	communities, vi llage volunteers and staff. • Income gener ation intervention promoted		
Rainfed Area Development	• Treatment of land t hrough improved so il and m oisture conservation practices on watershed basis.	• Land t o be br ought under i mproved so il moisture conservation practices. • Good agr icultural practices to b e promoted.	• Improved productivity of treated land. • Increased availability of w ater in cells. • Increase i n ann ual agricultural	Increase i n pr oportion of households having more security of food I ncrease i n contribution of agr icultural income t o t he hou sehold income

Components	Activities	Outputs	Effect	Impact
	• Promotion of good agricultural practices- horticulture, improved cr op and vegetable. • Promotion of organic farming practices. • Formation of Fodder banks to increase f odder security and promote dai ry development among communities. • Identification and pr omotion of agr i-produce based i ncome generation activities like grading, processing and packaging.	• Organic farming t o be pr omoted. Fodder banks t o be established. • Agriculture base d livelihood in come generation act ivities to be promoted • Water har vesting structures to b e constructed. • Drip ir rigation facilities t o b e distributed am ong farmers. • Approx 15000 person days of em ployment to be generated. • Trainings, exposure visits and m eetings to be or ganized f or communities, vi llage volunteers.	production. • Farmers ado pt organic f arming practices. • Fodder secu rity of farmers enhanced. • Increased availability of w ater for 9 to12 months. • Increased availability of w ater for livestock • Increase i n agricultural productivity of land. • Augmentation of drinking w ater supply.	

Components	Activities	Outputs	Effect	Impact
	• Promotion of better i rrigation practices l ike drip irrigation • Impart trainings, conduct meetings and organize exposure visit s of communities.			
Women's socio-political and eco nomic empowerment	• Formation and strengthening of women' SHG groups • Capacity building of women folk. • Capacity building of S HG leaders and acco untants Linking SHGs with external financial institutions	• Women's SHG groups to be formed. • Federation of Women's SHGs to be formed. • Trainings t o b e conducted f or preparation of woolen products from sheep and goats	• Enhanced capacities of leaders of women's group in taking i nitiatives to solve pr oblems at different levels. • Improved acce ss to credit for live lihood purposes Increased household income.	• Position of women in household, community, so ciety (politically, so cially and economically) as perceived by women and co mmunity at large. • Performance enhancement of SHGs in te rms of participation, decision-making, leadership and f und management. • Equality and equi ty in gender relations at

Components	Activities	Outputs	Effect	Impact
				home (decision making, e xpenditure, 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.