CONTENTS (IWMP II)

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CHAPTER- 1

METHODOLOGY

INTRODUCTION

The Government of India (GOI) adopted watershed management as a strategy to address the sustainable agricultural productivity in the rainfed areas since last three decades. Further, GOI has adopted watershed management as anational policy since 2003. Several studies have highlighted that appropriate natural resource management shall 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 utilization of 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, Haryali & IWDP 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.

To implement watershed (IWMP-II) area programme a systematic survey has been conducted to know the potentiality of each village / Micro-Watershed. With this view, a baseline survey was conducted in nine micro- watershedsDaula (2C5D4q5), Mundawar (2C5D4r2), Satlaka (2C5D4r3), Bai Khera (2C5E1s3),Ranika Singhola (2C5D4r2), Hazipur (2C5D4j4), Ghangola (2C5D4j7), Sarmathla (2C5E1s2) and Loh Singhani (2C5D4r5).The baseline 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 programs and to plan its goal in identifiable terms and be used as future reference. PRA techniques and transect walk were conducted with the Gram Sabha members and beneficiaries for building confidence in participation during project planning.

1.1 SCIENTIFIC PLANNING

1.1.1 Cluster Approach

This envisages a broader vision of Geo-hydrological unit which involves treating the cluster (IWMP-II) of 9 micro watersheds namelyDaula (2C5D4q5), Mundawar (2C5D4r2), Satlaka (2C5D4r3), Bai Khera (2C5E1s3),Ranika Singhola (2C5D4r2), Hazipur (2C5D4j4), Ghangola (2C5D4j7), Sarmathla (2C5E1s2) and Loh Singhani (2C5D4r5)with their respective codes.

1.1.2 Base Line Survey

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

1.1.3 Collection of Primary Data

ThThe 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 Daula, Mundawar, Satlaka, Bai Khera,Ranika Singhola, Hazipur, Ghangola, Sarmathla and Loh Singhanimicro-watersheds. During this meeting, preliminary details of the proposed project including location of villages and criteria of selection and PPR were discussed.

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

The survey of India toposheets (Survey of India) of the area available on the 1:50000 scales were procured of the project area 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 was also compiled from revenue records, Anganwari workers and statistical officers of the district. Rainfall data was collected from the Ground Water Cell to maintains the record of rainfall from rain gauge station located in the Sub division/district headquarter of the project area.

1.1.4 Collection of Secondary data

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

1.2.1Participatory Net Planning

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

Based on the experience of the experts working in the area and catchment area characteristics each structures like Roof top rainwater Harvesting, Ramp, inlet & outlet, Earthen Embankments /Marginal bunds with pucca outlet, Small earthen

embankment with vegetative support, Construction of Check Dam, water conveyance systemetc. were recommended to conserve and store water used for life saving irrigation potential in the rain fed area and to avoid degradation of the land.

1.2.2 Community Participants in Social Mapping

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

1.2.3 Transect Walk

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

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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 and Quality, Proposed and existing activities of works. All Watershed maps (micro- watershed) have been prepared based on the watershed maps made available by Soil and Land use Survey of India (SLUSI) with coding.

1.3.1 Prioritization

With the assistance of Geographical Information System (GIS), various layers were created like Topography (slope), Drainage and contour, Groundwater conditions, Slope, Soil, 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 need and experience of the experts working in the area and catchment area, structures like Roof top rainwater Harvesting, Ramp, inlet & outlet, Earthen Embankments /Marginal bunds with pucca outlet, Small earthen embankment with vegetative support, Construction of Check Dam, water conveyance system etc. were provided in consultation with the Gram Sabha Members. However finally only those activities are included which were suggested by the Gram Sabha according to their needs.

1.3.3 Hydrological modeling

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

Table 1. Detail of scientific planning and inputs in IWMP projects

S.No.	Scientific Criteria/input used	Whether Scientific Criteria was used
A	**Planning**	
	Cluster approach	Yes
	Hydro-geological survey	Yes
	Contour Mapping	Yes
	Participatory net planning (PNP)	Yes
	Remote sensing data-especially soil	Yes
	Ridge to valley treatment	Yes
	Online IT connectivity between	Yes
	1. Project and DRDA cell/ZP	Yes
	2. DRDA and SLNA	Yes
	3. SLNA and DoLR	Yes
	Availability of GIS layers	Yes
	1. Survey of India map/imagery /SLUSI map	Yes
	2. Micro- Watershed Boundary	Yes
	3. Drainage pattern	Yes
	4. Soil (soil fertility status)	Yes
	5. Land use	Yes
	6. Ground water status	Yes
B	Inputs	-

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

1.4 Preparation of Action Plan and Approval

Based on the need and problems in watershed area; a draft action plan was prepared and placed before the concerned watershed development committee as per schedule circulated by Additional Deputy Commissioner, Gurgaon for approval of the Watershed Committees. After detailed deliberation and incorporation of relevant recommendation/ suggestions into the plan, 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 Sohna block of Gurgaon district in Haryana state. The project is a cluster of nine micro- watersheds namely Daula (2C5D4q5), Mundawar (2C5D4r2), Satlaka (2C5D4r3), Bai Khera (2C5E1s3), Ranika Singhola (2C5D4r2), Hazipur (2C5D4j4), Ghangola (2C5D4j7), Sarmathla (2C5E1s2) and Loh Singhani (2C5D4r5). The total geographical area of the project is **5361 ha** out of which **4660 ha** has been undertaken to be treated under IWMP II starting from year 2012-13. 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	Daula	Daula	2C5D4q5	Daula	Sohna	Gurgaon	436	230	27.6	ASCO, Gurgaon
2	Daula	Daula	2C5D4q5	Jalapur	Sohna	Gurgaon	135	130	15.6	ASCO, Gurgaon
3	Daula	Daula	2C5D4q5	Khobri	Sohna	Gurgaon	142	145	17.4	ASCO, Gurgaon
4	Daula	Mundawar	2C5D4r2	Mundawar	Sohna	Gurgaon	547	495	59.4	ASCO, Gurgaon
5	Daula	Satlaka	2C5D4r3	Satlaka	Sohna	Gurgaon	128	95	11.4	ASCO, Gurgaon
6	Daula	Satlaka	2C5D4r3	Bidhwaka	Sohna	Gurgaon	118	100	12	ASCO,

Sr. No	Name of the project	Name of the micro watersheds	Code No.	Name of the villages	Block	District	Area of the Project (ha)	Area proposed to be treated (ha)	Total Project cost (Rs lacs)	PIA
										Gurgaon
7	Daula	Satlaka	2C5D4r3	Rahaka	Sohna	Gurgaon	137	95	11.4	ASCO, Gurgaon
8	Daula	Satlaka	2C5D4r3	Jolaka	Sohna	Gurgaon	232	220	26.4	ASCO, Gurgaon
9	Daula	Bai Khera	2C5E1s3	Bai Khera	Sohna	Gurgaon	157	155	18.6	ASCO, Gurgaon
10	Daula	Bai Khera	2C5E1s3	Kuliaka	Sohna	Gurgaon	175	175	21	ASCO, Gurgaon
11	Daula	Bai Khera	2C5E1s3	Lala Kherli	Sohna	Gurgaon	182	180	21.6	ASCO, Gurgaon
12	Daula	Ranika Singhola	2C5D4r2	Ranika Singhola	Sohna	Gurgaon	178	171	20.52	ASCO, Gurgaon
13	Daula	Ranika Singhola	2C5D4r2	Tolni	Sohna	Gurgaon	183	175	21	ASCO, Gurgaon
14	Daula	Ranika Singhola	2C5D4r2	Bhogpur	Sohna	Gurgaon	144	144	17.28	ASCO, Gurgaon
15	Daula	Hazipur	2C5D4j4	Hazipur	Sohna	Gurgaon	269	205	24.6	ASCO, Gurgaon
16	Daula	Hazipur	2C5D4j4	Khutpuri	Sohna	Gurgaon	229	155	18.6	ASCO, Gurgaon
17	Daula	Hazipur	2C5D4j4	Bilaka	Sohna	Gurgaon	225	150	18	ASCO, Gurgaon
18	Daula	Ghangola	2C5D4j7	Ghangola	Sohna	Gurgaon	514	480	57.6	ASCO, Gurgaon
19	Daula	Sarmathhla	2C5E1s2	Sarmathhla	Sohna	Gurgaon	754	700	84	ASCO, Gurgaon
20	Daula	Loh Singhani	2C5D4r5	Loh Singhani	Sohna	Gurgaon	314	310	37.2	ASCO, Gurgaon

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
21	Daula	Loh Singhani	2C5D4r5	Khatrika	Sohna	Gurgaon	162	150	18	ASCO, Gurgaon
					Grand Total		**5361**	**4660**	**559.2**	

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 Weight Age for Selection of Watershed

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

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

Based on above criteria and weightage of 95.0 concerning above thirteen parameters, a composite ranking was given to Daula Watershed (IWMP II) project as given in **Table- 3.**

The percentage of schedule caste in the watershed is in the range of 20 % to 40% , so the score is given as 5. The percentage of poor population in the range of 50% to 80%, so the score of 7.5 was allotted. The moisture index is below -

33.2 the score allotted is 0 whereas rainfed area is between 80 to 90 percent so the score allotted is 10. Considering all the parameter mentioned for criteria and weightage for selection of watershed in the project, the composite score is 95.0.

Table- 3: Weight-age 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.	Gurgaon	Daula Sub-Watershed (IWMP II)	9	4660	Sub-Hilly	559.20	7.5	5	0	5	5	0	10	7.5	15	15	10	10	5	95.0

Table 4: Watershed Information

Name of the Project	No. of Micro-Watersheds to be Treated	Watershed codes	Watershed regime/type/order
Daula Watershed (IWMP II)	9	2C5D4q5, 2C5D4r2, 2C5D4r3, 2C5E1s3, 2C5D4r2, 2C5D4j4, 2C5D4j7, 2C5E1s2 and 2C5D4r5	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 etc. All the active programmes are tabulated in **Table 5.**

Table 5. Ongoing Developmental Programs in the Project Area

S. No.	Name of the Program /Project	Name of Micro watersheds	Sponsoring agency	Objective	Estimated number of beneficiaries for year 2013-14 (Job card issued)
1	MGNREGA	Daula	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of village.	--
2	MGNREGA	Jalapur	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of village.	--
3	MGNREGA	Khobri	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of village.	--
4	MGNREGA	Mundawar	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of village.	76
5	MGNREGA	Satlaka	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of village.	--
6	MGNREGA	Bidhwaka	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of village.	--
7	MGNREGA	Rahaka	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of	77

				village.	
8	MGNREGA	Jolaka	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of village.	--
9	MGNREGA	Bai Khera	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of village.	--
10	MGNREGA	Kuliaka	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of village.	--
11	MGNREGA	Lala Kherli	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of village.	--
12	MGNREGA	Ranika Singhola	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of village.	--
13	MGNREGA	Tolni	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of village.	--
14	MGNREGA	Bhogpur	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of village.	--
15	MGNREGA	Hazipur	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of village.	--
16	MGNREGA	Khutpuri	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of village.	--
17	MGNREGA	Bilaka	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of village.	24
18	MGNREGA	Bhangola	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of	--

				village.	
19	MGNREGA	Sarmathhla	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of village.	51
20	MGNREGA	Loh Singhani	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of village.	42
21	MGNREGA	Khathrika	DRDA, Gurgaon	To provide assured employment of 100 days in a year to unskilled labour and development of village.	---

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)

S. No	Names of Districts	Total micro-watersheds in the District		Micro-watersheds covered so far						Net watersheds to be covered	
				Dept. of Land Resources		Other Ministries/ Depts.		Total watersheds covered			
				Pre-IWMP projects (DPAP +DDP +IWDP)		Any other watershed project					
		No.	Area (ha.)	No.	Area (ha.)	No.	Area (ha.)	No.	Area (ha.)	No.	Area (ha.)
1.	Gurgaon	141	81624	2	2300	33	22756	35	25056	106 (Balance)	56568 (Balance)

CHAPTER – 3

BASIC INFORMATION OF THE PROJECT AREA

GEOGRAPHY AND GEOHYDROLOGY

The Daula Watershed (IWMP II) falls in Sohna block of District Gurgaon. Physiographically, the area falls under duny and inter dune plains. The area lying in between 28°13'30'' to 28°18'00''N latitude and 77°07'30'' to 77°13'30''E longitude.The general elevation varies between 196-287 m **(MSL) above mean sea level.** Area experiences the 494 mm rainfall. Despite total rainfall received in this area, water retention is very low, due to light texture and dune topography. 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 Daula Watershed (IWMP II)

S. No.	Name of watershed	Names of Micro watersheds	Geographical Area of the village	Land under agricultural use	Rain fed area	Wasteland	
						Cultivable	Non-cultivable
1	Daula Sub-Watershed IWMP II	Daula	713	656	448	20	37
2		Satlaka	615	439	319	111	65
3		Mundawar	547	120	83	27	400
4		Bai Khera	514	437	433	2	75
5		Ranika Singhola	505	396	381	20	89
6		Hazipur	723	605	392	59	59
7		Ghangola	514	473	439	-	41
8		Sarmathla	754	672	618	20	62

9		Loh Singhani	476	398	382	29	49
			5361	**4196**	**3495**	**288**	**877**

(Source – District Census Handbook, 2001 Gurgaon)

3.2 SOIL AND TOPOGRAPHY

The soils of Daula Watershed are Sandy loam to clay loam with gravels in pockets in some places. The topography of the area ranges from level to steep slopes. Soils are subject to susceptible to moderate water and wind erosion. The slope ranges from 2 to 10% and above most of the area of micro watersheds falls under level to nearly level slopes on dune and most of the areas fall under lands. 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.	Daula	2C5D4q5	713	Sandy loam to clay loam	Level to nearly level slopes and moderate in hilly areas
2.	Mundawar	2C5D4r2	547	Sandy loam to clay loam	
3.	Satlaka	2C5D4r3	615	Sandy loam to sandy clay loam with gravels in pockets	
4.	Bai Khera	2C5E1s3	514	Sandy loam to sandy clay loam with gravels in pockets	
5.	Ranika Singhola	2C5D4r2	505	Sandy loam to clay loam	
6	Hazipur	2C5D4j4	723	Sandy loam to clay loam	
7	Ghangola	2C5D4j7	514	Sandy loam to clay loam	
8	Sarmathhla	2C5E1s2	754	Sandy loam to clay loam	

9	Loh Singhani	2C5D4r5	476	Sandy loam to clay loam	

Source: - Department of Agriculture, Haryana

3.2.1 Flood and Drought Condition

The data collected from the revenue department reveals that the instances of flood and drought occur once in 10 years. The flood and drought resulted in low to very low yields of the crops.

Table 3. Flood and Drought condition

Sr. No.	Name of Micro- watersheds	Flood Incidence	Drought Incidence
1.	Daula	Once in a 10 Year	Once in a 10 year
2.	Mundawar		
3.	Satlaka		
4.	Bai Khera		
5	Ranika Singhola		
6	Hazipur		
7	Ghangola		
8	Sarmathhla		
9	Loh Singhani		

3.3 SOILS

3.3.1 Soil Erosion

In the identified nine micro watersheds, it is observed that due to light texture & less vegetative cover to increase the loss of soil in the watershed area. This results in degradation of agricultural land, deforestation and low organic matter contents Average annual rainfall is 494 mm of the area. In the watershed area the upper soil crest gets washed away in

the form of runoff during rainy season if heavy storm occur, which also carries valuable top soil (sheet). Soil erosion in respect of sheet is moderate. Majority of the watershed Community are dependent on agriculture. Agriculture suffers due to area being rain fed and due to deficit rains in the region, resulting in further deterioration of socio economic conditions of community.

3.3.2 Soil Salinity/Alkalinity (Salinity ingress)

There is moderate soil salinity in the Project and pH is normal and within the limits of 7.60 to 8.63.

Based on the soil samples analysis and reports the village wise distribution of pH is tabulated and shown in Table. 4.

Table 4. Soil pH and Salinity

Sr. No.	Name of Micro Watersheds	Soil pH	Type of salinity
1.	Daula	8.23	Low to moderate
2.	Mundawar	7.73	Low to moderate
3.	Satlaka	8.13-8.63	Normal to high Salinity
4.	Bai Khera	7.87-7.93	Low to moderate
5.	Ranika Singhola	8.0-8.3	Low to moderate
6.	Hazipur	7.97-8.53	Normal to high Salinity
7.	Ghangola	7.6	Low to moderate
8.	Sarmathhla	8.23	Low to moderate
9.	Loh Singhani	8.30-8.33	Normal to high Salinity

3.3.3 SOIL CLASSIFICATION

The Soil map is presented in **Annexure V. The fertility status of the project area, available nitrogen and phosphorus are low. However, the available pot ash 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 1 to class IV land is suited to agriculture. Classes V to VIII are not suitable for agriculture. These are used for pastures, forestry, and wildlife and recreation purposes and other industrial and township. Depending upon the degree of limitation and the kind of problems involved in management of soils, the land capability sub classes were indicated by adding the following limitation symbols to the capability classes:

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

The soils of the selected Watersheds have been grouped into two subclasses. 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 e_2s_2

These soils are moderately very deep, light to coarse loamy texture located on level to nearly level land and intra dunal plains. These soils are well drained, moderately permeable, and have low water holding capacity with slight to moderate 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 cost of land leveling.
2. Engineering measures like earthen embankments if require with drop structure for safe disposal of excess rainwater should be under taken.

3. Agronomic measures; mainly dry land farming, leguminous crop growing as mix cropping should be recommended.
4. Provide proper drainage system in low lying depression in the area.
5. Increase biomass through adopting agro- forestry on field bunds.
6. Provide community water storage tanks for supplementary irrigation during lean period.
7. Strengthening of defunct water courses for water conservation which is waste during irrigation.

Land capability subclass IV e_3s_3

These soils are greatly light textured soils developed on nearly level. The water holding capacity is very poor and the water and wind erosion hazard is moderate to severe.

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

1. Suitable soil conservation measures should be adopted to check water and wind erosion. Soils should be provided permanent vegetation (Agro forestry) cover to check further deterioration of soils and check wind erosion.
2. Soils would be occasionally cultivated in suitable crop rotation with indigenous grasses.
3. Land leveling should be done at 50% subsidy, because formers are not economically capable to bear the rate of land leveling.
4. Earthen Embankment and field bunding with agro- forestry should be provided to check water erosion and dune stabilization.
5. Provide community water storage tanks for supplementary irrigation during lean period.
6. Strengthening of defunct water courses for water conservation which is waste during irrigation.

3.3.5 Climatic Conditions

The average annual rainfall of the district is 494 mm (during the past 10 year's data). The highest rainfall is 864 mm during the year 2010 and lowest 200 mm during the year 2006. The uneven rainfall distribution is leading to run off soil

every year to the steams, rivulets and depressed area of the Daula Watershed (IWMP II). The year wise rainfall from 2004 to 2013 is presented in **Table.5.**

Table-5. Rainfall during the years 2004-13

Sr. No.	Year	Rainfall (in mm)
1	2004	654
2	2005	483
3	2006	200
4	2007	324
5	2008	624
6	2009	505
7	2010	864
8	2011	356
9	2012	559
10	2013	373
	Total Average	**494**

(Source: - Ground Water Cell, Gurgaon)

The mean maximum temperature is 49˚ C (May and June) and mean minimum is 2˚ C (January) of the district.

3.3.6 Physiography and Relief

Physiographically, the area is divided into two parts active and stabilized sand dunes and hilly area. The general Elevation in the area belongs to stabilized sand dunes, Interdunal plains and out cropped area (hilly) 196-287 m above mean sea level. Area experiences moderate rainfall and water is drained through fields and create temporary water logging/ stagnation conditions in depressions and along the canal. The elevation range and percentage slope distribution has been presented in **Table 6.**

Table 6. Physiography and Relief

Project Name	Elevation (MSL)	Slope Range (%)
Daula Watershed (IWMP II)	196-287 m	2-10% and above

3.4 LAND AND AGRICULTURE

The land holding pattern of the villages under Daula Watershed shows that the majority of the land holding is 1-3 ha. In the majority of Watershed area suffering from assured irrigation source has forced the majority of the farmers adopt side income source to survive because the rainfed agriculture not fulfill of their daily needs. The near est Industrial Area is Gurgaon. This affects directly the demographic profile of the village.

The major crops Bajra, Gwar, Arahar, Green fodder and pulses in Kharif under rainfed conditions. The major crops during Rabi Wheat, Green fodder and se asonal ve getables, Gram, Mustard in rain fed and i rrigated co nditions. The soil and water co nservation m easures such as Engineering like Roof t op r ainwater Harvesting, R amp, i nlet & out let, E arthen Embankments /Marginal bun ds with pucca outlet, S mall e arthen em bankment w ith ve getative su pport, C onstruction of Check Dam, w ater c onveyance syst em etc. The pr oject w ould help t he f armers to t ake cr op pr oduction w hich will enhance t he net pr oduction va lue. The f ollowing pl ants are co mmonly observed i n t he P roject A rea. The nat ural vegetation in the project area is exhibited in **Table 7.**

Table 7. NATURAL VEGETATION

Sr. No.	Trees	Fruits	Grasses and Shrubs
1	Neem	Jamun	Shanti
2	Pipal	Guava	Munj
3	Sisham	Sahsoot	Daab
4	Botal Brush	Mango	Motha

Sr. No.	Trees	Fruits	Grasses and Shrubs
5	Gulmohar		Satyanashi
6	Bakayan		Barna
7	Sukhchain		Congress Grass

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
2141	950	745	-	3836

3.4.2 AGRICULTURE/PATTERN

Table 9. Agriculture/ Pattern

Sr. No.	Name of Micro Watersheds	Land under agriculture use (ha)	Net Sown area (ha)	
			One time	Two times
1	Daula	656	553	421
2	Satlaka	439	376	271
3	Mundawar	120	106	72
4	Bai Khera	437	378	264
5.	Ranika Singhola	396	342	248
6.	Hazipur	605	501	392
7.	Ghangola	473	396	301
8.	Sarmathla	672	587	406
9.	Loh Singhani	398	343	236
		4196	**3582**	**2611**

(Source: Department of Agriculture, Haryana)

3.4.3 IRRIGATION

Lack of Assured Irrigation Facilities

The area being located in the canal network where surface water availability is uncertain, however the quality of ground water under shallow depth is marginal where the farmers are exploiting the ground water for irrigation. The present source of irrigation in the watershed has been tabulated in **Table 10.**

Table 10. Irrigation Pattern.

Sr. No	Name of Micro Watersheds	Source 1: Canal		Source 2: Groundwater (Tube wells)	
		Availability months	Net area (ha)	Availability months	Net area (ha)
1	Daula	-	-	July to June	208
2	Mundawar	-	--	July to June	37
3	Satlaka	July to June	8	July to June	112
4	Bai Khera	-	-	July to June	4
5	Ranika Singhola	-	-	July to June	15
6	Hazipur	July to June	27	July to June	186
7	Ghangola	-	-	July to June	34
8	Sarmathhla	-	-	July to June	54
9	Loh Singhani	July to June	12	July to June	4

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

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. No.	Village	Wheat				Mustard			
		Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer

1	Lohsinghani	237	976203	4119	D.A.P./ Urea	1	1713	1713	D.A.P. Urea/Sulphur
2	Ghengola	192	790848	4119	D.A.P./ Urea	33	56529	1713	D.A.P. Urea/Sulphur
3	Bai Khera	106	436614	4119	D.A.P./ Urea	28	47964	1713	D.A.P. Urea/Sulphur
4	Hazipur	188	774372	4119	D.A.P./ Urea	39	66807	1713	D.A.P. Urea/Sulphur
5	Tolani	170	700230	4119	D.A.P./ Urea	5	8565	1713	D.A.P. Urea/Sulphur
6	Ranika Singhola	86	354234	4119	D.A.P./ Urea	37	63381	1713	D.A.P. Urea/Sulphur
7	Johlaka	182	749658	4119	D.A.P./ Urea	6	10278	1713	D.A.P. Urea/Sulphur
8	Bhogpur	92	378948	4119	D.A.P./ Urea	6	10278	1713	D.A.P. Urea/Sulphur
9	Khuntpuri	144	593136	4119	D.A.P./ Urea	14	23982	1713	D.A.P. Urea/Sulphur
10	Rahaka	98	403662	4119	D.A.P./ Urea	7	11991	1713	D.A.P. Urea/Sulphur
11	Satlaka	93	383067	4119	D.A.P./ Urea	1	1713	1713	D.A.P. Urea/Sulphur
12	Lala Kherli	130	535470	4119	D.A.P./ Urea	14	23982	1713	D.A.P. Urea/Sulphur
13	Kuliyaka	125	514875	4119	D.A.P./ Urea	19	32547	1713	D.A.P. Urea/Sulphur
14	Bidwaka	113	465445	4119	D.A.P./ Urea	1	1713	1713	D.A.P. Urea/Sulphur
15	Khatrika	116	477804	4119	D.A.P./ Urea	-	-	-	D.A.P. Urea/Sulphur
16	Sarmthla	613	2524947	4119	D.A.P./ Urea	4	6852	1713	D.A.P. Urea/Sulphur
17	Mandawar	111	45729	4119	D.A.P./ Urea	15	25695	1713	D.A.P. Urea/Sulphur
18	Bilaka	177	729063	4119	D.A.P./ Urea	20	34260	1713	D.A.P.

									Urea/Sulphur
19	Daula	225	926775	4119	D.A.P./ Urea	80	137040	1713	D.A.P. Urea/Sulphur
20	Jalalpur	8	32952	4119	D.A.P./ Urea	8	13704	1713	D.A.P. Urea/Sulphur
21	Khobri	11	45309	4119	D.A.P./ Urea	5	8565	1713	D.A.P. Urea/Sulphur
		3217	**12839341**			**343**	**587559**		

Table 11 B. Crop Details (Kharif)

Sr. No.	Village	Bajra				Paddy				Gwar/Jawar			
		Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer
1	Lohsinghani	4	7788	1947	FYM/Urea/ DAP	224	730240	3260	FYM/Urea /DAP	-	-	-	FYM/Urea
2	Ghengola	89	173283	1947	FYM/Urea/ DAP	11	35807	3260	FYM/Urea /DAP	1/29	1580	1580	FYM/Urea
3	Bai Khera	71	138237	1947	FYM/Urea/ DAP	36	117360	3260	FYM/Urea /DAP	3	4740	1580	FYM/Urea
4	Hazipur	185	360195	1947	FYM/Urea/ DAP	3	9780	3260	FYM/Urea /DAP	6/13	9480	1580	FYM/Urea
5	Tolani	152	295944	1947	FYM/Urea/ DAP	-	-	-	FYM/Urea /DAP	4	6320	1580	FYM/Urea
6	Ranika Singhola	92	179124	1947	FYM/Urea/ DAP	-	-	-	FYM/Urea /DAP	11	17380	1580	FYM/Urea
7	Johlaka	73	142131	1947	FYM/Urea/ DAP	-	-	-	FYM/Urea /DAP	0/5	-	-	FYM/Urea
8	Bhogpur	54	105138	1947	FYM/Urea/ DAP	-	-	-	FYM/Urea /DAP	0/2	-	-	FYM/Urea
9	Khuntpuri	54	99297	1947	FYM/Urea/	47	153220	3260	FYM/Urea	10/16	15800	1580	FYM/Ur

					DAP				/DAP				ea
10	Rahaka	18	35046	1947	FYM/Urea/ DAP	34	110840	3260	FYM/Urea /DAP	3/2	4740	1580	FYM/Urea
11	Satlaka	26	50622	1947	FYM/Urea/ DAP	37	120620	3260	FYM/Urea /DAP	1/3	1580	1580	FYM/Urea
12	Lala Kherli	98	190806	1947	FYM/Urea/ DAP	1	3260	3260	FYM/Urea /DAP	24/6	37920	1580	FYM/Urea
13	Kuliyaka	81	157707	1947	FYM/Urea/ DAP	51	166260	3260	FYM/Urea /DAP	-	-	-	FYM/Urea
14	Bidwaka	3	5841	1947	FYM/Urea/ DAP	64	208640	3260	FYM/Urea /DAP	-	-	-	FYM/Urea
15	Khatrika			1947	FYM/Urea/ DAP	114	371640	3260	FYM/Urea /DAP	0/2	-	-	FYM/Urea
16	Sarmthla	13	25311	1947	FYM/Urea/ DAP	470	1532200	3260	FYM/Urea /DAP	-	-	-	FYM/Urea
17	Mandawar	91	177177	1947	FYM/Urea/ DAP	-	-	-	FYM/Urea /DAP	0/3	-	-	FYM/Urea
18	Bilaka	57	110979	1947	FYM/Urea/ DAP	-	-	-	FYM/Urea /DAP	0/7	-	-	FYM/Urea
19	Daula	144	280368	1947	FYM/Urea/ DAP	-	-	-	FYM/Urea /DAP	5/6	7900	1580	FYM/Urea
20	Jalalpur	11	21417	1947	FYM/Urea/ DAP	-	-	-	FYM/Urea /DAP	-	-	-	FYM/Urea
21	Khobri	4	7788	1947	FYM/Urea/ DAP	-	-	-	FYM/Urea /DAP	-	-	-	FYM/Urea

3.4.5 Livestock

Farmers in these villages have managing 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 nut ritive f eed. I ntroduction of cr oss breed co ws and m urrah buf falo w ith bet ter m ilk production w ill popularize dairy farming in the area. Also, the farmyard manure procured from these animals would help improve the soil healt

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

Sr. No.	Villages	Buffalo (8Lit/per day/annum) for 6 months	Cow (5Lit/per day/annum) for 6 months	Sheep	Goat	Camel
1	Lohsinghani	537/4296/723280	106/530/95400	12	-	-
2	Ghengola	706/5648/1016640	50/250/45000	-	-	-
3	Bai Khera	299/2392/430560	29/145/26100	-	-	-
4	Hazipur	480/3840/691200	108/540/97200	-	17	-
5	Tolani	107/856/154080	16/80/14400	-	9	-
6	Ranika Singhola	324/2592/466560	178/890/160200	-	-	-
7	Johlaka	268/2144/385920	269/1345/242100	-	83	-
8	Bhogpur	193/1544/277920	41/205/36900	-	46	-
9	Khuntpuri	337/2696/485280	36/180/32400	-	-	-
10	Rahaka	110/880/158400	17/85/15300	-	-	-
11	Satlaka	270/2160/388800		-	-	-
12	Lala Kherli	603/4824/868320	63/315/56700	-	-	-
13	Kuliyaka	285/2280/410400	71/355/63900	-	-	-
14	Bidwaka	70/560/100800	-	-	-	-
15	Khatrika	22/176/31680	5/25/4500	-	-	-
16	Sarmthla	836/6688/1203840	65/325/58500	-	-	-
17	Mandawar	250/2000/360000	54/270/48600	-	364	-
18	Bilaka	352/2816/506880	54/270/48600	-	-	-
19	Daula	936/7488/1347840	117/585/105300	-	59	-
20	Jalalpur	-	-	-	-	-
21	Khobri	-	-	-	-	-

(Source: Animal Husbandry, Gurgaon)

***Average Yield of Buffalo is 7-8 Lit/day and cow yield 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 over the district 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 level of watershed varies from 4-27 m depth. 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 Daula Watershed (IWMP II)

Sr. No.	Name of Villages	Source	Pre-Project level (m)
1	Lohsinghani	Well	4.10
2	Ghengola	Well	5.87
3	Bai Khera	Well	8.10
4	Hazipur	Well	11.85
5	Tolani	Well	11.20
6	Ranika Singhola	Well	10.90
7	Johlaka	Well	11.95
8	Bhogpur	Well	10.50
9	Khuntpuri	Well	12.00
10	Rahaka	Well	7.10
11	Satlaka	Well	7.10
12	Lala Kherli	Well	22.15
13	Kuliyaka	Well	7.30
14	Bidwaka	Well	6.30
15	Khatrika	Well	7.10
16	Sarmthla	Well	6.87
17	Mandawar	Well	22.10
18	Bilaka	Well	10.90
19	Daula	Well	26.18
20	Jalalpur	Well	26.18

21	Khobri	Well	26.18

The area of watershed is underlain by fresh to marginal quality of ground water. In general, the area being under shallow water table condition is fresh whereas the area in village in micro-watershed Bilakha and Ranika Singhola (Bilakha, Bhogpur, Tolani and Ranika Singhola villages) quality of water is marginal. This is due to the deeper water table depth (from 10 to 15 m or more). The water quality map of the area is presented in **Annexure-IX**. The source of drinking water supply is through canal network and tube well where the quality of ground water is acceptable for drinking purposes in the area.

b. Water table fluctuation

From the availability of the data from the period June 1974 to June 2014, it is observed that the water table is declining at the rate 43 cm per year (Ground water cell record).

The average Sohna block seasonal fluctuation i.e. Pre and Post monsoon period is 18 cm.

c. Rain water harvesting and Recharging

It has been proposed to make rainwater-harvesting by construction of water harvesting structure for subsequent use and in the of the areas of deep water table conditions (>10m), recharging is recommended. The provision of this has been provided in the project proposal.

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

Table14. Detail of Common Property Resources

Name of the Project	CPR Particulars	Total Area, ha (Area owned / in possession of)				Area available for treatment (ha)			
		Pvt. Person	Govt.	PRI	Any Other	Pvt. Person	Govt.	PRI	Any Other
Daula Watershed (IWMP II)	Waste land	125	150	550	340	100	120	350	250
	Pasture	-	25	30	5	-	25	30	5
	Orchards	-	-	-	-	-	-	-	-
	Village w ood lot	-	-	-	-	-	-	-	-
	Forest	-	-	-	-	-	-	-	-
	Village ponds, lake	-	12	25	2	-	12	25	2
	Community Buildings	-	-	-	-	-	-	-	-
	Weekly Mkts		-	-	-	-	-	-	-
	Permanent Mkts	-		-	-	-	-	-	-
	Temples/place of worship	-	-	-	-	-	-	-	-
	Others	125	150	550	340	100	120	350	250

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

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

3.5.1 Demographic Status

Table 15. Demographic Status/ Population Pattern

Sr. No.	Name of the Micro watershed	Name of villages	Total no. of houses	Total Population			SC			
				Male	Female	Total	Male	Female	Total	%age
1		Daula	551	1610	1459	3069	231	195	426	29.2
2		Jalapur	-	-	-	-	-	-	-	-
3		Khobri	-	-	-	-	-	-	-	-
4		Mundawar	195	619	547	1167	103	94	197	36.0
5		Satlaka	155	556	497	1053	13	13	26	5.2
6		Bidhwaka	29	109	99	208	0	0	0	0.0
7		Rahaka	61	168	149	317	0	0	0	0.0
8		Jolaka	81	251	208	459	0	0	0	0.0
9		Bai Khera	92	279	255	534	89	91	180	70.6
10		Kuliaka	117	481	427	908	23	19	42	9.8
11		Lala Kherli	364	1220	1043	2263	249	226	475	45.5
12		Ranika Singhola	77	303	256	559	33	33	66	25.8
13		Tolni	70	229	213	442	37	35	72	33.8
14		Bhogpur	146	383	351	734	24	19	43	12.3
15		Hazipur	349	948	928	1876	205	214	419	45.2
16		Khutpuri	112	329	297	626	59	50	109	36.7
17		Bilaka	104	373	336	709	0	0	0	0.0
18		Ghangola	351	1103	949	2052	244	277	521	54.9
19		Sarmathhla	424	1310	1067	2377	154	136	290	27.2
20		Loh Singhani	346	989	870	1859	598	521	1119	60.2
21		Khathrika	12	35	26	61	0	0	0	0.0
			3636	**11295**	**9977**	**21273**	**2062**	**1923**	**3985**	**39.9**

(Source- District Census 2011)

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

Sr.	Name of	Total	Literacy

No.	villages	population	Total Literates	% age	Male	% age	Female	% age
1	Daula	3069	2155	70.2	1256	58.3	899	41.7
2	Jalapur	-	-	-	-	-	-	-
3	Khobri	-	-	-	-	-	-	-
4	Mundawar	1167	788	67.5	465	59.0	323	41.0
5	Satlaka	1053	485	46.1	353	72.8	132	27.2
6	Bidhwaka	208	98	47.1	70	71.4	28	28.6
7	Rahaka	317	225	71.0	133	59.1	92	40.9
8	Jolaka	459	314	68.4	190	60.5	124	39.5
9	Bai Khera	534	346	64.8	208	60.1	138	39.9
10	Kuliaka	908	345	38.0	250	72.5	95	27.5
11	Lala Kherli	2263	1410	62.3	888	63.0	522	37.0
12	Ranika Singhola	559	300	53.7	175	58.3	125	41.7
13	Tolni	442	294	66.5	177	60.2	117	39.8
14	Bhogpur	734	349	47.5	227	65.0	122	35.0
15	Hazipur	1876	1282	68.3	754	58.8	528	41.2
16	Khutpuri	626	413	66.0	259	62.7	154	37.3
17	Bilaka	709	464	65.4	280	60.3	184	39.7
18	Ghangola	2052	1434	69.9	883	61.6	551	38.4
19	Sarmathhla	2377	1504	63.3	913	60.7	591	39.3
20	Loh Singhani	1859	1290	69.4	742	57.5	548	42.5
21	Khathrika	61	55	90.2	33	60.0	22	40.0
		21273	**13551**	**63.7**	**8256**	**60.9**	**5295**	**39.1**

(Source- District Census- 2011)

Table 17. EMPLOYMENT STATUS

Sr. No.	Name of Micro Watersheds	Name of villages	Schedule caste		Cultivators		Agricultural labourers		Household industry workers		Other workers	
			Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1	Daula S/W/S	Daula	231	195	162	9	7	2	3	1	268	35

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
2	(IWMP-II)	Jalapur	-	-	-	-	-	-	-	-	-	-
3		Khobri	-	-	-	-	-	-	-	-	-	-
4		Mundawar	103	94	31	35	11	1	6	2	155	20
5		Satlaka	13	13	98	57	3	1	2	4	45	18
6		Bidhwaka	0	0	19	0	0	0	1	0	13	1
7		Rahaka	0	0	16	0	3	0	0	0	36	4
8		Jolaka	0	0	71	1	2	0	0	0	29	5
9		Bai Khera	89	91	46	2	1	0	1	0	51	6
10		Kuliaka	23	19	62	3	47	3	0	0	64	3
11		Lala Kherli	249	226	215	5	46	35	1	0	244	20
12		Ranika Singhola	33	33	119	2	9	0	2	0	3	0
13		Tolni	37	35	23	0	8	0	0	0	29	9
14		Bhogpur	24	19	74	0	39	7	0	0	23	4
15		Hazipur	205	214	225	2	69	3	1	0	126	15
16		Khutpuri	59	50	87	9	9	3	0	0	54	79
17		Bilaka	0	0	88	7	7	2	2	1	65	55
18		Ghangola	244	277	234	31	3	1	1	1	185	26
19		Sarmathhla	154	136	161	10	39	4	1	1	347	270
20		Loh Singhani	598	521	108	29	65	28	2	3	220	275
21		Khathrika	0	0	13	0	0	0	0	0	1	0
	Total		**2062**	**1923**	**1852**	**202**	**368**	**90**	**23**	**13**	**1958**	**845**

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 Daula 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/persons
1	Lohsinghani	1859	189	120	For Work	5500
2	Ghengola	2052	254	150	For Work	5600
3	Bai Khera	534	56	150	For Work	5500
4	Hazipur	1876	126	150	For Work	5900
5	Tolani	442	45	120	For Work	5400
6	Ranika Singhola	559	55	120	For Work	5600
7	Johlaka	459	62	150	For Work	5900
8	Bhogpur	734	77	180	For Work	5500
9	Khuntpuri	626	69	180	For Work	5600
10	Rahaka	317	42	150	For Work	5500
11	Satlaka	1053	86	150	For Work	5600
12	Lala Kherli	2263	196	150	For Work	5700
13	Kuliyaka	908	102	120	For Work	5500
14	Bidwaka	208	39	120	For Work	5600
15	Khatrika	61	5	150	For Work	5700
16	Sarmthla	2377	179	120	For Work	5800
17	Mandawar	1167	73	180	For Work	5700
18	Bilaka	709	61	150	For Work	5600
19	Daula	3069	246	150	For Work	5500
20	Jalalpur	-	-	-	-	-
21	Khobri	-	-	-	-	-

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	Lohsinghani	346	130	38
2	Ghangola	351	217	62
3	Bai Khera	92	72	78
4	Hazipur	349	50	14
5	Tolani	70	17	24
6	Ranika Singhola	77	7	9
7	Johlaka	81	22	27
8	Bhogpur	146	133	91
9	Khuntpuri	112	40	36
10	Rahaka	61	21	34
11	Satlaka	155	72	47
12	Lala Kherli	364	150	41
13	Kuliyaka	117	46	39
14	Bidwaka	29	11	38
15	Khatrika	12	-	-
16	Sarmthla	424	186	44
17	Mandawar	195	101	52
18	Bilaka	104	27	26
19	Daula	551	104	19
20	Jalalpur	-	-	-
21	Khobri	-	-	-

(Source: District Administration Gurgaon, Haryana)

INFRASTRUCTURE DETAILS

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

Table 20. Village Infrastructure

Sr. No.	Name of villages	Bank Y/N	Post office Y/N	School Primary/High/Sr. Sec.	Milk Collection Centre Y/N	Pucca Road to Village Y/N	Health Facility Govt/Private Y/N	Veterinary facility Y/N
1	Lohsinghani	No	No	Primary/Middle	No	Yes	Yes	No
2	Ghengola	Yes	Yes	Primary/High/Sr.Sec.	No	Yes	No	Yes
3	Bai Khera	No	No	Primary	No	Yes	No	No
4	Hazipur	No	Yes	Primary/High	Yes	Yes	No	Yes
5	Tolani	No	No	Primary	No	Yes	No	No
6	Ranika Singhola	No	No	Primary	No	Yes	No	No
7	Johlaka	No	No	Primary	No	Yes	No	No
8	Bhogpur	No	No	Primary	No	Yes	No	No
9	Khuntpuri	No	No	Primary	No	Yes	No	No
10	Rahaka	No	No	Primary	No	Yes	No	No
11	Satlaka	No	No	Primary	No	Yes	No	No
12	Lala Kherli	No	No	Primary/High	No	Yes	No	No
13	Kuliyaka	No	No	Primary	No	Yes	No	No
14	Bidwaka	No	No	No	No	Yes	No	No
15	Khatrika	No	No	No	No	Yes	No	No
16	Sarmthla	Yes	No	Primary/Middle	Yes	Yes	Yes	No
17	Mandawar	No	No	Primary/Middle	No	Yes	No	No
18	Bilaka	No	No	Primary/Middle	No	Yes	No	No
19	Daula	Yes	Yes	Primary/High	Yes	Yes	Yes	Yes
20	Jalalpur	No	No	-	No	Yes	No	No
21	Khobri	No	No	-	No	Yes	No	No

FACILITIES/ HOUSEHOLD ASSETS

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

Sr.	Name of	Total	HHs	HHs with phones	HHs with vehicles	HHs	HHs	HHs	HHs

No.	villages	No. of Houses	with Safe latrines	Landline	Mobile	2 wheelers	4 wheelers	with TV sets	with cooking gas	with drinking water	with fridge
1	Lohsinghani	346	230	2	309	210	30	295	80	346	89
2	Ghangola	351	256	5	310	260	30	301	95	351	110
3	Bai Khera	92	70	1	85	50	10	80	30	92	35
4	Hazipur	349	216	3	302	220	40	398	75	349	80
5	Tolani	70	42	1	68	60	20	65	40	70	30
6	Ranika Singhola	77	45	-	73	70	15	70	35	77	20
7	Johlaka	81	67	-	77	75	20	80	54	81	60
8	Bhogpur	146	80	-	130	89	5	90	35	146	25
9	Khuntpuri	112	110	-	95	87	12	96	40	112	35
10	Rahaka	61	38	-	60	53	8	58	28	61	24
11	Satlaka	155	61	-	150	145	15	138	65	155	42
12	Lala Kherli	364	210	2	350	345	60	352	85	364	78
13	Kuliyaka	117	40	-	108	95	10	86	35	117	32
14	Bidwaka	29	10	-	25	15	3	20	10	29	8
15	Khatrika	12	8	-	12	10	8	10	10	12	7
16	Sarmthla	424	386	4	400	375	25	380	135	386	130
17	Mandawar	195	156	3	190	182	25	179	60	195	86
18	Bilaka	104	40	1	102	95	18	97	52	104	80
19	Daula	551	545	20	550	532	100	540	95	551	187
20	Jalalpur	-	-	-	-	-	-	-	-	-	-
21	Khobri	-	-	-	-	-	-	-	-	-	-

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 Daula Watershed (IWMP II)

Sr.	Name of	Agriculture	Animal	Casual	Others in	Total in Rs.

No.	villages	in Rs. P.A.	Husbandry in Rs. P.A.	labour in Rs. P.A.	Rs. P.A.	
1	Lohsinghani	19259	14237	4216	4169	41881
2	Ghangola	16392	13575	4721	4436	39128
3	Bai Khera	16190	13172	4890	4090	38342
4	Hazipur	18250	13869	4517	3921	40557
5	Tolani	19213	15439	4881	4412	43945
6	Ranika Singhola	18816	16012	4771	4280	43879
7	Johlaka	17812	14829	5019	4712	42365
8	Bhogpur	16999	13831	5128	4815	40773
9	Khuntpuri	18941	15412	4832	4582	43767
10	Rahaka	17682	15981	4750	4890	43303
11	Satlaka	16351	13239	3989	4029	37608
12	Lala Kherli	18389	14837	4925	4315	42466
13	Kuliyaka	16862	15367	4512	4015	40756
14	Bidwaka	15590	14272	3835	3790	37487
15	Khatrika	18070	16162	5205	4840	44177
16	Sarmthla	19360	15892	4123	3920	43295
17	Mandawar	16869	13190	4729	3861	33649
18	Bilaka	17667	14221	4812	4592	41292
19	Daula	18390	15289	5109	4769	43557
20	Jalalpur	17512	14324	4819	4312	40967
21	Khobri	16375	13569	4720	4230	33898

3.5.4 Comparative Status of crop Productivity

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

3.6 REASONS FOR LOW PRODUCTIVITY

- Moderate to severe erosion hazard
- Poor physical and chemical properties of the soils are light in texture with boulders in pockets and poor fertility.

- Low water holding/ retention capacity.
- Medium to Moderate permeability.
- Low organic carbon content.
- Poor phosphorous and medium potash nutrients availability.
- Lack of assured irrigation facility.
- Acceptance of hybrid/ high yielding varieties is very low.
- Irregular and erratic rainfall: there is long span between two subsequent rainfalls in the area.
- Sudden change in climate of the area.
- Essential micro- nutrient deficiency in the soil.
- Full and partial dependence of monsoon.
- Low use of fertilizer per unit cropped area.
- Lack of economic condition of farmers.
- Lack of good quality of seeds and fertilizer.
- Lack of post harvesting facilities such as storage and marketing.
- Poor ground water quality.

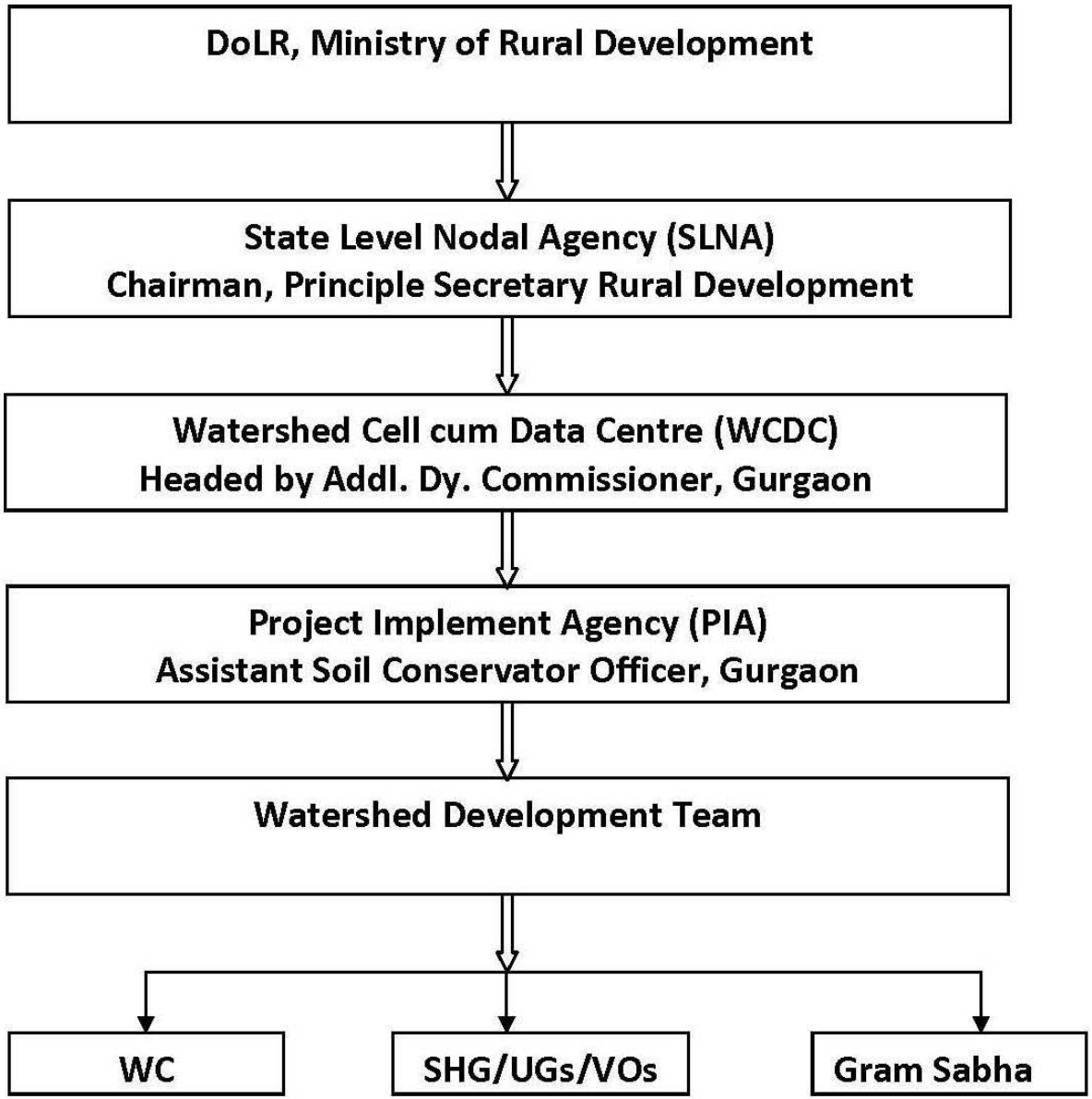
CHAPTER-4

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. Dy. Commissioner, Gurgaon
Project Implement Agency (PIA)
Assistant Soil Conservator Officer, Gurgaon
Watershed Development Team
WC
SHG/UGs/VOs
Gram Sabha

4.2 STATE LEVEL NODAL AGENCY, HARYANA

State Level Nodal Agency (SLNA) is headed by Chief Executive Officer and supported by Technical Experts is fully functional. The regular meetings with PIA and other stake holders are held to provide necessary guidance to them 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, GURGAON

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 that 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 Gurgaon is selected by the State Level Nodal Agency (SLNA) for Integrated Watershed Management Programme (IWMP) in Haryana. In the district Gurgaon, where the area of development is 10921 ha, a separate dedicated unit, called the Watershed Cell cum Data Centre has been established which will oversee the implementation of watershed programme. The PIA is responsible for implementation of watershed project. Soils and Water Conservation Department, Gurgaon. With the 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	Daula Watershed (IWMP-II)	i) Type of organization	Govt Organization
		ii) Name of organization	Department of Agriculture, Haryana
		iii) Designation & Address	ASCO, Gurgaon
		iv) Telephone	
		v) Fax	-----
		vi) E-mail	ascogurgaon@gmail.com

The PIA is well competent to effectively manage this project and has a good r apport with the village co mmunity. 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 for its 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 of fice with officials from the Gurgaon 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 below: **(Table 2)**

Table 2. Watershed Committees (WC) Details

Name of Micro Watersheds	Name of President	Name of Secretary	Name of Members
Lohsinghani	Sohanwati	Balwant singh	Pratap,Tarachand,Neetu,Keval,Mangal,Mukesh,Satish,Rasudhir
Ganghola	Ramkumar	Jangjeet singh	Rajkumar,Brijpal,Kheri singh,Rambir,Bhupan devi,Santra,Pratap,Bhagwan,Raju,Pooran,Jwahar,Devkaran
Baikhera	Birsingh	Satyapal	Chetram,Durga,Udayveer,Veena,Pinki,Anguri,Krishna,Devilal,Rajpal
Hajipur	Rajni	Hariparkash	Rajender,Trilok,Karamchand,Bijender,bijender,Saroj,Pawan,Thakurlal,sanehlata
Tolni	Bijender	Dheeraj	Ajeet,Ashok,Udaysingh,Beersingh,Giriraj,Rami,Rajwati,singhra,Pinki
Rani ka singhola	Bijender	Dheeraj	Gaajraj,Yogender,Rajbir,Babli,Bimla,Rajkumar,Rajender,Joginder
Johlaka	Baladevi	Satyender	Parshuram,sukhbir,dharamvati,kavita,rajender,karanpal,satyaveer,dharamveer,bhudhan
Bhogpur	Baladevi	sonu	Durga,suban,sumitra,jagdish,dharambeer,dalsingh,bhawarsingh,satyaveer,amarsingh
khutpuri	Indra devi	Ajit	Bhagwan shai,dharamveer,murti devi,vinod ,pyarelal,rekha,lakhmi,dhaniram,vedram
Satlaka	Jakaria	Javed	Chandermal,sahina,suman,sahil,ruksina,suleman
Rahaka	Jakaria	Javed	Ashok,Omvati,bhagwat,bhawar

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 is 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 DAULA 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
Daula Watershed (IWMP II)	5361	4660	55920000	Administrative costs	559200	559200	1677600	1677600	1118400	**5592000**
				Monitoring	0	0	0	559200	0	**559200**
				Evaluation	0	139800	139800	139800	139800	**559200**
				Entry point activities	2236800	0	0	0	0	**2236800**
				Institution and capacity building	0	2796000	0	0	0	**2796000**
				Detailed project report	559200	0	0	0	0	**559200**
				Watershed development works	0	4473600	8947200	9506400	8388000	**31315200**
				Livelihood activities for the asset less persons	0	0	1677600	2796000	559200	**5032800**
				Production system and micro enterprises	0	0	1677600	2236800	1677600	**5592000**
				Consolidation phase	0	0	0	0	1677600	**1677600**
				Total	**3355200**	**7968600**	**14119800**	**16915800**	**13560600**	**55920000**
				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: Daula)

(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**	**863550**	**1530150**	**1833150**	**1469550**	**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 3. PHASING YEAR WISE (Name of the Micro Watershed: Mundawar)

(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**	**846450**	**1499850**	**1796850**	**1440450**	**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: Satlaka)
(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
510	6120000	Administrative costs	61200	61200	183600	183600	122400	**612000**
		Monitoring	0	0	0	61200	0	**61200**
		Evaluation	0	15300	15300	15300	15300	**61200**
		Entry point activities	244800	0	0	0	0	**244800**
		Institution and capacity building	0	306000	0	0	0	**306000**
		Detailed project report	61200	0	0	0	0	**61200**
		Watershed development works	0	489600	979200	1040400	918000	**3427200**
		Livelihood activities for the asset less persons	0	0	183600	306000	61200	**550800**
		Production system and micro enterprises	0	0	183600	244800	183600	**612000**
		Consolidation phase	0	0	0	0	183600	**183600**
		Total	**367200**	**872100**	**1545300**	**1851300**	**1484100**	**6120000**
		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: Bai Khera)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
510	6120000	Administrative costs	61200	61200	183600	183600	122400	**612000**
		Monitoring	0	0	0	61200	0	**61200**
		Evaluation	0	15300	15300	15300	15300	**61200**
		Entry point activities	244800	0	0	0	0	**244800**
		Institution and capacity building	0	306000	0	0	0	**306000**
		Detailed project report	61200	0	0	0	0	**61200**
		Watershed development works	0	489600	979200	1040400	918000	**3427200**
		Livelihood activities for the asset less persons	0	0	183600	306000	61200	**550800**
		Production system and micro enterprises	0	0	183600	244800	183600	**612000**
		Consolidation phase	0	0	0	0	183600	**183600**
		Total	**367200**	**872100**	**1545300**	**1851300**	**1484100**	**6120000**
		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: Ranika Singhola)

(BUDGET AT A GLANCE)

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

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

Area in Hectares and
Funds in Rs.

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

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
510	6120000	Administrative costs	61200	61200	183600	183600	122400	**612000**
		Monitoring	0	0	0	61200	0	**61200**
		Evaluation	0	15300	15300	15300	15300	**61200**
		Entry point activities	244800	0	0	0	0	**244800**
		Institution and capacity building	0	306000	0	0	0	**306000**
		Detailed project report	61200	0	0	0	0	**61200**
		Watershed development works	0	489600	979200	1040400	918000	**3427200**
		Livelihood activities for the asset less persons	0	0	183600	306000	61200	**550800**
		Production system and micro enterprises	0	0	183600	244800	183600	**612000**
		Consolidation phase	0	0	0	0	183600	**183600**
		Total	**367200**	**872100**	**1545300**	**1851300**	**1484100**	**6120000**
		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: Ghangola)
(BUDGET AT A GLANCE)

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

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

Area in Hectares and
Funds in Rs.

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

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
700	8400000	Administrative costs	84000	84000	252000	252000	168000	**840000**
		Monitoring	0	0	0	84000	0	**84000**
		Evaluation	0	21000	21000	21000	21000	**84000**
		Entry point activities	336000	0	0	0	0	**336000**
		Institution and capacity building	0	420000	0	0	0	**420000**
		Detailed project report	84000	0	0	0	0	**84000**
		Watershed development works	0	672000	1344000	1428000	1260000	**4704000**
		Livelihood activities for the asset less persons	0	0	252000	420000	84000	**756000**
		Production system and micro enterprises	0	0	252000	336000	252000	**840000**
		Consolidation phase	0	0	0	0	252000	**252000**
		Total	**504000**	**1197000**	**2121000**	**2541000**	**2037000**	**8400000**
		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: Loh Singhani)
(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
460	5520000	Administrative costs	55200	55200	165600	165600	110400	**552000**
		Monitoring	0	0	0	55200	0	**55200**
		Evaluation	0	13800	13800	13800	13800	**55200**
		Entry point activities	220800	0	0	0	0	**220800**
		Institution and capacity building	0	276000	0	0	0	**276000**
		Detailed project report	55200	0	0	0	0	**55200**
		Watershed development works	0	441600	883200	938400	828000	**3091200**
		Livelihood activities for the asset less persons	0	0	165600	276000	55200	**496800**
		Production system and micro enterprises	0	0	165600	220800	165600	**552000**
		Consolidation phase	0	0	0	0	165600	**165600**
		Total	**331200**	**786600**	**1393800**	**1669800**	**1338600**	**5520000**
		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. Those groups will be revived and new ones were formed depending upon willingness of the interest groups. The type of activities these groups want pursue and their capacity building requirements were 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, micro-watershed wise and village wise with the lined 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 out come of participatory rural appraisal and out come 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, Soil fertility, Land Capability Classification, Ground Water Depth and Quality, Proposed and existing Activities of works. All the works proposed in the DPR are location specific and are as per the local demand and socio- economic conditions of the watersheds.

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

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

Strengths

- **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
- Poor deep ground water quality for irrigation
- 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

- ❖ Available Rain Water harvesting for life saving irrigation.
- ❖ Promotion of organic farming.
- ❖ Dry land horticulture activities.
- ❖ Provide training on dairy farming and other income generating activities.
- ❖ Promotion of nursery raising and pasture development.
- ❖ **Consumptive use of ground water.**

Threats

There are few negative issues that may have adverse effect

- ❖ Unreliable rainfall.
- ❖ Absence of assured irrigation and poor ground water quality.
- ❖ 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.
- ❖ Frequent droughts.
- ❖ Poor avenues for employment.
- ❖ Wild life menace.

CAPACITY BUILDING- 5%
27, 96,000/-

6.2 Capacity Building

1. Introduction

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

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

2. Vision

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

3. Need

The term Capacity Development is understood as the development of peoples, organizations and societies' 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, already 47 projects 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 the current action plan is primarily prepared to 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 Gurgaon District**

Sr. 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**				
	Gurgaon District	Members of Watershed Committees @ 10 per committee would also include accompanying WDT Members.	320	300-350	1
02	Block Level Functional Programmes for Secretaries of Watershed Committees. **Two Days**				
	Gurgaon District	Secretaries of Village Watershed Committees	32	35-40	1
03	Project Level Sensitization Camps for WC **One Days**				
	Gurgaon District	Members of Watershed Committees @ 10 Persons (Tentative) per WC	320	50	6
04	Village Level Awareness Camps on IWMP at Micro Watershed Level for User Groups **One Day**				
	Gurgaon District	Approximately 50 prospective user groups per micro watershed.	1600	50	32
05	Block Level Functional Programmes for SHGs [Leader, Secretary and Treasurer] under IWMP **One Day**				
	Gurgaon District	Three persons (Leader, Secretary and Treasurer) per Self Help Group @ around one SHG per village.	86	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	30776
2	Block Level Functional Programmes for Secretaries of Watershed Committees. Two Days	4086
3	Village Level Sensitization Camps for WC One Days	21167
4	Village Level Awareness Camps on IWMP at Micro Watershed Level for Prospective User Groups One Day	49030
5	Block Level Functional Programmes for SHGs [Leader, Secretary and Treasurer] under IWMP One Day	7717
	Total	**112776**

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

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	36000	5	18	90000	1000	2000	180000
2	User gr oups from each m icro watershed	NRM, Po st Project Management etc. – Exposure Visit	2	18000	5	9	45000	1000	2000	90000
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	54000	5	9	67500	1500	6000	270000
4	Sub w atershed Level- PIA	Exposure Visit- Within	2	27000	5	9	67500	1500	3000	135000

S. No.	Target Group	Training Topics	No. of days	Budget per camp	No. of Camps	No. of Participants per camp	Cost 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	18000	5	9	45000	1000	2000	90000
6	District L evel-Line D eptt., WDC	Exposure visit to su ccessful watersheds within state.	2	18000	5	9	45000	1000	2000	90000
7	SLNA and District L evel Controlling Officers	Exposure visit to su ccessful watersheds outside state	4	54000	5	9	67500	1500	6000	270000
Total			**18**		**35**	**72**				**1125000**

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

S. No.	District	No. Micro watershed	No. of Camps/ Year/ Micro watershed	Total No. of camps per Year	Total No. of camps for 5 Year's	Amount of per Camp	Amount per Micro watershed	Total Budget
1.	Farmer Training Camp in each season	9	2	18	90	12,000	1,20,000	1080000
2.	Propaganda & Documentation (Puppet show, documentary movies show, videography, Photography, wall Painting, Display Board, pamphlets, leaflets. Etc)	9	2	18	90	5000	50,000	450000
3	Contingency charges							28224
	Total							**1558224**

i) **Training Programmes for SLNA, WDT, PIA , Field Functionary , WDC member's , SHG & UG organize by HIRD = 112776/-**

ii) **Micro Watershed Wise Exposure cum training Visit For SLNA, WDT, PIA , Field Functionary , WDC, SHG & UG Members**
= 1125000/-

iii) **Farmer's / Beneficiaries training camps with Extension Program's = 1558224/-**

Grand Total = 2796000

6.2 .1 EXPECTED OUTCOME OF CAPACITY BUILDING

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

6.3 Entry Point Activities 4%

EPA activities are taken up under the watershed to build rapport with village community at the beginning of the project, generally certain important works which are in urgent demand of the local community are taken up. A group discussion was conducted in the Gram Sabha meeting/watershed committee regarding EPA activities. It was conveyed to the Gram Sabha that an amount of **Rs. 22,36,800/-** 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 Daula Watershed (IWMP II)

(Rs. In Lacs)

Sr. No.	Block	Name of Project	No. of EPAs Identified	No. of EPAs Completed	No. of EPAs in progress	Name/Nature of EPA	Location	Expenditure
1	Sohna	IWMP-II	45	45	-	Drinking Water Tank (1)	Lohsinghani	1.00
						Street Solar Light (4)	Lohsinghani	0.55
						Drinking Water Tank (2)	Ghangola	0.48
						Cattle Trought (1)	Ghangola	0.30
						Street Solar Light (5)	Ghangola	0.69
						Drinking Water Tank (1)	Baikhera	0.48
						Cattle Trought (1)	Bikhera	0.26
						Drinking Water Tank (2)	Hazipur	0.48 0.48
						Drinking Water Tank (1)	Tolani	0.48
						Cattle Trought (1)	Tolani	0.29
						Drinking Water Tank (1)	Ranika Singola	0.48

						Cattle Trought (1)	Ranika Singola	0.30
						Pond Inlet (1)	Johlaka	0.85
						Street Solar Light (2)	Johlaka	0.28
						Drinking Water Tank (1)	Bhogpur	0.68
						Roof Rainwater Harvesting Structure (1)	Khuntpuri	0.70
						Drinking Water Tank (1)	Rahaka	0.45
						Drinking Water Tank (1)	Satlaka	0.43
						Drinking Water Tank (1)	Lala Khedli	0.49
						Cattle Trought (1)	Lala Khedli	0.24
						Drinking Water Tank (1)	Kuliyaka	0.74
						Drinking Water Tank (1)	Bidhwaka	0.48
						Channal (1)	Khatrika	0.50
						Street Solar Light (2)	Khatrika	0.28
						Drinking Water Tank (1)	Sarmathla	0.63
						Channal (1)	Sarmathla	0.97
						Cattle Trought (1)	Sarmathla	0.29

						Street Solar Light (3)	Sarmathla	0.42
						Drinking Water Tank (1)	Mandawar	0.87
						Roof Rainwater Harvesting Structure (1)	Mandawar	1.29
						Channal (1)	Bilahaka	0.69
						Recharge Kit (1)	Daula	0.77

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 team of experts comprising of PIA, Hydrologist from Haryana supported by Livelihood expert, Agriculture and Horticulture expert and expert in Animal Husbandry. Participatory approach has been adopted to identify the activities under the project. The detailed discussions were held with watershed committees and works identified along with villagers after making visits to identified sites. The works mainly relate to soil and water conservation activities like Roof top rainwater Harvesting, Ramp, inlet & outlet, Earthen Embankments /Marginal bunds with pucca outlet, Small earthen embankment with vegetative support, Construction of Check Dam, water conveyance system etc. The proposed project proposals were presented in the Gram Sabha meeting as per the schedule and were approved with certain changes. The works thus identified are given in the attached sheets along with estimates – micro watershed wise.

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

Natural Resource Management

The project area having small or large old ponds which have been silted up and needs strengthening (Ramp). The land holding is small and any loss of land nearby area would be loss to the farmer. Under the IWDP/ Haryali some works like renovation of farm ponds, field bunding has been undertaken but still at few places inlet of the ponds and outlet needs to

be constructed. So their repair and renovation is proposed during the discussion it was felt to be genuine demand for repair, renovation and capacity enhancement in the area. This will increase the rain water harvesting.

Run-off from upper area (sand dune) shall be reduced by construction of dams 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.

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

7.2 Proposed Activity

The provision for renovation of pond, inlet, outlet, ramp etc. is the main requirement by project stakeholders which has been provided. Ponds as such are the best source of rainwater harvesting.

Due to the paucity funds the repair works has been undertaken under different schemes in piece meal. The main requirement of retaining wall was ignored due to inadequate funds. During the discussions/interaction the stake holders gave high priority for construction of retaining wall as huge quantity of water is being wasted through cutting of banks.

7.2.1 Earthen Embankment

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

Suggested Interventions: In a number of villages, sites have been proposed for in-situ moisture conservation and construction of embankments where village paths have got converted in to nalas due to severe erosion.

The DPR proposals shall be implemented in participatory mode. In this watershed management program, it was planned to rehabilitate the degraded watersheds. The scope of integrated watershed regeneration/rehabilitation works which emerged from the PRA are as under:-

Sample estimates are as follows:

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

Table. 1

Name of Project: IWMP II	Name of Watershed: Daula						Name of Village: LOHSINGHANI	
Sr. No.	**Nature of Works**	**Catchment, Storage capacity, Submergence and com mand area (wherever applicable)**	**Location (with lat itude and longitude)**	**Unit**	**No. of Works**		**Estimated Cost Rs. In Lacs.**	**Objective**
					Phy.	**Unit Cost (Rs.in Lacs)**		
1	Water conveyance system to village waste water	-	village to main drain N28.16.180 E77.13.981 N28.16.328 E77.13.813	Mtr	2000	0.006	12	For water saving , smoothly divert waste water and rain water, increase crop yield to the village
2	Digging of pond	11 hac. 6100 cum. 4050 sqm. 6hac	Panchayat land N28.16.973 E77.14.085	Nos	1	3	3	Increasing water level , availability cattle drinking water and for live stock and irrigated water and all villagers are beneficiaries
3	Earthen Embankment with pacca outlet	-	Village to field N28.16.557 E77.14.081	Nos	5	0.97	4.85	For the control of soil erosion , in situ moisture conservation
4	Roof top rain water harvesting structure govt. primary school	-	village to primary school N28.16.557 E77.13.741	Nos	1	2	2	For the conservation of water and ground water recharging
Total Cost							**21.85**	
Available Fund							**20.83**	
Convergence							**1.02**	

Name of Project: IWMP II		Name of Watershed: Daula					Name of Village: HAZIPUR
Sr. No.	**Nature of Works**	**Catchment, Storage capacity, Submergence and command area (wherever applicable)**	**Location (with latitude and longitude)**	**Unit**	**No. of Works**		**Estimated Cost Rs. In Lacs.**	**Objective**
					Phy.	**Unit Cost (Rs.in Lacs)**		
1	Water conveyance system from nearest canal to village pond	-	canal to village pond N28.12.982 E77.11.047	mts	1150	0.007	8.05	To ensure availability of water in pond during lean period
2	Digging of pond	13 hac. 7300 cum. 4850 sqm. 5hac	Panchayat land N28.12.882 E77.10.647	Nos	1	3	3	Increasing water level , availability cattle drinking water and for live stock and irrigated water and all villagers are beneficiaries
3	Small Earthen Embankment for vegetative support	-	village to pond N28.13.039 E77.10.996	100cm	500	0.29	1.45	For the control of soil erosion , in situ moisture conservation
4	Rainfed horticulture	-	Personal land N28.12.736 E77.10.687	hac	5	0.4	2	Waste water saving , smoothly divert waste water
Total Cost							**14.5**	
Available Fund							**13.78**	
Convergence							**0.72**	

Name of Project: IWMP II		Name of Watershed: Daula					Name of village: JOHLAKA
Sr. No.	**Nature of Works**	**Catchment, Storage capacity, Submergence and command area (wherever applicable)**	**Location (with latitude and longitude)**	**Unit**	**No. of Works**		**Estimated Cost Rs. In Lacs.**	**Objective**
					Phy.	**Unit Cost (Rs.in Lacs)**		
1	Water conveyance system from nearest canal to village pond	-	Gurgaon canal to village pond N28.16.279 E77.10.594 N28.14.961 E77.10.766	mts	2200	0.005	11	Increasing water level , availability cattle drinking water and irrigated water
2	Check dam	25 hac. 14000 cum. 9300 sqm. 11hac	In the Hill N28.15.020 E77.11.008	nos	1	4	4	increase biomass and additional income to the farmers
Total Cost							**15**	
Available Fund							**14.78**	
Convergence							**0.22**	

Name of Project: IWMP II		Name of Watershed: Daula					Name of Village: GHANGOLA
Sr. No.	**Nature of Works**	**Catchment, Storage capacity, Submergence and command area (wherever applicable)**	**Location (with lat itude and longitude)**	**Unit**	**No. of Works**		**Estimated Cost Rs. In Lacs.**	**Objective**
					Phy.	**Unit Cost (Rs.in Lacs)**		
1	Digging of pond	50 hac. 28100 cum. 18700 sqm. 23hac	Panchayat land,Near mandir N28.15.185 E77.11.604	No.s	1	5	5	For ground water recharging and availability of water for village community animals
2	Digging of pond	40 hac. 22500 cum. 11250 sqm. 18hac	Panchayati land N28.15.360 E77.12.487	No.s	1	5	5	Increasing water level , availability cattle drinking water and for live stock and irrigated water and all villagers are beneficiaries
3	Earthen embankment with pucca outlet	-	village to field N28.15.535 E77.12.071	No.s	10	0.97	9.7	For the control of soil erosion , in situ moisture conservation
4	Water conveyance system from nearest canal to village pond	-	canal to village pond N28.15.174 E77.11.685	Mtr	2600	0.005	13	To ensure availability of water in pond during lean period
5	Agroforestry	-	Personal and mandir land N28.15.697 E77.11.701	hac	10	0.2	2	Increase biomass and additional income to the farmers
Total Cost							**34.7**	

Available Fund	**32.26**	
Convergence	**2.44**	

Name of Project: IWMP II		**Name of Watershed: Daula**					**Name of Village: BAIKHEDA**
Sr. No.	**Nature of Works**	**Catchment, Storage capacity, Submergence and command area (wherever applicable)**	**Location (with lat itude and longitude)**	**Unit**	**No. of Works**		**Estimated Cost Rs. In Lacs.**	**Objective**
					Phy.	**Unit Cost (Rs.in Lacs)**		
1	water conveyance system for diversion of waste water		Nearest to village pond N28.17.124 E77.11.754	mts	800	0.007	5.6	For water saving , smoothly divert waste water in pond during lean period
2	Digging of pond	15 hac. 8400 cum. 5600 sqm. 7hac	Panchayat land N28.17.070 E77.11.802	nos	1	3	3	Increasing water level , availability cattle drinking water and for live stock and irrigated water and all villagers are beneficiaries
3	Small earthen embankment with vegetative support		village to field N28.17.209 E77.11.213	100 cm	650	0.29	1.88	For the control of soil erosion , in situ moisture conservation
4	Agro-forestry		Personal land N28.17.125 E77.11.329	hac	10	0.2	2	Increase biomass and additional income to the farmers
Total Cost							**12.48**	
Available Fund							**10.42**	

Convergence	**2.06**	

Name of Project: IWMP II			Name of Watershed: Daula					Name of Village: KHUNTPURI
Sr. No.	**Nature of Works**	**Catchment, Storage capacity, Submergence and command area (wherever applicable)**	**Location (with latitude and longitude)**	**Unit**	**No. of Works**		**Estimated Cost Rs. In Lacs.**	**Objective**
					Phy.	**Unit Cost (Rs.in Lacs)**		
1	Water conveyance system to village pond		Village to pond N28.13.610 E77.10.633 N28.13.736 E77.10.519	mts	800	0.007	5.6	For water saving , smoothly divert waste water and irrigated water to pond
2	Digging of pond	11 hac. 6100 cum. 4100 sqm. 5Hac	Panchayat land N28.13.657 E77.10.993	Nos.	1	3	3	Increasing water level , availability cattle drinking water and for live stock and irrigated water and all villagers are beneficiaries
3	Small earthen embankment with vegetative support		village to field N28.13.649 E77.10.776 N28.13.651 E77.10.980	100cm	300	0.29	0.87	For the control of soil erosion , in situ moisture conservation
4	Rainfed horticulture		personal land N28.13.649 E77.10.934	hac	5	0.4	2	Proper utilization of uncultivated field and additional income for farmers
5	Agroforestry		Panchayat and personal land N28.13.651 E77.10.987	hac	5	0.2	1	Increase biomass and additional income to the farmers
Total Cost							**12.47**	

Available Fund	**10.42**	
Convergence	**2.05**	

Name of Project: IWMP II			**Name of Watershed: Daula**					**Name of Village: TOLANI**
Sr. No.	**Nature of Works**	**Catchment, Storage capacity, Submergence and command area (wherever applicable)**	**Location (with latitude and longitude)**	**Unit**	**No. of Works**		**Estimated Cost Rs. In Lacs.**	**Objective**
					Phy.	**Unit Cost (Rs.in Lacs)**		
1	Digging of pond	15hac. 8400 cum. 5600 sqm. 6.5hac	Panchayat land N28.14.652 E77.09.287	nos	1	4	4	Increasing water level , availability cattle drinking water and for live stock and irrigated water and all villagers are beneficiaries
2	Water conveyance system from nearest canal to village pond		canal to village pond N28.14.640 E77.09.311 N28.14.638 E77.09.491	mts	1000	0.005	5	To ensure availability of water in pond during lean period
3	Small earthen embankment with vegetative support		village to field N28.14.606 E77.09.282	100cm	700	0.29	2.03	For the control of soil erosion , in situ moisture conservation
4	Agro-forestry		Personal land N28.14.616 E77.09.071	hac	10	0.2	2	Increase biomass and additional income to the farmers
Total Cost							**13.03**	
Available Fund							**11.76**	

Convergence	**1.27**	

Name of Project: IWMP II		**Name of Watershed: Daula**					**Name of Village: BHOGPUR**
Sr. No.	**Nature of Works**	**Catchment, Storage capacity, Submergence and command area (wherever applicable)**	**Location (with latitude and longitude)**	**Unit**	**No. of Works**		**Estimated Cost Rs. In Lacs.**	**Objective**
					Phy.	**Unit Cost (Rs.in Lacs)**		
1	Water conveyance system from nearest canal to village pond	-	Canal to village pond N28.14.206 E77.10.225 N28.14.181 E77.10.459	mts	750	0.007	5.25	For water saving , smoothly divert waste water in pond during lean period
2	Digging of pond	10 hac. 5600 cum. 3700 sqm. 4.5hac	panchayat land to near primary school N28.14.158 E77.10.381	Nos	1	3	3	Increasing water level , availability cattle drinking water and for live stock and irrigated water and all villagers are beneficiaries
3	Small earthen embankment with vegetative support	-	Village to field N28.14.208 E77.10.231	100cm	500	0.29	1.45	For the control of soil erosion , in situ moisture conservation
4	Agroforestry	-	Panchayat land and personal land pond N28.14.280	hac	10	0.2	2	Increase biomass and additional income to the farmers

			E77.10.522				
Total Cost						**11.7**	
Available Fund						**9.68**	
Convergence						**2.02**	

Name of Project: IWMP II		Name of Watershed: Daula					Name of Village: RANI KA SINGOLA
Sr. No.	**Nature of Works**	**Catchment, Storage capacity, Submergence and command area (wherever applicable)**	**Location (with latitude and longitude)**	**Unit**	**No. of Works**		**Estimated Cost Rs. In Lacs.**	**Objective**
					Phy.	**Unit Cost (Rs.in Lacs)**		
1	Digging of pond	17 hac. 9500 cum. 6300 sqm. 9hac	panchayat land N28.14.955 E77.10.144	Nos	1	3	3	Increasing water level , availability cattle drinking water and for live stock and irrigated water and all villagers are beneficiaries
2	Roof top rain water harvesting pit in govt primary school	-	village to primary school N28.14.895 E77.10.018	nos	1	2	2	For the conservation of water and ground water recharging
3	Horticulture	-	Personal land N28.15.131 E77.09.978	hac	10	0.4	4	Proper utilization of uncultivated field and additional income for farmers
4	Agro-forestry	-	panchayat and personal land N28.14.998 E77.10.128	hac	24	0.2	4.8	Increase biomass and additional income to the farmers
Total Cost							**13.8**	
Available Fund							**11.49**	
Convergence							**2.31**	

Name of Project: IWMP II			Name of Watershed: Daula					Name of Village: LALAKHEDALI
Sr. No.	**Nature of Works**	**Catchment, Storage capacity, Submergence and command area (wherever applicable)**	**Location (with latitude and longitude)**	**Unit**	**No. of Works**		**Estimated Cost Rs. In Lacs.**	**Objective**
					Phy.	**Unit Cost (Rs.in Lacs)**		
1	Digging of pond	17 hac. 9500 cum. 6300 sqm. 8hac	Panchayat land N28.17.547 E77.09.802	Nos	1	3	3	Increasing water level , availability cattle drinking water and for live stock and irrigated water and all villagers are beneficiaries
2	Construction of check dam	35 hac. 7600 cum. 5100 sqm. 15hac	In hills near mandir N28.17.937 E77.09.682 N28.17.824 E77.09.681	Nos	5	2	10	For storing water
Total Cost							**13.0**	
Available Fund							**12.1**	
Convergence							**0.9**	

Name of Project: IWMP II		Name of Watershed: Daula						Name of Village: KULIYAKA
Sr. No.	**Nature of Works**	**Catchment, Storage capacity, Submergence and com mand area (wherever applicable)**	**Location (with latitude and longitude)**	**Unit**	**No. of Works**		**Estimated Cost Rs. In Lacs.**	**Objective**
					Phy.	**Unit Cost (Rs.in Lacs)**		
1	Digging of pond	45 hac. 11100 cum. 7400 sqm. 23hac	Panchayat land N28.16.236 E77.11.433	Nos	1	5	5	Increasing water level , availability cattle drinking water and for live stock and irrigated water and all villagers are beneficiaries
2	Earthen embankment with pucca outlet		Village to field N28.16.704 E77.11.139	Nos	3	0.97	2.91	For the control of soil erosion , in situ moisture conservation
3	Roof top rainwater harvesting pit in govt. primary school		primary school N28.16.525 E77.11.163	Nos	1	0.4	2	For the conservation of water and ground water recharging
4	Rainfed horticulture		personal land N28.16.606 E77.11.148	hac	5	5	20	Proper utilization of uncultivated field and additional income for farmers
5	Agro-forestry		Panchayat and personal land N28.17.014 E77.11.339	hac	11	0.2	2.2	Increase biomass and additional income to the farmers
Total Cost							**14.11**	
Available Fund							**11.76**	
Convergence							**2.35**	

Name of Project: IWMP II		Name of Watershed: Daula						Name of Village: BIDHWAKA
Sr. No.	**Nature of Works**	**Catchment, Storage capacity, Submergence and command area (wherever applicable)**	**Location (with lat itude and longitude)**	**Unit**	**No. of Works**		**Estimated Cost Rs. In Lacs.**	**Objective**
					Phy.	**Unit Cost (Rs.in Lacs)**		
1	Digging of pond	33 hac. 9100 cum. 6100 sqm. 15 hac	Panchayat land N28.16.057 E77.10.677	No.s	1	5	5	For ground water recharging and availability of water for village community animals
2	Rainfed horticulture	-	personal land N28.15.929 E77.10.611	hac	1	0.4	1.6	Proper utilization of uncultivated field and additional income for farmers
3	Earthen Embankment with pacca outlet	-	Village to field N28.15.923 E77.10.558	Nos	2	0.97	1.94	For the control of soil erosion , in situ moisture conservation
4	Agro-forestry	-	Personal and road side land N28.15.949 E77.10.840	hac	7.5	0.2	1.5	Increase biomass and additional income to the farmers
Total Cost							**10.04**	
Available Fund							**6.72**	
Convergence							**3.32**	

Name of Project: IWMP II		Name of Watershed: Daula					Name of Village: KHATRIKA	
Sr. No.	**Nature of Works**	**Catchment, Storage capacity, Submergence and command area (wherever applicable)**	**Location (with lat itude and longitude)**	**Unit**	**No. of Works**		**Estimated Cost Rs. In Lacs.**	**Objective**
					Phy.	**Unit Cost (Rs.in Lacs)**		
1	Digging of pond	11 hac. 6100 cum. 4100 sqm. 4.5hac	Panchayat land N28.16.182 E77.11.475	No.s	1	3	3	Increasing water level , availability cattle drinking water and for live stock and irrigated water and all villagers are beneficiaries
2	Water conveyance system from nearest canal to village pond		Canal to village pond N28.16.134 E77.11.573	mts	1000	0.007	7	To ensure availability of water in pond during lean period
5	Agro-forestry		Panchayat and personal land N28.16.059 E77.11.413	hac	10.5	0.2	2.1	Increase biomass and additional income to the farmers
Total Cost							**12.1**	
Available Fund							**10.08**	
Convergence							**2.02**	

Name of Project: IWMP II		Name of Watershed: Daula					Name of Village: SATLAKA
Sr. No.	**Nature of Works**	**Catchment, Storage capacity, Submergence and command area (wherever applicable)**	**Location (with latitude and longitude)**	**Unit**	**No. of Works**		**Estimated Cost Rs. In Lacs.**	**Objective**
					Phy.	**Unit Cost (Rs.in Lacs)**		
1	Digging of pond	13hac. 7300 cum 4800 sqm. 5hac	Panchayat land N28.15.715 E77.10.175	nos	1	3	3	Increasing water level , availability cattle drinking water and for live stock and irrigated water and all villagers are beneficiaries
2	Small Earthen embankment with vegetative support	-	village to field N28.16.049 E77.09.679	100cm	500	0.029	1.45	For the control of soil erosion , in situ moisture conservation
3	Roof top rain water harvesting pit in govt primary school	-	primary school N28.15.930 E77.10.066	nos	1	2	2	For the conservation of water and ground water recharging
4	Agro forestry	-	Personal and personal land N28.16.014 E77.09.983	hac	6	0.2	1.2	Increase biomass and additional income to the farmers
Total Cost							**7.65**	
Available Fund							**6.38**	
Convergence							**1.27**	

Name of Project: IWMP II		Name of Watershed: Daula					Name of Village: Rahaka
Sr. No.	**Nature of Works**	**Catchment, Storage capacity, Submergence and command area (wherever applicable)**	**Location (with latitude and longitude)**	**Unit**	**No. of Works**		**Estimated Cost Rs. In Lacs.**	**Objective**
					Phy.	**Unit Cost (Rs.in Lacs)**		
1	Digging of pond	15hac. 8450 cum. 5650 sqm. 6hac	Panchayat land N28.16.078 E77.10.106	nos	1	3	3	For ground water recharging and availability of water for village community animals
2	Small Earthen embankment with vegetative support	-	village to field N28.16.075 E77.10.118	100cm	500	0.029	1.45	For the control of soil erosion , in situ moisture conservation
3	Roof top rain water harvesting pit in govt primary school	-	primary school N28.15.841 E77.10.198	nos	1	2	2	For the conservation of water and ground water recharging
4	Agro-forestry	-	Personal and panchayat land N28.15.807 E77.10.169	hac	6	0.2	1.2	Increase biomass and additional income to the farmers
Total Cost							**7.65**	
Available Fund							**6.38**	
Convergence							**1.27**	

Name Name of Project: IWMP II				Name of Watershed: Daula				Name of Village: Daula
Sr. No.	**Nature of Works**	**Catchment, Storage capacity, Submergence and command area (wherever applicable)**	**Location (with latitude and longitude)**	**Unit**	**No. of Works**		**Estimated cost Rs. In Lacs**	**Objective**
					Phy.	**Unit Cost (Rs. In Lacs)**		
2	Horticulture	-	Farmer Personal land N28.15.684 E77.06.573	Ha	12	0.40	4.8	Proper uti lization of uncultivated fields additional i ncome for farmers
3	Water Conveyance System	-	From Village to Pond N28.15.820 E77.06.495	Mtr.	1100	0.007	7.7	For ground water recharge
4	Digging of pond	13hac. 7300 cum. 4850 sqm. 5hac	Near Shiv Mandir N28.15.878 E77.06.530	No.	1	3.00	3	Increasing water l evel , availability c attle drinking w ater and for live s tock a nd i rrigated water and al l v illagers are beneficiaries
Total cost							**15.55**	
Available Fund							**15.46**	
Convergence							**0.09**	

Name of Project: IWMP II			Name of Watershed: Daula					Name of Village: Bilakha
Sr. No.	**Nature of Works**	**Catchment, Storage capacity, Submergence and command area (wherever applicable)**	**Location (with latitude and longitude)**	**Unit**	**No. of Works**		**Estimated cost Rs. In Lacs**	**Objective**
					Phy.	**Unit Cost (Rs. In Lacs)**		
1	Digging of pond	15hac. 8450 cum. 5650 sqm. 6hac	Near Mandir & Near Road N28.14.849 E77.11.433	No.	**1**	**3.00**	3	Increasing water level , availability cattle drinking water and for live stock and irrigated water and all villagers are beneficiaries
2	Deepening of Pond	11hac. 6150 cum. 4100 sqm. 5 hac	Near Mandir N28.14.631 E77.11.848	No.	1	3.00	3	For ground water recharge and availability of water for village community animals
3	Horticulture		Pachayati Land N28.14.333 E77.10.952	Ha	7	0.40	2.8	Proper utilization of uncultivated fields additional income for farmers
4	Water Conveyance System		From village to pond N28.14.430 E77.11.125	Mtr.	700	0.007	4.9	For ground water recharge
Total cost							**12.10**	
Available Fund							**10.08**	
Convergence							**3.02**	

Name of Project: IWMP II			Name of Watershed: Daula					Name of Village: Sarma Thala
Sr. No.	Nature of Works	Catchment, Storage capacity, Submergence and command area (wherever applicable)	Location (with latitude and longitude)	Unit	No. of Works		Estimated cost Rs. In Lacs	Objective
					Phy.	Unit Cost (Rs. In Lacs)		
1	Water conveyance system	-	From Pond to Pond N28.16.930 E77.12.682	M	2000	0.007	14.00	For store surplus water for use during lean period
2	Digging of pond	15hac. 8450 cum. 5600 sqm. 5.5hac	Near Mohakampur N28.16.286 E77.11.775	No.	2	3	6	Increasing water level , availability cattle drinking water and for live stock and irrigated water and all villagers are beneficiaries
3	Deepening of Pond	10hac. 5600 cum 3700 sqm 4Hac	Jat ki Johari N28.16.286 E77.12.432	No.	1	3	3	For availability fo water for village community animals & ground water recharge
4	Water conveyance system	-	From Minor to pond N28.16.976 E77.12.653	Mtr.	2500	0.007	17.5	To ensure availability of water in pond during lean period
5	Agro-Forestry	-	In forestry field N28.16.994 E77.12.955	Ha	20	0.20	4	Increase biomass product & control soil erosion
6	Horticulture	-	In farmer field	Ha	30	0.40	12	Increase addition income

			N28.16.667 E77.12.713					
Total cost							**56.95**	
Available Fund							**47.04**	
Convergence							**9.41**	

Name of Project: IWMP II				**Name of Watershed: Daula**			**Name of Village: Mandawar**	
Sr. No.	**Nature of Works**	**Catchment, Storage capacity, Submergence and command area (wherever applicable)**	**Location (with latitude and longitude)**	**Unit**	**No. of Works**		**Estimated cost Rs. In Lacs**	**Objective**
					Phy.	**Unit Cost (Rs. In Lacs)**		
1	Construction of earthen dam	85hac. 47800 cum 23900 sqm 58 hac	In the Hill N28.17.309 E77.09.594	No.	1	30	30	Available of water in dry period
2	Digging of pond	13hac. 7350 cum 4900 sqm 6hac	Near Mandir N28.16.731 E77.09.386	No.	1	3	3	Increasing water level , availability cattle drinking water and for live stock and irrigated water and all villagers are beneficiaries
4	Construction of check dam	-	From hill N28.16.924 E77.09.570	No.	1	5	5	To increase availability of water in pond during dry period
Total cost							**38.00**	
Available Fund							**33.26**	
Convergence							**4.74**	

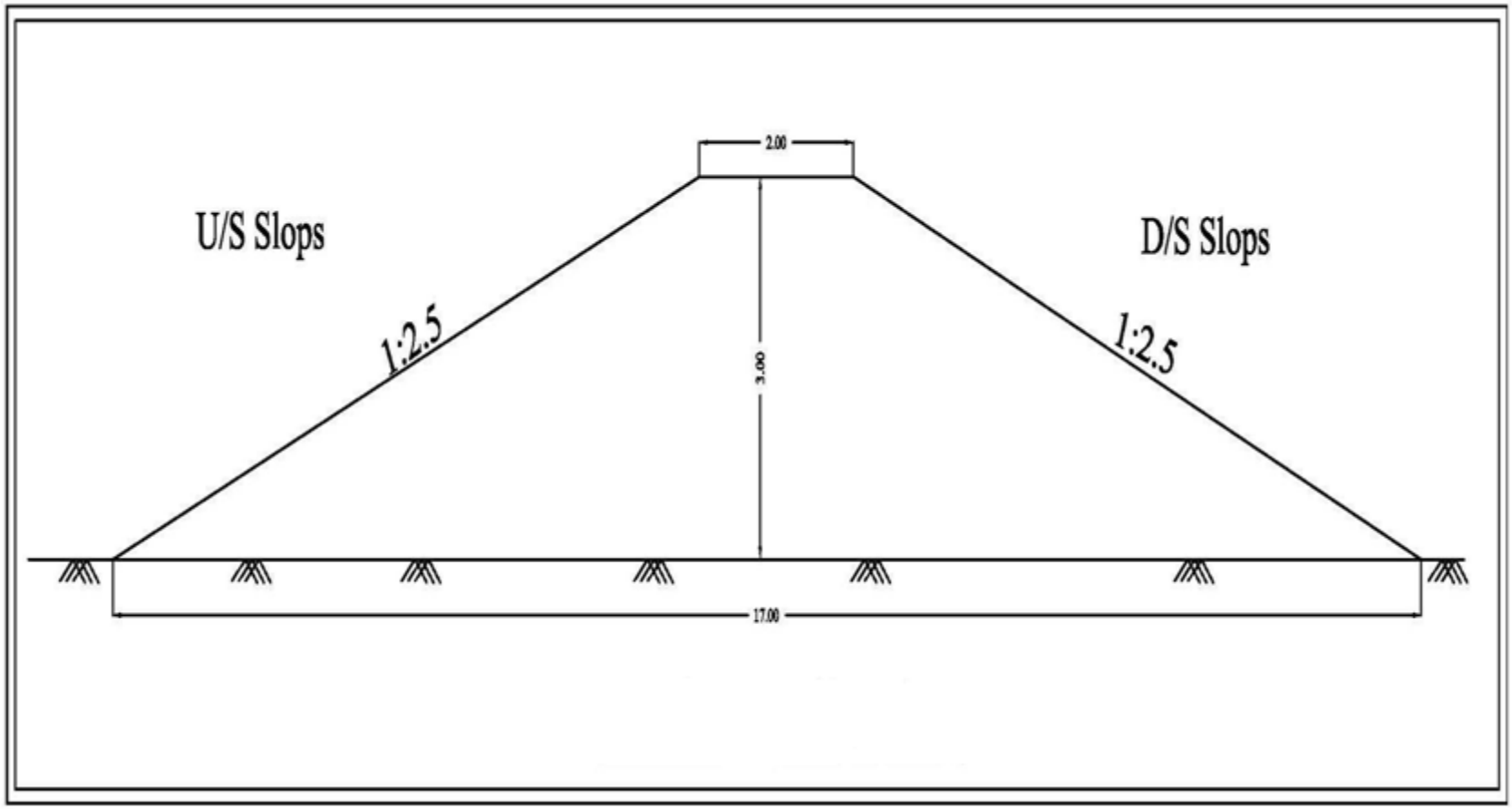
Name of Project: IWMP II		Name of Watershed: Daula					Name of Village: Jalalpur
Sr. No.	**Nature of Works**	**Catchment, Storage capacity, Submergence and command area (wherever applicable)**	**Location (with latitude and longitude)**	**Unit**	**No. of Works**		**Estimated Cost Rs. In Lacs.**	**Objective**
					Phy.	**Unit Cost (Rs.in Lacs)**		
1	Digging of pond	15hac. 6750 cum 4500 sqm 5hac	Panchayat land N28.16.892 E77.07.801	nos	1	5	5	For ground water recharging and availability of water for village community animals
2	Small Earthen embankment with vegetative support	-	village to field N28.16.561 E77.07.658	100cm	1000	0.029	2.9	For the control of soil erosion , in situ moisture conservation
3	Agro-forestry	-	Personal and panchayat land N28.16.346 E77.07.322	hac	6	0.2	1.2	Increase biomass and additional income to the farmers
Total Cost							**7.65**	
Available Fund							**6.38**	
Convergence							**1.27**	

Name of Project: IWMP II			Name of Watershed: Daula				Name of Village: Khobari	
Sr. No.	**Nature of Works**	**Catchment, Storage capacity, Submergence and command area (wherever applicable)**	**Location (with latitude and longitude)**	**Unit**	**No. of Works**		**Estimated Cost Rs. In Lacs.**	**Objective**
					Phy.	**Unit Cost (Rs.in Lacs)**		
1	Digging of pond	17hac. 9500 cum 6300 sqm 8hac	Panchayat land N28.15.874 E77.06.494	nos	1	6	6	For ground water recharging and availability of water for village community animals
2	Small Earthen embankment with vegetative support	-	village to field N28.15.683 E77.06.538	100cm	500	0.029	1.45	For the control of soil erosion , in situ moisture conservation
3	Land levelling*	-	Personal and panchayat land N28.15.706 E77.06.581	hac	5	0.5	2.5	Increase biomass and additional income to the farmers
Total Cost							**9.95**	
Available Fund							**9.74**	
Convergence							**0.21**	

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

Table 2. DETAILED ESTIMATE OF EARTHEN EMBANKMENT

Let the Average length of the embankment	=	40 meters
Let the Average Height of the embankment	=	3.0 meters
Up Stream Slope of the embankment	=	1 : 2.5
Down Stream Slope of the embankment	=	1 : 2.5



Earthen Embankment

Leads Statement :-	
Cross Section Area = (Base + Top) ÷ 2 x Height i.e {(17.00 +2.00) ÷ 2} x 3.00 = 28.50 Square meters	
Horizontal leads = (Base/2) + (Cross section area/ 2 x 0.6) i.e. (17.00/2) + [{28.50}/(2 x 0.6)] =32.25 meters	
Vertical leads = (Height +0.60) x 0.4 x 10 i.e. (3.00 +0.60) x 0.4 x 10 = 14.40 meters	

Total leads = 32.25 meters + 14.40 meters = 46.65 meters					
Number of leads = (46.65 - 15.00) / 7.5 = 4.22 leads Or Say 5 No. of Leads					
Area of Jungle Clearance :-					
Area to be covered by the body of Dam = Length x Average base i.e. 40.00 x 17.00 = 680.00 Sq. meters					
Area from where E/W is to be excavated = Av. Length x leads i.e. 40.00 x 46.65 = 1866.00 Sq. meters					
Total Area = 680.00 + 1866.00 =	2546.00	Sq. meters.			
Volume of Loose soil to be removed :-					
Area to be covered by the body of Dam X Depth of loose soil i.e (680.00 x 0.30) =				204.00	cum
Volume of Earthwork in bund filling :-					
(Cross Section Area X Length) + Loose soil to be removed i.e.(28.50 x 40.00)+ 204.00 =				1344.00	cum
ABSTRACT OF COST					
S.No.	**Item of Work**	**Quantity**	**Rate**	**Unit**	**Amount**
1	Jungle c learance i ncluding upr ooting of rank v egetarian, gr ass, bus h w oods etc H.S.R.6.26	2546.00 sq.m	Rs.66.80 + 300% C. Prem. =267.20	100 sq.m	6802.91
2	Removal of loose soil up to 0.3 m below Natural surface level H.S.R. 6.2 (b)	204.00 cum	Rs.586.60 + 350% C. Prem.= 2639.70	100 cum	5384.99
3	E/work excavation for making embank-ment undressed including breaking of Clods. H.S.R. 6.2 (b)	1344.00 cum	Rs.586.60 + 350% C. Prem.= 2639.70	100 cum	35477.57
4	Extra for admixture for single or kanker Exceeding 30% but up to 40% . H .S.R. 6.2 (h) ii	1344.00 cum	Rs. 318.55 + 350% C. Prem.= 1433.48	100 cum	19265.97

5	Extra for every 7.5 meter additional lead beyond 60m t but up to 255 m by the animal or ani mal dr iven c art (5 l eads) H.S.R. 6.2 (c) (ii)	1344.00 cum	[(15.00 x 5 N o.)+ 350% C . P rem.= 337.50	100 cum	4536.00
6	Dressing of earthwork H.S.R. 6.3 (i)	1344.00 cum	Rs.45.90 + 350 % C . Prem.= 206.55	100 cum	2776.03
Total =					**74243.4712**
Add Contingency at the rate of 3% =					2227.30
Grand Total =					**76470.78**

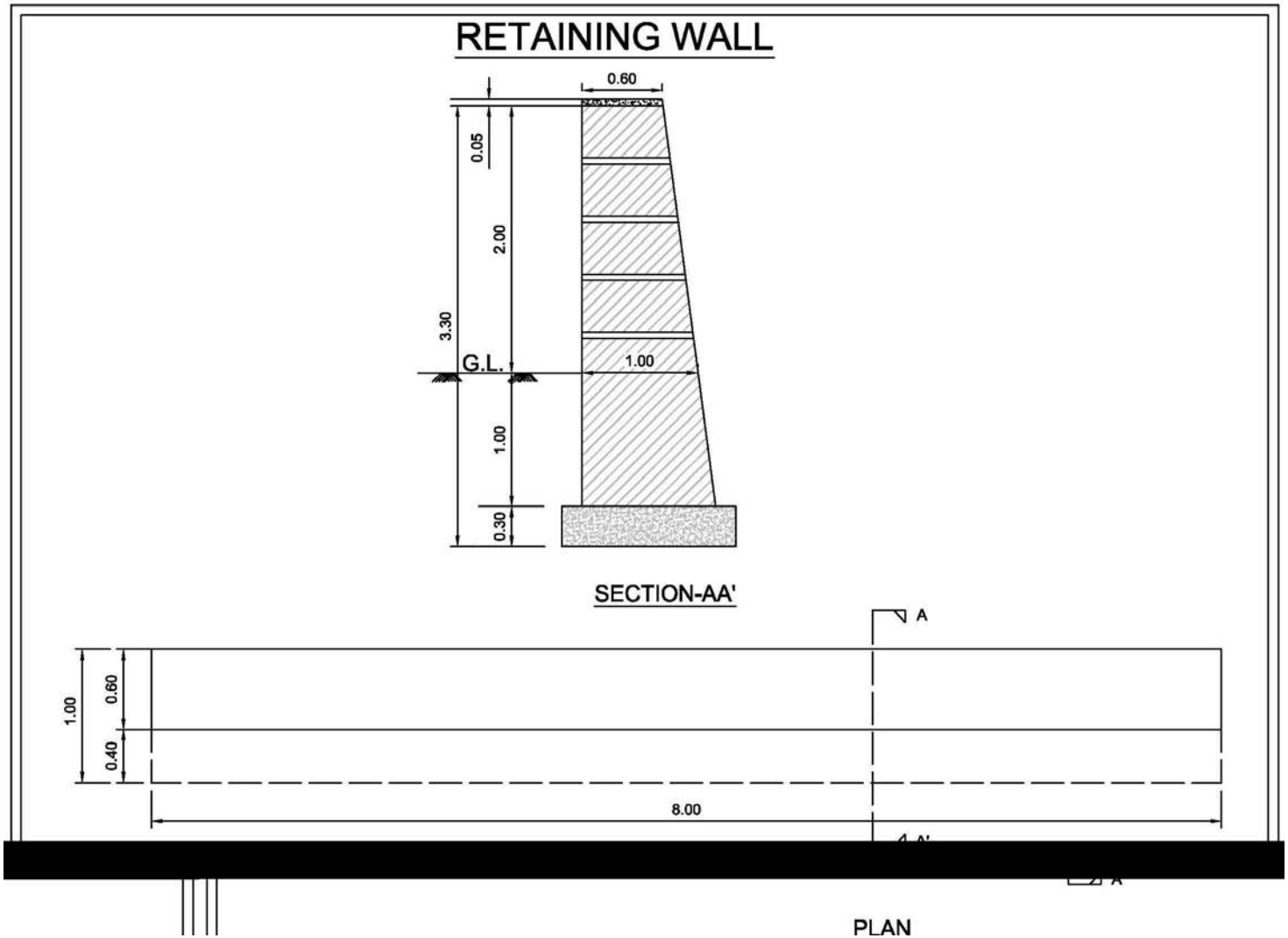
Table. 25 Detail Estimate For Retaining Wall

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

	Rate		340/- P/bag	1400/- P/cum	1500/- Per cum.	1450/- Per cum.	
	Total		**21539.00**	**10248.00**	**300.00**	**3190.00**	
	Grand Total		**35298.12**				

Abstract Cost of Retaining Wall

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


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

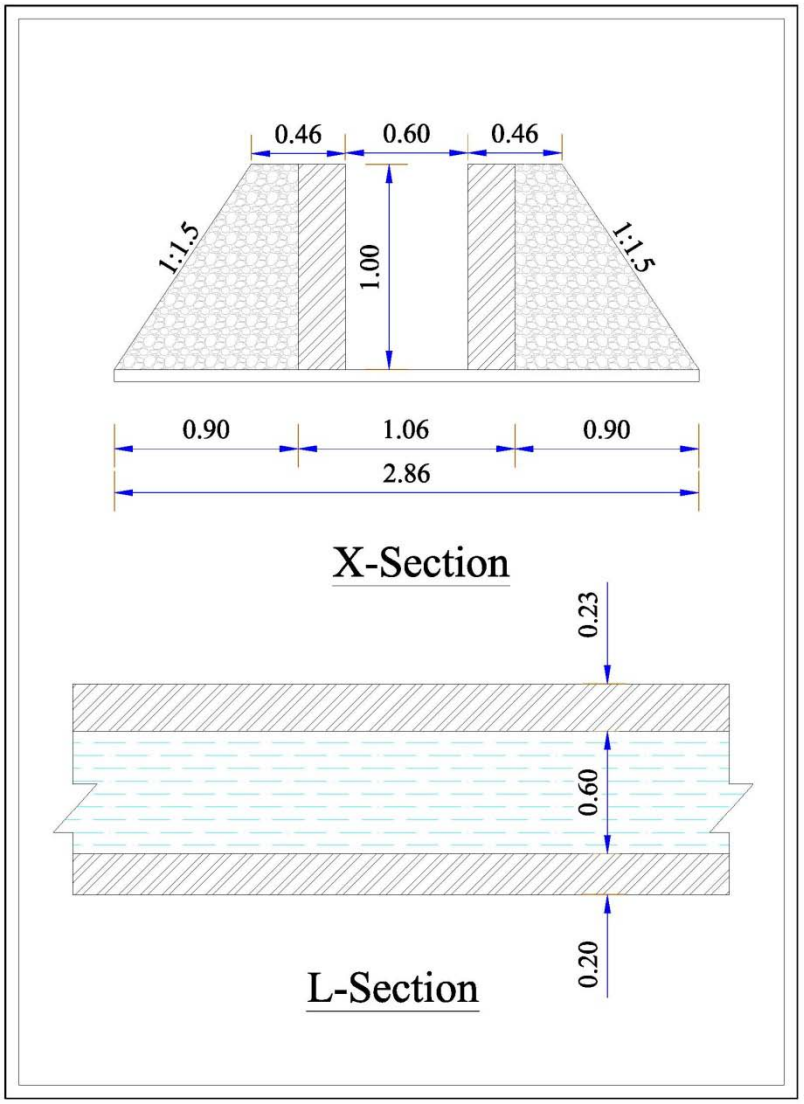
Table: Estimate of Open Channel

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 ordinary soil as per HSR 6.1(a)	64.8 m3	415.50-15% +425% =1854.16	100 m³	1201.49
2	Flat bricks laid in bed HSR 14.24	106 m2	520-15%+600% = 296.60	m²	3279.64
3	First class bricks works land in CSM 1.5 HSR 11.23	20.25 m3	49.85 + 15% + 600% =296.60	m³	6339.62
4	Plaster bed 1.4 12 mm thick 15.5 HSR	60 m2	5.5 + 15% + 500% = 28.05	m²	1683.00
5	Plaster 14 m side wall 15.5 HSR	90 m2	5.5 + 15% + 500% = 28.05	m²	2574.50
6	Field Gota 1.4 HSR 15.5	23.4 m2	5.5 + 15% + 500% = 28.05	m²	656.37
7	Topping 25 mm thick on top of wall HSR 14.8	46 M2	8.60+15% + 600% = 51.17	m²	2302.65
8	E/work for wall protection HSR 6.1 (a)	85.50 M3	415.50 +15% + 500%	100 m³	1077.53
			Total labour cost		**18596.64**
			Material cost		**98783.00**
			Total		**117379.64**
			Contingency 2%		**2347.59**
			Grand total		**49929.23**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1.00
1:1.5
0.90
1.06
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2.86
X-Section
0.23
0.60
0.20
L-Section

Pucca disposal open channel

Estimate of Under Ground Pipeline

Length of U.G.P.L. :- 800.00 m.
Bed Width :- 0.45 m.
Top Width :- 0.95 m.
Maximum Depth :- 1.00 m.
Cost of Project :- 4,28,000

Sr. No.	Particular	No.	Length (m.)	Breadth (m.)	Depth (m.)	Unit	Content
1	Clearing Jungle including up rooting and vegitation grass buresh wood, Trees removed of rubbish up to distance of SOM out side the periphery of the area cleured H.S.R.-6.26	1	600	2.50	-	Sq.m.	1500.00
2	Excavaton on for pipe line ruming under prosur in open area H.S.R. - 6.8	1	800	$\frac{0.95 + 0.45}{2}$	1.00	Sq.m.	60.00
3	Less partion of road under ground pipe line hole (Kalanour to Beri Road)	1	16	$\frac{0.95 + 0.45}{2}$	1.00	Sq.m.	11.20
4	Laying out 200mm. HDPE pipe I.S.I marked H.S.R. - 28.7	1	800				

5	Jointing og 200mm. HDPE pipe I.S.I. marked H.S.R.- 28.8	1	132				

Abstract of Cost

Sr. No.	Particular	Qty.	Rate	Unit	Amount
1	Clearing Jungle including uprooting and vegitation grass buresh wood, Trees removed of rubbish up to distance of SOM outside the periphery of the area cleured H.S.R.-6.26	1500.00	66.80-21.5% + 370% = 246.46	Per 100 Sq.m.	3696.90
2	Excavaton on for pipe line ruming under prosur in open area H.S.R. - 6.8	548.80	1030-21.5% + 370% = 3800.18	Per 100 Sq.m.	20855.39
3	Under Ground hole for cross the U.G.P.L. uner road	16.00	600.00	Per m.	9600.00
4	Laying out 200mm. Pipe HDPE ISI marked H.S.R.- 28.7	800.00	24.60 - 21.5% + 300% = 77.24	Per 10 Sq.m.	6179.20

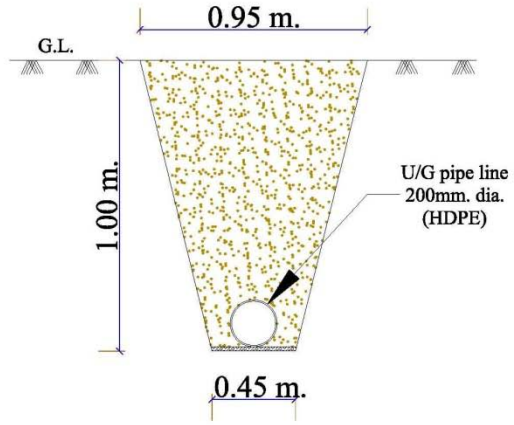
5	Jaintng of 200mm. HDPE pipe ISI H.S.R.- 28.8	132.00	9.15 -21.5% + 300% = 28.73	Per Jart.	3792.36
			Total (1)		**44123.85**

Cost of Metrial:-

		Qty.	**Rate**	**Amount**
I.	Cost of HDPE pipe 200mm. Dia.	142.00	2598.00	368916
II.	Cost of bed 200mm. Dia.	4.00	650.00	2600
III.	Cost of P.C.N.-9	1.00	1200.00	1200
IV.	Cost of air realaas valve	1.00	1440.00	1440
V.	Cost of end C/P	2.00	450.00	900
		Total (2)		**375056.00**

Grand Total (1+2)	**419179.85**
Add 2% Contingency	**8383.596957**
Total	**427563.44**
Say	**4,28,000.00**

Under Ground Pipe Line HDPE 200mm. dia.



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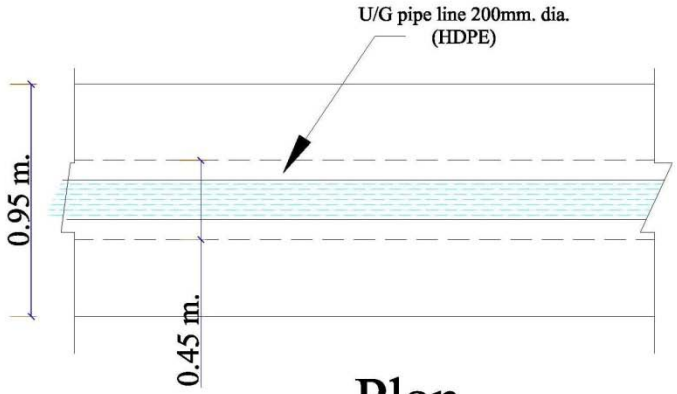

Plan

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

A. Horticulture

Sr. No.	Particulars	Quantity	Unit	Rate	Amount
1	Soil working 1m x 1m x 1m size 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)

A. Horticulture

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

Table. 8. Estimate of Agro- Forestry/ Afforestation

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

					Total	**1741.40**

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

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

PRODUCTION SYSTEM- 10%

7.3 PRODUCTION SYSTEM

7.3.1 Crop Production

Present Status: Agriculture is the mainstay of the inhabitants of the project area which is mainly rainfed and people gamble with the uncertain rains. The fertility of the soil is very poor especially in nitrogen and phosphorous because the organic carbon contained in the soil is very low and the available potash in the soil is medium (fertility map attached in annexure VI). 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 tree farming and 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 use of chemical fertilizer is limited to urea upto 50 Kg/acre in wheat. Only farm yard manure is added to maintain yield levels. Food grains are hardly sufficient for 6 to 8 months with small farmers.

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 elated 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 concept of precision farming and non-monetary inputs shall be introduced.
- Agro-forestry with integration of trees like Eucalyptus, Neem, Acacia, Shisham would be promoted on large scale.
- Leguminous crops mainly Moong and mash short duration varieties needs to be introduced.

7.3.2 Horticulture

Existing System: Ber, amla and guava are the most preferred fruit crop of the farmers and scattered plants of local citrus fruits are seen in farm lands. Some farmers have started raising Guava and Kinnow where irrigation facilities are available. Citrus fruits also raised but mostly for domestic use. There is no well organized marketing system in fruit plants.
Proposed System: The average annual rainfall is 494 mm in the project area. The project areas are well connected by roads and the economic condition of the locals can be improved by introducing improved cultural practices of fruit plants coupled with rain water harvesting and efficient use of water. Large number of farmers are interested to increase area under Guava and Kinnow and requested for supply of good quality nursery raised plants. Several families have shown interest in raising Citrus fruits and amla. The following activities are proposed to promote horticulture in the area.

- Supply of quality seedlings arranged from approved nurseries as per choice of farmers.
- Soil testing up to a depth of 180 cm depth to ensure suitability of soil for fruit plants.
- Proper back up 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.
- Proper planning for raising filler plants like Papaya, pomegranate and shade loving crop like turmeric.
- 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 self use. Some poly houses have come up in the area with financial support from National Horticulture Mission (NHM) and have started commercial cultivation of off season vegetables with the introduction of NHM scheme the farmers are interested for drip/sprinkler irrigation to enhance the net production value of the farm.

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 and parthenium, the most obnoxious weeds have invaded such area.

The following interventions are proposed to popularize agro-forestry as an alternate source of income.

- Planting of improved verity of Eucalyptus and Neem in the project both as single rows on field bunds and also as blocks.

7.3.5 Livestock Improvement Including Fodder Production

Livestock rearing is the most important subsidiary occupation of the project villagers. In addition to selling milk for regular daily income, farm yard manure is most needed to maintain fertility and moisture retention of soils. Even

landless families also maintain few numbers of animals. The animal breed improvement work was initiated in these villages under Arravali, DDP, DPAP projects and it is a regular program of the Animal Husbandry Department. However, the availability of animal health services at the door step is grossly lacking. The programs proposed under the project for livestock improvement include:

- In order to promote animal health care camps shall be organized and medicines for de-worming, mineral mixture shall be supplied in addition to awareness generation about prevention of animal diseases.
- Provision of quality seed of fodder crops and demonstration.
- Rising of protein rich fodder plants by promoting Napier Bajra Hybrid and Leucaena hedge rows on field bunds.

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, fruits and milk though these are source of income with many families.

The efforts through the project are directed towards diversification of agriculture to include fruit and vegetable crops and dairy development. The transfer of area to these high value crops would depend on development of irrigation facilities, facilitation in input supplies, transfer of production technology, easy credit and market linkages. Efforts have been made to reactivate the non-functional SHGs and UGs. New watershed committees have been formed in each village. Farmers have shown interest in joint management of resources and join hands for processing, value addition and marketing.

Fortunately, the involvement of Rural Development Department means regular interaction with the district administration whose good offices would be used to involve rural banking institutions in funding support for SHGs, User Groups and other interest groups.

7.3.7 Detail of production system to be promoted

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

Table 9 .Detail of Production System proposed to be promoted in the project village

S. No.	Particulars	Contents	No. of micro watershed	No. of beneficiaries per micro watershed	No. of total beneficiaries	Cost per beneficiaries	Total
1	Vermi Compost	Vermi compost is organic matter that is decomposed and recycled, used as fertilizer for soil am endment whi ch i s a k ey i ngredient i n organic farming. Under IWMP, financial assistance of 25% of total cost of Rs. 24000/- is provided.	9/21	10	210	6000	1260000
2	Green Manuring	Addition of organic matter required, which is deficient in project area. Under IWMP, financial assistance @ Rs. 500 for 20 Kg.s per farmer for 2 Acre (0.8 ha) holding is provided.	9/21	50	1050	500	525000
3	Bio-fertilizers	For i ntegrated nutrient m anagement (combination of c hemical f ertilizers, orga nic manure, crop residue and nitrogen fixing. Under I WMP, f inancial as sistance @ Rs . 40 per f armer for 2 A cre (0. 8 ha) hol ding i s provided.	9/21	50	1050	40	42000
4	Pest-Management	For i ntegrated p est M anagement, t he bi o control t echnique has been re ported ec o-friendly for control of pests. A provision of	9/21	50	1050	250	262500

S. No.	Particulars	Contents	No. of micro watershed	No. of beneficiaries per micro watershed	No. of total beneficiaries	Cost per beneficiaries	Total
		Azadirachtin bio pesticide @ Rs . 250/ lit. per farmer is provided.					
5	Sprinkler irrigation	Sprinkler irrigation is a m ethod of applying irrigation water which is similar to natural rainfall. Und er I WMP, financial as sistance @ 25% of Rs. 30000/- or price fixed by agriculture department is provided.	9/21	10	210	7500	1575000
6	Drip Irrigation	Drip Irrigation i s an irrigation m ethod t hat saves wat er and f ertilizer b y al lowing water t o drip slowly to the roots of plants. Under IWMP, financial assistance @ 10% of Rs. 58000 per ha f or ho rticulture f ixed b y A griculture Department is provided.	9/21	5	105	5800	609000
7	Lazer Leveling	Lazer Leveling is one such proven technology that is highly useful in conversation of irrigation water. Un der I WMP, f inancial as sistance @ 30% of Rs. 1075 per farmer is provided	9/21	50	1050	322.5	338625
8	Kitchen Gardening	To f acilitate wi th i nputs, s eeds and equipments etc., for development of Kitchen Gardening. Under IWMP, financial assistance @ Rs. 50 per f armer p er season (Rs. 100 per year) is provided.	9/21	50	1050	100	105000
9	Horticulture	Potential for Grafted Horticulture plants. Supply of plants @ Rs. 40/- per plant under IWMP 50 % cost share for cultivation of fruits like Citrus fruits, G uava, A mla, Ber f loriculture an d vegetables (especially, turmeric, garlic, onion	9/21	80	1680 (16800 plants)	20	336000

S. No.	Particulars	Contents	No. of micro watershed	No. of beneficiaries per micro watershed	No. of total beneficiaries	Cost per beneficiaries	Total
		and tomato)					
10	Reclamation & Alcination	Supply of gypsum bags@ 75/- for farmer	21	3	63	7500	472500
	Total						5525625
	Contingency, printing material other unforeseen items						66375

Total: Rs. 5592000/-

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.

Under Agro forestry, tree species commonly planted are eucalyptus and neem. The impacts of such type's plantation have given extra source of income.

7.3.8. Vermin Compost

The vermin compost is one of the very useful organic manure. The vermin compost prepared by induction of various types worms (Earth Worm), to de co mpost and c onverted from raw ani mal 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 ava ilable nutrients in vermin- compost are higher than country type farmyard manure. As per NHM guideline, the installation cost of structure of 1 vemin 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 addi tional amount i.e. Rs. 10000/- will be born 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 80% 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) Gurgaon and Haryana Institute of rural development, Nilokheri. Agriculture University, Gurgaon, Central Soil and Water research and training Institute, Chandigarh and HIRD, Nilokheri. 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 (RFP) so that 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. Pickles, sauces, jam, jelly etc.
12. Backyard poultry
13. Floriculture

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	Daula	3	3	25000	75000
2	Mundawar	1	1	25000	25000
3	Satlaka	4	4	25000	100000
4	Bai Khera	3	3	25000	75000
5	Ranika Singhola	3	3	25000	75000
6	Hazipur	3	3	25000	75000
7	Ghangola	1	1	25000	25000
8	Sarmathhla	1	1	25000	25000
9	Loh Singhani	2	2	25000	50000
	Total	**21**	**21**		**525000**

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	Daula	3	3	35000	105000
2	Mundawar	1	1	35000	35000
3	Satlaka	4	4	35000	140000
4	Bai Khera	3	3	35000	105000

5	Ranika Singhola	3	3	35000	105000
6	Hazipur	3	3	35000	105000
7	Ghangola	1	1	35000	35000
8	Sarmathhla	1	1	35000	35000
9	Loh Singhani	2	2	35000	70000
	Total	**21**	**21**		**735000**

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 unit, Domestic poultry, Mushroom cultivation unit, Plumbing, Carpentry, Food Processing, Animal Husbandry, Product Processing etc.

Table 13. Computer Training (6 months) for unemployed youth above 12 th 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	Daula	3	15	10000	150000
2	Mundawar	1	10	10000	100000
3	Satlaka	4	20	10000	200000
4	Bai Khera	3	15	10000	150000
5	Ranika Singhola	3	20	10000	200000

6	Hazipur	3	15	10000	150000
7	Ghangola	1	10	10000	100000
8	Sarmathhla	1	10	10000	100000
9	Loh Singhani	2	15	10000	150000
	Total	**21**	**130**		**1300000**

Note: The beneficiaries will contribute 10% as cost sharing of the livelihood support programme Rs. 1300000 @ 10% cost sharing.

= 1300000- 130000
= 1170000/-

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

S. No.	Name of micro watersheds	No. of villages	No. of Persons in micro watershed	Amount of Training per Trainee	Total
1	Daula	3	3	25000	75000
2	Mundawar	1	1	25000	25000
3	Satlaka	4	4	25000	100000
4	Bai Khera	3	3	25000	75000
5	Ranika Singhola	3	3	25000	75000
6	Hazipur	3	3	25000	75000
7	Ghangola	1	1	25000	25000
8	Sarmathhla	1	1	25000	25000

9	Loh Singhani	2	2	25000	50000
	Total	**21**	**21**		**525000**

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. 525000 @ 10% cost sharing.

= 525000- 52500
= 472500/-

Table 15. Cutting and Tailoring Centre for female beneficiaries

S. No.	Name of micro watersheds	No. of villages	No. of centre's	Requirement for sewing machines per village (2 No.)	Payment to trainer per months	Period of training for each centre	Total payment to trainer
1	Daula	3	3	6	2000	6	36000
2	Mundawar	1	1	2	2000	6	12000
3	Satlaka	4	4	8	2000	6	48000
4	Bai Khera	3	3	6	2000	6	36000
5	Ranika Singhola	3	3	6	2000	6	36000
6	Hazipur	3	3	6	2000	6	36000
7	Ghangola	1	1	2	2000	6	12000
8	Sarmathhla	1	1	2	2000	6	12000
9	Loh Singhani	2	2	4	2000	6	24000
	Total	**21**	**21**	**42**			**252000**

Total cost for 6 Centres

1. Payment to trainers 252000/-
2. Sewing Machine Cost 252000/- @ Rs. 6000 per machine
3. Total 504000/-

Table 16. Embroidery Centre for female beneficiaries

S.No.	Name of micro watersheds	No. of villages	No. of centers	Payment t o Trainer per Month	Period months	Payment t o t rainer for 6 m onths @ R s. 2000 p.m	Total trainers	Grand Total
1	Daula	3	3	2000	6	12000	3	36000
2	Mundawar	1	1	2000	6	12000	1	12000
3	Satlaka	4	4	2000	6	12000	4	48000
4	Bai Khera	3	3	2000	6	12000	3	36000
5	Ranika Singhola	3	3	2000	6	12000	3	36000
6	Hazipur	3	3	2000	6	12000	3	36000
7	Ghangola	1	1	2000	6	12000	1	12000
8	Sarmathhla	1	1	2000	6	12000	1	12000
9	Loh Singhani	2	2	2000	6	12000	2	24000
	Total	**21**	**21**				**21**	**252000**

Payment to trainer: Rs.252000/-

Cost of machine: Rs.420000/- @ Rs. 20000/- per machine

Total Cost: Rs.672000/-

Table 17. Livelihood Support

S.No.	Name of micro watersheds	No. of villages	Revolving fund assistance to individuals unemployed youth/ landless, women			
			Dairy Unit	Bee Keeping	Vegetable & flower production	Computer cyber café
1	Daula	3	3	3	3	1
2	Mundawar	1	1	1	1	1
3	Satlaka	4	4	4	4	1
4	Bai Khera	3	3	3	3	1
5	Ranika Singhola	3	3	3	3	1
6	Hazipur	3	3	3	3	1
7	Ghangola	1	1	1	1	1
8	Sarmathhla	1	1	1	1	1
9	Loh Singhani	2	2	2	2	1
	Total	**21**	**21**	**21**	**21**	**9**
	Rate (Rs)		**2400**	**2400**	**24000**	**36000**
	Cost (Lakh Rs)		**0.504**	**0.504**	**5.04**	**3.24**

Contingency, printing material and other unseen items: Rs. 25500/-

Total funds available under this component are Rs. 5032800/-

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

i. HIRD, Nilokheri

ii. Agriculture, Technology and Extension, Gurgaon 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), Gurgaon

There appears to be great potential for these activities and these activities are likely to generate income of Rs. 2000/- to Rs. 2500/- per member per month. However no activities would be forced upon on any SHGs and they would be free to decide the activity they would like to opt for their additional income. The PIA can take up the activities as per the need and approval of the Watershed Committee. Based on their choice, Project report for the specified activity would be prepared and revolving fund of Rs. 20000/ Rs. 25000/- per SHG would be given for running their respective micro enterprise. If need arises for more funds for their Income Generation Activities at later stage, they would be assisted in getting loan from banks. SHGs thus formed would be provided all possible assistance to uplift for their Socio- Economic conditions.

CONVERGENCE

7.5 INTRODUCTION

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

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

7.5.1 Convergence between MGNREGA and Watershed Programmes

Most of the activities under watershed development are covered under MGNREGA and there is a need for convergence to meet gap in requirement under IWMP. The labour component would be met out of funds made available under MGNREGA. The village wise details of the fund requirement are exhibited below (table. 35)

Detail of Convergence of IWMP and other schemes

Table 18. GAPS IN FUNDS REQUIREMENT – MICRO WATERSHED WISE

S.No	Name of micro watershed	Total cost requirement for works	Total funds available under IWMP for works	Gap in funds requirement for works	Convergence with MGNREGA
1	Daula	33.15	31.58	1.57	1.57
2	Mundawar	38.00	33.26	4.74	4.74
3	Satlaka	40.34	34.26	6.08	6.08
4	Bai Khera	39.59	34.28	5.31	5.31
5	Ranika Singhola	38.53	32.93	5.60	5.60
6	Hazipur	39.07	34.28	4.79	4.79
7	Ghangola	34.70	32.26	2.44	2.44
8	Sarmathhla	56.95	47.04	9.91	9.91
9	Loh Singhani	33.95	30.91	3.04	3.04
	Total	**354.28**	**310.80**	**43.48**	**43.48**

- 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 five 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 32 ha horticulture development programme with the financial assistance of Rs.

8.00 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 Roof top rainwater Harvesting, Ramp, inlet & outlet, Earthen Embankments /Marginal bunds with pucca outlet, Small earthen embankment with vegetative support, Construction of Check Dam, water conveyance system 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 under progress and post project. 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	Daula	505	60,60,000	60,600
2	Satlaka	510	61,20,000	61,200
3	Mundawar	495	59,40,000	59,400
4	Bai Khera	510	61,20,000	61,200
5	Ranika Singhola	490	58,80,000	58,800
6	Hazipur	510	61,20,000	61,200
7	Ghangola	480	57,60,000	57,600
8	Sarmathla	700	84,00,000	84,000
9	Loh Singhani	460	55,20,000	55,200

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	Daula	505	60,60,000	60,600
2	Satlaka	510	61,20,000	61,200
3	Mundawar	495	59,40,000	59,400
4	Bai Khera	510	61,20,000	61,200
5	Ranika Singhola	490	58,80,000	58,800
6	Hazipur	510	61,20,000	61,200
7	Ghangola	480	57,60,000	57,600
8	Sarmathla	700	84,00,000	84,000
9	Loh Singhani	460	55,20,000	55,200

CONSOLIDATION PHASE- 3 %
Consolidation Phase = Rs. 16, 77,600 /-

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: Daula

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	0.36
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: Satlaka

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	0.37
2	Preparation of Project completion report	0.09
3	Documentation of success stories	0.09
4	Management of proper utilization of WDF	0.28
5	Mechanism for quality and sustainability issues under the Project	0.09
6	Watershed activities	0.92

Total: 1.84 lacs

Name of Micro watershed: Mundawar

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	0.27
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: Bai Khera

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	0.37

2	Preparation of Project completion report	0.09
3	Documentation of success stories	0.09
4	Management of proper utilization of WDF	0.28
5	Mechanism for quality and sustainability issues under the Project	0.09
6	Watershed activities	0.92

Total: 1.84 lacs

Name of Micro watershed: Ranika Singhola

Table 7. Consolidated Phase

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

Total: 1.76 lacs

Name of Micro watershed: Hazipur

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	0.37
2	Preparation of Project completion report	0.09
3	Documentation of success stories	0.09
4	Management of proper utilization of WDF	0.28
5	Mechanism for quality and sustainability issues under the Project	0.09
6	Watershed activities	0.92

Total: 1.84 lacs

Name of Micro watershed: Ghangola

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	0.08
4	Management of proper utilization of WDF	0.26
5	Mechanism for quality and sustainability issues under the Project	0.09
6	Watershed activities	0.86

Total: 1.73 lacs

Name of Micro watershed: Sarmathla

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	0.50
2	Preparation of Project completion report	0.13
3	Documentation of success stories	0.12
4	Management of proper utilization of WDF	0.38
5	Mechanism for quality and sustainability issues under the Project	0.13
6	Watershed activities	1.26

Total: 2.52 lacs

Name of Micro watershed: Loh Singhani

Table 11. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.33
2	Preparation of Project completion report	0.09
3	Documentation of success stories	0.08
4	Management of proper utilization of WDF	0.25
5	Mechanism for quality and sustainability issues under the Project	0.08
6	Watershed activities	0.83

Total: 1.66 lacs

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

- Improving the sustainability of various structures and equitable distribution. The watershed committee will fix the charges of water and 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 4660 ha and the Project Cost is 599.20 lacs covering 9 no. micro watersheds and in 21 villages. Benefits will be much more than the project cost as detailed below:

With the several interventions under IWMP II project such as Livelihood support, Farm production system, various types of activities relating to soil conservation measures for diversification of crops, Protection to field by constructing the structures etc, it is expected that these Watershed villages will gain a lot. This intervention will have multiple benefits available to communities in terms of employment, improvement in water table, more area under agriculture, 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 IWMP 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. Similarly due to lack of fodder animal husbandry does not keep them engage full time. Thus the people mainly depend upon casual labour either in the villages or nearby industry.

Table 1. Expected Employment Generation in the Project area

S. No.	Name of micro watershed	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	Daula	2238	5428	7666	280	679	958	-	11	22	33
2	Mundawar	2117	3764	5881	265	471	735	-	11	-	11
3	Satlaka	344	6268	6612	43	784	827	22	11	11	44
4	Bai Khera	2320	3207	5527	290	401	691	11	11	11	33
5	Ranika Singhola	1302	4128	5430	163	516	679	11	-	22	33
6	Hazipur	2122	5652	7774	265	707	972	11	22	-	33
7	Ghangola	3034	2493	5527	379	312	691	11	-	-	11
8	Sarmathhla	2205	5902	8107	276	738	1013	-	11	-	11
9	Loh	1541	3577	5118	193	447	640	11	11	-	22

	Singhani										
		17223	**40419**	**57642**	**2153**	**5052**	**7205**	**77**	**88**	**66**	**231**

57642 man days would be generated with the implementation of the project (IWMP II), which means 115 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 Daula 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	Lohsinghani	189	95	120	60	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
2	Ghengola	254	127	150	75	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
3	Bai Khera	56	28	150	75	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
4	Hazipur	126	63	150	75	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
5	Tolani	45	23	120	60	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
6	Ranika Singhola	55	28	120	60	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
7	Johlaka	62	31	150	75	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
8	Bhogpur	77	39	180	90	No. of persons migrating will be reduced and also

						no. of days would be reduced by over 50%
9	Khuntpuri	69	35	180	90	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
10	Rahaka	42	21	150	75	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
11	Satlaka	86	43	150	75	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
12	Lala Kherli	196	98	150	75	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
13	Kuliyaka	102	51	120	60	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
14	Bidwaka	39	20	120	60	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
15	Khatrika	5	3	150	75	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
16	Sarmthla	179	90	120	60	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
17	Mandawar	73	37	180	90	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
18	Bilaka	61	31	150	75	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
19	Daula	246	123	150	75	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
20	Jalalpur	-	-	-	-	
21	Khobri	-	-	-	-	

9.3 GROUND WATER TABLE (Drinking Water)

The Drinking Water supply is managed by Public Health Department by Installing Tube well and canal network in the area the project is expected to augment the ground water resources with the proposed water harvesting structure.

The present water table ranges 4-27 m below ground level. The area of watershed is underlain by fresh to marginal quality of ground water. In general, the area being under shallow water table condition is fresh whereas the area in village in micro-watershed Bilakha and Ranika Singhola (Bilakha, Bhogpur, Tolani and Ranika Singhola villages) quality of water is marginal. This is due to the deeper water table depth (from 10 to 15 m or more). It has been proposed to make rainwater-harvesting by construction of water harvesting structures. The provision of this has been provided in the project proposal.

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

Sr.No.	Name of micro watersheds	Source	Existing pre-project ground Water table level(m)	Remarks
1	Lohsinghani	Well	4.10	The necessary provision of rain water harvesting where the water level is below 5 m and recharging has been proposed where ground water is being exploited and is below 10 m depth.
2	Ghengola	Well	5.87	
3	Bai Khera	Well	8.10	
4	Hazipur	Well	11.85	
5	Tolani	Well	11.20	
6	Ranika Singhola	Well	10.90	
7	Johlaka	Well	11.95	
8	Bhogpur	Well	10.50	
9	Khuntpuri	Well	12	
10	Rahaka	Well	7.10	
11	Satlaka	Well	7.10	
12	Lala Kherli	Well	22.15	
13	Kuliyaka	Well	7.30	
14	Bidwaka	Well	6.30	
15	Khatrika	Well	7.10	

16	Sarmthla	Well	6.87	
17	Mandawar	Well	22.10	
18	Bilaka	Well	10.90	
19	Daula	Well	26.18	
20	Jalalpur	Well	26.18	
21	Khobri	Well	26.18	

Source: Ground Water Cell, Haryana

9.4 CROPS

Agriculture primary depends upon water, but this is availability of this is lacking without existence of canal network and deeper ground water conditions. All this can change with the integrated land and water management during the watershed project. The planned Roof top rainwater Harvesting, Ramp, inlet & outlet, Earthen Embankments /Marginal bunds with pucca outlet, Small earthen embankment with vegetative support, Construction of Check Dam, water conveyance system etc. can preserve sub moisture in the soil. This will help in additional area coming under cultivation and increasing productivity too. The crop yield pre project and expected and post project is presented in table 4.

Table 4. Increase in Expected Yield in Daula Watershed

Name of Micro Watersheds	Name of Crops	Pre Project		Total Production (in Kg)	Total Value Rs.	Expected post project		Total Production (in Kg)	Total Value Rs.
		Area ha	Average yield kg. Per ha			Area ha	Average yield kg. Per ha		
Lohsinghani	Wheat	237	4119	976203	13178741	261	4243	1107423	14950211
	Sugarcane	23	73634	1693582	5097682	25	77316	1932900	5818029
	Rice	224	3260	730240	14604800	246	3423	842058	16841160
Gangola	Wheat	192	4119	790848	10676448	211	4243	895273	12086186
	Mustard	33	1713	56529	1695870	36	1799	64764	1942920
	Bajra	89	1947	173283	2166038	98	2025	198450	2480625

Baikhera	Wheat	106	4119	436614	5894289	117	4243	496431	6701819
	Mustard	28	1713	47964	1438920	31	1799	55769	1673070
	Bajra	71	1947	138237	1727963	78	2025	157950	1974375
Hazipur	Wheat	188	4119	774372	10454022	207	4243	373301	26349030
	Mustard	39	1713	66807	2004210	43	1799	77357	2320710
	Bajra	185	1947	360195	4502438	204	2025	413100	5163750
Tolani	Wheat	170	4119	700230	9453105	187	4243	793441	10711454
	Mustard	5	1713	8565	256950	6	1799	10794	323820
	Bajra	152	1947	295944	3699300	167	2025	338175	4427188
Ranika Singola	Wheat	86	4119	354234	4782159	95	4243	403085	5441648
	Mustard	37	1713	63381	1901430	41	1799	73759	2212770
	Bajra	92	1947	179124	2239050	101	2025	428543	5356788
Johlaka	Wheat	182	4119	749658	10120383	200	4243	848600	11456100
	Mustard	6	1713	10278	308340	7	1799	12593	377790
	Bajra	73	1947	142131	1776638	80	2025	162000	2025000
Bhogpur	Wheat	92	4119	378948	5115798	101	4243	428543	5785331
	Mustard	6	1713	10278	308340	7	1799	12593	377790
	Bajra	54	1947	105138	1314225	59	2025	119475	1493438
Khuntpuri	Wheat	144	4119	593136	8007336	158	4243	670394	90503190
	Bajra	54	1947	99297	1241213	59	2025	119475	1493438
	Rice	47	3260	153220	3064400	52	3423	177996	3559920
Rahaka	Wheat	98	4119	403662	5449437	108	4243	458244	6186294
	Bajra	18	1947	35046	438075	20	2025	40500	506250
	Rice	34	3260	110840	2216800	37	3423	126651	2533020
Satalaka	Wheat	93	4119	383067	5171405	102	4243	432786	5842611
	Bajra	26	1947	50622	632775	29	2025	58725	734063
	Rice	37	3260	120620	2412400	41	3423	140343	2806860
Lala Khedali	Wheat	130	4119	535470	4528845	143	4243	606749	81911112
	Mustard	14	1713	23982	719460	15	1799	26985	809550
	Bajra	98	1947	190806	2385075	108	2025	218700	2733750
Kuliyaka	Wheat	125	4119	514875	6950813	138	4243	585534	
	Bajra	81	1947	157707	1971338	89	2025	180225	2252813
	Rice	51	3260	166260	3325200	56	3423	191688	3833760
Bidhwaka	Wheat	113	4119	465447	6283535	124	4243	526132	7002782

	Bajra	3	1947	5841	73013	3	2025	6075	75938
	Rice	64	3260	208640	4172800	70	3423	239610	4792200
Khatrika	Wheat	116	4119	477804	6450354	128	4243	543104	7331904
	Rice	114	3260	371640	7432800	125	3423	427875	8557500
	Sugarcane	3	73634	220902	664915	3	77316	23193	69811
Sarmathla	Wheat	613	4119	2524947	34086785	674	4243	2859782	33607057
	Bajra	13	1947	25311	316388	14	2025	28350	354375
	Rice	470	3260	1532200	30644000	517	3423	1769691	35393820
Mandawar	Wheat	111	4119	457209	6172322	122	4243	517646	6988221
	Mustard	15	1713	25695	770850	15	1799	26985	809550
	Bajra	91	1947	177177	2214713	100	2025	202500	2531250
Bilahaka	Wheat	177	4119	729063	9842351	195	4243	827385	11169698
	Mustard	20	1713	34260	1027800	22	1799	39578	1187340
	Bajra	57	1947	110979	1387238	62	2025	127575	1594688
Daula	Wheat	225	4119	926775	12511463	248	4243	1052264	14205564
	Mustard	80	1713	137040	4111200	88	1799	158312	4749360
	Bajra	144	1947	280368	3504600	158	2025	319950	3999375
Jalalpur	Wheat	8	4119	32952	444852	9	4243	38187	515525
	Mustard	8	1713	13704	411120	9	1799	16191	485730
	Bajra	11	1947	21417	267713	12	2025	27300	303750
Khobari	Wheat	11	4119	45309	611672	12	4243	50916	687366
	Mustard	5	1713	8565	256250	6	1799	10794	647640
	Bajra	4	1947	7788	97350	4	2025	8100	101250

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

9.5 HORTICULTURE

Table 5. Pre and post project area under Horticulture

Sr. No.	Name of Micro Watersheds	Existing area under horticulture (ha)	Additional Area under horticulture proposed to be covered through IWMP	Total area in ha- Post Project
1	Lohsinghani	-	8	8
2	Ghengola	-	10	10

3	Bai Khera	-	7	7
4	Hazipur	1	12	13
5	Tolani	-	10	10
6	Ranika Singhola	8	9	17
7	Johlaka	1	7	8
8	Bhogpur	-	6	6
9	Khuntpuri	-	7	7
10	Rahaka	2	8.5	10.5
11	Satlaka	-	7	7
12	Lala Kherli	-	11	11
13	Kuliyaka	-	8	8
14	Bidwaka	-	9	9
15	Khatrika	-	2	2
16	Sarmthla	-	9	9
17	Mandawar	-	5	5
18	Bilaka	-	4	4
19	Daula	4	6	10
20	Jalalpur	-	5	5
21	Khobri	-	4	4

9.6 AFFORESTATION/ VEGETATIVE COVER

Table 6. Pre and post project forest and vegetative cover

Sr. No.	Name of micro watersheds	Existing area under tree covered, ha	Area under tree cover proposed ha	Total
1	Lohsinghani	40	20	60
2	Ghengola	41	20	61
3	Bai Khera	32	16	48
4	Hazipur	40	20	60
5	Tolani	40	20	60
6	Ranika Singhola	42	22	64

7	Johlaka	46	23	69
8	Bhogpur	44	22	66
9	Khuntpuri	41	20	61
10	Rahaka	33	17	50
11	Satlaka	36	18	54
12	Lala Kherli	33	16	49
13	Kuliyaka	44	22	66
14	Bidwaka	40	20	60
15	Khatrika	41	20	61
16	Sarmthla	42	21	63
17	Mandawar	45	23	68
18	Bilaka	44	22	66
19	Daula	40	20	60
20	Jalalpur	32	16	48
21	Khobri	30	15	45

9.7 LIVESTOCK

Table 7. Details of livestock in the project area

Sr. No.	Name of micro watershed	Type of Animals	Pre Project			Post Project			Remarks
			No.	Yield Kg/day	Income in Rs. per day	No.	Yield Kg/day	Income in Rs. per day	
1	Lohsinghani	Buffalo	537	8-9	320-360	618	9-10	333-368	Increase in milk Yield and number of animals by approx 15%
		Cow	106	5-6	150-180	122	6-7	163-188	Increase in milk Yield and number of animals by approx 15%
2	Ghangola	Buffalo	706	8-9	320-360	812	9-10	333-368	Increase in milk Yield and number of animals by approx 15%
		Cow	50	5-6	150-180	58	6-7	163-188	Increase in milk Yield and number of animals by approx 15%
3	Baikhera	Buffalo	299	8-9	320-360	344	9-10	333-368	Increase in milk Yield and number of animals by approx 15%

		Cow	29	5-6	150-180	33	6-7	163-188	Increase in milk Yield and number of animals by approx 15%
4	Hazipur	Buffalo	480	8-9	320-360	552	9-10	333-368	Increase in milk Yield and number of animals by approx 15%
		Cow	108	5-6	150-180	124	6-7	163-188	Increase in milk Yield and number of animals by approx 15%
5	Tolani	Buffalo	107	8-9	320-360	123	9-10	333-368	Increase in milk Yield and number of animals by approx 15%
		Cow	16	5-6	150-180	18	6-7	163-188	Increase in milk Yield and number of animals by approx 15%
6	Ranika Singola	Buffalo	324	8-9	320-360	373	9-10	333-368	Increase in milk Yield and number of animals by approx 15%
		Cow	178	5-6	150-180	205	6-7	163-188	Increase in milk Yield and number of animals by approx 15%
7	Johalka	Buffalo	268	8-9	320-360	308	9-10	333-368	Increase in milk Yield and number of animals by approx 15%
		Cow	269	5-6	150-180	309	6-7	163-188	Increase in milk Yield and number of animals by approx 15%
8	Bhogpur	Buffalo	193	8-9	320-360	222	9-10	333-368	Increase in milk Yield and number of animals by approx 15%
		Cow	41	5-6	150-180	47	6-7	163-188	Increase in milk Yield and number of animals by approx 15%
9	Khuntpuri	Buffalo	337	8-9	320-360	388	9-10	333-368	Increase in milk Yield and number of animals by approx 15%
		Cow	36	5-6	150-180	41	6-7	163-188	Increase in milk Yield and number of animals by approx 15%
10	Rahaka	Buffalo	110	8-9	320-360	127	9-10	333-368	Increase in milk Yield and number of animals by approx 15%
		Cow	17	5-6	150-180	20	6-7	163-188	Increase in milk Yield and number of animals by approx 15%
11	Satlaka	Buffalo	270	8-9	320-360	311	9-10	333-368	Increase in milk Yield and number of animals by approx 15%
		Cow	-	-	-	-	-	-	Increase in milk Yield and number of animals by approx 15%

12	Lalakhedali	Buffalo	603	8-9	320-360	694	9-10	333-368	Increase in milk Yield and number of animals by approx 15%
		Cow	63	5-6	150-180	103	6-7	163-188	Increase in milk Yield and number of animals by approx 15%
13	Kulyaka	Buffalo	285	8-9	320-360	328	9-10	333-368	Increase in milk Yield and number of animals by approx 15%
		Cow	71	5-6	150-180	82	6-7	163-188	Increase in milk Yield and number of animals by approx 15%
14	Bidhwaka	Buffalo	70	8-9	320-360	81	9-10	333-368	Increase in milk Yield and number of animals by approx 15%
		Cow	-	-	-	-	-	-	Increase in milk Yield and number of animals by approx 15%
15	Khatrika	Buffalo	22	8-9	320-360	25	9-10	333-368	Increase in milk Yield and number of animals by approx 15%
		Cow	5	5-6	150-180	6	6-7	163-188	Increase in milk Yield and number of animals by approx 15%
16	Sarmathala	Buffalo	836	8-9	320-360	961	9-10	333-368	Increase in milk Yield and number of animals by approx 15%
		Cow	65	5-6	150-180	75	6-7	163-188	Increase in milk Yield and number of animals by approx 15%
17	Mandawar	Buffalo	250	8-9	320-360	288	9-10	333-368	Increase in milk Yield and number of animals by approx 15%
		Cow	54	5-6	150-180	62	6-7	163-188	Increase in milk Yield and number of animals by approx 15%
18	Bilaka	Buffalo	352	8-9	320-360	405	9-10	333-368	Increase in milk Yield and number of animals by approx 15%
		Cow	54	5-6	150-180	62	6-7	163-188	Increase in milk Yield and number of animals by approx 15%
19	Daula	Buffalo	936	8-9	320-360	1076	9-10	333-368	Increase in milk Yield and number of animals by approx 15%
		Cow	117	5-6	150-180	135	6-7	163-188	Increase in milk Yield and number of animals by approx 15%
20	Jalalpur	Buffalo	-	-	-	-	-	-	-
		Cow	-	-	-	-	-	-	-

21	Khobri	Buffalo	-	-	-	-	-	-	-
		Cow	-	-	-	-	-	-	-

9.8 LINKAGES

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

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

Table No. 8: Backward-Forward Linkages

Sr. No.	Project	Type of Marketing Facility	Pre-Project (no.)	During the Project (no.)	Post-project (no.)
1	Daula 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

9.8.1.1 LOGICAL FRAMEWORK ANALYSIS

Table 9. Logical Framework Analysis

Components	Activities	Outputs	Effect	Impact
Village Institution Formation	Formation of W atershed Community, User Groups	• Watershed Committee each village • Number of use r 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 per ception towards the programme.

Components	Activities	Outputs	Effect	Impact
Strengthening Village operations	• Organizing training and awareness programme for village institutions (I.E.C. Activities). • Capacity Building workshops and exposure visits for User Group and Watershed Community • Facilitating and monitoring the functioning of UGs and WCs Strengthen linkages between UGs and WCs and Panchayat Institutions • Gender sensitization of UGs and WCs to increase inclusiveness of Samuh (Joint) decision making. • Sensitize Village communities to involve children and youth in development	• Awareness camps to be organized • Trainings and exposure visits UGs and WCs to be held Capacity building workshops to be organized one. • Federations of UGs and WC to be formed.	• Quality of management of common resources improved. • Quality of distribution of benefits between people improved. • Increased awareness amongst women about village resources • Women participation enhanced in decision-making of GVCs. • Involvement of youth and children in village development.	
Fund Management	• Improve management and utilization of UGs and WCs • Prepare communities to	UGs and WCs operating bank account and managing resources on their own.	• Purpose, frequency and volume of use of the fund enhanced	

Components	Activities	Outputs	Effect	Impact
	explore other so urces of income for UGs and WCs.		• Volume of f unds generated f or U Gs and WCs from ot her so urces of income increased	
Ecological restoration	• Protection, Tr eatment and regeneration of co mmon and private lands. • Protection, t reatment and regeneration of f orest lands. • Plantation of f ruits and forest species. • Input t rainings, co nduct meetings and or ganize exposure visit s f or communities, vil lage volunteers and st aff to effectively plan, e xecute and monitor activities. • Identification and promotion of non -timber forest pr oduce b ased income g eneration activities.	• Common and pr ivate l ands to be br ought und er new plantations and agr o-horti-forestry like Neem, Adussa, prosopis, B anyan an d Peepul. • Forest l ands to be br ought under ne w pl antations and protection. • Trainings, exp osure visit s and m eetings to be organized for co mmunities, village volunteers and staff. • Income gener ation intervention promoted	• Fodder av ailability from common and pr ivate l and increased. • Accessibility t o co mmon and f orest l ands increased with removal of encroachments and resolution of conflicts	• Better E cological or der i n the area. • Increase in the proportion of house holds having more security of fodder. • Reduction in dr udgery of fodder and f uel co llection, especially women
Rainfed Area Development	• Treatment of l and t hrough improved soil and moisture	• Land t o be br ought under improved so il m oisture	• Improved pr oductivity of treated land.	Increase i n pr oportion of households havin g m ore

Components	Activities	Outputs	Effect	Impact
	conservation practices on watershed basis. • Promotion of good agricultural practices-horticulture, improved crop and vegetable. • Promotion of organic farming practices. • Formation of Fodder banks to increase fodder security and promote dairy development among communities. • Identification and promotion of agri-produce based income generation activities like grading, processing and packaging. • Promotion of better irrigation practices like drip irrigation • Impart trainings, conduct meetings and organize exposure visits of communities.	conservation practices. • Good agricultural practices to be promoted. • Organic farming to be promoted. Fodder banks to be established. • Agriculture based livelihood income generation activities to be promoted • Water harvesting structures to be constructed. • Drip irrigation facilities to be distributed among farmers. • Approx 49000 man days of employment to be generated. • Trainings, exposure visits and meetings to be organized for communities, village volunteers.	• Increased availability of water in cells. • Increase in annual agricultural production. • Farmers adopt organic farming practices. • Fodder security of farmers enhanced. • Increased availability of water for 9 to12 months. • Increased availability of water for livestock • Increase in agricultural productivity of land. • Augmentation of drinking water supply.	security of food Increase in contribution of agricultural income to the house hold income

Components	Activities	Outputs	Effect	Impact
Women's socio-political and economic empowerment	• Formation and strengthening of women' SHG groups • Capacity building of women folk. • Capacity building of SHG leaders and accountants Linking SHGs with external financial institutions	• Women's SHG groups to be formed. • Federation of Women's SHGs to be formed. • Trainings to be conducted for preparation of woolen products from sheep and goats	• Enhanced capacities of leaders of women's group in taking initiatives to solve problems at differt levels. • Improved access to credit for livelihood purposes Increased household income.	• Position of women in household, community, society (politically, socially and economically) as perceived by women and community at large. • Performance enhancement of SHGs in terms of participation, decision-making, leadership and fund management. • Equality and equity in gender relations at home (decision making, expenditure, children's education, health)

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

The introduction of improved production technologies would stabilize crop production, save crops from adverse impacts of droughts and raise income level of farmers. The increased fodder availability and animal health care, the milk production would increase.

There would be increased cash flows from subsidiary occupations. The increased awareness, operations through SHGs and easy availability of finance would make the communities more vibrant and enterprising.