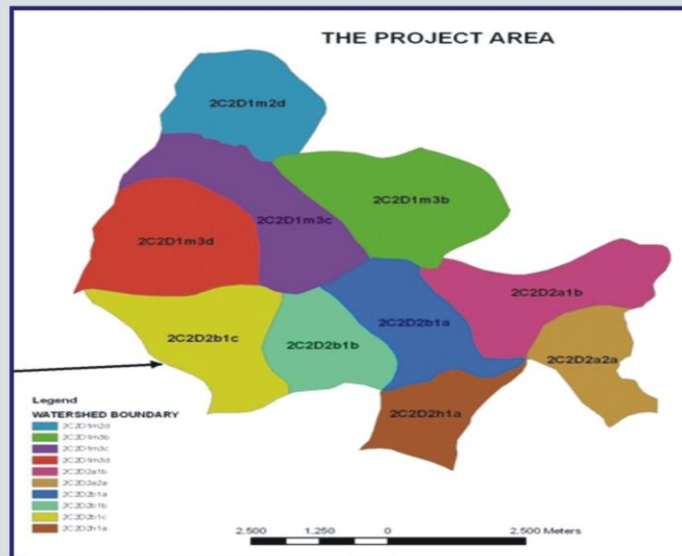


DETAILED PROJECT REPORT

OF INTEGRATED WATERSHED MANAGEMENT PROGRAMME-X LALITPUR - 12 (2010-11)



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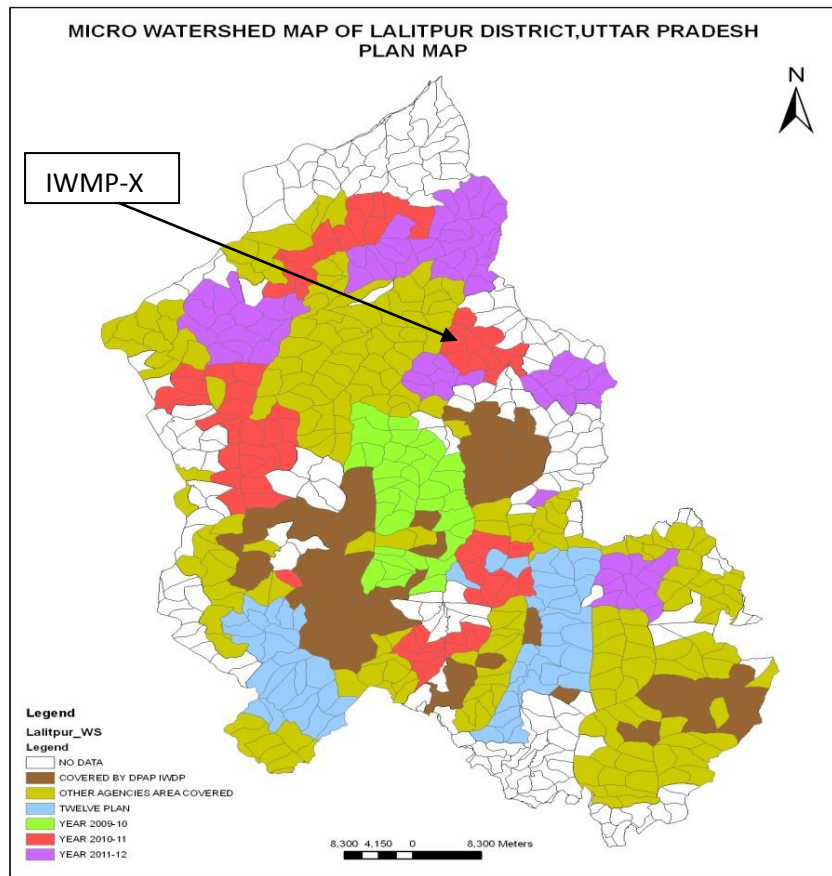
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IWMP-X (2010-11) DISTRICT – LALITPUR

PROJECT AT A GLANCE

Name of the project	Weightage	No. of MWS	Geographical Area (ha)	Rainfed Area (ha)	Treatable area (ha)
I.W.M.P. - X	85	10	6564.00	5710.00	5350.00



1.	Name of Block	BAR
2.	No. of Gram Panchayats	10
3.	Four reasons for selection of Watershed	i. Poverty index above 82% ii. Actual wages are significantly lower than minimum iii. Area under rainfed agriculture is more than 80 – 90% wages iv. Land with low production and reasonable efforts applicable.
4.	Date of approval of watershed Development Plan by DRDA/DPC	
5.	Area proposed to be treated (ha.)	5350.00 ha
6.	Date of sanction of PPR & Date of release of Ist Instalment	10-03-2010 & 15-06-2010
7.	Project duration	2010-2011 to 2013-2014
8.	Project Cost (in lac.)	642.00 Lacs
9.	Proposed mandays	243300

Table-1: PROJECT AT A GLANCE

1.	Name of Project	IWMP – X , Shahzad, Jamni River
2.	Name of Block	BAR
3.	Name of District	LALITPUR
4.	Name of State	UTTAR PRADESH
5.	Name of Micro Watershed	Gandora-I, 2C2D1m3c, Gandora-II, 2C2D1m3b, Bar-I, 2C2D1m3d, Bar-II, 2C2D2b1c, Bachrawni, 2C2D2b1a, Dashrara, 2C2D2b1b, Buragoun-I, 2C2D2h1a, Buragoun-II, 2C2D2a2a, Bhawani, 2C2D2a1b, Ladwari 2C2D1m2d
6.	Name of Village under Micro Watershed	Bar, Gandora, Bamangan, Bhujupura, Fadari, Dasrara, Bhaloni Lodh, Ladwari, Bachrawni, Buragoun, Kaloni, Bahwni, Bamhori Sahna
7.	Micro Watershed Code Selected	2C2D1m3c, 2C2D1m3b, 2C2D1m3d, 2C2D2b1c, 2C2D2b1a, 2C2D2b1b, 2C2D2h1a, 2C2D2a2a, 2C2D2a1b, 2C2D1m2d
8.	Total Area of the Project	5710.00 Hec.
9.	Proposed Area for Treatment	5300.00 Hec.
10.	Cost per Hectare	Rs. 12000 per Hec.
11.	Project Period	YEAR 2010-11 TO 2013-14
12.	Total Cost of Project	Rs. 642.00 Lakhs

EXECUTIVE SUMMARY

1. Breif about area

Bundelkhand comprises of four major systems i.e

- i) Archaean: comprising of crystalline, impermeable or hard igneous and metamorphic rocks with poor aquifer (water yield 1-5 litres per second (lps)) and high run off producing potentials
- ii) Vindhyan: comprising of massive sandstone and limestone escarpments and hold relatively more ground water (5-25 lps yield)
- iii) Transitional: represented by post Aravali and pre Vindhyan period of sedimentary strata of sandstone and limestone and constitute reasonable aquifer (5-25 lps yield) and
- iv) Recent: comprising of large 26 scale alluvial deposits with high ground water yield (20-40 lps).

Uttar Pradesh portion of Bundelkhand is spatially very highly rural based where over 80% population is living in villages in an area extent of 99%. Against National figure of Rural/Urban ratio of 2.6, UP state has this ratio as 3.81 depicting overall poverty in the state.

About 90% of the geological area of Bundelkhand is a hard rock with very poor yield of aquifer, fast depletion of water table and inadequate rate of replenishment or recharging. Development of ground water resources is not very dependable or attractive and aquifer water should be prioritized and preserved for drinking purpose. Therefore, watershed management, development of surface water resources, improving water use efficiency, enhancing biomass productivity of forest and livestock sector are the most important options of the new strategies.

Land degradation control is essential if future rural production is to be maintained and improved. Land restoration measures, involving soil erosion control, enhanced vegetative cover and water run-off management

will help to preserve the remaining soil and vegetation resources and assist in mitigating the severity of natural disasters. However, much of the land degradation is already irreparable and no amount of effort can overcome the existing damage. Any productive soil which is already lost through erosion has already permanently left the system.

The selected watershed in Lalitpur district (UP) is located along Lalitpur to Deogarh Road about 3 km. to 15 Km. & Lalitpur Rajghat roads 5 to 7 Km. from district headquarter. It lies between the longitude of 78° 34' 26" to 78° 41'08" and latitudes 24° 48' 04" to 24° 54' 27" having watershed code no **2C2D1m3c, 2C2D1m3b, 2C2D1m3d, 2C2D2b1c, 2C2D2b1a, 2C2D2b1b, 2C2D2h1a, 2C2D2a2a, 2C2D2a1b, 2C2D1m2d.** Its altitude ranges from 350 to 385 m from the mean sea level (MSL). The total area of watershed is 6564.00 Ha. These micro watersheds are surrounded by the catchment of river Shahzad-Jamni. This watershed is located in the West of LALITPUR District.

The project area comprises of **13** Villages namely Bar,Gandora,Bamangan,Bhujupura,Fadari,Dasrara, Bhaloni Lodh, Ladwari, Bachrawni,Buragoun,Kaloni,Bahwni, Bamhori Sahna of Bar block of District Lalitpur (U.P.)

The climate of the region is characterized by long and intensive hot summer ,low and irregular rainfall and short mild winter.

The catchment Shahzad-Jamni River covered by undulating land with slope ranges between (0.5 to 10%)and hillocks spreading here and there.

The soils of the study area can be divided into two broad groups namely red and black soils with three distinct soil associations (i) Bundelkhand coarse grained radish brown soils, (ii) Bundelkhand coarse grained grey to grayish brown soils and (iii) Bundelkhand clay loam black soils. In local parlance these soils are termed as *Rakar, Parwa* and *Kabar*, respectively. Horizon differentiation is almost absent. Soils are slightly acidic to neutral

in nature with presence of CaCO₃ granules in lower depths. Most of the soils are low in organic matter, available N and P and medium in available K. The watershed area has undulating terrain with scattered hills, crossed by the numerous streams and tributaries.

Agriculture practices in the project in the study area are **mono cropping, *anna pratha***. The farmers generally leave their fields fallow for free range grazing system in Kharif season, which makes cultivation difficult. These livestock, generally sheep, goat and indigenous cattle, having low productivity are let loose for grazing. This needs changing mindset which needs massive extension efforts to address increasing demands on the land, rainfall and water resources and non manageable condition of mar and kabar soil of the district.

Though no organized orchards are present in the watershed, homestead planting of fruit trees of Lime and guava has been practiced by farmers. The sub-tropical fruits and vegetable have very good potential in the watershed. Organized orchard, commercial vegetable cultivation, Horti-agri and other system of agro-forestry etc. are lacking but have good potential in the watershed.

The problem of erosion of the watershed is to be tackled by harvesting additional water in existing water harvesting structures, which have lost most of their capacity due to siltation and creating new water bodies. Water stored in the water harvesting structures shall be properly recycled to provide supplemental irrigation at critical growth stages of crops and for the establishment of fruit orchards and forest trees. The agricultural land will be treated with bunding along with minor leveling. Waste land will be treated with the engineering measures like staggered trenches and afforestation etc.

2. Institutional arrangement

This watershed has been identified by the state department under NWDPR scheme by proper prioritization of different parameters for watershed selection criteria.

The area of watersheds is proposed to be taken by Bhoomi Sanrakshan Adhikari, Department of land development & water resources, Lalitpur for integrated watershed management programme (IWMP) starting from the year 2010-11. The project will be completed by 2013-14.

3. Salient project activities

The area is prone to soil degradation due to environmental impact and over exploitation of natural resources therefore it is an urgent need to restore the ecological balance for the sustainability. Fodder shortage, lack of inputs and market facility are some of the major constraints being experienced by the farmers.

It is proposed that the soil conservation and check in run-off water is required urgently. Therefore the certain measures like contour bund, marginal bunds, and peripheral bunds are urgently required. On the other hand to control the run-off water the water management practices like drainage treatment check dams and other practices have been proposed according to general geology of the project area.

The agricultural land will be treated with bunding along with minor levelling. Waste land will be treated with the engineering measures like staggered trenches and a forestation etc.

Most of the land of the project area is undulating because of its plateaus character, steep slopping encourage rapid run-off leading to soil erosion. Land is also degraded due to mining operation in the project area. To deal with these problems, a two- fold approach-Physical and social has to be adopted. Physical reclamation of land is achieved through chemical treatment of degraded land followed with scientific rotation of crops. Social approach on the other hand is reflected through overall rural reconstruction, promoting agriculture and its productivity in particular.

Table-2: Watershed Development works including proposed engineering structures

Component	Total (Lakhs) Amount	% of the budget
<i>Soil & water conservation works</i>		
A.Submergence bund	41.11	50%
B.Periferal bund	38.06	
C.Gully Plug	96.16	
<i>Water harvesting & water resources works</i>	55.72	
A. Earthen check dam.		
B. Water harvesting bund	69.10	
<i>Afforestation works</i>		
A.Horticulture works	4.74	
B.Agro forestry works	16.10	
Total	321.00	50%

Livelihood Activities (community Based)

Component	Total (Lakhs) Amount	% of the budget
Income generating activities through SHG's for landless and marginal farmers and livestock's development works	64.20	10%
Total	64.20	10%

4. Table-3: YEAR WISE PHASING (PHYSICAL & FINANCIAL) OF I.W.M.P. X, LALITPUR (U.P.)

Area-Ha & Rs. In lakh											
Sl. No.	Item	1st Year (2010-11)		2 nd Year (2011-12)		3 rd Year (2012-13)		4 th Year (2013-14)		Total	
		Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.
1.	Administrative 10%	12.84	-	32.10	-	19.26	-	0.00	-	64.20	-
2.	Monitoring 1%	1.285	-	3.21	-	1.925	-	0.0	-	6.42	-
3.	Evaluation 1%	1.285	-	3.21	-	1.925	-	0.0	-	6.42	-
4.	Entry Point Activity 4%	25.68	-	0.00	-	0.00	-	0.00	-	25.68	-
5.	Institutional and Capacity Building 5%	6.42	-	16.05	-	9.63	-	0.00	-	32.10	-
6.	D.P.R. Preparation 1%	6.42	-	0.00	-	0.00	-	0.00	-	6.42	-
7.	Watershed Works 50%	64.20	1069.99	160.49	2674.98	96.31	1605.03	0.00	-	321.00	5350.00
8.	Livelihood & Income Generating 10%	64.20	-	0.00	-	0.00	-	0.00	-	64.20	-
9.	Production System Development 13%	16.69	-	41.73	-	25.04	-	0.00	-	83.46	-
10.	Consolidation Phase 5%	0.00	-	0.00	-	32.10	-	0.00	-	32.10	-
	Total	199.02	1069.99	256.79	2674.98	186.19	1605.03	0.0	-	642.00	5350.00

Budget for the various components is given below (I.W.M.P.- X, LALITPUR)

S.N.	Budget Component	Total (lakhs)
A.	1.Administrative 2. Monitoring 3. Evaluation	64.20 6.42 6.42
B.	Preparatory Phase 1. Entry point activities 2. Institution and capacity building 3. Detailed Project Report(DPR)	25.68 32.10 6.42
C.	WATERSHED WORKS PHASE 1. Watershed development works, 2. Livelihood activities for the asset less persons 3. Production system and micro enterprises.	321.00 64.20 83.46
D.	CONSOLIDATION PHASE	32.10
	GRAND TOTAL	642.00

5. Treatment area and details

The main objectives of the project area are: to control damage by run-off, to manage and utilize run-off for useful purpose or soil conservation and to increase infiltration of rain water.

The main problem in a watershed is the soil erosion by rainfall. The run off water transport the sediments which may block the channel head, dam, reservoir and storage structures are the major problems faced in the project area and attempts made so far to overcome them. The other main problems in the selected watershed are : lack of awareness amongst the villagers about the deteriorating environmental condition of the area, 75% of the run off water makes it away to way towards Shahzad-Jamni river carrying fertile soil which has nutrients and this decreases soil fertility, there is a decline in the productivity of cereals, pulses and vegetable crops, dependency of farmers on the rain water. Therefore it is an urgent need, that rainwater should be harvested for crops and re-charged to improve the quality of the water.

Table-4: WATERSHED WISE TREATMENT AREA

Sl. No.	Watershed Code	Total Area (ha)
1	Gandora-I 2C2D1m3c	768.35
2	Gandora-II 2C 2D1m3b	905.38
3	Bar-I 2C2D1m3d	851.61
4	Bar-II 2C2D2b1c	729.07
5	Bachrawni 2C2D2b1a	591.74
6	Dashrara 2C2D2b1b,	490.07
7	Buragoun-I 2C2D2h1a	408.72

8	Buragpun-II 2C2D2a2a	431.64
9	Bhawani 2C2D2a1b	744.05
10	Ladwari 2C2D1m2d	643.37

6. Fact sheet about benchmark indicators

Gradually increasing soil erosion, poor harvesting management, single cropping pattern, non treated land and water resources have been required to take immediate action for conservation of soil and moisture. Various types of earthen bunds in the watershed field, necessity has been observed, **Stabilize Disturbed Areas immediately.** Permanent structures, temporary or permanent vegetation, and mulch, or a combination of these measures, should be employed as quickly as possible after the land is disturbed. **Retain or Accommodate Runoff.** Runoff from the development should be safely conveyed to a stable outlet using storm drains.

Table-5: Area Under Various LCC Classes

LCC class	Area ha
I	266.00
II	3210.00
III	1070.00
IV	804.00
Total	5350.00

7. Action plan at a glance

The preparation of detailed project report has been carried out by applying different steps for its compilation. A brief detail has been given below:-

Secondary or co-lateral data collection – During the field visit programme all available data spatial and non- spatial has been collected through village level from gram panchayat office and community block level office.

Participatory rural appraisal (PRA) has been conducted for detail survey of the village resource information.

Formation of User'group and self help group and different committees for the social awareness among the people of the study area have been formed.

Conducted watershed committee meetings at gram panchyat level, for the discussion of different problems and their appropriate solution according to need in the project area.

After gathering all required information compiled thoroughly discussed and finalized the expected outcomes and benefits specially in the respect of livelihood for different segments. These are the target and performers, indicators for the project area,

The draft of the detailed project report has been prepared for the approval of the project.

CHAPTER-1

INTRODUCTION & BACKGROUND

1. PROJECT BACKGROUND:-

The broad objective was the promotion of the overall economic development and improvement of the socio-economic conditions of the resource poor sections of people inhabiting the programme areas. A comprehensive programme named Integrated Watershed Management Programme (I.W.M.P.) has been implemented under Common Guidelines on Watershed Development in 2008.

The main objectives of the IWMP are to restore the ecological balance by harnessing, conserving and developing degraded natural resources such as soil, vegetative cover and water. The outcomes are prevention of soil run-off, regeneration of natural vegetation, rain water harvesting and recharging of the ground water table. This enables multi-cropping and the introduction of diverse agro-based activities, which help to provide sustainable livelihoods to the people residing in the watershed area. In addition, there is a Scheme of Technology Development, Extension and Training (TDET) is also being implemented to promote development of cost effective and proven technologies to support watershed management.

The study area is a cluster of 10 (TEN) micro- watershed, with code No2C2D1m3c, 2C2D1m3b, 2C2D1m3d, 2C2D2b1c, 2C2D2b1a, 2C2D2b1b, 2C2D2h1a, 2C2D2a2a, 2C2D2a1b, 2C2D1m2d, having area of 6564.00.00 Ha, is located in West of the Lalitpur district of U.P. The area of watersheds is proposed to be taken by Bhoomi Sanrakshan Adhikari, Department of land development & water resources, Lalitpur for

integrated watershed management programme (IWMP-X) starting from the year 2010-11. The project will be completed by 2013-14.

Most of the land comes under agriculture. The livelihood of these people is primarily based on rainfed agriculture, animal husbandry, wage labour and goat keeping..

Table-1.1: Basic Project Information

S. No.	Name of the Project	Villages	Gram Panchayat	Block	District	Total area of The Project	Area proposed to be treated	Total Project cost (Rs. in Lacs)	PIA
1.	I.W.M.P. - X	Bar,Gandora,Bamanguan, Bhujupura,Fadari,Dasrara, Bhaloni Lodh, Ladwari, Bachrawni,Buragoun,Kaloni, Bahwni, Bamhori Sahna	Bar, Gandora, Dhangoul, Bhaloni Lodh, Dasrara, Bachrawni, Buragoun, Udaipura, Bahwni, Ladwari	Bar	Lalitpur	6564.00	5350.00	642.00	Bhoomi Sanrakshan Adhikari Department of Land Development and Water Resource Lalitpur

2. NEED AND SCOPE FOR WATERSHED DEVELOPMENT

The main objectives are

- (a) To control damage by run-off.
- (b) To manage and utilize run-off for useful purpose or soil conservation
- (c) To increase infiltration of rain water

Main problem in watershed Area

The main problem in a watershed is the soil erosion by rainfall. The run off water transport the sediments which may block the channel head, dam, reservoir and storage structures are the major problems faced in the project area and attempts made so far to overcome them. Following are the main problem in the selected watershed.

- (a) Lack of awareness amongst the villagers about the deteriorating environmental condition of the area.
- (b) 75% of the run off water makes it away to way towards Shahzad-Jamni river carrying fertile soil with has nutrients and this decreases soil fertility, there is a decline in the productivity of cereals,pulses and vegetable crops.
- (c) Due to over grazing, vegetative cover is declining on community land. There is no grasses and even shrub. Vegetation is vanishing, River carry a huge silt every year
- (d) Due to continuous cutting of trees, overgrazing bushes and shrubs ecological balance of the area has been hardly distrubed.
- (e) Due to increasing populasion pressure of man and animal there is camptition for collection of food, fodder and fuel resources.

- (f) The ground water of the watershed area is smelly and oily hence irrigation is not possible by this ground water. Farmers depends on the rain water., which flows directly of Shahzad-Jamniriver. Ther fore it is an urgent need, that rainwater should be harvested for crops and re-charged to improve the quality of the water.

3. WEIGHTAGE FOR SELECTION OF WATERSHED

Problem Identification And Prioritization

Food sufficiency, economic growth and environmental security were identified as the major issues to be addressed in the watershed area. The area has flat topography hence highly prone to soil erosion. Lack of irrigation water is the greatest problem experienced by the people followed by low function of field crops, lack of fodder availability and low animal productivity.

Problems identified and prioritized during the transact walk and PRA exercises in all villages namely Bar, Gandora, Bamanguan, Bhujupura, Fadari, Dasrara, Bhaloni Lodh, Ladwari, Bachrawni, Buragoun, Kaloni, Bahwni, Bamhori Sahna were pooled and a list of nine problems representing the whole watershed was prepared. Problems were ranked as per their total weightage in these villages.

Problem identification and prioritization for watershed

S. No.	Problems	Rank
1	Low production of field crops	3
2	Lack of irrigation water	1
3	Lack of drinking water	4
4	Non availability of fuel wood	6
5	Lack of inputs like quality seeds, fertilizers, pesticides etc.	2
6	Medical and health care facilities for milching animals and low productivity	5
7	Lack of fodder availability and low annual productivity	7
8	Lack of medical educational and transportation facilities	8

Strength, Weakness, Opportunity And Threat (Swot) Analysis Is A Useful Decision Support Tool

A SWOT analysis of the project area is presented as below:

Strength (S)	Weakness(W)
<ul style="list-style-type: none"> 1- Cooperative work culture is traditional activities 2- Close ethnic tier 3- Road at the top as well as outlet of the watershed 4- Hard working man power 5- Resource pool of crop genetic diversity 6- Awareness of farmers about watershed management program 7- Well established CPR maintaining and sharing system 8- Well maintained seasonal water bodies. 9- Social outlook of the community towards 	<ul style="list-style-type: none"> 1- Poor water management 2- Resource poor farmers 3- Out migration of youth 4- Low and erotic rain fall 5- Fragile geography 6- Fragmented land holding. 7- Heavy infestation of wild animals 8- Problem of fuel and fodder
Opportunities(O)	Threats (T)
<ul style="list-style-type: none"> 1- Wide range of annual and personal crops 2- Scope of regular employment opportunity to check out migration 3- Strengthening of existing irrigation system 4- Conductive climate for rainfed crop diversification 5- Good scope for agro forestry and dry land horticulture. 6- Potential for collective active action and magement of CPRs. 	<ul style="list-style-type: none"> 1- Prone to adverse climate like drought 2- High market risk 3- Social conflicts owing to PRI & WSM policies and local policies. 4- Weak coordination among line departments. 5- Lack of expertise of implementing agencies in different aspect of WSM.

4. Table-1.2: Weightage of the project

Project Name	Project Type	Weightage													
		i	ii	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	xiv
IWMP Lalitpur-X	IWMP	7.5	5	5	10	0	0	10	7.5	10	15	0	15	Na	85

Table-1.3: Criteria and weightage for selection of watershed

S.No.	Criteria	Maximum Score	Ranges & 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)	Above 70 % (Reject)

viii	Drinking water	10	No source (10)	Problematic village (7.5)	Partially covered (5)	Fully covered (0)
ix	Degraded land	15	High – above 20 % (15)	Medium – 10 to 20 % (10)	Low- less than 10 % of TGA (5)	
x	Productivity potential of the land	15	Lands with low production & where productivity can be significantly enhanced with reasonable efforts (15)	Lands with moderate production & where productivity can be enhanced with reasonable efforts (10)	Lands with high production & where productivity can be marginally enhanced with reasonable efforts (5)	
xi	Contiguity to another watershed that has already been developed/ treated	10	Contiguous to previously treated watershed & contiguity within the micro watersheds in the project (10)	Contiguity within the micro watersheds in the project but non contiguous to previously treated watershed (5)	Neither contiguous to previously treated watershed nor contiguity within the micro watersheds in the project (0)	
xii	Cluster approach in the plains (more than one contiguous micro-watersheds in the project)	15	Above 6 micro-watersheds in cluster (15)	4 to 6 micro watersheds in cluster (10)	2 to 4 micro watersheds in cluster (5)	
xiii	Cluster approach in the hills (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	90	41	2.5

5. Table-1.4: WATERSHED INFORMATION

Name of the Project	No. of water sheds to be treated	Watershed Code	Watershed regime/type/order
IWMP - X	10	2C2D1m3c, 2C2D1m3b, 2C2D1m3d, 2C2D2b1c, 2C2D2b1a, 2C2D2b1b, 2C2D2h1a, 2C2D2a2a, 2C2D2a1b, 2C2D1m2d	Micro Watershed

6. OTHER DEVELOPMENTAL PROJECTS/SCHEMES RUNNING IN THE VILLAGES:

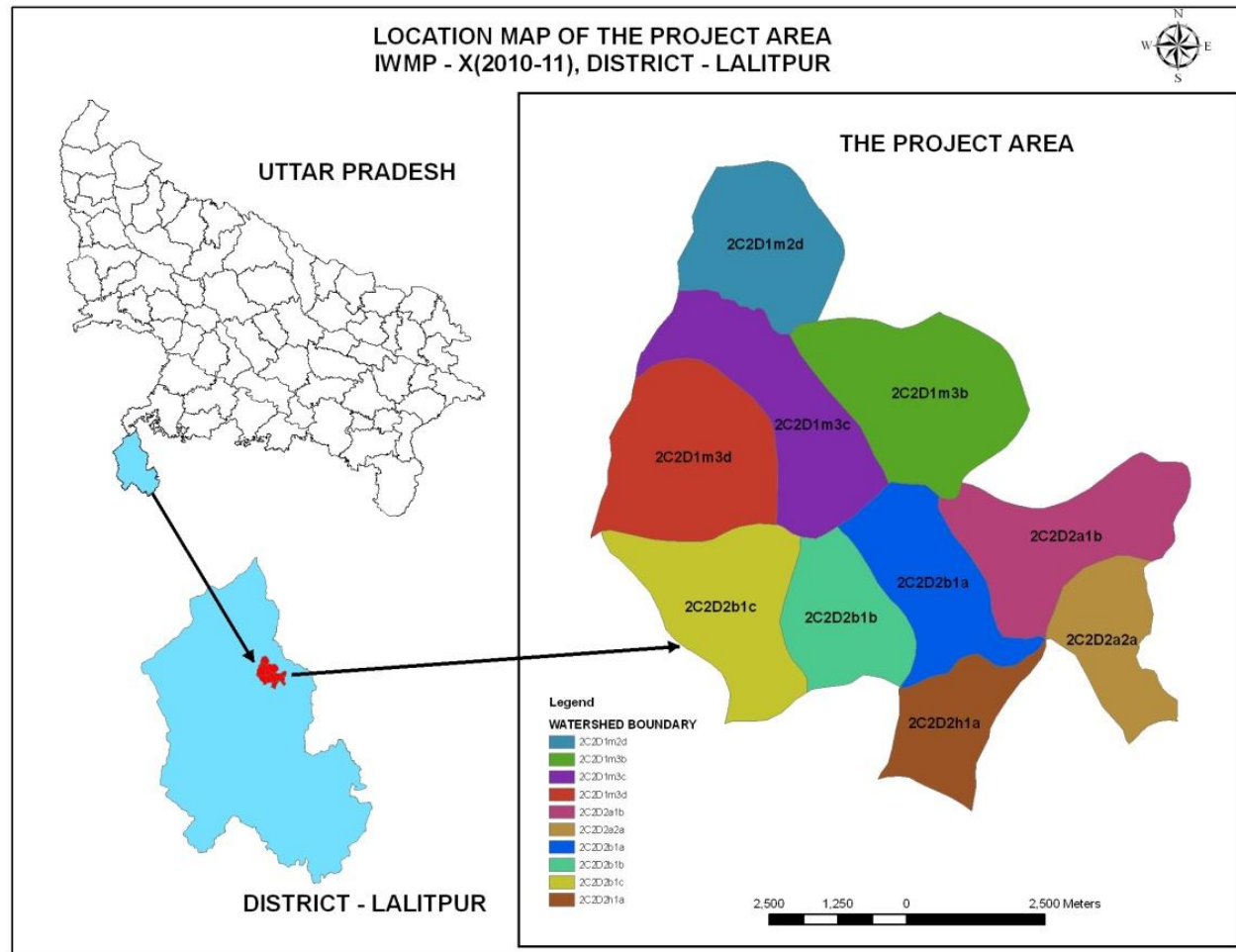
These villages of the project area being very backward therefore have been on top priority for a number of developmental projects. These programmes are Swarnajayanti Gram Swarajgar Yojana (SGSY) and Indira Awas Yojana (IAY). Integrated Watershed Management Programme in other areas of the district is under operation in the department of Agriculture DPAP Programme is also running in the project area.

CHAPTER – 2
GENERAL DESCRIPTION OF
PROJECT AREA

1. LOCATION

The selected watershed in Lalitpur district (UP) is located along Lalitpur to Bar Road about 33 to 45 Km. from district headquarter. It is located between the longitude of $78^{\circ} 34' 26''$ to $78^{\circ} 41' 08''$ and latitudes $24^{\circ} 48' 04''$ to $24^{\circ} 54' 27''$

LOCATION MAP OF THE PROJECT AREA



2. AREA

Table-2.1: LANDUSE PATTERN OF THE PROJECT AREA

S. No	Name of District	No. of Micro-watershed	No. of Villages	Geographical Area (ha)	Rainfed Area (ha)	Forest (ha)	Land under agricultural use (ha)	Wasteland (ha)
1	LALITPUR	10	13	6564.00	5710.00	277.99	4604.57	1496.41

3. AGRO-CLIMATE CONDITIONS

The Agro-Climatic condition of the project area including the Agro-Climatic Zone of the project area, soil type, rainfall, major crops etc., of LALITPUR district is briefly describe below.

Table-2.2: DETAILS OF AGRO-CLIMATE CONDITIONS

S. No.	Name of Project	Name of Agro-climate Zone covered	Area (Ha)	Major Soil Type	Topography	Average Rainfall (mm)	Major crops	
							Name	Area (ha)
1	IWMP -X, LALITPUR	Bundelkhand Zone	5350.00	Parwa, Kabar, Mar	Undulating with moderate slope	750 mm	Maize, Jowar, Wheat, Pulses	2948.00

4. PHYSIOGRAPHY

The watershed is in the Bundelkhand region having moderate slopes and drains into Shahzad-Jamni River. About 60% of the watershed area has slopes up to 3 %, 20% area has slopes up to 1% and 20% area has slopes from 3 to 5 %. A number of streams join the main perennial stream of Shahzad-Jamni .Total 31 numbers of streams of different order are found in watershed; with total length is 119350 meters.

Stream characteristics of watershed

Stream order	Stream Number	Mean stream length (m)
1 st order	52	25300
2 nd order	31	46550
3 rd order	12	47500
4 rd order		
Total	95	119350

Table-2.3: ELEVATION RANGE, LONGITUDE LATITUDE, RELIEF HEIGHT DIFFERENCE ETC,

S. No.	Detail s of the watershed	Settlement	Location		Elevation of watershed from Mean Sea level		
			Latitude (N)	Longitude (E)	Highest in Meters	Lowest in Meters	Relief Height Difference
1	Gandora-I 2C2D1m3c	Bar, Gandora, Bamanguan	24 ⁰ 50' 40" to 24 ⁰ 53' 03"	78 ⁰ 34' 49" to 78 ⁰ 37'30"	412	316	96
2	Gandora-II	Gandora, Bamanguan,	24 ⁰ 51' 03" to	78 ⁰ 36' 26" to	331	309	22

	2C 2D1m3b	Bhujupura	24° 52' 49"	78° 39'02"			
3	Bar-I 2C2D1m3d	Bar, Bamangan, Behta	24° 50' 38" to 24° 52' 24"	78° 34' 23" to 78° 36'17"	410	324	86
4	Bar-II 2C2D2b1c	Bar, Bamhori Sahna, Fadari, Bhalonilodh, Dasrara	24° 48' 52" to 24° 50' 40"	78° 34' 28" to 78° 36'36"	419	312	107
5	Bachrawni 2C2D2b1a	Bachrawni, Bamangan, Bar	24° 49' 16" to 24° 51' 13"	78° 37' 01" to 78° 39'14"	333	308	25
6	Dashrara 2C2D2b1b,	Dashrara, Bar, Bachrawni	24° 49' 13" to 24° 50' 39"	78° 36' 24" to 78° 37'52"	333	311	22
7	Buragoun-I 2C2D2h1a	Buragoun	24° 48' 03" to 24° 49' 34"	78° 37' 31" to 78° 39'15"	330	311	19
8	Buragpun-II 2C2D2a2a		24° 48' 43" to 24° 50' 32"	78° 39' 15" to 78° 40'22"	326	306	20
9	Bhawani 2C2D2a1b	Bhawani, Bachrawni,	24° 49' 43" to 24° 51' 12"	78° 38' 05" to 78° 40'45"	328	304	24
10	Ladwari 2C2D1m2d	Ladwari	24° 52' 40" to 24° 54' 20"	78° 35' 15" to 78° 37'02"	379	319	60

5. CLIMATE

The watershed falls under the semi-arid region of tropical climate. The average annual precipitation is 750 mm spreading over 35 rainy days. Most of the rainfall (about 90 %) is received during July to September. The rainfall is of moderate to high intensity. The area receives no or scanty rainfall in the winter season. The

temperature variation ranges from as high as 48° C in the month of May - June to as low as 4° C in December - January.

Table-2.4: Climate Conditions

YEAR	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
	F %DEP.	R/F %DEP.	R/F %DEP.	R/F %DEP.	R/F %DEP.	R/F %DEP.	R/F %DEP.	R/F %DEP.	R/F %DEP.	R/F %DEP.	R/F %DEP.	R/F %DEP.
2006	0.0 -100	0.0 -100	75.0 862	0.0 -100	25.6 282	63.7 -32	309.5 -11	183.1 -46	67.4 -61	0.0 -100	0.0 -100	0.0 -100
2007	0.0 -100	49.6 310	0.0 -100	1.0 -70	0.0 -100	78.5 -16	176.9 -49	199.2 -42	88.1 -49	0.0 -100	-----	-----
2008	0.0 -100	0.0 -100	0.0 -100	10.4 55	514.5 453	142.2 -59	64.0 -81	11.5 -93	4.0 -87	-----	-----	-----
2009	26.0 7	-----	1.5 -78	44.5 -52	216.5 -37	184.5 -46	121.5 -30	96.5 209	50.0 255	11.5 34	-----	-----
2010	3.0 -88	9.5 -21	0.0 -100	0.0 -100	0.0 -100	22.0 -76	322.0 -7	201.0 -41	119.0 -31	29.0 -7	47.0 233	1.5 -83

6. WIND VELOCITY

The Wind velocity of the Project area ranges from 4-17 Km/hr.

7. WATERSHED CHARACTERISTICS

Shape and Size

The shape of watershed (IWMP - X, LALITPUR) is more or less Rectangle in shape. The direction of the slope in the project area is north-west to south-east. The maximum length and width of IWMP -V watersheds, are 11708 m and 7761 m, respectively with the length: width ratio 1.50:1

Table-2.5: SHAPE AND SIZE OF WATERSHED

S. N.	Micro watershed Code	Area (ha)	Shape	Approximate size in meter		Ratio Length: width
				Length	Width	
1	Gandora-I 2C2D1m3c	768.35	Elongate	5032	1928	2.60:1
2	Gandora-II 2C 2D1m3b	905.38	Square	3787	2924	1.29:1
3	Bar-I 2C2D1m3d	851.61	Semi-circular	3263	3029	1.07:1
4	Bar-II 2C2D2b1c	729.07	Elongate	3598	2515	1.43:1
5	Bachrawni 2C2D2b1a	591.74	Elongate	3303	1548	2.13:1
6	Dashrara 2C2D2b1b,	490.07	Square	2712	1924	1.40:1
7	Buragoun-I 2C2D2h1a	408.72	Square	2584	1618	1.59:1
8	Buragpun-II 2C2D2a2a	431.64	Elongate	3006	2419	1.24:1
9	Bhawani 2C2D2a1b	744.05	Rectangle	4133	3044	1.35:1
10	Ladwari 2C2D1m2d	643.37	Square	2782	2586	1.07:1

8. GEOMORPHOLOGY

The area lies in the middle of District-Lalitpur of Bundelkhand region. The soil is mainly clay soil which is easily transportable after detaching causing soil erosion. Topography is Moderate and Undulating with steep slopes.

Table-2.6: DETAIL OF SOIL EROSION (I.W.M.P-X) LALITPUR

S. No.	Name of the Project	Water Erosion (Ha)				Run-Off (mm/yr)	Average Soil Loss in tons/ha/yr	Wind Erosion
		Sheet	Rill	Gully	Total			
1	IWMP - X	3161	1804	385	5350.00	430	25 to 30	N.A.

9. SOILS

In the watershed area mainly four typos of soil named. Mar, Kaber, Padawa & Rocker which are the main soil type of Bundelkhand region. Main crops are pulses that need more phosphorous. Therefore deficiency of phosphorous is very prevalent in this area.

10. DRAINAGE

Due to moderate to steep slopes and presence of a number of drainage lines, drainage is adequate. The watershed forms a part of the SHAHZAD-JAMNI river

11. NATURAL VEGETATION

Natural vegetation of the watershed is very poor. The forest vegetation is predominant with *vilayati Babool* (prosopis Juliflora) followed by *babool* (*Acacia nilotica*). There is occasional occurrence of Neem, Mango, Guava, Lemon, Amla, Mahua and Shisham. There is no reserve pasture land in the watershed. Grass patches are seen only on the bunds, road sides and other such places. The principal grasses are Doob & Munj.

CHAPTER-3

BASELINE SURVEY

A DETAILED BASELINE SURVEY OF THE PROJECT AREA WAS CONDUCTED TO THE STUDY MAJOR SOCIO-ECONOMIC AND BIOPHYSICAL CONSTRAINTS TO SUSTAINABLE CROP PRODUCTION. THE FOLLOWING INFORMATION WAS COLLECTED

Sustainability and Environmental Security

In the proposed watershed management plan of Sajnam proper blending of bio engineering measures will be applied. The proposed land use plan will improve the land utilization index and crop diversification index significantly as compared to existing one. It will help in maintaining ecosystem integrity on sustained basis.

Economic Analysis

Economic analysis of the project is carried out by taking direct benefits and costs, considering 30 year project life at 10% discount rate. For the purpose of economic analysis, whole watershed development plan is divided into four sectors namely agriculture (rain fed and irrigated), pure horticulture, agro-horticulture and silvi pastoral (Silvi-Pastoral + sericulture). Net present value (NPV), Benefit Cost Ratio (BCR), Pay Back Period (PBR) and Internal Rate of Return (IRR) criteria is employed to judge the economic efficiency of each enterprise, sector and project as a whole.

DEMOGRAPHIC INFORMATION

HUMAN AND LIVESTOCK POPULATION

The I.W.M.P – X, watershed project has a total population of **21508** out of which 11469 are male and 10039 are female.

Table-3.1: HUMAN AND LIVESTOCK POPULATION

Village	Total no. of House hold	Total Population	Male	Female	SC Population	ST Population	SC Population Female
Ladwari	303	1945	1058	887	435	234	201
Bar	1323	7425	3953	3472	2075	1083	992
Bhailoniladh	251	1606	834	772	485	255	230
Bamhorisahna	151	881	471	410	284	147	137
Fadari	32	176	98	78	0	0	0
Bacchrawani	278	1565	818	747	291	147	144
Dashrara	232	1359	716	643	260	134	126
Gaindora	239	1445	791	654	205	117	88
Bamanguan	35	176	95	81	0	0	0
Bhujaupura	67	402	211	191	19	11	8
Bhawani	223	1307	710	597	452	247	205
Kailoni	94	517	270	247	125	64	61
Buragoun	440	2704	1444	1260	704	370	334
TOTAL	3668	21508	11469	10039	5335	2809	2526

EMPLOYMENT GENERATION

Labor migration in search of gainful employment is one of the major problems in the remote watershed in particular. Causal employment opportunities to the tune of more than 0.35 lacs will be generated during the implementation of the project activities. However, the changes in land use pattern and adoption of other subsidiary enterprises will generate employment opportunities for persons in the watersheds.

DETAILS OF EMPLOYMENT GENERATION

S.No.	No. of the Villages	Wage employment										Self employment				
		No. of mandays (Lakhs)					No. Of beneficiaries					No. Of beneficiaries				
		SC	ST	Others	Women	Total	SC	ST	Others	Women	Total	SC	ST	Others	Women	Total
1	13	1.160	0	1.492	0.238	2.890	1160	0	1492	238	2890	105	0	138	27	270

MIGRATION PATTERN

Labour migration in search of gainful employment is one of the major problems in the remote watershed in particular. People migrate during summer season to different parts of the state as daily wagers, agricultural labours and construction workers. The detail is given below.

Table-3.2: DETAILS OF MIGRATION (I.W.M.P-X) LALITPUR

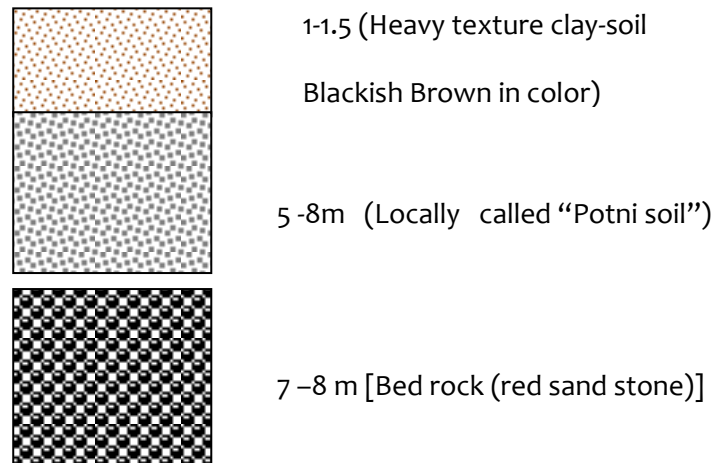
S.No.	No. of the villages	No. of persons migrating	No. of days per year of migration	Main reason for migration	Expected reduction in no. of persons migrating
1	13	260	150	Poverty & Unemployment	144

Soil and land Capability Classification

Soil Morphology: The selected area is situated in the middle of District- Lalitpur. The entire watershed is topographically divided into two major land forms. Accordingly, the soils of watershed have been grouped in the two major categories.

- 1- Slope land
- 2- sloppy and Heavy sloppy land

Soil Profile: A Representative Soil Profile



Morphology Of Typical Solid Profile Of Watershed

Horizon	Depth(Cm)	Morphology
A	0-150	Blackish brown in colour, clay content > 80%, soft and easily erodible when moist, hard when dry, high elasticity, Cracks occur when dried.
B	150-800	whitish brown in colour, very hard when dry, clay content > 60%
C	>800	Bedrock (Red and White sand stone)

Soil Characteristics and Fertility Status:

Four types of soils are in the watershed area. The fertility status is about normal range due to production of major pulses crops. There is scarcity of phosphorus due to continuous growing of pulses. The four soil samples of each village, three for nutrients analysis and one for sulphur and micro nutrients analysis have been send to laboratory. After receiving the analysis report effort will be made to motivate the farmers to use nutrients and micronutrients according to the any analysis report. For this demonstration of crop in Kharif and Rabi both seasons have been proposed under agriculture production activity. Receipts of sending samples are enclosed

Land Capability Classification (LCC):

Land capability classification(LCC) is crucial for appropriate land use planting consisting of practiced like choice of vegetation /crops, tillage practices, use of scientific method of cultivation and desirous conservation practices, Detailed LCC Survey carried out in the Shahzad-Jamni watershed brought out the prevailing LCC classes as I,II,III,IV

Area Under Various LCC Classes Shahzad-Jamni river Watershed

LCC class	Area ha
I	266.00
II	3210.00
III	1070.00
IV	804.00
Total	5350.00

LCC maps prepared by PRA method. *Situ* moisture conservation practices. In class III submergence bund, marginal and peripheral bund are planned and in class IV, gully plugging structures, earthen check dam and water harvesting bunds are proposed with permanent Pucca Drop Spill Way structures.

PRESENT LAND USE IN THE WATERSHED

Spatial information on land use/land cover is a necessary prerequisite in planning, utilizing and management of natural resources. In the current days context of development planning, information on land use/land cover and the changes over a period of time attain prominence because of its primary requirement in all the planning activities. The present watershed have varied land/use land cover categories as shown in table below. One such map of land use/ land cover of the watershed is shown in Annexure Map. The details of the Landuse/Landcover catagories in the project area is given in below

Table-3.3: THE LAND UNDER DIFFERENT CATEGORIES WITHIN WATERSHED

S. N.	Watershed Code	Name of villages falling in the watershed	Built-Up Land	Wasteland all types	Agriculture	Forest	Water Bodies	Total
1	Gandora-I 2C2D1m3c	Bar, Gandora, Bamangan	-	187.84	495.27	85.24	-	768.35
2	Gandora-II 2C 2D1m3b	Gandora, Bamangan, Bhujupura	13.66	177.74	713.98	-	-	905.38
3	Bar-I 2C2D1m3d	Bar, Bamangan, Behta	14.00	209.06	529.90	82.79	15.86	851.61
4	Bar-II 2C2D2b1c	Bar, Bamhori Sahna, Fadari, Bhalonilodh, Dasrara	17.93	83.71	608.73	11.69	7.01	729.07
5	Bachrawni 2C2D2b1a	Bachrawni, Bamangan, Bar	7.37	92.72	472.05	-	19.60	591.74
6	Dashrara 2C2D2b1b,	Dashrara, Bar, Bachrawni	6.25	161.93	310.16	-	11.67	490.07
7	Buragoun-I 2C2D2h1a	Buragoun	16.60	94.95	297.15	-	0.02	408.72
8	Buragpun-II 2C2D2a2a		8.22	64.27	346.45	-	12.70	431.64
9	Bhawani 2C2D2a1b	Bhawani, Bachrawni,	-	193.30	536.38	-	14.37	744.05
10	Ladwari 2C2D1m2d	Ladwari	10.87	230.89	294.44	98.27	8.90	643.37
		Total	94.90	1496.41	4604.57	277.99	90.13	6564.00

Present Landuse/Landcover of the project area

S.N	Landuse	Area (ha)	%
1	Built-up land	94.90	1.43
2	Waste Land	1496.41	22.79
3	Water Bodies	90.13	1.38
4	Agricultural Land	4604.57	70.15
5	Forest	277.99	4.25
Total		6564.00	100

DESCRIPTION

The present LU/LC map has been depicted through the satellite data of January, 2010 (Google). A total no. of 5 major categories of LU/LC has been mapped.

BUILT-UP LAND

All the major settlement areas have been mapped under this category and the total area under category is 94.90 Hectare which is 1.43 % of the total mapped area. Under this category road network and other built-up area has also been included.

WASTE LAND

Land which is deteriorating for lack of appropriate water and soil on account of natural causes comes under this category. The total area under this category comes about 1496.41 Hectare which is 22.79 % of the total mapped area. The sub categories are like Salt affected land, Gullied/Ravenous Land, Scrub Land etc.

WATER BODIES

This category comprises area with surface water either impounded in the form of ponds, lake & reservoirs. The total area under this category comes about 90.13 Hectare which is 1.38 % of the total mapped area.

AGRICULTURAL LAND

These are the lands primarily used for farming and for production of food; it includes land under the (irrigated and un-irrigated). Areas with standing crop as on the date of satellite overpass. Cropped areas are in varying shape and size in a contiguous and non contiguous pattern. They are widely distributed in different terrains; prominently appear in the irrigated areas irrespective of the source of irrigation. It is important to know that the project area has maximum **two crop areas** i.e. **Kharif and Rabi**. The average size of the agricultural field is less than 0.5 Hectare. The total area under this category comes about 4604.57 Hectare which is 70.15 % of the total mapped area.

AGRICULTURE

Various agricultural land uses in the watershed are extended to diversified land capabilities starting from marginal to good class II lands. The watershed distinctly has three types of lands i.e. leveled, sloping and degraded and undulating. The agriculture is practiced on all these soil types though the productivity considerably varies. The total area under agriculture in the watershed is about 5815 ha out of which 6382 ha is under rain-fed agriculture. The water (both irrigated and drinking) is most scarce natural resource in the

watershed. The operation of tube wells for irrigation of agricultural crops frequently leads to the drinking water problem to the farmers of watershed forcing them to carry drinking water from outside the watershed area. The agricultural field bunds are common in the watershed, however, they frequently breach on heavy rains adversely affecting the *in situ* percolation of rain water in the soils.

The agriculture soils in the watershed have diversified texture i.e. loam sand, silty clay loam and boulder mixed textures which are located in patches throughout the watershed. The heavy soils are almost kept fallow during rainy season. The agricultural soils also have hard calcium pan at variable depths. The irrigation water is conveyed in earthen channels and surface irrigation methods following mainly border method or flood method of irrigation by the farmers in the watershed. These factors substantially reduce the water use efficiency of limited available and valuable irrigation water in the watershed. The quality of irrigation water needs to be tested for assessing fitness of the quality for irrigation and other purposes.

Rehabilitation of waste lands with appropriate drought hardy species like *Prosopis juliflora*, introduction of suitable multi-purpose trees, promoting agro-forestry on agricultural lands with appropriate fruit and forest species, suitable vegetative barriers on sloping lands can of high future value in meeting out not only fire wood and fodder demands in the watershed but also for soil and water conservation, rehabilitation of wasteland and substantial income generation for socio-economic upliftment of farmers in the watershed.

One year rotation

Single cropping

Fallow-Lentil, urd- Gram, Urd-wheat, Arhar, Maize-pea.

Double cropping

Black gram/ green gram- mustard/ wheat/ gram/ lentil/ winter vegetables

Irrigated agriculture

One year rotation

Black gram/ green gram- mustard/ wheat/ winter vegetables

Crop Productivity

Food crop production is a major land based activity in the watershed. Traditional cultivation practices, coupled with poor quality seeds and long duration crops varieties result in low crop yields. Crops are taken under rain fed as well as irrigated conditions. The yield levels of rain fed crops are particularly very poor. Large variation has been noticed in productivity of wheat (9-19 Qtl/ha) under rain fed and irrigation, condition respectively. At present level of rain fed farming. The total produce from Rabi and Kharif crops obtained by a medium size of holding owning family can meet food requirements for up to 6 to 7 months only.

The farmers also do not have suitable cropping systems to deal aberrant weather. Weeds impose considerable constraint in producing of both Kharif and Rabi crops under irrigation as well as rain-fed production system. Use of weedicide is rare in the watershed.

The mixed cropping is in practice in limited area with Kharif crops like jowar+Arhar but it is not only irrational but also unscientific and beset with low productivity. Subsequent rabi crops in general are raised on residual soil moisture under rain-fed production system during past monsoon season. Imbalanced use of fertilizers is common in not only Rabi and Kharif crops but also in rain fed and irrigated production system. The recommended deep ploughing for enhanced in situ residual soil moisture conservation and higher production is also not followed in the watershed. The shallow ploughing tractors drawn tillage implements are available with the farmers in the watershed but deep ploughing implements yet need to be introduced.

The soil fertility/health restoration practices like green manuring, crop rotations and intercropping specially with legumes, use of FYM/compost, vermi-compost , bio fertilizers ,soil and water conservation measures, use of brought up or in situ mulches are widely lacking in the watershed. The soil and water conservation measures are limited to mechanical/earthen measures created by the state Govt. agencies. Conservation agronomical measures like seeding and ploughing across the slope, wed mulching, agro-forestry, vegetative barriers etc also completely lack in the watershed.

Indigenous Technological Knowledge (ITK)

Agriculture is an old age occupation which farmers have practiced and improved in their own manner to earn livelihood under the condition of area. The villagers have their traditional village ponds, practice of field bunding, production of Arhar, til crop on the bunds in paddy area which typically constitute agriculture related ITKs in the watershed. The indigenous farming technology in the watershed is observed to cover a vast spectrum of activities involving tillage, implement crop selection, storage of produce and value condition in Buldelkhand region line showing is in the traditional practice due to the soil condition. Seed drill, seed comfort drill is used with tractor and Nai/chonga with indigenous plough. These ITKs are eco-friendly, cost effective and involve use of local materials with farmers own wisdom. These techniques equip farmers with skills and strength to adapt to the prevailing adverse conditions.

Economics of agriculture sector.

S. No.	Sector	Area (ha)	NPV (Rs.)	BC ratio
1	Irrigated agriculture	1403	73500000	1.6:1
2	Rain fed agriculture	3947	8290170000	1.2:1
3	Total	5350	8363670000	1.4:1

Mono cropping of the above mentioned crops is the usual practice. Selection of crops is very traditional. They go for species those are being cultivated since their forefathers due to non-availability of improved varieties of seeds and lack of awareness. But this area is suitable for non-paddy crops like Sugarcane, mustard, potato & wheat. Our major initiative will be to encourage inter cropping of paddy with local Arhar, The other feasible options should be intercropping of cereals + pulses/deep rooted + shallow rooted/ long duration + short duration varieties to reduce the risk factor & make optimum utilization of soil nutrients.

Local seeds are being used in all crops except for vegetables in which some high yielding varieties are being used. As far as use of pesticides is concerned, pesticide and fertilizer are being used only for paddy, ragi, and vegetables.

Packages for improvement in the present status of agriculture

- i) Cultivation on scientific basis i.e., line sowing, space maintenance, use of good quality & sufficient quantity of organic compost, proper irrigation and proper storing technique.
- ii) Introduction of new potential crops like Sugarcane, Mustard and Wheat which has more economic value and opportunities for wider replication.
- iii) Use of improved or high yielding variety seeds along with the local varieties Cultivation of profitable vegetables on large scale for which the area is very suitable to generate income and take care of the nutrition aspect. During the current (2nd) year it as per area suitability & beneficiaries' choice rabi vegetable cultivation has been taken up.
- iv) Cultivation of grafted mango, grafted cashew, high yielding papaya varieties and drumstick on large scale so as to generate profit and as well as conserve the soil & moisture. In the current year itself mango, papaya, drumstick & guava have been taken up.

As far as agricultural implement is concerned, they are all very traditional. There is no usage of modern implements. Training of key farmers and volunteers will be one of the priority areas to ensure implementation of the work at field level. The different topics to be covered are:

- i) Preparation of compost pit, Magic/vermi compost and other organic farming techniques.

- ii) Judicious use of chemical fertilizers, its dose, application stage and method of application.
- iii) Demonstrations on bio-fertilizers usage and benefits.
- iv) Preparation and application method of indigenous organic pesticides along with judicious use of common chemical pesticides, its dose and application technique.

Agriculture Development

- Demonstration of better agriculture practices like sustainable and organic practices; the demonstration plots to an extent of 0.50 ac per each demonstration are identified.
- Training on sustainable agriculture practices through organic approach
- Construction of a new check dam in the upper ridge.
- 20 families will take up compost demonstration and production exercise
- Take up vegetable cultivation in the backyard
- Liaison with the agriculture department for better organic farming practices in 10 Ha.

Crop production

Mulching and crop residue management

The sources of mulching material as brought up mulch i.e. litter or pruned material of trees etc are scarce in the watershed. The weeds, *in situ* grown legume and multipurpose trees (as hedge row or on marginal and degraded lands) are some of the options available with growers for mulching the rain-fed crops for moisture conservation, fertility restoration and other purposes. Therefore, weed mulching and hedge row of MPTs will be demonstrated in the watershed for benefit of the rural community.

Green manuring

Intensive cropping with inadequate application of organic manures i.e. FYM, compost etc, has over exploited the existing agricultural production system in the watershed. In order to improve the fertility as well as physico-chemical properties of soils green manuring *insitu* and *ex-situ* with suitable crops like *dhaincha*, sun-hemp and Neel are proposed to be demonstrated in the watershed areas.

Vermi-composting

In order to provide quality manure with high nutrient content to various field crops, vegetables and cash crops, to save time and proper disposal of on farm organic refuse and cow dung as well as to promote organic farming, vermin-composting will be demonstrated to the farmers so that within a short period they can be able to produce manure from organic waste.

Crop rotation and intercropping

In order to diversify farm produce, minimize the farming risk, mitigate soil erosion, to ensure nutritional security and to optimize farm return, intercropping of legumes (black gram and green gram) in inter row spaces of bajra are proposed to be undertaken in the watershed during *kharif* season. Sustainable and profitable crop-rotations suiting to various needs of the people of the watershed will be demonstrated.

Bio-fertilizers

The various beneficial bio-fertilizers like nitrogen fixers, phosphate solubliser and organic matter decomposers for both legumes and non legumes will be demonstrated in the farmer's field under the watershed villages.

Tillage operations

Deep tillage technology developed at the Agra center holds promising in enhancing post monsoon residual soil moisture conservation and improving the yield of subsequent mustard crop. This technology is proposed to be demonstrated for benefit of farmers in the watershed.

Introduction of improved seeds of high yielding varieties (HYV)

Replacement of low yielding traditional varieties of jowar, gram and lentil in the villages in the watershed with improved varieties is necessary for improving the productivity and farm income. These HYVs will be demonstrated in the watershed for the benefit of the farmers.

Balanced fertilizer use

Inadequate and imbalanced fertilizer use in bajra and jowar during *kharif* season and in wheat, mustard, gram and lentil in *Rabi* season are one of the major constraints in agricultural production system of the watershed. Therefore, balanced fertilizer use in different crops will be demonstrated in the watershed for the benefits of the farming community.

Control of insect pest and diseases

Aphid in the mustard and pod borer in gram are the major insects in the watershed areas leading to loss in crop productivity. Similarly white blister is also a common disease in the mustard crop. The management strategies of these insect pests and diseases will also be demonstrated in the watershed for benefit of the growers.

VEGETATION

(a) Natural Vegetation:

Natural vegetation of the watershed is very poor. The forest vegetation is predominant with *vilayati Babool* (prosopis Juliflora) followed by *babool* (*Acacia nilotica*). There is occasional occurrence of Neem, Mango, Guava, Lemon, Amla, Mahua and Shisham. There is no reserve pasture land in the watershed. Grass patches are seen only on the bunds, road sides and other such places. The principal grasses are Doob & Munj.

Management of the crop

The recommended technology (14) of crop management will be demonstrated to the farmers in half plot trial approach so as to enable the farmers to assess the benefits and impact of each technology or package of practice for their ultimate adoption in the watershed. The interventions scheduled on prioritization of problems in the crop production following PRA and surveys target specifically solution of the each and problem related to the crop production as per interventions at 14. The specific problems, if any shall be dealt with contingency budget.

7 Dry land Horticulture

About 14.50 ha of land is suitable for horticultural development. Species like Bael and Ber will be planted at suitable spacing in the watershed.

Agri- Horticultures

Amla and Sahjan would be a suitable horticultural crop to the locality. Therefore, about 4.00 ha land in the farmers field shall be selected and brought under Agri-horti system. The cropping system followed will be Bajra and Wheat.

The watershed does not have organized orchards; however, farmers have fruit plants (mango, ber, bel, guava, mahua, amla etc.) near the homesteads and kitchen gardens. The climate and soil of the area is favorable for fruit growing for sub tropical fruits in the lower reaches. Organized orchards, commercial vegetable cultivation, agro horticulture, and other system of agro forestry etc. are lacking but have good potential in the watershed. The watershed is located near the national highway and North Central railway line and has scope to transport the produce to the nearest market Kanpur, Jhansi even to Delhi.

Farmers Preferences

Fruit Trees

Farmers' preferences for fruit trees are solicited in terms of attributes like production, market availability and timber wood value. Overall, Amla, Guava, Ber, Lemon, Papaya is found most preferred fruit tree.

Fodder Trees

Farmers also do not have any preferred fodder tree in the watershed in spite of fact that watershed falls in semi arid tract. The marketing facilities, lack of follow up of modern scientific package of practices of cropping potential in the watershed, socio-economical factors etc. is found to be most important factors deciding the preferences of farmers pertaining to selection and cultivation of agricultural crops, fruits, or fodder trees in the watershed.

Land ownership details

Non-legal possession of government or patta land has become a common feature to the community dwellers as they carry a notion that the existing land and forest belongs to their forefathers and the govt. has nothing to do with this. As a result the encroachment is one of the main issues to be tackled in future course of post management of the watershed project. The encroachment by the community in the forest, pasture and other common land area is increasing at a disproportion rate. It is observed by the project social workers that rich farmers are encroaching the more common lands than landless families in the watershed. It is felt that persons with more man-power and better financial status are enjoying the CPR at higher rate than compared to the land less laborers

Labour Requirement

Labour requirement is found to be maximum during October-November, when the harvesting of Kharif and sowing of Rabi crops are done simultaneously. The other crucial periods are March-April when harvesting and threshing of Rabi crop is done and July-August when sowing of Kharif crops takes place. Other income generating enterprises having potential during the remaining month should be planned to reduce the migration of labours.

Agro forestry

The agro forestry practices are highly lacking in the watershed though it has good potential under existing dispositions and may play a vital role particularly with respect to minimization of cropping risk, built up soil fertility and productivity soil conservation, partly meeting out the fire wood demand of rural community and moreover, optimizing the watershed the other agro-forestry systems like agri-silvi, silvi-pastoral, bund and



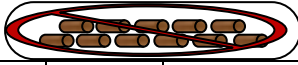
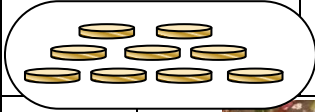





boundary plantations also have good potential to cater the firewood and fodder demands of the rural community in the watershed. The existing area under agro forestry is almost negligible. *Prosopis juliflora* may be planted as block or sole plantation especially on marginal and degraded lands in the watershed. The agro-forestry interventions comprising of ber, bel, amla, guava, teak etc may be applied for benefit of farmers under rain fed to irrigated production systems on leveled to slopy and marginal agricultural using proper planting techniques and termite control measures. The multipurpose trees may also help in supplementing fire wood and fodder demands of the rural community in the watershed and may be planted as hedge rows on rain-fed, marginal and degraded lands.

Horticulture

The fruit trees are in limited in number like Mango, guava, papaya, lemon, lime, ber, aonla as well as vegetables like cucurbits, okra, radish, tomato, cauliflower, cabbage, garlic, onion, brinjal, chilly but they are found surviving well in the watershed villages. The subtropical fruits and vegetables have very good potential in the watershed. Organized orchards, commercial vegetable cultivation, horti-agri and other systems of agro-forestry etc are lacking but have good potential in the watershed.

SEASONAL ANALYSIS

Seasonal analysis has done with the help of farmers about rainfall patterns, cultivated crops, employment, income, availability of fuel, fodder, migration, transport and health hazards, etc. with respect to seasonal variation in a year which is shown as below:

Month Item	January	February	March	April	May	June	July	August	September	October	November	December
Festivals			Holi	Baisakhi			Rakshabandhan			Dashara	Diwali	Guru Parv
Sowing crops/ harvesting			Mustard		Maize, Paddy, Arhar				Wheat			
			Wheat, Arhar						Maize, Paddy			
Disease	Cough & Cold				Gastro Intestinal/ Loose-motion.				Fever			
Purchase/ Expending					😊😊😊😊😊						😊😊😊😊😊😊😊😊😊😊😊😊😊😊😊	
Rains							////////////////////					
Fodder Scarcity												
Fuel/ wood scarcity												
Loaning period (required)												
Marriage Period												
Drinking Water Scarcity												
Irrigation Water Scarcity												

LAND HOLDING PATTERN

Majority of the farmers are in the category of marginal (< 1 ha) and small (1-2 ha) with average land holding of about 2.4 ha. These small land holding are further scattered at different places, which makes cultivation very difficult. Distribution of farm families according to the size of the land holdings are given in the Table below.

Distribution of farm families according to their size of landings

S. No.	Name & Code no. of micro watershed	Name of Concern village	Land holding classification				Percentage		
			Marginal	Small	Others	Total	Marginal	Small	Others
1	Gandora-I 2C2D1m3c	Bar, Gandora, Bamanguan	11	157	22	190	5.78	86.14	8.08
2	Gandora-II 2C 2D1m3b	Gandora, Bamanguan, Bhujupura	17	230	25	272	6.25	84.56	9.19
3	Bar-I 2C2D1m3d	Bar, Bamanguan, Behta	10	151	22	183	5.46	82.52	12.02
4	Bar-II 2C2D2b1c	Bar, Bamhori Sahna, Fadari, Bhalonilodh, Dasrara	9	137	16	162	5.55	84.58	9.87
5	Bachrawni 2C2D2b1a	Bachrawni, Bamanguan, Bar	7	92	14	113	6.19	81.43	12.38
6	Dashrara 2C2D2b1b,	Dashrara, Bar, Bachrawni	14	192	23	229	6.11	83.85	10.04
7	Buragoun-I 2C2D2h1a	Buragoun	6	74	11	91	6.59	81.33	12.08
8	Buragpun-II 2C2D2a2a		8	72	16	96	8.33	75.01	16.66
9	Bhawani 2C2D2a1b	Bhawani, Bachrawni,	14	135	22	171	8.18	78.96	12.86
10	Ladwari 2C2D1m2d	Ladwari	11	154	17	182	6.04	84.62	9.34
	TOTAL		107	1394	188	1689	6.33	82.53	11.14

LIVESTOCK POPULATION

The information on live stock collected through PRA Levels .Total livestock population of the watershed is 12164. Buffalo is preferred as milch animal compared to cow, but milk yield is very low. Goats are also kept for milk as well as for meat purpose. The breakup of livestock population is as follows.

Table-3.4: VILLAGE WISE ANIMAL POPULATION

S. No.	Village	Buffalo	Cow	Ox	Calf	Buffalo child(M)	Buffalo child(F)	Goat/Sheep	Birds etc.	Total
1	Ladwari	215	375	32	123	57	68	130	125	1125
2	Bar	328	258	110	82	45	55	414	378	1670
3	Bhailoniladh	150	325	90	70	40	34	201	125	1035
4	Bamhorisahna	160	230	158	215	69	42	650	150	1674
5	Fadari	90	310	30	120	37	29	62	43	721
6	Bacchrawani	100	300	53	27	25	17	80	80	682
7	Dashrara	220	140	26	60	60	70	140	08	724
8	Gaindora	100	170	53	27	21	13	70	08	462
9	Bamanguan	35	150	22	50	09	10	280	18	574
10	Bhujaupura	107	145	10	40	22	26	70	28	448
11	Bhawani	252	117	70	182	115	85	230	100	1151
12	Kailoni	98	300	53	27	25	17	80	80	680
13	Buragoun	314	140	26	60	60	70	340	208	1218
	Total	2169	2960	733	1083	585	536	2747	1351	12164

LIVELIHOOD ACTIVITIES

Agriculture is the primary source of livelihood for medium and large farmer, whereas landless, marginal & small farmers depend on daily wage during more than 6 months every year. The secondary source of livelihood for landless & very poor families are shifting cultivation, animal husbandry and collection & marketing due to unsystematic agricultural practice, erratic rain and absence of technical know-how, people lack in agriculture sector, people have shifted from agriculture based livelihood towards non-agriculture based livelihood. Mostly it is found that, people do prefer to go for daily labour work to nearby towns for earning.

As it is analyzed during the PRA exercises, the total cost of cultivation of major crops like paddy, Wheat, is slightly more than the total cost of production. Therefore emphasis has to be given on increased crop productivity. As it was understood that there is distress sale of animal husbandry is not profitable at present, therefore initiatives has to be taken for increased animal productivity and scope should be created for collective marketing.

INFRASTRUCTURE SOCIAL FEATURES

The watershed has moderate communication facilities and all 13 villages and Concern majra are approachable through motorable road. Mostly villages are electrified and have TV & telephonic connection. Nearest small market is about 8-15 km and nearest big market is about 12-15 km from the watershed. Religious and ritual features are almost common as in other part of the U.P. Small land holding (average less than 0.46 ha) with large family size (average 7 person) and more than 25 % of the labor force of the total population living below poverty line indicate poor socio economic status of the watershed community. However, strong community spirit among the villager's show positive indication for the success of any programmed to be implemented in

participatory mode. Traditionally the entire village community participates in the individual works, map of the watershed villages drawn by villagers themselves, depicting various village features is shown in TaMe as below:

Table-3.5 INFRASTRUCTURE FACILITIES IN THE PROJECT AREA

S. NO.	Name of Village	Linkage to main road	Electricity	Primary School	Junior High School	Inter Collage	Post Office	P.H.C./District Hospital	Bank	Vetnary Hospital	Co-op. Society	Market	Agri. Service Center
1	Ladwari	Yes	Yes	Yes	Yes	4 Km.	Yes	4 Km.	4 Km.	4 Km.	4 Km.	4 Km.	4 Km.
2	Bar	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	Bhailoniladh	Yes	Yes	Yes	Yes	3 km.	3 Km.	3 Km.	3 Km.	3 Km.	3 Km.	3 Km.	3 Km.
4	Bamhorisahna	Yes	Yes	Yes	4 km.	4 km.	4 km.	4 km.	4 km.	4 km.	4 km.	4 km.	4 km.
5	Fadari	Yes	Yes	Yes	4 km.	4 km.	4 km.	4 km.	4 km.	4 km.	4 km.	4 km.	4 km.
6	Bacchrawani	Yes	Yes	Yes	Yes	6 Km.	6 Km.	6 Km.	6 Km.	6 Km.	6 Km.	6 Km.	6 Km.
7	Dashrara	Yes	Yes	Yes	2 Km.	5 Km.	5 Km.	5Km.	5 Km.	5 km.	5 Km.	5 Km.	5Km.
8	Gaindora	Yes	Yes	Yes	Yes	3 Km.	3 Km.	3 Km.	3 Km.	3 Km.	3 Km.	3 Km.	3 Km.
9	Bamangan	Yes	Yes	Yes	3 Km.	3 Km.	3 Km.	3 Km.	3 Km.	3 Km.	3 Km.	3 Km.	3 Km.
10	Bhujaupura	Yes	Yes	Yes	3 Km.	3 Km.	3 Km.	3 Km.	3 Km.	3 Km.	3 Km.	3 Km.	3 Km.
11	Bhawani	Yes	Yes	Yes	Yes	8 Km.	Yes	8Km.	8Km.	8km.	8Km.	8Km.	8 Km.
12	Kailoni	Yes	Yes	Yes	5 km.	5 km.	5 km.	5 km.	5 km.	5 km.	5 km.	5 km.	5 km.
13	Buragoun	Yes	Yes	Yes	Yes	7 Km.	Yes.	7 Km.	7 Km.	7 km.	7 Km.	7 Km.	27Km

MEANS OF COMMUNICATION

The watershed can be approached from two main roads

- 1- Lalitpur to Devgarh road.
- 2- Lalitpur to Rajghat Road.

DEPENDENCY ON FOREST FOR FUEL WOOD AND FODDER

(A) Fuel wood:

Some villagers of the selected villages are using LPG to meet their cooking energy requirements. The main source of fuel is from cow dung cake, woody stem of Arhar crop and Mustard. About 65 to 70 percent of the domestic energy requirement is met from the Agro By-Product and cow dung cake. Rest is met out from the forest outside the village and watershed boundary. Fuel wood is obtained from the forest which is situated in the Outside the Watershed Boundary. About 30 ha land will be taken from the waste land falling in the class-VII category in the watershed. These lands will be planted with species like *Prosopis juliflora*, *Acacia nilotica*, *Prosopis cineraria* and *Holoptelia integrifolia*.

(B) Fodder:

Villages do not have any significant dependency on forest based fodder as these sources are not available in the forests. There is shortage of green fodder in winter and summer due to inadequate irrigation facility. Due to lack of fodder availability, there is *Anna Pratha* (tradition of leaving cattle free by villagers) in this area, which is also one of the most important reasons for more mortality rate of planted trees.

LACK OF ADEQUATE FARM MACHINERY

Even today a large number of farmers in water shade area use wooden ploughs and bullocks. They don't have adequate machinery like seed drill. So, old machineries take more time in tillage practices.

HYDROLOGY AND WATER RESOURCE CATEGORIES

Water resources are divisible into two distinct categories : the surface-water resources & the ground-water resources. Each of these categories is a part of the earth's water circulatory system, called the hydrologic cycle, & is ultimately derived from precipitation, which is rainfall plus snow. They are interdependent & frequently the loss of one is the gain of the other. The brief description of the run-off cycle, which is a part of the hydrologic cycle, will help us to understand the origin & the interdependence of these two categories of water resources.

The precipitation that falls upon **land** & is the ultimate source for both the categories of water resources is dispersed in several ways. A sizeable portion is intercepted by the vegetal cover or temporarily detained in surface depressions. Most of it is later lost through evaporation. When the available interception or the depression storage are completely exhausted & when the rainfall intensity at the **soil** surface exceeds the infiltration capacity of the **soils**, the overland flow begins. Once the overland flow reaches a stream channel, it is called surface run-off, which together with other components of flow, forms the total run-off.

Part of the water that infiltrates into the surface **soil** may continue to move laterally at shallow depth as interflow owing to the presence of relatively impervious lenses just below the **soil** surface & may eventually reach the stream channel when it is called the sub-surface runoff. A part of the sub-surface run-off may enter the stream promptly, whereas the remaining part may take a long time before joining the stream flow.

A second part of the precipitation which infiltrates is lost through evapo-transpiration via plant roots & thermal gradients just below the **soil** surface. A third part may remain above the water table in the zone of unsaturated flow. A fourth remaining part percolates deeply into the ground-water. Part of this ground-water may

eventually reach the stream channel & become the base flow of the stream. This portion is termed ground-water run-off or ground-water flow.

Apart from infiltrated rain-water, the seepage from canals,ponds,tanks,lakes,irrigated fields,etc.is also dispersed & accounted for in the same manner.

The total run-off in the stream channel includes the snow-melt, the surface run-off the sub-surface run-off, the ground-water run-off & the channel precipitation, i.e. the precipitation falling directly on the water surface of streams,lakes,etc. It constitutes what is known as the surface-water resources. The portion of the precipitation which, after infiltration,reaches the ground-water-table, together with the contribution made to ground water from a neighbouring basin, influent rivers,natural lakes,ponds,artificial storage reservoirs,canals,irrigation,& constitutes the ground-water resources.That quantity of water in the ground-water reservoir, which is not annually replenishable, is not taken into account, as it is a sort of dead storage which cannot be used on a continuing basis from year to year.

The above phase of the run-off cycle pinpoints the inflow components for the surface-as well as for the ground-water resources. It has to be appreciated that there is always a balance between the inflow factors making up water resources of a region, whether surface or ground, & the outflow components. The surface water resource of a given basin in excess of the withdrawal use is accounted for on the outflow side by one or more of the following factors:

- (i) Stream outflow from the basin;
- (ii) loss through evaporation;and

(iii) the influent recharge to the ground water.

Similarly, the unutilised ground-water resource of a basin is accounted for by the following outflow factors:

- (i) Evapo-transpiration from the ground-water-table;
- (ii) outflow to the neighbouring ground-water basin;
- (iii) the effluent discharge to the streams;and
- (iv) the addition to the ground-water storage.

The interrelationship between the surface-water & the ground-water resources is evident from the above analysis. The surface-water resources contribute to the ground-water recharge in various ways:

- (i)by influent recharge from the streams;
- (ii)by seepage from natural lakes,ponds,etc;
- (iii)seepage from artificial storage reservoirs,canal systems,etc, &

(iv)return flow from irrigation. These factors presently contribute to about 25 percent of the country's total ground-water resources.

On the other hand, the bulk of the base-flow in the rivers, which represents the sustained fair-weather run-off is contributed by the ground-water resources. This contribution, presently, is roughly assessed at about 25 percent of the total surface-water resources of the country.

Factors Affecting Water Resources

The water resources of a region, conceived as a dynamic phase of the hydrologic cycle, are influenced by the following three major groups of factors:

A. Climatic Factors

B. Rainfall : its intensity,duration & distribution.

C. Snow

D. Evapo-transpiration

1. Physiographic Factors

A. Basic characteristics.

1. Geometric factors : drainage area,shape,slope & stream density.

2. Physical factors : **land** use, surface infiltration conditions,**soil** types,etc.

B. Channel characteristics : carrying capacity & storage capacity.

2. Geological Factors

A. Lithologic including composition, texture, sequenceof rock types & the thickness of rock formations.

B. Structural, including chief faults & folds that interrupt the uniformity of occurrence of rock types or sequence of rock types also beds, joints, fissures, cracks,etc.

C. Hydrologic characteristics of the aquifers permeability, porosity, transmissivity, storability,etc

The physiographic features (including geological factors) not only influence the occurrence & distribution of water resources within a region but these, particularly the orography, play a significant role in influencing rainfall & other climatic factors, such as temperature, humidity & wind. However, within a geographical location & physiographic framework, it is primarily the rainfall (its intensity, duration & distribution) & the climatic factors affecting evapo-transpiration that determine the totality of water resources in the region.

SOIL AND MOISTURE CONSERVATION AND EFFICIENT USE OF WATER

Water is essential for all life and is used in many different ways - for food production, drinking and domestic uses and industrial use. It is also part of the larger ecosystem on which bio diversity depends. Precipitation, converted to soil and groundwater and thus accessible to vegetation and people, is the dominant pre-condition for biomass production and social development in drylands. The amount of available water is equivalent to the water moving through the landscape. It also fluctuates between the wet and dry periods. Fresh water scarcity is not limited to the arid climatic regions only. Even in areas with good supply, the access to safe water is becoming a critical problem. Lack of water is caused by low water storage capacity, low infiltration capacity, large inter-annual and annual fluctuations of precipitation and high evaporative demand.

A variety of essential soil moisture and water conservation technologies must be adopted to reduce the cost of irrigation, extend it throughout and promote sustainable small-scale irrigation on a watershed basis. These technologies are essential especially in drought-prone areas. Even though drought is a purely natural calamity caused by the failure of (monsoon) rain, it can be minimized by careful planning and operation. During good rainy years, excess rainwater should be stored in the soil and also underground using suitable soil moisture conservation measures and water harvesting structures on a watershed basis. This stored water can subsequently be used for irrigation.

Conceptual approach

Watershed development and management implies an integration of technologies within the natural boundary of a drainage area for optimum development of land, water and plant resources, to meet the people's basic needs in a sustained manner. A watershed is an area from which runoff resulting from precipitation flows

past a single point into a large stream, river, lake or pond. Each watershed is an independent hydrological unit. It has become an acceptable unit of planning for optimum use and conservation of soil and water resources.

The concept of integrated watershed development refers to the development and management of the resources in the watershed to achieve higher sustainable production without deterioration in the resource base and any ecological imbalances. This concept requires the formulation and implementation of a package of programmes with activities for optimum resource use in the watershed without adversely affecting the soil and water base or life supporting system. The concept assumes more importance in the context of planning for sustained development. Watershed development aims at preventing watershed degradation resulting from the interaction of physiographic features. It eliminates unscientific land use, inappropriate cropping patterns and soil erosion, thereby improving and sustaining productivity of resources leading to higher income and living standards for the inhabitants in the watershed area. It therefore involves restoration of the ecosystem, protecting and utilizing the locally available resources within a watershed to achieve sustainable development.

Rainfall failure occurs once every 3 to 5 years and is usually below 50% of the average annual rainfall of the region. During periods of rainfall failure, the groundwater level lowers since fluctuations in the water table levels depend on the rainfall when both surface and groundwater availability becomes critical. Drought begins to prevail and there is difficulty to cope up with the water demand during this period. Similarly, in some locations or areas water shortage is observed just before the rainy season commences. These two situations can be managed if suitable soil and moisture conservation measures are systematically implemented on a small watershed basis.

There are always strong links between soil conservation and water conservation measures. Many actions are directed primarily to one or the other, but most contain an element of both. Reduction of surface runoff can be achieved by constructing suitable structures or by changes in land management. Further, this reduction of surface runoff will increase infiltration and help in water conservation.

Appropriate structures and their functions

To increase the period of water availability and overcome water scarcity in drought years, the following activities can be implemented in the field for a compact, viable watershed of about 200 - 500 ha.

Soil and water conservation can be approached through agronomic and engineering procedures. Agronomic measures include contour farming, off season tillage, deep tillage, mulching and providing vegetative barriers on the contour. These measures mainly prevent soil erosion but will also help in improving soil moisture availability in the watershed.

Soil and water conservation measures on a watershed basis

The engineering measures adopted differ with location, slope of the land, soil type, amount and intensity of rainfall. Depending on these parameters, the methods commonly used are contour trenching, contour stone walls, construction of temporary and permanent check dams and gully plugging structures. Additionally, percolation ponds, silt detention tanks and irrigation tanks are constructed to harvest water and recharge it to the groundwater for use in agriculture (irrigation). Farm ponds can also be constructed for every 4-5 ha in the watershed to provide protective/supplemental irrigation.

The above soil and water conservation management and water harvesting programme should be implemented in an integrated manner on a catchment/watershed basis.

Functions of the structures

Contour bunds, contour barriers (vegetative and stone), contour trenches and contour stone walls will not only prevent soil erosion but also obstruct the flow of runoff water. Consequently, the obstructed water will increase the soil moisture and recharge the groundwater in the area.

Check dams: This may be a temporary structure constructed with locally available materials. The various types are: Brush wood dam, loose rock dam and woven wire dam. The main function of the check dam is to impede

the soil and water removed from the watershed. This structure is cheap, but lasts about 2-5 years. The cost of the structure depends on the materials used, the size of the gully and the height of the obstruction (dam). A permanent check dam can be constructed using stones, bricks and cement. Small earth work is also needed on both sides. This water recharges the groundwater.

Percolation Pond: The percolation pond is a multipurpose conservation structure depending on its location and size. It stores water for livestock and recharges the groundwater. It is constructed by excavating a depression, forming a small reservoir or by constructing an embankment in a natural ravine or gully to form an impounded type of reservoir. The capacity of these ponds or tanks varies from 0.3 to 0.5 mcft (10 000 - 15 000 m³). Normally 2 or 3 fillings are expected in a year (season) and hence the amount of water available in one year in such a tank is about 1 mcft to 1.5 mcft (30 000 - 45 000 m³). This quantity of water, if it is used for irrigation, is sufficient to irrigate 4-6 hectares of irrigated dry crops (maize, cotton, pulse, etc.) and 2-3 hectares of paddy crop.

Irrigation Tank: The main function of this storage structure is irrigating crops. It is constructed below the above-mentioned structures in a watershed. Each tank can irrigates from 10 to 5 000 hectares. Earthen bunds are reinforced with masonry to collect and store rainwater for irrigation. The cost of this tank (dam) depends upon the size, location and site condition. Water from the tanks is normally used to grow paddy crop.

Apart from the above, to increase moisture availability to agricultural and tree crops, in situ moisture conservation techniques must be adopted in addition to the large scale soil and moisture conservation and water harvesting structures in the watershed.

The following are some of the *in situ* moisture conservation measures which can be practised in the watershed to increase production.

For agricultural crops, the measures adopted are forming ridges and furrows, broad bed and furrows, basins, tie ridging (random tie ridges) and water spreading.

For tree crops micro catchment, saucer basin, semi-circular bund, crescent shaped bunds, V ditch technology, catch pits and deep pitting can be practised.

In addition to the above measures and structures, small storage structures with a water storage capacity for an area of about 0.4 to 0.5 ha can be constructed in large numbers one for every 10 to 20 ha catchment or watershed at the foot hills slopes and hilly areas. These storage facilities would attenuate the floods during storms. These measures will also ensure soil moisture for good growth of trees grown down stream recharging the groundwater in the region and making available more water for drinking and irrigation water.

PROBLEMS AND NEEDS

The main problem in a watershed is the soil erosion by rainfall. The run off water transport the sediments which may block the channel head, dam, reservoir and storage structures are the major problems faced in the project area and attempts made so far to overcome them. The other main problems in the selected watershed are : lack of awareness amongst the villagers about the deteriorating environmental condition of the area, 75% of the run off water makes it away to way towards Shahzad-Jamnirivers carrying fertile soil which has nutrients and this decreases soil fertility, there is a decline in the productivity of cereals, pulses and vegetable crops, dependency of farmers on the rain water. Therefore it is an urgent need, that rainwater should be harvested for crops and re-charged to improve the quality of the water.

CHAPTER - 4
INSTITUTION BUILDING &
PROJECT MANAGEMENT

PARTICIPATORY RURAL APPRAISAL (PRA)

The past experience of watershed has given tremendous input to focus on creating accountability of the stakeholders towards the program. This has created an emphasis to include all the stakeholder communities and their local and Indigenous Technological Knowledge (ITK) while planning for any activity. Participatory approach provides a new path for planning, implementing, and monitoring and post- withdrawal activities with a complete accountability of the stakeholders. Various PRA techniques like resource mapping, social mapping, and season calendars were used to understand the physical and social orientation of the village in general and watershed in specific. These tools put the villagers in ease than the complicated questionnaires. Various tools like matrix ranking, venn diagram were used to identify various local vegetations (apt for afforestation), fodders crops.

PROJECT IMPLEMENTING AGENCY (PIA)

U.P. Government, Land Development And Water Resources Department section -1 Lucknow has nominated as PIA to Bhoomi Sanrakshan Unit, Land development and water resources Department Dist – Lalitpur for IWMP.

Table-4.1: DETAILS OF PIA STAFF I. W. M. P. – X, LALITPUR

S.No.	Name	Designation	Qualification
1	Sri C. D, Ram	BSA	Intermediate Diploma in Ag. Engg.
2	Sri Raja Ram Rajput	JE	Intemediate, Diploma in Civil eng.
3	Sri M. P. Yadav	JE	Intemediate, Diploma in Civil eng.
4	Sri Rajendra Prasad Panday	Accountant	M.Com.
5.	Sri Dharam Pal Singh	Senior Clerk	B.A.
6.	Sri Pramod Kumer Singh	Junior clerk	B.A
7.	Sri Shyam Lal Saroj	ASCI	M.Sc. Ph.d.
8.	Sri Raj bali Singh Yadav	ASCI	B.Sc. Ag.
9.	Sri Santosh Kumar Sigh	Seench Parvekshak	Intermediate
10.	Sri Ram Dhani Ram	Seench Parvekshak	M.A.
11.	Sri Nitya Nand Srivastava	Seench Parvekshak	Intermediate
12.	Sri Santosh Kumar srivastava	Seench Parvekshak	Intermediate
13.	Sri Azaz ahmad	Seench Pal	Intermediate
14.	Sri Pradeep Kumar Singh	Seench Pal	Intemediate
15	Sri Gyan shankar Mishra	Treasure	Intermediate Diploma in Civil
16	Sri Vinod Kumar singh	Fourth Class	Literate
17.	Sri Ram Dev Pal	„	„
18.	Sri sanjay Kumar Singh Yadav	„	Intermediate
19.	Sri Manoj	„	High School

ROLES AND RESPONSIBILITIES OF THE PIA

The project Implementing Agency(PIA) will provide necessary technical guidance to the Gram Panchayat for preparation of development plans for the watershed through Participatory Rural Appraisal(PRA) exercise, undertake community organization and training for the village communities, supervise watershed development activities, inspect and authenticate project accounts, encourage adoption of low cost technologies and build upon indigenous technical knowledge, monitor and review the overall project implementation and set up institutional arrangements for post-project operation and maintenance and further development of the assets created during the project period.

The PIA, after careful scrutiny, shall submit the action plan for watershed development project for approval of the DWDU/DRDA and other arrangements. The PIA shall submit the periodical progress report to DWDU. The PIA shall also arrange physical, financial and social audit of the work undertaken. It will facilitate the mobilization of additional financial resource from other government programs, such as NREGA, BRGF, SGRY, National Horticulture Mission, Tribal Welfare Schemes, Artificial Ground Water Recharging, Greening India, etc.

WATERSHED DEVELOPMENT TEAM

The WDT is an integral part of the PIA and will be set up by the PIA. Each WDT should have at least four members, broadly with knowledge and experience in agriculture, soil science, water management, social

mobilization and institutional building. At least one of the WDT members should be a woman. The WDT members should preferably have a professional degree. However, the qualification can be relaxed by the DWDU with the approval of SNLA in deserving cases keeping in view the practical field experience of the candidate. The WDT should be located as close as possible to the watershed project. At the same time, it must be ensured that the WDT should function in close collaboration with the team of experts at the district and state level. The expenses towards the salaries of the WDT members shall be charged from the administrative support to the PIA. DWDU will facilitate the training of the WDT members.

As per new common guideline direction/instruction given in Para 5.3 points 40, P. I. A. has been constituted Watershed Development Team as given in table below:

WATERSHED DEVELOPMENT TEAM I.W.M.P.-X

S.No.	District	Name of Project	Year sanction	Details of Formation of WDT members					Total	Remarks
				Agriculture	Soil Science	Water Management	Social Organisation & Institution Building			
1	Lalitpur	BSA LDWR Lalitpur-12	IWMP-X	Dr. Raghunath Dr. A.K.S. Chouhan	Dr. Shiv Prasad Yadav	Dr. Rajeev Shukla	Km. Archana	5		

ROLES AND RESPONSIBILITIES OF WDT

The WDT will guide the watershed committee (WC) in the formulation of the watershed action plan. An indicative list of the roles and responsibilities of the WDT would include among other s, the following.

- a. Assist Gram Panchayat /Gram Sabha in constitution of the watershed committee and their functioning.
- b. Organizing and nurturing User Groups and Self-Help Groups.
- c. Mobilizing women to ensure that the perspectives and interests of women are adequately related in the watershed action plan.

- d. Conducting the participatory base –line surveys, training and capacity building.
- e. Preparing detailed resource development plans including water and soil conservation or reclamation etc. to promote sustainable livelihood at household level.
- f. Common property resource management and equitable sharing.
- g. Preparing Detailed Project Report (DPR) for the consideration of Gram Sabha.
- h. Undertake engineering surveys, prepare engineering drawing and cost estimates for any structure to be built.
- i. Monitoring, checking, accessing, and undertaking physical verification and measurement of 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.

WATERSHED COMMITTEE (WC)

It is a committee that is constituted by Gram Panchayat to implement the watershed project with technical support of WDT in the village. This committee is registered under society Registration Act 1860. The Gram Panchayat of the village selects the chairperson of the watershed committee with the secretary who will be a paid functionary. A watershed Committee was formed accordingly in the village. Capacity building training to the watershed committee is given by WDT.

The watershed committee has a pivotal role to play during and after the project implementation period

Table-4.3 Water shed committees

S. No.	Name Of Micro Watershed	President	Secretary	Total No. of members
1	Gandora-I 2C2D1m3c	Sri Har Pal Singh	Sri Jwala Prasad singh	12
2	Gandora-II2C 2D1m3b	Sri Lal Singh	Sri Balwan singh	12
3	Bar-I 2C2D1m3d	Sri Ashok Kumar purohit	Sri Mohan Lal Kushwaha	12
4	Bar-II 2C2D2b1c	Sri Heera lal	Sri Ratan Lal Kushwaha	12
5	Bachrawni 2C2D2b1a	Sri Bal Ram Singh	Sri Ayodhya Prasad	12
6	Dashrara 2C2D2b1b,	Sri Mahesh Kumar	Sri Rahul Rawat	12
7	Buragoun-I 2C2D2h1a	Sri Indra Pal Singh	Sri Mukesh Rajak	12
8	Buragpun-II 2C2D2a2a	Sri Raksha Pla Singh	Sri Amol Rajak	12
9	Bhawani 2C2D2a1b	Sri Rajendra singh	Sri Mohan Lal	12
10	Ladwari 2C2D1m2d	Sri Raja Bhaiya	Sri Jug Lal Kushwaha	12

Watershed Committee :

- Gram Panchayat Member (02)
- SHG Member (02)
- Usersgroup (04)
- Project Incharge (department) (01)
- WDT Member (01)
- President (01)
- Secretary (01)
- Total Member (12)**

Watershed Committee, IWMP-X

GP : Ladwari

S.N o.	Name	Father/Husban d's Name	Age (in Years)	Caste/Cate gory	Education	Remarks
1.	Sri Raja Bhaiya	Sri Pyare Raja	40	Thakur	High School	President
2.	Sri Jug Lal Kushwaha	Sri Har Lal	35	Kushwaha	Inter	Secretary
3.	Sri Raghvendra Singh	Sri Rav Raja	38	Thakur	B.Com.	GP Member
4.	Sri Shiv Shankar	Sri Kishore Kumar	35	Dhanuk	Litterate	Member
5	Sri Mulayam Singh	Sri Om Prakash Singh	38	Kshatriya	8 th	SHG Member
6	Sri Narendra Singh	Sri Udal Singh	30	Kshatriya	10 th	SHG Member
7	Sri Bhagirath	Sri Damma Kushwaha	28	Kushwaha	Literate	Users Group
8	Sri Dhani Ram	Sri Jallu	35	Dheemar	Literate	Users Group
9	Sri Seva Ram	Sri Bhagona	35	Luhar	8 th	Users Group
10	Ragunath	Sri Ram Lal	46	Luhar	B.A.	Users Group
11	Sri Shyam Raj Saroj	ASCI	30	SC	Ph.D., M.Sc.	Project Incharge
12	Sri M.P. Yadav	Junior Engineer	54	Yadav	Inter Dip (Civil)	WDT Member

GP : Bhawani

S. No.	Name	Father/Husband's Name	Age (in Years)	Caste/ Category	Education	Remarks
1.	Sri Ashok Kumar	Sri Summa	` 25	Basore	High School	President
2.	Sri Dashrath	Radhu	26	Ahirwar	High School	Secretary
3.	Smt. Parvati	Sri Nathu	40	Ahirwar	Literate	GP Member
4.	Smt. Pushpa	Sri Bhagwan Das	22	Ahirwar	5th	GP Member
5	Smt. Geeta	Sri Ram Das	32	Kushwaha	Literate	Shg Member
6	Smt. Phoola	Sri Sudami	22	Ahirwar	Literate	SHG Member
7	Smt. Puspendra Sinbgh	Sri Durtg Singh27	40	Chouhan	8 th	Users Gruop
8	Sri Desraj	Sri Suke	30	Kushwaha	5 th	Users Gruop
9	Sri Damodar	Sri Hari	35	Viswakarma	10 th	Users Gruop
10	Sri Ram Das	Sri Kammod	32	Kushwaha	8	Users Gruop
11	Sri Shyam Raj Saroj	ASCI	30	SC	Ph.D., M.Sc.	Project Incharge
12	Sri M.P. Yadav	Junior Engineer	54	Yadav	Inter Dip (Civil)	WDT Member

GP : Bar-Ist

S.No	Name	Father/Husband's Name	Age (in Years)	Caste/Category	Education	Remarks
1.	Sri Sri Gokal Prasad	Sri Mohan	29	Kushwaha	B.A.	President
2.	Sri Mohan Lal	Sri Babu Lal	28	Kushwaha	B.A.	Secretary
3.	Smt. Sakhi	Sri Ramdin	25	Kushwaha	Literate	GP Member
4.	Sri Ram Das	Sri Manka	24	Sahariya	Literate	GP Member
5	Smt. Raina	Sri Ram Prasad	30	Kushwaha	Literate	SHG Member
6	Smt. Mankunwar	Sri Ram LAL	25	Kushwaha	Literate	SHG Member
7	Sri Pancham	Sri Bal Chand	35	Kushwaha	Literate	Users Group
8	Sri Ram Lal	Sri Gangu	27	Kushwaha	10 th	Users Group
9	Sri Panna Lal	Sri Ram Charan	35	Ahirwar	5 th	Users Group
10	Sri Ranju	Sri Jugga	30	Ahirwar	10 th	Users Group
11	Sri Pradeep Kumar	Seenchpal	52	Kshatriya	Inter	Project Incharge
12	Sri Raja Ram Rajput	Junior Engineer	52	Rajput	Inter, Dip. (Civil)	WDT Member

GP : Bar-II

S.No	Name	Father/Husband's Name	Age (in Years)	Caste/Cate gory	Education	Remarks
1.	Sri Ratan Lal	Sri Har Prasad	27	Kachhi	8 th	President
2.	Sri Ram Lal	Sri Gangu	58	Kachhi	5 th	Secretary
3.	Sri Heera Lal	Sri Ajuddi	58	Kachhi	Literate	GP Member
4.	Sri Ram Prasad	Sri Shyam	30	Kachhi	Literate	GP Member
5	Smt. Keshar	Sri Gore Lal	25	Ahirwar	5 th	SHG Member
6	Smt. Rani	Sri Rati Ram	25	Ahirwar	Literate	SHG Member
7	Smt. Rekha	Sri Ramswaroop	26	Ahirwar	Illiterate	Users Group
8	Smt. Meena	Sri Veeran	32	Ahirwar	Literate	Users Group
9	Sri Kallu	Sri Brij Lal	30	Ahirwar	Literate	Users Group
10	Sri Devi Lal	Sri Chhote Lal	30	Kushwaha	Literate	Users Group
11	Sri Santosh Kumar	Seench Paryavekshak	59	Kayasth	Intermedia te	Project Incharge
12	Sri M.P. Yadav	Junior Engineer	54	Yadav	Inter Dip (Civil)	WDT Member

GP : Bachharawani

S.No	Name	Father/Husband's Name	Age (in Years)	Caste/Cate gory	Education	Remarks
1.	Sri Balram Singh	Sri Chhote Lal	25	Yadav	9 th	President
2.	Sri Ayodhya Prasad	Sri Ramu Lal	42	Nai	10 th	Secretary
3.	Sri Rajju Lal	Sri Randhir	26	Ahirwar	9 th	GP Member
4.	Sri Kishora	Sri Dille	40	Kushwaha	Illiterate	GP Member/Landless
5	Sri Bhagwan Das	Sri Bahore	28	Ahirwar	BA	SHG Member
6	Sri Mukesh Kumar	Sri Ramdin	25	Ahirwar	BA	SHG Member
7	Sri Kishora	Sri Dille	40	Kushwaha	Illiterate	Users Group
8	Sri Nathu Ram	Sri Sooke	55	Nai	8 th	Users Group
9	Sri Janki Lal	Sri Suk Lal	24	Ahirwar	10 th	Users Group
10	Sri Raksh Pal	Sri Lakhan	23	Ahirwar	8 th	Users Group
11	Sri Raj Bali Yadav	ASCI	50	Yadav	B.Sc. (Ag.)	Project Incharge
12	Sri Raja Ram Rajput	Junior Engineer	52	Rajput	Inter, Dip. (Civil)	WDT Member

GP : Dashrara

S. No.	Name	Father/Husband's Name	Age (in Years)	Caste/Category	Education	Remarks
1.	Sri Mahesh Kumar	Sri Saligram	34	Brahmin	Inter	President
2.	Sri Rahul Rawat	Sri Kailash Narayan	22	Brahmin	B.A.	Secretary
3.	Smt Raj Kumari	Sri Pragi Lal	30	Dhobi	Litterate	GP Member
4.	Sri Laxman	Sri Thakre	50	Vishwakarma	Illiterate	GP Member/Landless
5	Smt. Manisha	Sri Arvind Kumar	24	Srivastava	10 th	SHG Member
6	Smt. Goura	Sri Jugal Kishor	35	Ahirwar	Illiterate	SHG Member
7	Sri Laxman	Sri Thakre	50	Viskarma	Illeterate	Users Group
8	Smt. Ram Pyari	Sri Khyali	25`	Ahirwar	Illiterate	Users Group
9	Smt. Jashoda	Sri Rakesh	22	Kachhi	Illiterate	Users Group
10	Sri Vinod Kumar	Sri Har Swaroop	40	Srivastava	BA	Users Group
11	Sri Shyam Raj Saroj	ASCVI	30	SC	Ph.D., M.Sc.	Project Incharge
12	Sri M.P. Yadav	Junior Engineer	54	Yadav	Inter Dip (Civil)	WDT Member

GP : Gaindora-I

S. No.	Name	Father/Husband's Name	Age (in Years)	Caste/Category	Education	Remarks
1.	Sri Harpal Singh	Sri Bhawani Singh	30	Thakur	5 th	President
2.	Sri Jwala Singh	Sri Pyare Lal	52	Yadav	10	Secretary
3.	Smt. Ram Kali	Sri Bhagwan Singh	52	Kori	5 th	GP Member
4.	Srmt. Baby	Sri Uday Bhan	25	Basnkar	5 th	GP Member
5	Smt. Kiran	Sri Shiv Narayan	30	Kori	Inter	SHG Member
6	Smt. Bharti	Sri Arvind	22	Kori	8 th	SHG Member
7	Sri Ravindra	Sri Pyare Raj	55	Thakur	8 th	Users Group
8	Sri Rajju	Sri Mully	30	Bunkar	Illiterate	Users Group
9	Smt. Urmila	Sri Jodhan	25	Lodhi	8 th	Users Group
10	Sri Sripat Singh	Sri Shyam Lal	48	Lodhi	BA	Users Group
11	Sri R. D. Ram	Seench Paryavekshak	52	SC	B.A.	Project Incharge
12	Sri Raja Ram Rajput	Junior Engineer	52	Rajput	Inter, Dip. (Civil)	WDT Member

GP : Gaindora-II

S. No.	Name	Father/Husband's Name	Age (in Years)	Caste/Category	Education	Remarks
1.	Sri Lal Singh	Sri Moti Lal	30	Lodhi	5 th	President
2.	Sri Balwab	Sri Pragi Lal	36	Lodhi	5 th	Secretary
3.	Smt. Kunwar Bai	Sri Raju Laodhi	30	Lodhi	7 th	GP Member
4.	Sri Deva	Sri Bhoopat	35	Lodhi	8 th	GP Member
5	Smt. Radha	Sri Yashwant Singh	20	Lodhi	5 th	SHG Member
6	Smt. Rachna	Sri Raja Ram Lodhi	26	Lodhi	5 th	SHG Member
7	Sri Pappu	Sri Baldev	31	Lodhi	5 th	Users Group
8	Sri Narendra Singh	Sri Jahar Singh	35	Lodhi	10	Users Group
9	Smt. Seema Devi	Sri Sardar Singh	22	Lodhi	10 th	Users Group
10	Sri Veeran	Sri Pratap	35	Lodhi	Literate	Users Group
11	Sri Ajaj Ahmad	Seenchpal	53	Minority	B.A.	Project Incharge
12	Sri Raja Ram Rajput	Junior Engineer	52	Rajput	Inter, Dip. (Civil)	WDT Member

GP : Buragoun-I

S. No.	Name	Father/Husband's Name	Age (in Years)	Caste/ Category	Educatio	Remarks
1.	Sri Bhagwan Singh Singh	Sri Munna Lal	42	Yadav	10th	President
2.	Sri Mukesh	Sri Hariya	32	Rajak	8th	Secretary
3.	Sri Bhagwan Singh	Sri Parvat Singh	36	Kshatriya	10 th	GP Member
4.	Sri Feran Singh	Sri Tej singh	35	Kshatriya	8 th	GP Member
5	Smt. Hemlata	Sri Mulayam	25	Jogi	5 th	SHG Member
6	Smt Lata	Sri Anrudha	23	Jogi	Illiterate	SHG Member
7	Sri Roop Lal	Sri Ram din	30	Kushwaha	8 th	Users Group
8	Smt. Gajra	Sri Balram	25	Parihar	Illiterate	Users Group
9	Sri Bhagwan Singh	Sri Majboot Singh	35		8 th	Users Group
10	Sri Pooran	Sri Uddet	36	Kushwaha	8th	Users Group
11	Sri Nitya Nand	Seench Paryavekshak	53	Kayasth	Intermediate	Project Incharge
12	Sri M.P. Yadav	Junior Engineer	54	Yadav	Inter Dip (Civil)	WDT Member

GP : Buragoun-II (Jarawali)

S. No.	Name	Father/Husband's Name	Age (in Years)	Caste/ Category	Educatio	Remarks
1.	Sri Rakshpal Singh	Sri Moti Lal	30	Lodhi	BA	President
2.	Sri Amol Rajak	Sri Ram Prasad	24	Rajak	8 th	Secretary
3.	Smt. Urmila	Sri Phundi Lal	40	Ahirwar	Illiterate	GP Member
4.	Sri Kartar Singh	Sri Mool Chand	36	Lodhi	8 th	GP Member
5	Sri Anandi Lal	Sri Channe	35	Ahirwar	Literate	SHG Member
6	Sri Makundi	Sri Chiman	30	Ahirwar	Literate	SHG Member
7	Sri Dhurai	Sri Tapa	35	Ahirwar	Literate	Users Group
8	Sri Hari Ram	Sri Kure	28	Ahirwar	Literate	Users Group
9	Sri Khushi Ram	Sri Duji	35	Ahirwar	Literate	Users Group
10	Sri Brishbhan	Sri Ralli	26	Lodhi	5 th	Users Group
11	Sri Raj Bali Yadav	ASCI	50	Yadav	B.Sc. (Ag.)	Project Incharge
12	Sri Raja Ram Rajput	Junior Engineer	52	Rajput	Inter, Dip. (Civil)	WDT Member

Self Help Group (SHG)

Self Help Groups are motivated, small homogenous groups organized together through credit and thrift activities. Self help group's initiative will be especially for women to help and uplift their livelihood. Generally self help groups include landless and poor women. Before formation of the SHGs, during PRA activities, Focused Group Discussions (FGDs) were held with the women, which came up with the following observations:

- a) Lack of proper credit facilities due to low intervention of formal financial credit institution.
- b) Excessive exploitation of weaker section by money lenders
- c) Lack of attitude for saving among poor people
- d) Lack of knowledge on credit and thrift activity and banking.

A detailed discussion took place with some of the local NGOs working in the area like SEWA, which has planned to have some capacity building training regarding these SHG activities. It was also proposed to have some livelihood activities which will promote women empowerment.

Table-4.4 DETAILS OF SELF HELP GROUP

S. No.	Name of Micro Watershed	No. Of SHG Formed	Activities
1	Gandora-I 2C2D1m3c	02	<ul style="list-style-type: none">● Goat Farming● Bamboo Crafting● Poltry Farm● Fisheries
2	Gandora-II 2C 2D1m3b	02	
3	Bar-I 2C2D1m3d	02	
4	Bar-II 2C2D2b1c	03	
5	Bachrawni 2C2D2b1a	02	
6	Dashrara 2C2D2b1b,	02	
7	Buragoun-I 2C2D2h1a	02	
8	Buragpun-II 2C2D2a2a	03	
9	Bhawani 2C2D2a1b	02	
10	Ladwari 2C2D1m2d	02	
	Total	22	

USER GROUP

User Groups are normally formed to manage an activity or asset created under the programme on a long term basis. The user group collects user charges from their members, oversee the works and manage the

benefits. It was decided that each group would formulate certain internal rules and have a feeling of ownership with community spirit.

Table-4.5 DETAILS OF USER GROUP

S. No.	Name Of Micro Watershed	Area Of Micro Watershed (Ha)	Selected Area For Treatment (Ha)	No. Of User Group Constituted
1	Gandora-I 2C2D1m3c	767.76	570.00	6
2	Gandora-II2C 2D1m3b	905.50	680.00	7
3	Bar-I 2C2D1m3d	851.87	640.00	6
4	Bar-II 2C2D2b1c	730.42	570.00	5
5	Bachrawni 2C2D2b1a	591.50	450.00	5
6	Dashrara 2C2D2b1b,	877.09	640.00	7
7	Buragoun-I 2C2D2h1a	408.84	335.00	4
8	Buragpun-II 2C2D2a2a	431.70	335.00	4
9	Bhawani 2C2D2a1b	743.45	570.00	6
10	Ladwari 2C2D1m2d	408.84	335.00	4
	TOTAL	6967.00	5350.00	54

INSTITUTIONAL ARRANGEMENT AT PROJECT LEVEL

The SLNA would evolve appropriate mechanisms for selecting and approving the PIAs, who would be responsible for implementation of watershed projects in different districts. These PIAs may include relevant line departments, Autonomous organizations under State/Central Governments, Government Institutes/Research bodies, Intermediate Panchayats, Voluntary Organizations (VOS).

However, the following criteria may be observed in the selection of these PIAs:

- 1- They should preferably have prior experience in watershed related aspects or management of watershed development projects.
- 2- They should be prepared to constitute dedicated Watershed Development Teams.

Selected PIAs will sign a contract/MOU with the concerned DWSUs/District Level Committee as referred in para29 that will spell out well –defined annual outcomes, against which the performance of each PIA will be monitored each year and evaluated on a regular basis by institutional evaluators from a panel approved by the SLNA/Departmental Nodal Agency at the central level.

Each PIA must put in position a dedicated watershed development team (WDT) with the approval of DWDU. The WDT will be hired on contract/deputation. Transfer etc for a term not exceeding the project period. The composition of the WDT will be indicated in the contract/MOU. No programme funds for DPR and watershed works under any circumstances should be released to either the PIA or Watershed Committee (WC) unless the composition of the WDT has been clearly indicated in the MOU/contract and the team members are fully in place.

CHAPTER – 5

MANAGEMENT / ACTION PLAN

PROBLEM AND NEED OF THE AREA

Integrated Watershed Development Programme is aimed at the socio-economic upliftment of the dwellers of watershed area and to create trust about the programme to be implemented so that they can coordinate in participatory mode for success of the programme. As per the New Common Guidelines total financial outlay for entry point activities is 4% of the total project cost. To increase the per capita availability of drinking water, older wells of the village will be renovated as well as the chabootra will be constructed, to increase the irrigation water availability, older Bund which already exists but not functioning will be reconstructed or renovated. Repairing and maintenance of water bodies have been proposed on priority basis. Schools lies in the watershed area will be equipped with drinking water facility and extracurricular activities will be promoted among the children's of the water by supplying sport goods to the schools. For environmental purpose in the villages, tree planting will be done. Construction of bathrooms, renovation of ponds and drainage as well as hand pump will be completed. Total estimated cost for these activities is Rs. 25.44 Lakh.

ENTRY POINT ACTIVITY (EPA)

EPA activities are taken up under watershed projects to build a rapport with the 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 with watershed Development Committee regarding the EPA activity, It was conveyed to the WC that an amount of Rs. 25.68 Lakh was allotted for EPA activity, which was 4 per cent of total allocated budget. The villagers discussed various activities which they felt is important but after a brief discussion it was conveyed to them that only those activities can be taken, which revive the common natural resources. It was also taken into

priority that there should be an instrument of convergence which will result in sustainability of activities.

Table 5.1: Entry point activities (EPA) (All financial figures in lakh Rs.)

Sl.No	Micro – Watershed Code No.	Amount Earmarked for EPA	Entry Point Activities Planned	Estimated Cost (Rs. in Lakh)
1.	2C2D1m3c, 2C2D1m3b, 2C2D1m3d, 2C2D2b1c, 2C2D2b1a, 2C2D2b1b, 2C2D2h1a, 2C2D2a2a, 2C2D2a1b, 2C2D1m2d	6.42	Improvement in drinking water system, school, water harvesting & approach road etc.	25.68 Lakh
Total		25.68 Lakh		25.68 Lakh

WATER HARVESTING STRUCTURES, ENERGY AND RESOURCE CONSERVATION

For soil and moisture conservation, water resource developments, horticulture, besides agro-forestry vegetation/plantation work, engineering structure have also been proposed under the project. Engineering structures are important components of soil and water conservation that can play a vital role in erosion control on arable land. Engineering measures usually involve creating mechanical barriers across the direction of flow of water and thus retard or retain runoff on the following principles:

- Increase the time of concentration.

- Break a long slope into several short ones.
- Protection of drainage channels against damage.
- Prevent excessive soil and water losses.

Watershed Development works is proposed to be taken up from 2nd year of the initiation of the project. These works are proposed to be taken up from village to village. And allocation of Rs 43.20 Lakh & 60% of the total cost has been made for watershed development works

CONTOUR, MARGINAL AND PERIPHERAL BUND

Contour bunding is effective for erosion control and moisture conservation measures in dry areas having less than 2% slope to reduce the length of slope. Contour bund will be constructed against the slope in the treatment area. Marginal bund is the engineering structure to reduce the volume and speed of runoff. Those locations where there is a change in slope and soil texture. Peripheral bund will constructed along with the nala bank.

WATER HARVESTING STRUCTURE/CHECK DAM

These structure of built of masonry. Check dams have been proposed constructed in big gullies/ravines carrying relatively high run of and sediment load. Water stored in check dams will be utilized as source of irrigation water during post Monsoon season.

AGRO FORESTRY

Land will be taken from the waste land falling in the class-VII category in the watershed. The Eucalyptus and Sagon plants planted by the farmers.

DRY LAND HORTICULTURE

Lawn will be taken for the plantation of fruit trees like Guava, Mango will be planted at suitable spacing in the watershed.

AREA TREATMENT PLAN

Integrated watershed development program envisage treatment of proposed area with soil & water conservation works along with development of Horticulture, Afforestation & development of silvi pastoral system in denuded land unfit for cultivation, following works are proposed under watershed Development works.

1. Constructions of bunds (Field bund, contour bund, submergence bund, Marginal & peripheral).
2. Renovation of Existing Bund for in-situ moisture conservation.
3. Rain fed Horticulture with and without fencing.
4. Construction of recharge Filter.
5. Construction of new & renovation of Existing structures/ gully plugs/Check dams.
6. Afforestation and development of silvi- pastoral system.
7. Drainage line treatment (pucca structures, gully plug, check dams).

Table 5.2 : Details of activities of preparatory phase

Name of villages	Institutional and capacity buildings	Detailed Project Report	Total estimated cost
13	32.10	6.42	38.52

Table 5.3 : Other Activities of watershed works phase - Proposed Target

Micro- Watershed code	Construction of bunds (Field bund, contour bund, Marginal bund & Peripheral Bund)		Renovation of Existing bund or un-sites soil moisture conservation		Rainfed Horticulture with fencing		Rain fed Horticulture without fencing		
	Area (ha)	Cost Rs. in Lakh	Area (ha)	Cost Rs. in Lakh	Area (ha)	Cost Rs. in Lakh	Area (ha)	Cost Rs. in Lakh	
2C2D1m3c, 2C2D1m3b, 2C2D1m3d, 2C2D2b1c, 2C2D2b1a, 2C2D2b1b, 2C2D2h1a, 2C2D2a2a, 2C2D2a1b, 2C2D1m2d	-	175.33	-	-	-	-	-	-	
New and renovation of existing water harvesting structures such as talab and water bodies etc.		Aforestation, Horticulture & Agro-forestry			Drainage Line Treatment Pucca Structure Inlet, Outlet and Spillway				
Area Ha		Cost in Lacs	Area Ha		Cost in Lacs		Area Ha		Cost in Lacs
-		124.82	-		20.84		-		-

PASTURE MANAGEMENT

The sound animal industry in any country centres around good quality feed and fodders. The livestock population in India is nearly 15% of the total livestock population of the world, though we have only 2% of the world's geographical area. The project on for green and dry fodder requirement in India has been estimated at 1061 and 590 million by 2010 A-D, while the present feed and fodder resources in the country can meet only 4% of the requirement. The grazing intensity is very high i.e., 26 adult cattle unit (ACU)/ha as against 0.8 ACU in the developing countries.

The importance of grasses for protection and production, the two aspects of soil and water conservation is well known. Grass is unique in that it is the only resource utilized in situ by grazing. A "grassland" or more appropriately, a "range" is defined as "the areas which are predominantly covered with grasses or grass like plants and are primarily utilized as for age for grazing animals or used as hay." The grasslands are the major sources of food to the animals.

Pasture Management: All grazing areas are referred to as pastures, but ore specifically the term is applied to cultivated grassland used for grazing. Thus pastures are artificial grasslands with or without non-grass vegetation (such as legumes) that are created with selected high forage-yielding grass and legume species and with inputs like fertilizers and irrigation and carefully managed to exclude all other vegetation. Pastures are usually fenced and used for grazing, for gay and silage making or for both.

Intensive Fodder Production: In areas where the major enterprise of the farmers centers on the milk production. Continuous supply of green fodder round the year is the basis for success of such as industry. Under the aegis of ICAR's all India coordinated Research Project on Forage Crops, several

highly productive fodder cropping system have been tested and recommendations made for their general use. For central region important intensive crop rotations are presented as given below

Conservation on of Forages: In order to sustain animal production, it is essential that the optimum feeding should be maintained round the year. In India, we have two seasons, rainy season and winter season, when surplus quantities of green fodder is available-country to this there are 2 to 3 months of lean periods(October-November and April to July) when the fodder availability to animals is at its low. In the summer months, it is difficult even to meet the maintenance requirements of the animals. The conservation of forages could be done in the form of silage from cultivated fodders (legumes and cereals) and also pasture grasses. Forages could also be conserved in the form of hay when dried to its nutrients. This feed stuff is quantitatively important from both maintenance and nutritional point of view.

Agro-forestry system for fodder production: A number of fodder trees play an important role in human food security through their function as animal food sources, especially as drought services. Agro-forestry systems consisting of such tress and animals and/or pasture are called Silvo-Pastoral system.

Silvi-Pasture (or Silvo-Pastoral system) is the most promising alternate land use system which integrates multipurpose trees, shrubs, legumes and grasses mostly on non-arable, degraded and marginal lands for optimizing land productivity. It helps in conservation of vegetation, soil and nutrients and provides forage, timber and fuel wood on a sustainable basis.

Potentials of Semi-arid region for different forage production systems

Region	Forge Production Systems
Semi arid	Integration of Agro-Silvi-Pasture, dry land agriculture on cultivated lands. Forage-cum-Copping forming on the marginal and sub marginal lands with intercropping dry lands cereals and legumes

ROLE OF GRASSLAND IN SOIL CONSERVATION

The grass plant itself protects the soil from the forces of water erosion including the impact of rain drops and surface flow. Grass acts a spring cushion intercepting and broking up the falling rain drops in their way down. Conducting the water down the blades and stems of the plants and finally allowing it to reach the ground as fine sprays without disturbing the surface. Clamps of grass plants, in a mechanical way, obstruct-flowing water and reduce its rate of flow.

In fact to control soil erosion whatever technique is adopted, there are four approaches to deal with the problem:

- 1- To condition the soil to make it resistant to determent and transportation and create more absorptive surface layer.
- 2- To cover the soil so that it is protected from the impact of wind and rain drops.

- 3- To decrease the velocity of wind or runoff water.
- 4- To provide safe disposal outlet for surplus run off.

Grass in the nature highly efficient device to protect the soil from destructive forces like rain, wind etc. Grass and legumes increase the aggregation of soil particles; improve soil structure and water holding capacity of the soil. Grasses gives quicker protection to eroded lands. To establish gully sides, water ways, gully head and check dams. Grass is perhaps the most effective and economical tool. It can put to various uses in soil conservation:

- 1- Strip cropping, rotational cropping or lay farming.
- 2- Stabilization of bunds and terraces.
- 3- Stabilization of gullies, diversion or drainage channels.
- 4- Stabilization of sand dunes.
- 5- Meadows and pasture on steep slopes.
- 6- Fertility builder for eroded soil.

HORTICULTURE DEVELOPMENT FOR WATERSHED MANAGEMENT

Horticulture is an important component of land use management. Now India is the second largest producer of fruits in the world after Brazil.

However, 53% of the total geographical area of the country is degraded due to various reasons. Fruit trees and fruit based systems are the viable alternatives for economic utilization of such lands. The basic philosophy behind the conservation horticulture is the use of available resources and skilful choice of fruits. The use of available soil moisture , collection of the runoff water from the catchment

area to make up the deficit requirements as well as in situ water harvesting techniques are some of the measures. The in situ water harvesting techniques should be used for growing trees in such a way that each tree has its own micro catchment area. The success of the conservation of horticulture entirely depends on the selection of economically viable hardy varieties of fruit crops resistant to moisture stress or drought and other adverse climate conditions. The fruit crops selected for degraded lands must be such that their maximum growth take place during the period of maximum water availability in the soil and should have low demand.

The main constraints which restrict development of the horticulture land use in degraded lands are enumerated below:

(A) Basic constraints

- 1- Lack of suitable agro-techniques for degraded lands
- 2- Lack of trained resource persons
- 3- Inadequate dissemination of the technologies
- 4- Lack of community approach
- 5- High biotic interference
- 6- Lack of infrastructure including marketing.

(B) Soil constraints

- 1- Poor nutrient status of the soil
- 2- Physical impediment

3- Moisture stress / water logging / inadequate drainage.

(C) Plant related constraints

1- Problem of plant establishment

2- Physiological disorders

3- Fruit drop and poor productivity

4- Incidence of insects-pests.

However , apart from the above mentioned constraints, the measure bottleneck in horticulture development are poor technological advancements, high initial establishment cost, high input demand , timely operation and seasonal shortage of labours, etc.

CONCEPTS AND ADVANTAGES OF CONSERVATION HORTICULTURE

Conservation horticulture or horticulture land use based on soil and water conservation principle is a suitable alternative for utilization and management of land under rainfed conditions. Thus horticulture development in watershed management appears to be the most appropriate technique for sustained productivity as well as for restoration of degraded lands. In fact, horticulture system meet all the basic needs-food, fruits, fodder, fuel and timber besides, providing employment and sustaining a number of products for industries.

The fruit trees grown with crops can provide fuel from pruned shoots and dried branches, leaf fodder for animals and leaf litter that can be utilized as mulch material and organic matter the leaf litter of deciduous fruit trees not only protects the top soil from the impact of raindrops but also improve soil

structure, reduces evapotranspiration, increases infiltration and add to the nutrient status of soil. Therefore conservation based horticulture land use system assumes great significance as fruit trees on degraded lands provide higher returns and offer alternative opportunity in non-arable areas where cropping may not be possible.

Horticulture Practices (For plantation)

Some of the important practices are given below:

1- Selection of Suitable Fruits Types:

For the success of conservation horticulture, selection of hardy varieties resistant to diseases and pests and use of local or other hardy root stocks for raising fruit-trees is of great importance. The major part of the reproductive cycle i.e. Period from flowering to fruiting must also fall during maximum water availability period and the root ripening must be completed before the onset of dry summer (April-May).

Ber, Guava, Karonda, Bel, Amla, Lemon, and Phalsa etc. are the plants which fulfill this requirement and all these fruit plants are most suitable for this region.

2-Planting Techniques:

For degraded lands, pits should be dug of 1m x 1m x 1m size, the excavated soil is mixed with Farmyard Manure (FYM) @ 5-10kg/pit with doses of potash and phosphorous and some insecticide / pesticide (numicide / aldrex) for prevention of white ant. Planting of the fruits plants should be done with the onset of monsoon.

3-Use of Root Stokes:

Budding and grafting on the wild root stock gives benefit of the establishment root and in turn provides better quality fruits with high field potential. For example, *Ziziphun mauritiana*, a wild ber can be successful budded with scion of improved cultivars, this practice is only successful where sizable patch of wild root stock is available. The budded/grafted stock needs intensive management as it is required to be protected from the wild animals, birds, insects, pests etc. The wild root stock develops efficient top root to provide moisture and nutrients to the scion. Amla. Bel is other examples of raising the improved cultivation the wild root stock.

4-In Site Water Harvesting:

Since on slopy lands, runoff water is considerably higher, therefore, it should be harvested and used. The run off can be utilized for growing fruit plants in such a way that each tree in the established plants is at the time of fruit setting and fruiting. Moisture available at this critical period improves the fruit yield.

Runoff water will be harvested and stored in tanks during the rains. The stored water will be utilized at the time when the fruit trees show moisture stress during dry months. Counter trenches will dig between the rows of fruit trees because this is effective in conserving moisture and providing soil erosion.

5-Mulching:

Mulching is practiced to conserve moisture. It prevents the loss of moisture by evaporation and improve water intake by the soils. Various organic (Straw, hay, manure, tree leaves, dry wads) Mulches

are used for mulching. Use of plastic mulch has been taken in rainfed and dryfarming conditions to increase the productivity by minimizing evapotranspiration losses.

6-Drip Irrigation:

Drip irrigation saves water by 40 to 70 percent and two to three times more area can be irrigated with the same amount of available water. It has the advantages that it ensures uniform distribution of water, provides perfect control over water application and minimizing the losses during convergence and seepage.

COST IN PLANTING ONE PLANT WITH DIGGING, FILLING MIXED WITH FYM AND COST OF PLANT

S.No.	Particular	No.	L	B	D/H	Quantity	Rate	Amount
1	Earth work in digging	1	1.0	1.0	1.00	1.00	36.66	36.66
2	Cost of FYM, in Kg/pit	1	-	-	-	10Kg	8.00	80.00
3	Filling of pits mixed with FYM and soil	1	1.0	1.0	1.0	1.00	36.66	36.66
4	Cost of plants	1	-	-	-	1	18.00	18.00
Total								171.32
Say Rs.								172.00

**ESTIMATE FOR SILVI-PASTORAL SYSTEM
(RS. ha⁻¹) PLANTATIONS (800 PLANTS ha¹)**

Sl. No.	Particulars of work	Rate (Rs.)	Cost (Rs.)
1-	Clear felling or bush clearance of area	LS	550.00
2-	The area is to be protected Infected with <i>Lantana</i> etc. including Cost of burning		
3-	Soil working –earth work, digging of Pits/holes 60 cm deep, 30cm dia -800 Nos. Including cost of refilling and trenching (400 trenches/ha)	LS	6085.00
4-	Cost of seedlings for 900 nos. and grass Rs.2.00 per seeding /legumes seeds and planning/sowing	-	2050.00
5-	Weeding and hoeing (2 Nos.)	LS	300.00
Total			8985
Maintenance 2 nd year 15% of the 1 st year expenditure including being up of 1 st year failure			
Grand total			10,335.00
Say			10,350.00

Estimate of Orchard Development in the Watersheds Per Hectare (With Fencing)

S.No.	Particulars	Quantity	Rate	Amount	Remarks
A. Horticulture					
1.	Soil working 1m x 1m x 1m size pits (270nos.) including cost of refilling	270.00 cum	36.66/cum	9898.20	Since, the project is to be operated in a participatory mode, contribution in the form of labour input for pit digging, FYM and its applications, weeding and hoeing are to be provided by the participating farmers, hence the costs are not included in the estimates.
2.	Application of Farmyard Manure, including cost		L.S.	450.00	
3.	Cost of NPK mixture, neemicide @ 250 gm/plant		L.S.	400.00	
4.	Cost of plants (including 15% etc. for mortality) including transportation and planting	310 nos.	15.00/Plant	4650.00	
5.	Casualty replacement @ 10% of item No. 4 & 5			465.00	
6.	Cost of 2 weedings and hoeing		1.00/Plant	540	
7.	Contingency and unforeseen (3%)			492.00	
	Total			Rs. 6,007.00	
	Say			Rs. 6,000.00	
	Maintenance cost 2 nd year onwards – 15 % of 1 st year cost			900.00	
	For next 5 years i.e., Rs. 900 x 5			4500.00	
	Total Cost			Rs. 10,500.00	
	Say			Rs. 10,500.00	
B. Agro-Horticulture (cost per ha)					
1.	Cost of raising 270 plants up to 5 years @ Rs. 10,000.00			10500.00	The remarks mentioned under Horticulture are also applicable for Agro-Horticulture.
2.	Cost of raising agricultural crops @ Rs. 5,000 per hectare per year			5000.00	
3.	Fencing			45300.00	
	Total			Rs. 60,800.00	

Estimate of Orchard Development in the Watersheds Per Hectare (Without Fencing)

S.No.	Particulars	Quantity	Rate	Amount	Remarks
A. Horticulture					
1.	Soil working 1m x 1m x 1m size pits (270nos.) including cost of refilling	270.00 cum	36.66/cum	9898.20	Since, the project is to be operated in a participatory mode, contribution in the form of labour input for pit digging, FYM and its applications, weeding and hoeing are to be provided by the participating farmers, hence the costs are not included in the estimates.
2.	Application of Farmyard Manure, including cost		L.S.	450.00	
3.	Cost of NPK mixture, neemicide @ 250 gm/plant		L.S.	400.00	
4.	Cost of plants (including 15% etc. for mortality) including transportation and planting	310 nos.	15.00/Plant	4650.00	
5.	Casualty replacement @ 10% of item No. 4 & 5			465.00	
6.	Cost of 2 weedings and hoeing		1.00/Plant	540	
7.	Contingency and unforeseen (3%)			492.00	
	Total			Rs. 6,007.00	
	Say			Rs. 6,000.00	
	Maintenance cost 2 nd year onwards – 15 % of 1 st year cost			900.00	
	For next 5 years i.e., Rs. 900 x 5			4500.00	
	Total Cost			Rs. 10,500.00	
	Say			Rs. 10,500.00	
B. Agro-Horticulture (cost per ha)					
1.	Cost of raising 270 plants up to 5 years @ Rs. 10,000.00			10500.00	The remarks mentioned under Horticulture are also applicable for Agro-Horticulture.
2.	Cost of raising agricultural crops @ Rs. 5,000 per hectare per year			5000.00	
	Total			Rs. 15,500.00	

DEMONSTRATION OF AGRO-HORTICULTURE USING PLASTIC DRUM OF 200 LITRES CAPACITY

To promote horticulture with crops a demonstration model using plastic drums for horticulture is made. Mainly crops roots go in to the soil up to "4-5" in cereal crops and "6-9" in pulses. Using plastic drums the plants will be planted 50-60 cm below the ground level which is below the root zone of crops. Therefore trees will not able to take nutrients from upper layer of fields and there will no effect of plants on crops.

In summer season up to 1 to 1.50m depth of soil becomes dry causes more mortality rate of plants, using drums plants are planted below 50-60 from Ground level and in rainy and winter season up to February roots of plants goes below 2.10m below where moisture will be available and plants will be safe in summer also. Using barbed wire fencing the plants will be protected by Anna Pratha.

Therefore, it is hoped that farmers will adapt this procedure for Agro-forestry and will become prosperous.

DETAIL ESTIMATE OF DEMONSTRATION OF HORTICULTURE AND MIXED CROPPING

For 1.00 Hectare

S.No.	Description of Work	No.	L.	B.	D./H.	Quantity
1.	Earth work in cutting	156	3.14 x 1.20	-	1.35	793.54
	Trench	156	1.50	0.75	0.75	131.62
	Fencing Poll	133	0.20	0.20	0.20	1.064
	Total					926.22 cum
2.	Farm yard manure	156x10				1560 kg
3.	Filling of earth work with farm yard manure	156	3.14 x 1.00	-	1.20	587.80 cum
4.	C.C.W. 1:2:4 for fencing poll	133	0.20	0.20	0.20	1.064 cum
5.	Angle iron for poll	133	1.80	-	-	239.40 m
6.	Barbed wire	3	400	-	-	1200.00 m
7.	Plants	156	-	-	-	156 nos.
8.	Plastic drums (200 litre)	156	-	-	-	156 nos.

CONSUMPTION OF MATERIALS

S.No.	Description of Work	Quantity	Farmyard Manure (kg)	Cement Bags (nos)	Coarse Sand (cum)	G.S.Grit 10-20 mm	Angle Iron (m)	Barbed Wire (kg)	Planting Drum (nos)
1.	C.C.W. 1:2:4	1.064 cum	-	6.49	0.446	0.883	-	-	-
2.	Angle iron	239.4 m	-	-	-	-	239.40	-	-
3.	Barbed wire	1200.0 m	-	-	-	-	-	1200.0	-
4.	Farmyard manure	1560.0 kg	1560 kg	-	-	-	-	-	-
5.	Plastic drum	156 nos.	-	-	-	-	-	-	156
Total			1560.0 kg	6.49	0.446	0.883	239.40	1200.0	156
Say			1560.0 kg	6.50 bags	0.450 cum	0.900 cum	239.40	1200.0 m	156

COST OF MATERIALS

S.No.	Particulars	Quantity	Rate	Amount
1.	Farm yard manure	1560.0 kg	10.00/kg	15600.00
2.	Barbed wire	1200.0 m/120.0 kg	60.50/kg	7260.00
3.	Angle iron	239.40 m/785 kg	40.50/kg	31792.50
4.	Plastic drum	156 nos	690.00 each	107640.00
5.	Cement	6.50 bags	285.00/bag	1852.50
6.	Coarse sand	0.450 cum	2500.00/cum	1125.00
7.	G.S.Grit 10-20 mm	0.900 cum	1250.00/cum	1125.00
8.	Plants	156 nos	18.00 each	2808.00
Total				Rs. 1,69203.50

LABOUR CHARGES

S.No.	Particulars	Quantity	Rate	Amount
1.	Earth work	1514.02 cum	36.66/cum	55503.97
2.	C.C.W. 1:2:4	1.064 cum	492.00/cum	523.88
3.	Fixing of angle iron	10 Man Days	100/Man Day	1000.00
4.	Fixing of barbed wire	15 Man Days	100/Man Day	1500.00
Total				Rs. 58,527.85

Total Expenditure	
1. Cost of materials	1,69203.50
2. Labour Charges	58,527.85
Total	Rs. 227730.35
Say	Rs. 2,27,730.00 only

DEMONSTRATION OF GREEN MANURING

Green Manuring is very useful but due to sowing of Kharif season crop, lack of suitable type of seeds, and limitation of moisture, it is not widely practiced. Green Manuring brings immediate advantage because of its quick decomposition where as FYM and compost improves the soil physical

condition in the long-run. Benefits of Green Manuring accrue from substitution of chemical fertilizers, enhance soil biological activities and erosion control due to vegetative cover.

Sesbania Species (Dhaincha) and *Crotalaria Juneea* (Sunhemper Sanai) are most common green manure crops. They accumulate about 100 kg N/ha in their biomass and 64-88% of this is derived from atmosphere. Apart from direct benefit of green Manuring as a source of nutrients and organic matter, it has the capacity to mobilize soil phosphorus and other nutrients. It also helps in reclamation of problem of soil, e.g., *Sesbania* helps in removing exchangeable sodium and reclamation of salt affected soils.

In I.W.M.P. V Project, efforts will be made to oblige the farmers for Green Manuring.

A typical estimate is made for Green Manuring is given below:

ESTIMATE FOR GREEN MANURING IN THE WATERSHED (PER ha)

S.No.	Particulars	Rate	Cost	Remark
1	Seed of Sesbania (Dhaincha)25Kg/ha	25.00/Kg	625	Since the project is to be operated in a participatory mode, contribution in the form of tillage will be done by farmers is not included in the estimate.
2	Tillage operation before sowing and to plough the plants of Dhaincha after 40-45 days of sowing for Green Manuring.	1000/ha Before and after saring	2000.00	
Total			Rs. 625.00	

Therefore cost per hectare of Green Manuring is Rs. 625.00/ha

CHAPTER – 6

CAPACITY BUILDING

CAPACITY BUILDING

Capacity Building is the process of assisting the group or individuals to identify and address issues and gain the insights, knowledge and experience needed to solve problems and implement change.

There is a realization in the development sector that there is a need to appraise the success of development interventions by going beyond the conventional development targets and measures of success (e.g. in the form of commodities, goods and services) to take into account improvements to human potential. Capacity building of stakeholders is also increasingly viewed as an important factor in developmental projects that involve participation of stakeholders at all levels for effective implementation of projects.

SCOPE OF CAPACITY BUILDING AT PROJECT AREA

- Alternative Land Use Plan
- Scientific technique of Soil and Moisture conservation
- Improved and Scientific agriculture practices
- Fodder development and Management
- Forestation
- Meteorological Information
- Dairy Development and Management
- Rural Craft
- Income Generation Activities
- Stitching
- Food Processing
- Post Harvest management practices

CHAPTER -7

**PHASING OF PROGRAMME
& BUDGETING**

WATERSHED ACTIVITIES

Watershed management as a strategy has been adopted by Government of India especially in the rain-fed regions of semi-arid tropics. These regions are characterized by low and undependable rain, low soil fertility, poor infrastructure development, low literacy and high incidence of migration. Several studies have identified that there is a dire need of a systematic and scientific approach to deal with watershed development. The common guidelines generate a fresh and flexible framework for the next generation watershed development.

Scientific Planning

Cluster Approach

This ever sages integrated development of Geo-hydrological unit ie. Treatment of cluster of micro - watershed the IWMP - X Project consist of 10 micro watershed namely 2C2D1m3c, 2C2D1m3b, 2C2D1m3d, 2C2D2b1c, 2C2D2b1a, 2C2D2b1b, 2C2D2h1a, 2C2D2a2a, 2C2D2a1b, 2C2D1m2d.

Base line Survey

To access the impact of any watershed development programme a detailed baseline survey has to be conducted. This acts a benchmark for any intervention during and pest implementation of any development programme. A detailed baseline survey was undertaken which involved household census survey, Bio-physical survey and Village level data collection from Gram Panchayate AdhikarL Household census survey includes a . detailed questionnaire which has been filled by visiting each and every household in the village. This gave in the details of the demographic profile of the village, the literacy percentage, SC/ST population, number of BPL household, cattle population, net consumption rate in the village, average milk production of the cattle and various schemes running and their benefits.

Bio-physical survey was undertaken to identify various natural resources available in the village. It included the soil type, well in the area, crop under taken in the field. Cropping pattern, fertilizer used and various sources of irrigation in the field.

Participatory Rural Appraisal (PRA)

The past experience of watershed has given tremendous input to focus on creating accountability of the stakeholders towards the programme. This has created an emphasis to include all the stakeholder communities and their local and Indigenous Technological Knowledge (YTK} while planning for any activity. Participatory approach provides a new path for planning, implementing, monitoring and post- withdrawal activities with a complete accountability of the stakeholders. Various PRA techniques like resource mapping, social mapping, and season calendars were used to understand the physical and social orientation of the villagp in general and watershed in specific. These tools put the villagers in ease than the complicated questionnaires-

Use of GIS and Remote sensing for planning

Use of various high science tools has been promoted at various stages of watershed development.

Prioritization

Geographical Information System(GIS) has been used for prioritization process. Various layer maps were created like Geo-morpholodigital. Soil, BPL Population, SC/ST population. Ground water Status, Drinking water situation Slope percent These were all given proper weight age according to the DoLR specification. This helped in prioritization of various watershed a-eas.

Planning

Action plan matrix was formulated by State Level Nodal Agency (SLNA] taking into account various features like the slope percent, soil Depth Soil Texture, Soil erosion in the area for wasteland, forest land and agricultural " land. Global position ng System (GPS) was used to identify each and every water conservation structures available in the project area. Thi: was used to create a map. Contour Map of vertical interval of 0.3 meter at a scale of 1:4000 was used for identifying various locations for soil and water conservation structures.

Hydrological modeling

Hydrology modeling technique was used for locating drainage, stream length, flow direction, sink, Flow accumulation. This model overlaid over cadastral map to calculate the catchment area of each structures like the check dam etc This has helped to remove the human error which generally occurs while calculating the catchment area of a check dam.

Table-7.1: Details of Scientific Planning and Inputs in IWMP projects

Scientific criteria / input used	Whether scientific criteria was used
(A) Planning	
Cluster approach	Yes
Whether technical back-stopping for the project has been arranged? If yes, mention the name of the Institute	-
Baseline survey	Yes

Hydro-geological survey	Yes
Contour mapping	Yes
Participatory Net Planning (PNP)	Yes
Remote sensing data-especially soil/ crop/ run-off cover	-
Ridge to Valley treatment	-
Online IT connectivity between	-
(1) Project and DRDA cell/ZP	Yes
(2) DRDA and SLNA	Yes
(3) SLNA and DoLR	Yes
Availability of GIS layers	Yes
Cadastral map	Yes
Village boundaries	Yes
Drainage	Yes
Soil (Soil nutrient status)	Yes
Land use	Yes
Ground water status	Yes
Watershed boundaries	Yes
Activity	Yes
Crop simulation models	No
Integrated coupled analyzer/ near infrared visible spectroscopy/ medium	No
Normalized difference vegetation index (NDVI)#	No

Weather Station	-
(B) Inputs	NO
Bio-pesticides	No
Organic manures	No
Vermi compost	Yes
Bio-fertilizer	Yes
Water saving devices	Yes
Mechanized tools/ implements	Yes
Bio-fencing	Yes
Nutrient budgeting	Yes
Automatic water level recorders & sediment samplers	NO
Any other (please specify)	NO

Table-7.2: PHASING OF WORKS (Financial and Physical)

FINANCIAL OUTLAYS

Year wise financial outlays (lakh Rs.)

S. No	Component	Unit	Unit cost (Rs.)	1 st year	2 nd year	3 rd year	4 th year	Total
A	ADMINISTRATIVE COSTS	-	-	-	-	-	-	-
	Administrative cost- TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency	-	-	12.84	32.10	19.26	0.00	64.20
	DPR PREPRATION	-	-	6.42	0.00	0.00	0.00	6.42
	Expert for monitoring and evaluation	-	-	2.57	6.42	3.85	0.00	12.84
	Sub Total	-	-	21.83	38.52	23.11	0.00	83.46
B	PREPARATORY PHASES							
	Entry Point Activities like improvement in drinking water system, & water harvesting etc.	-	-	25.68	0.00	0.00	0.00	25.68
	<u>Institutional and capacity building</u>	-	-	6.42	16.05	9.63	0.00	32.10
	Sub Total	-	-	32.10	16.05	9.63	0.00	57.78
C	WATERSHED WORKS	-	-					
a	Soil & water conservation works	-	-					
1	Submergence bund	Ha.	4500/-	8.22	20.56	12.33	0.00	41.11
2	Periferal bund	Ha.	4500/-	7.61	19.03	11.42	0.00	38.06
3	Gully Plug	Ha.	5500/-	19.23	48.08	28.85	0.00	96.16

b.	Water harvesting & water resources works							
1	Earthen check dam.	Ha.	6000/-	11.14	27.86	16.72	0.00	55.72
2	Water harvesting bund	Ha.	12700/-	13.82	34.55	20.73	0.00	69.10
c.	A forestation works							
1	Horticulture works	Ha.	10000/-	0.95	2.37	1.42	0.00	4.74
2	Agro forestry works	Ha.	5000/-	3.22	8.05	4.84	0.00	16.10
	Sub Total			64.20	160.49	96.31	0.00	321.00
D.	LIVILHOOD PROGRAMME(Community based)							
	Income generating activities through SHG's for landless and marginal farmers and livestock's development works.			64.20	0.00	0.00	0.00	64.20
		-	-					
	Sub Total			64.20	0.00	0.00	0.00	64.20
E	PRODUCTION SYSTEM AND MICRO ENTERPRISES							
	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system			16.69	41.73	25.04	0.00	83.46
		-	-					
	Sub Total	-	-	16.69	41.73	25.04	0.00	83.46
F	CONSOLIDATION PHASE	-	-	0.00	0.00	32.10	0.00	32.10
	GRAND TOTAL	-	-	199.02	256.79	186.19	0.00	642.00

PHYSICAL PLAN

Physical plan phasing

Activities related to	UNIT	1 st year (quantity)	2 nd year (quantity)	3 rd year (quantity)	4 th year	Total
ADMINISTRATIVE COSTS						
TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency		-	-	-	-	-
Expert for monitoring and evaluation		-	-	-	-	-
PREPARATORY PHASES						
Entry Point Activities like improvement in drinking water system, school, temple etc		-	-	-	-	-
Institutional and capacity building	-	-	-	-	-	-
WATERSHED WORKS						
(a) Watershed development works		-	-	-	-	-
Submurjenc bunds,		182.70	456.76	274.05	-	913.51
Periferal Bund		169.18	422.94	253.77	-	845.89
Gully Plug,		349.67	874.16	524.50	-	1748.33
(b) Water Harvesting Works.						
Earthen Check dam		185.73	464.33	278.60	-	928.65
Water harvesting bunds (WHB) area in ha.		108.82	272.05	163.23	-	544.10
(C) A forestation Works	-					
Dry land Horticulture development	-	9.49	23.73	14.24	-	47.45

Agro forestry work		64.40	161.01	96.64	-	322.02
Sub Total		1069.99	2674.98	1605.03	-	5350.00
LIVILIHOD PROGRAMME(Community based)						
Income generating activities through SHG's for landless and marginal farmers		Yes	Yes	-	-	-
Livestock development activities		Yes	Yes	Yes	Yes	
PRODUCTION SYSTEM AND MICRO ENTERPRISES						-
Demonstration and assessment of improved composting system using alternate materials Nadif compost and nutrient analysis (Nos.)		-	54	64	0	118
			52	52		104
Introduction of improved crop production practices		-				-
i) for <i>Kharif</i> crops (ha)			22	20	8	50
ii) for <i>Rabi</i> crops (ha)			19	15	7	41
CONSOLIDATION PHASE						

Estimation and costing of the project

Abstract of estimation and costing of the watershed

S. No.	Component	Total (Rs. In Lacs)
A	ADMINISTRATIVE COSTS	
1	Administrative cost -TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency	64.20
2	Expert for monitoring and evaluation, DPR Preparation	19.26
	Sub Total	83.46
B	PREPARATORY PHASES	
1	Entry Point Activities like improvement in drinking water system, water harvesting works and etc.	25.68
2	Institutional and capacity building	32.10
	Sub Total	57.78
C	WATERSHED WORKS	
a	Watershed development works	
1	Submergence bund	41.11
2	Periferal bund	38.06
3	Gully Plug	96.16
b.	Water harvesting works	
1	Earthen Check dam	55.72
2	Water harvesting bund	69.10
c.	A forestation works	
1	Dry land horticulture	4.74
2	A forestation	16.10

	Sub Total	321.00
D.	LIVILHOOD PROGRAMME(Community based)	
1	Income generating activities through SHG's for landless and marginal farmers and Livestock development activities	64.20
	Sub Total	64.20
E.	PRODUCTION SYSTEM AND MICRO ENTERPRISES	
1	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system	83.46
	Sub Total	83.46
F.	CONSOLIDATION PHASE	32.10
	Sub Total	32.10
	GRAND TOTAL	642.00

GANDORA-Ist

S. No.	Component	Total (Rs. In Lacs)
A	ADMINISTRATIVE COSTS	
1	Administrative cost -TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency	6.84
2	Expert for monitoring and evaluation, DPR Preparation	2.05
	Sub Total	8.89
B	PREPARATORY PHASES	
1	Entry Point Activities like improvement in drinking water system, water harvesting works and etc.	2.74
2	<i>Institutional and capacity building</i>	3.42
	Sub Total	6.16
C	WATERSHED WORKS	

a	Watershed development works	
1	Submergence bund	4.38
2	Periferal bund	4.06
3	Gully Plug	10.24
b.	Water harvesting works	
1	Earthen Check dam	5.94
2	Water harvesting bund	7.36
c.	A forestation works	
1	Dry land horticulture	0.51
2	A forestation	1.72
	Sub Total	34.20
D.	LIVILHOOD PROGRAMME(Community based)	
1	Income generating activities through SHG's for landless and marginal farmers and Livestock development activities	6.84
	Sub Total	6.84
E.	PRODUCTION SYSTEM AND MICRO ENTERPRISES	
1	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system	8.89
	Sub Total	8.89
F.	CONSOLIDATION PHASE	3.42
	Sub Total	3.42
	GRAND TOTAL	68.40

ANDORA-IIInd

S. No.	Component	Total (Rs. In Lacs)
A	ADMINISTRATIVE COSTS	
1	Administrative cost -TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency	8.16
2	Expert for monitoring and evaluation, DPR Preparation	2.45
	Sub Total	10.61
B	PREPARATORY PHASES	
1	Entry Point Activities like improvement in drinking water system, water harvesting works and etc.	3.26
2	<i>Institutional and capacity building</i>	4.08
	Sub Total	7.34
C	WATERSHED WORKS	
a	Watershed development works	
1	Submergence bund	5.23
2	Periferal bund	4.84
3	Gully Plug	12.22
b.	Water harvesting works	
1	Earthen Check dam	7.08
2	Water harvesting bund	8.78
c.	A forestation works	
1	Dry land horticulture	0.60
2	A forestation	2.05
	Sub Total	40.80
D.	LIVILHOOD PROGRAMME(Community based)	

1	Income generating activities through SHG's for landless and marginal farmers and Livestock development activities	8.16
	Sub Total	8.16
E.	PRODUCTION SYSTEM AND MICRO ENTERPRISES	
1	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system	10.61
	Sub Total	10.61
F.	CONSOLIDATION PHASE	4.08
	Sub Total	4.08
	GRAND TOTAL	81.60

BAR-Ist

S. No.	Component	Total (Rs. In Lacs)
A	ADMINISTRATIVE COSTS	
1	Administrative cost -TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency	7.68
2	Expert for monitoring and evaluation, DPR Preparation	2.30
	Sub Total	9.98
B	PREPARATORY PHASES	
1	Entry Point Activities like improvement in drinking water system, water harvesting works and etc.	3.07
2	<i>Institutional and capacity building</i>	3.84
	Sub Total	6.91
C	WATERSHED WORKS	
a	Watershed development works	

1	Submergence bund	4.92
2	Periferal bund	4.55
3	Gully Plug	11.50
b.	Water harvesting works	
1	Earthen Check dam	6.67
2	Water harvesting bund	8.27
c.	A forestation works	
1	Dry land horticulture	0.57
2	A forestation	1.93
	Sub Total	38.40
D.	LIVILHOOD PROGRAMME(Community based)	
1	Income generating activities through SHG's for landless and marginal farmers and Livestock development activities	7.68
	Sub Total	7.68
E.	PRODUCTION SYSTEM AND MICRO ENTERPRISES	
1	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system	9.98
	Sub Total	9.98
F.	CONSOLIDATION PHASE	3.84
	Sub Total	3.84
	GRAND TOTAL	76.80

BACHHARAWANI

S. No.	Component	Total (Rs. In Lacs)
A	ADMINISTRATIVE COSTS	
1	Administrative cost -TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency	5.40
2	Expert for monitoring and evaluation, DPR Preparation	1.62
	Sub Total	7.02
B	PREPARATORY PHASES	
1	Entry Point Activities like improvement in drinking water system, water harvesting works and etc.	2.16
2	<i>Institutional and capacity building</i>	2.70
	Sub Total	4.86
C	WATERSHED WORKS	
a	Watershed development works	
1	Submergence bund	3.46
2	Periferal bund	3.20
3	Gully Plug	8.09
b.	Water harvesting works	
1	Earthen Check dam	4.69
2	Water harvesting bund	5.81
c.	A forestation works	
1	Dry land horticulture	0.40
2	A forestation	1.35
	Sub Total	27.00
D.	LIVILHOOD PROGRAMME(Community based)	

1	Income generating activities through SHG's for landless and marginal farmers and Livestock development activities	5.40
	Sub Total	5.40
E.	PRODUCTION SYSTEM AND MICRO ENTERPRISES	
1	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system	7.02
	Sub Total	7.02
F.	CONSOLIDATION PHASE	2.70
	Sub Total	2.70
	GRAND TOTAL	54.00

BURAGOUN-Ist

S. No.	Component	Total (Rs. In Lacs)
A	ADMINISTRATIVE COSTS	
1	Administrative cost -TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency	4.02
2	Expert for monitoring and evaluation, DPR Preparation	1.21
	Sub Total	5.23
B	PREPARATORY PHASES	
1	Entry Point Activities like improvement in drinking water system, water harvesting works and etc.	1.61
2	<i>Institutional and capacity building</i>	2.01
	Sub Total	3.62
C	WATERSHED WORKS	
a	Watershed development works	

1	Submergence bund	2.57
2	Periferal bund	2.38
3	Gully Plug	6.02
b.	Water harvesting works	
1	Earthen Check dam	3.49
2	Water harvesting bund	4.33
c.	A forestation works	
1	Dry land horticulture	0.30
2	A forestation	1.01
	Sub Total	20.10
D.	LIVILHOOD PROGRAMME(Community based)	
1	Income generating activities through SHG's for landless and marginal farmers and Livestock development activities	4.02
	Sub Total	4.02
E.	PRODUCTION SYSTEM AND MICRO ENTERPRISES	
1	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system	5.23
	Sub Total	5.23
F.	CONSOLIDATION PHASE	2.01
	Sub Total	2.01
	GRAND TOTAL	40.20

BURAGOUN-IIInd

S. No.	Component	Total (Rs. In Lacs)
A	ADMINISTRATIVE COSTS	
1	Administrative cost -TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency	4.02
2	Expert for monitoring and evaluation, DPR Preparation	1.21
	Sub Total	5.23
B	PREPARATORY PHASES	
1	Entry Point Activities like improvement in drinking water system, water harvesting works and etc.	1.61
2	<i>Institutional and capacity building</i>	2.01
	Sub Total	3.62
C	WATERSHED WORKS	
a	Watershed development works	
1	Submergence bund	2.57
2	Periferal bund	2.38
3	Gully Plug	6.02
b.	Water harvesting works	
1	Earthen Check dam	3.49
2	Water harvesting bund	4.33
c.	A forestation works	
1	Dry land horticulture	0.30
2	A forestation	1.01
	Sub Total	20.10
D.	LIVILHOOD PROGRAMME(Community based)	

1	Income generating activities through SHG's for landless and marginal farmers and Livestock development activities	4.02
	Sub Total	4.02
E.	PRODUCTION SYSTEM AND MICRO ENTERPRISES	
1	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system	5.23
	Sub Total	5.23
F.	CONSOLIDATION PHASE	2.01
	Sub Total	2.01
	GRAND TOTAL	40.20

BAR-II

S. No.	Component	Total (Rs. In Lacs)
A	ADMINISTRATIVE COSTS	
1	Administrative cost -TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency	6.84
2	Expert for monitoring and evaluation, DPR Preparation	2.05
	Sub Total	8.89
B	PREPARATORY PHASES	
1	Entry Point Activities like improvement in drinking water system, water harvesting works and etc.	2.74
2	<i>Institutional and capacity building</i>	3.42
	Sub Total	6.16
C	WATERSHED WORKS	
a	Watershed development works	
1	Submergence bund	4.38

2	Periferal bund	4.06
3	Gully Plug	10.24
b.	Water harvesting works	
1	Earthen Check dam	5.94
2	Water harvesting bund	7.36
c.	A forestation works	
1	Dry land horticulture	0.51
2	A forestation	1.72
	Sub Total	34.20
D.	LIVILIHOD PROGRAMME(Community based)	
1	Income generating activities through SHG's for landless and marginal farmers and Livestock development activities	6.84
	Sub Total	6.84
E.	PRODUCTION SYSTEM AND MICRO ENTERPRISES	
1	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system	8.89
	Sub Total	8.89
F.	CONSOLIDATION PHASE	3.42
	Sub Total	3.42
	GRAND TOTAL	68.40

DASHRARA

S. No.	Component	Total (Rs. In Lacs)
A	ADMINISTRATIVE COSTS	
1	Administrative cost -TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency	7.68
2	Expert for monitoring and evaluation, DPR Preparation	2.30
	Sub Total	9.98
B	PREPARATORY PHASES	
1	Entry Point Activities like improvement in drinking water system, water harvesting works and etc.	3.07
2	<i>Institutional and capacity building</i>	3.84
	Sub Total	6.91
C	WATERSHED WORKS	
a	Watershed development works	
1	Submergence bund	4.92
2	Periferal bund	4.55
3	Gully Plug	11.50
b.	Water harvesting works	
1	Earthen Check dam	6.67
2	Water harvesting bund	8.27
c.	A forestation works	
1	Dry land horticulture	0.57
2	A forestation	1.93
	Sub Total	38.40
D.	LIVILHOOD PROGRAMME(Community based)	

1	Income generating activities through SHG's for landless and marginal farmers and Livestock development activities	7.68
	Sub Total	7.68
E.	PRODUCTION SYSTEM AND MICRO ENTERPRISES	
1	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system	9.98
	Sub Total	9.98
F.	CONSOLIDATION PHASE	3.84
	Sub Total	3.84
	GRAND TOTAL	76.80

BHWANI

S. No.	Component	Total (Rs. In Lacs)
A	ADMINISTRATIVE COSTS	
1	Administrative cost -TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency	6.84
2	Expert for monitoring and evaluation, DPR Preparation	2.05
	Sub Total	8.89
B	PREPARATORY PHASES	
1	Entry Point Activities like improvement in drinking water system, water harvesting works and etc.	2.74
2	<i>Institutional and capacity building</i>	3.42
	Sub Total	6.16
C	WATERSHED WORKS	
a	Watershed development works	

1	Submergence bund	4.38
2	Periferal bund	4.06
3	Gully Plug	10.24
b.	Water harvesting works	
1	Earthen Check dam	5.94
2	Water harvesting bund	7.36
c.	A forestation works	
1	Dry land horticulture	0.51
2	A forestation	1.72
	Sub Total	34.20
D.	LIVILHOOD PROGRAMME(Community based)	
1	Income generating activities through SHG's for landless and marginal farmers and Livestock development activities	6.84
	Sub Total	6.84
E.	PRODUCTION SYSTEM AND MICRO ENTERPRISES	
1	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system	8.89
	Sub Total	8.89
F.	CONSOLIDATION PHASE	3.42
	Sub Total	3.42
	GRAND TOTAL	68.40

LADWARI

S. No.	Component	Total (Rs. In Lacs)
A	ADMINISTRATIVE COSTS	
1	Administrative cost -TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency	6.72
2	Expert for monitoring and evaluation, DPR Preparation	2.02
	Sub Total	8.74
B	PREPARATORY PHASES	
1	Entry Point Activities like improvement in drinking water system, water harvesting works and etc.	2.69
2	<i>Institutional and capacity building</i>	3.36
	Sub Total	6.05
C	WATERSHED WORKS	
a	Watershed development works	
1	Submergence bund	4.30
2	Periferal bund	3.98
3	Gully Plug	10.06
b.	Water harvesting works	
1	Earthen Check dam	5.83
2	Water harvesting bund	7.23
c.	A forestation works	
1	Dry land horticulture	0.50
2	A forestation	1.69
	Sub Total	33.60
D.	LIVILIHOD PROGRAMME(Community based)	

1	Income generating activities through SHG's for landless and marginal farmers and Livestock development activities	6.72
	Sub Total	6.72
E.	PRODUCTION SYSTEM AND MICRO ENTERPRISES	
1	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system	8.74
	Sub Total	8.74
F.	CONSOLIDATION PHASE	3.36
	Sub Total	3.36
	GRAND TOTAL	67.20

GANDORA-Ist

Activities related to	UNIT	1 st year (quantity)	2 nd year (quantity)	3 rd year (quantity)	4 th year	Total
ADMINISTRATIVE COSTS						
TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency		-	-	-	-	-
Expert for monitoring and evaluation		-	-	-	-	-
PREPARATORY PHASES						
Entry Point Activities like improvement in drinking water system, school, temple etc		-	-	-	-	-
Institutional and capacity building	-	-	-	-	-	-
WATERSHED WORKS						
(a) Watershed development works		-	-	-	-	-
Submurjenc bunds,		19.47	48.66	29.20	0.00	97.33

Periferal Bund		18.02	45.06	27.04	0.00	90.12
Gully Plug,		37.25	93.14	55.88	0.00	186.27
(b) Water Harvesting Works.						
Earthen Check dam		19.79	49.47	29.68	0.00	98.94
Water harvesting bunds (WHB) area in ha.		11.59	28.98	17.39	0.00	57.97
<u>(C) A forestation Works</u>	-					
<u>Dry land Horticulture development</u>	-	1.01	2.53	1.52	0.00	5.06
Agro forestry work		6.86	17.15	10.29	0.00	34.31
						570.00
LIVILIHOD PROGRAMME(Community based)						
Income generating activities through SHG's for landless and marginal farmers		Yes	Yes	-	-	-
<u>Livestock development activities</u>	-	Yes	Yes	Yes	Yes	
PRODUCTION SYSTEM AND MICRO ENTERPRISES						-
Demonstration and assessment of improved composting system using alternate materials Nadif compost and nutrient analysis (Nos.)		-	7	8	0	15
			7	6		13
Introduction of improved crop production practices		-				-
i) for <i>Kharif</i> crops (ha)			2	2	2	6
ii) for <i>Rabi</i> crops (ha)			2	2	1	5
CONSOLIDATION PHASE						

GANDORA-IIInd

Activities related to	UNIT	1 st year (quantity)	2 nd year (quantity)	3 rd year (quantity)	4 th year	Total
ADMINISTRATIVE COSTS						
TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency		-	-	-	-	-
Expert for monitoring and evaluation		-	-	-	-	-
PREPARATORY PHASES						
Entry Point Activities like improvement in drinking water system, school, temple etc		-	-	-	-	-
Institutional and capacity building	-	-	-	-	-	-
WATERSHED WORKS						
(a) Watershed development works		-	-	-	-	-
Submurjenc bunds,		23.22	58.06	34.83	0.00	116.11
Periferal Bund		21.50	53.76	32.25	0.00	107.51
Gully Plug,		44.44	111.11	66.67	0.00	222.22
(b) Water Harvesting Works.						
Earthen Check dam		23.61	59.02	35.41	0.00	118.03
Water harvesting bunds (WHB) area in ha.		13.83	34.58	20.75	0.00	69.16
<u>(C) A forestation Works</u>	-					
<u>Dry land Horticulture development</u>	-	1.21	3.02	1.81	0.00	6.03
Agro forestry work		8.19	20.46	12.28	0.00	40.93
						680.00

LIVILHOOD PROGRAMME(Community based)						
Income generating activities through SHG's for landless and marginal farmers		Yes	Yes	-	-	-
<u>Livestock development activities</u>	-	Yes	Yes	Yes	Yes	
PRODUCTION SYSTEM AND MICRO ENTERPRISES						-
Demonstration and assessment of improved composting system using alternate materials Nadif compost and nutrient analysis (Nos.)		-	7	8	0	15
			7	6		13
Introduction of improved crop production practices		-				-
i) for <i>Kharif</i> crops (ha)			2	2	2	6
ii) for <i>Rabi</i> crops (ha)			2	2	1	5
CONSOLIDATION PHASE						

BAR-Ist

Activities related to	UNIT	1 st year (quantity)	2 nd year (quantity)	3 rd year (quantity)	4 th year	Total
ADMINISTRATIVE COSTS						
TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency		-	-	-	-	-
Expert for monitoring and evaluation		-	-	-	-	-
PREPARATORY PHASES						
Entry Point Activities like improvement in drinking water system, school, temple etc		-	-	-	-	-

Institutional and capacity building	-	-	-	-	-	-
WATERSHED WORKS						
(a) Watershed development works		-	-	-	-	-
Submurjenc bunds,		21.86	54.64	32.78	0.00	109.28
Periferal Bund		20.24	50.60	30.36	0.00	101.19
Gully Plug,		41.83	104.57	62.74	0.00	209.15
(b) Water Harvesting Works.						
Earthen Check dam		22.22	55.55	33.33	0.00	111.09
Water harvesting bunds (WHB) area in ha.		13.02	32.54	19.53	0.00	65.09
<u>(C) A forestation Works</u>	-					
<u>Dry land Horticulture development</u>	-	1.14	2.84	1.70	0.00	5.68
Agro forestry work		7.70	19.26	11.56	0.00	38.52
						640.00
LIVILIHOD PROGRAMME(Community based)						
Income generating activities through SHG's for landless and marginal farmers		Yes	Yes	-	-	-
<u>Livestock development activities</u>	-	Yes	Yes	Yes	Yes	
PRODUCTION SYSTEM AND MICRO ENTERPRISES						
Demonstration and assessment of improved composting system using alternate materials Nadif compost and nutrient analysis (Nos.)		-	7	8	0	15
			7	6	0	13
Introduction of improved crop production practices		-				
i) for <i>Kharif</i> crops (ha)			2	2	2	6
ii) for <i>Rabi</i> crops (ha)			2	2	1	5
CONSOLIDATION PHASE						

BACHHARAWANI

Activities related to	UNIT	1 st year (quantity)	2 nd year (quantity)	3 rd year (quantity)	4 th year	Total
ADMINISTRATIVE COSTS						
TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency		-	-	-	-	-
Expert for monitoring and evaluation		-	-	-	-	-
PREPARATORY PHASES						
Entry Point Activities like improvement in drinking water system, school, temple etc		-	-	-	-	-
Institutional and capacity building	-	-	-	-	-	-
WATERSHED WORKS						
(a) Watershed development works		-	-	-	-	-
Submurjenc bunds,		15.37	38.42	23.05	0.00	76.84
Periferal Bund		14.23	35.57	21.34	0.00	71.15
Gully Plug,		29.41	73.53	44.12	0.00	147.06
(b) Water Harvesting Works.						
Earthen Check dam		15.62	39.06	23.43	0.00	78.11
Water harvesting bunds (WHB) area in ha.		9.15	22.88	13.73	0.00	45.77
<u>(C) A forestation Works</u>	-					
<u>Dry land Horticulture development</u>	-	0.80	2.00	1.20	0.00	3.99
Agro forestry work		5.42	13.54	8.13	0.00	27.09
						450.00
LIVILIHOD PROGRAMME(Community based)						

Income generating activities through SHG's for landless and marginal farmers		Yes	Yes	-	-	-
<u>Livestock development activities</u>	-	Yes	Yes	Yes	Yes	
PRODUCTION SYSTEM AND MICRO ENTERPRISES						-
Demonstration and assessment of improved composting system using alternate materials Nadif compost and nutrient analysis (Nos.)		-	7	8	0	15
			7	6	0	13
Introduction of improved crop production practices		-				
i) for <i>Kharif</i> crops (ha)			2	2	2	6
ii) for <i>Rabi</i> crops (ha)			2	2	1	5
CONSOLIDATION PHASE						

BURAGOUN-Ist

Activities related to	UNIT	1 st year (quantity)	2 nd year (quantity)	3 rd year (quantity)	4 th year	Total
ADMINISTRATIVE COSTS						
TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency		-	-	-	-	-
Expert for monitoring and evaluation		-	-	-	-	-
PREPARATORY PHASES						
Entry Point Activities like improvement in drinking water system, school, temple etc		-	-	-	-	-

Institutional and capacity building	-	-	-	-	-	-
WATERSHED WORKS						
(a) Watershed development works		-	-	-	-	-
Submurjenc bunds,		11.44	28.60	17.16	0.00	57.20
Periferal Bund		10.59	26.48	15.89	0.00	52.97
Gully Plug,		21.89	54.74	32.84	0.00	109.47
(b) Water Harvesting Works.						
Earthen Check dam		11.63	29.07	17.44	0.00	58.15
Water harvesting bunds (WHB) area in ha.		6.81	17.03	10.22	0.00	34.07
<u>(C) A forestation Works</u>	-					
<u>Dry land Horticulture development</u>	-	0.59	1.49	0.89	0.00	2.97
Agro forestry work		4.03	10.08	6.05	0.00	20.16
						335.00
LIVILHOOD PROGRAMME(Community based)						
Income generating activities through SHG's for landless and marginal farmers		Yes	Yes	-	-	-
<u>Livestock development activities</u>	-	Yes	Yes	Yes	Yes	
PRODUCTION SYSTEM AND MICRO ENTERPRISES						
Demonstration and assessment of improved composting system using alternate materials Nadif compost and nutrient analysis (Nos.)		-	7	8	0	15
			7	6	0	13
Introduction of improved crop production practices		-				
i) for <i>Kharif</i> crops (ha)			2	2	2	6
ii) for <i>Rabi</i> crops (ha)			2	2	1	5
CONSOLIDATION PHASE						

BURAGOUN-IIInd

Activities related to	UNIT	1 st year (quantity)	2 nd year (quantity)	3 rd year (quantity)	4 th year	Total
ADMINISTRATIVE COSTS						
TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency		-	-	-	-	-
Expert for monitoring and evaluation		-	-	-	-	-
PREPARATORY PHASES						
Entry Point Activities like improvement in drinking water system, school, temple etc		-	-	-	-	-
Institutional and capacity building	-	-	-	-	-	-
WATERSHED WORKS						
(a) Watershed development works		-	-	-	-	-
Submurjenc bunds,		11.44	28.60	17.16	0.00	57.20
Periferal Bund		10.59	26.48	15.89	0.00	52.97
Gully Plug,		21.89	54.74	32.84	0.00	109.47
(b) Water Harvesting Works.						
Earthen Check dam		11.63	29.07	17.44	0.00	58.15
Water harvesting bunds (WHB) area in ha.		6.81	17.03	10.22	0.00	34.07
<u>(C) A forestation Works</u>	-					
<u>Dry land Horticulture development</u>	-	0.59	1.49	0.89	0.00	2.97
Agro forestry work		4.03	10.08	6.05	0.00	20.16
						335.00
LIVILIHOD PROGRAMME(Community based)						

Income generating activities through SHG's for landless and marginal farmers		Yes	Yes	-	-	-
<u>Livestock development activities</u>	-	Yes	Yes	Yes	Yes	
PRODUCTION SYSTEM AND MICRO ENTERPRISES						-
Demonstration and assessment of improved composting system using alternate materials Nadif compost and nutrient analysis (Nos.)		-	7	8	0	15
			7	6	0	13
Introduction of improved crop production practices		-				
i) for <i>Kharif</i> crops (ha)			2	2	2	6
ii) for <i>Rabi</i> crops (ha)			2	2	1	5
CONSOLIDATION PHASE						

BAR-II

Activities related to	UNIT	1 st year (quantity)	2 nd year (quantity)	3 rd year (quantity)	4 th year	Total
ADMINISTRATIVE COSTS						
TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency		-	-	-	-	-
Expert for monitoring and evaluation		-	-	-	-	-
PREPARATORY PHASES						
Entry Point Activities like improvement in drinking water system, school, temple etc		-	-	-	-	-

Institutional and capacity building	-	-	-	-	-	-
WATERSHED WORKS						
(a) Watershed development works		-	-	-	-	-
Submurjenc bunds,		19.47	48.66	29.20	0.00	97.33
Periferal Bund		18.02	45.06	27.04	0.00	90.12
Gully Plug,		37.25	93.14	55.88	0.00	186.27
(b) Water Harvesting Works.						
Earthen Check dam		19.79	49.47	29.68	0.00	98.94
Water harvesting bunds (WHB) area in ha.		11.59	28.98	17.39	0.00	57.97
<u>(C) A forestation Works</u>	-					
<u>Dry land Horticulture development</u>	-	1.01	2.53	1.52	0.00	5.06
Agro forestry work		6.86	17.15	10.29	0.00	34.31
						570.00
LIVILIHOD PROGRAMME(Community based)						
Income generating activities through SHG's for landless and marginal farmers		Yes	Yes	-	-	-
<u>Livestock development activities</u>	-	Yes	Yes	Yes	Yes	
PRODUCTION SYSTEM AND MICRO ENTERPRISES						
Demonstration and assessment of improved composting system using alternate materials Nadif compost and nutrient analysis (Nos.)		-	7	8	0	15
			7	6	0	13
Introduction of improved crop production practices		-				
i) for <i>Kharif</i> crops (ha)			2	2	2	6
ii) for <i>Rabi</i> crops (ha)			2	2	1	5
CONSOLIDATION PHASE						

DASHRARA

Activities related to	UNIT	1 st year (quantity)	2 nd year (quantity)	3 rd year (quantity)	4 th year	Total
ADMINISTRATIVE COSTS						
TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency		-	-	-	-	-
Expert for monitoring and evaluation		-	-	-	-	-
PREPARATORY PHASES						
Entry Point Activities like improvement in drinking water system, school, temple etc		-	-	-	-	-
Institutional and capacity building	-	-	-	-	-	-
WATERSHED WORKS						
(a) Watershed development works		-	-	-	-	-
Submurjenc bunds,		21.86	54.64	32.78	0.00	109.28
Periferal Bund		20.24	50.60	30.36	0.00	101.19
Gully Plug,		41.83	104.57	62.74	0.00	209.15
(b) Water Harvesting Works.						
Earthen Check dam		22.22	55.55	33.33	0.00	111.09
Water harvesting bunds (WHB) area in ha.		13.02	32.54	19.53	0.00	65.09
<u>(C) A forestation Works</u>	-					
<u>Dry land Horticulture development</u>	-	1.14	2.84	1.70	0.00	5.68
Agro forestry work		7.70	19.26	11.56	0.00	38.52
						640.00
LIVILIHOD PROGRAMME(Community based)						

Income generating activities through SHG's for landless and marginal farmers		Yes	Yes	-	-	-
<u>Livestock development activities</u>	-	Yes	Yes	Yes	Yes	
PRODUCTION SYSTEM AND MICRO ENTERPRISES						-
Demonstration and assessment of improved composting system using alternate materials Nadif compost and nutrient analysis (Nos.)		-	7	8	0	15
			7	6	0	13
Introduction of improved crop production practices		-				
i) for <i>Kharif</i> crops (ha)			2	2	2	6
ii) for <i>Rabi</i> crops (ha)			2	2	1	5
CONSOLIDATION PHASE						

BHAWNI

Activities related to	UNIT	1 st year (quantity)	2 nd year (quantity)	3 rd year (quantity)	4 th year	Total
ADMINISTRATIVE COSTS						
TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency		-	-	-	-	-
Expert for monitoring and evaluation		-	-	-	-	-
PREPARATORY PHASES						
Entry Point Activities like improvement in drinking water system, school, temple etc		-	-	-	-	-

Institutional and capacity building	-	-	-	-	-	-
WATERSHED WORKS						
(a) Watershed development works		-	-	-	-	-
Submurjenc bunds,		19.47	48.66	29.20	0.00	97.33
Periferal Bund		18.02	45.06	27.04	0.00	90.12
Gully Plug,		37.25	93.14	55.88	0.00	186.27
(b) Water Harvesting Works.						
Earthen Check dam		19.79	49.47	29.68	0.00	98.94
Water harvesting bunds (WHB) area in ha.		11.59	28.98	17.39	0.00	57.97
<u>(C) A forestation Works</u>	-					
<u>Dry land Horticulture development</u>	-	1.01	2.53	1.52	0.00	5.06
Agro forestry work		6.86	17.15	10.29	0.00	34.31
						570.00
LIVILIHOD PROGRAMME(Community based)						
Income generating activities through SHG's for landless and marginal farmers		Yes	Yes	-	-	-
<u>Livestock development activities</u>	-	Yes	Yes	Yes	Yes	
PRODUCTION SYSTEM AND MICRO ENTERPRISES						
Demonstration and assessment of improved composting system using alternate materials Nadif compost and nutrient analysis (Nos.)		-	7	8	0	15
			7	6	0	13
Introduction of improved crop production practices		-				
i) for <i>Kharif</i> crops (ha)			2	2	2	6
ii) for <i>Rabi</i> crops (ha)			2	2	1	5
CONSOLIDATION PHASE						

LADWARI

Activities related to	UNIT	1 st year (quantity)	2 nd year (quantity)	3 rd year (quantity)	4 th year	Total
ADMINISTRATIVE COSTS						
TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency		-	-	-	-	-
Expert for monitoring and evaluation		-	-	-	-	-
PREPARATORY PHASES						
Entry Point Activities like improvement in drinking water system, school, temple etc		-	-	-	-	-
Institutional and capacity building	-	-	-	-	-	-
WATERSHED WORKS						
(a) Watershed development works		-	-	-	-	-
Submurjenc bunds,		19.12	47.81	28.69	0.00	95.62
Periferal Bund		17.71	44.27	26.56	0.00	88.54
Gully Plug,		36.60	91.50	54.90	0.00	183.00
(b) Water Harvesting Works.						
Earthen Check dam		19.44	48.60	29.16	0.00	97.20
Water harvesting bunds (WHB) area in ha.		11.39	28.48	17.09	0.00	56.95
<u>(C) A forestation Works</u>	-					
<u>Dry land Horticulture development</u>	-	0.99	2.48	1.49	0.00	4.97
Agro forestry work		6.74	16.85	10.11	0.00	33.71
						560.00
LIVILIHOD PROGRAMME(Community based)						

Income generating activities through SHG's for landless and marginal farmers		Yes	Yes	-	-	-
<u>Livestock development activities</u>	-	Yes	Yes	Yes	Yes	
PRODUCTION SYSTEM AND MICRO ENTERPRISES						-
Demonstration and assessment of improved composting system using alternate materials Nadif compost and nutrient analysis (Nos.)		-	7	8	0	15
			7	6	0	13
Introduction of improved crop production practices		-				
i) for <i>Kharif</i> crops (ha)			2	2	2	6
ii) for <i>Rabi</i> crops (ha)			2	2	1	5
CONSOLIDATION PHASE						

GANDORA-Ist

S. No	Component	Unit	Unit cost (Rs.)	1 st year	2 nd year	3 rd year	4 th year	Total
A	ADMINISTRATIVE COSTS			-	-	-	-	-
	Administrative cost- TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency			1.37	3.42	2.05	0.00	6.84
	DPR PREPRATION			0.14	0.34	0.21	0.00	0.68
	Expert for monitoring and evaluation			0.27	0.68	0.41	0.00	1.37
	Sub Total			1.78	4.45	2.67	0.00	8.89

B	PREPARATORY PHASES							
	Entry Point Activities like improvement in drinking water system, & water harvesting etc.			2.74	0.00	0.00	0.00	2.74
	<u>Institutional and capacity building</u>			0.68	1.71	1.03	0.00	3.42
	Sub Total			3.42	1.71	1.03	0.00	6.16
C	WATERSHED WORKS							
a	Soil & water conservation works							
1	Submergence bund	Ha.	4500/-	0.88	2.19	1.31	0.00	4.38
2	Periferal bund	Ha.	4500/-	0.81	2.03	1.22	0.00	4.06
3	Gully Plug	Ha.	5500/-	2.05	5.12	3.07	0.00	10.24
b.	Water harvesting & water resources works							
1	Earthen check dam.	Ha.	6000/-	1.19	2.97	1.78	0.00	5.94
2	Water harvesting bund	Ha.	12700/-	1.47	3.68	2.21	0.00	7.36
c.	A forestation works							
1	Horticulture works	Ha.	10000/-	0.10	0.25	0.15	0.00	0.51
2	Agro forestry works	Ha.	5000/-	0.34	0.86	0.51	0.00	1.72
	Sub Total			6.84	17.10	10.26	0.00	34.20
D.	LIVILIHOD PROGRAMME(Community based)							
	Income generating activities through SHG's for landless and marginal farmers and livestock's development works.			8.04	0.00	0.00	0.00	6.84
	Sub Total			8.04	0.00	0.00	0.00	6.84
E	PRODUCTION SYSTEM AND MICRO ENTERPRISES							

	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system			0.00	3.56	3.56	1.78	8.89
	Sub Total			1.78	4.45	2.67	0.00	8.89
F	CONSOLIDATION PHASE			0.00	0.00	3.42	0.00	3.42
	Sub Total			0.00	0.00	3.42	0.00	3.42
	GRAND TOTAL			21.86	27.70	20.04	0.00	68.40

GANDORA-IIInd

S. No	Component	Unit	Unit cost (Rs.)	1 st year	2 nd year	3 rd year	4 th year	Total
A	ADMINISTRATIVE COSTS			-	-	-	-	-
	Administrative cost- TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency			1.63	4.08	2.45	0.00	8.16
	DPR PREPRATION			0.16	0.41	0.24	0.00	0.82
	Expert for monitoring and evaluation			0.33	0.82	0.49	0.00	1.63
	Sub Total			2.12	5.30	3.18	0.00	10.61
B	PREPARATORY PHASES							
	Entry Point Activities like improvement in drinking water system, & water harvesting etc.			3.26	0.00	0.00	0.00	3.26
	<u>Institutional and capacity building</u>			0.82	2.04	1.22	0.00	4.08

	Sub Total			4.08	2.04	1.22	0.00	7.34
C	WATERSHED WORKS							
a	Soil & water conservation works							
1	Submergence bund	Ha.	4500/-	1.05	2.61	1.57	0.00	5.23
2	Periferal bund	Ha.	4500/-	0.97	2.42	1.45	0.00	4.84
3	Gully Plug	Ha.	5500/-	2.44	6.11	3.67	0.00	12.22
b.	Water harvesting & water resources works							
1	Earthen check dam.	Ha.	6000/-	1.42	3.54	2.12	0.00	7.08
2	Water harvesting bund	Ha.	12700/-	1.76	4.51	2.63	0.00	8.78
c.	A forestation works							
1	Horticulture works	Ha.	10000/-	0.12	0.30	0.18	0.00	0.60
2	Agro forestry works	Ha.	5000/-	0.41	1.02	0.61	0.00	2.05
	Sub Total			8.16	20.52	12.24	0.00	40.80
D.	LIVILHOOD PROGRAMME(Community based)							
	Income generating activities through SHG's for landless and marginal farmers and livestock's development works.			8.04	0.00	0.00	0.00	8.16
	Sub Total			8.04	0.00	0.00	0.00	8.16
E	PRODUCTION SYSTEM AND MICRO ENTERPRISES							
	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system			2.12	5.30	3.18	0.00	10.61
	Sub Total			2.12	5.30	3.18	0.00	10.61

F	CONSOLIDATION PHASE			0.00	0.00	4.08	0.00	4.08
	Sub Total			0.00	0.00	4.08	0.00	4.08
	GRAND TOTAL			24.52	33.17	23.91	0.00	81.60

BAR-Ist

S. No	Component	Unit	Unit cost (Rs.)	1 st year	2 nd year	3 rd year	4 th year	Total
A	ADMINISTRATIVE COSTS			-	-	-	-	-
	Administrative cost- TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency			1.54	3.84	2.30	0.00	7.68
	DPR PREPRATION			0.77	0.00	0.00	0.00	0.77
	Expert for monitoring and evaluation			0.31	0.77	0.46	0.00	1.54
	Sub Total			2.61	4.61	2.76	0.00	9.98
B	PREPARATORY PHASES							
	Entry Point Activities like improvement in drinking water system, & water harvesting etc.			3.07	0.00	0.00	0.00	3.07
	<u>Institutional and capacity building</u>			1.54	1.54	0.77	0.00	3.84
	Sub Total			4.61	1.54	0.77	0.00	6.91
C	WATERSHED WORKS							
a	Soil & water conservation works							
1	Submergence bund	Ha.	4500/-	0.98	2.46	1.48	0.00	4.92
2	Periferal bund	Ha.	4500/-	0.91	2.28	1.37	0.00	4.55

3	Gully Plug	Ha.	5500/-	2.30	5.75	3.45	0.00	11.50
b.	Water harvesting & water resources works							
1	Earthen check dam.	Ha.	6000/-	1.33	3.33	2.01	0.00	6.67
2	Water harvesting bund	Ha.	12700/-	1.65	4.13	2.48	0.00	8.27
c.	A forestation works							
1	Horticulture works	Ha.	10000/-	0.11	0.28	0.17	0.00	0.57
2	Agro forestry works	Ha.	5000/-	0.39	0.96	0.58	0.00	1.93
	Sub Total			7.68	19.20	11.53	0.00	38.40
D.	LIVILIHOD PROGRAMME(Community based)							
	Income generating activities through SHG's for landless and marginal farmers and livestock's development works.			7.68	0.00	0.00	0.00	7.68
	Sub Total			7.68	0.00	0.00	0.00	7.68
E	PRODUCTION SYSTEM AND MICRO ENTERPRISES							
	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system			2.00	4.98	3.00	0.00	9.98
	Sub Total			2.00	4.98	3.00	0.00	9.98
F	CONSOLIDATION PHASE			0.00	0.00	3.84	0.00	3.84
	Sub Total			0.00	0.00	3.84	0.00	3.84
	GRAND TOTAL			24.58	30.32	21.90	0.00	76.80

BACHHARAWANI

S. No	Component	Unit	Unit cost (Rs.)	1 st year	2 nd year	3 rd year	4 th year	Total
A	ADMINISTRATIVE COSTS			-	-	-	-	-
	Administrative cost- TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency			1.08	2.70	1.62	0.00	5.40
	DPR PREPRATION			0.54	0.00	0.00	0.00	0.54
	Expert for monitoring and evaluation			0.22	0.54	0.32	0.00	1.08
	Sub Total			1.84	3.24	1.94	0.00	7.02
B	PREPARATORY PHASES							
	Entry Point Activities like improvement in drinking water system, & water harvesting etc.			2.16	0.00	0.00	0.00	2.16
	<u>Institutional and capacity building</u>			1.08	1.08	0.54	0.00	2.70
	Sub Total			3.24	1.08	0.54	0.00	4.86
C	WATERSHED WORKS							
a	Soil & water conservation works							
1	Submergence bund	Ha.	4500/-	0.69	1.73	1.04	0.00	3.46
2	Periferal bund	Ha.	4500/-	0.64	1.60	0.96	0.00	3.20
3	Gully Plug	Ha.	5500/-	1.62	4.04	2.43	0.00	8.09
b.	Water harvesting & water resources works							
1	Earthen check dam.	Ha.	6000/-	0.94	2.34	1.41	0.00	4.69

2	Water harvesting bund	Ha.	12700/-	1.16	2.91	1.74	0.00	5.81
c.	A forestation works							
1	Horticulture works	Ha.	10000/-	0.08	0.20	0.12	0.00	0.40
2	Agro forestry works	Ha.	5000/-	0.27	0.68	0.41	0.00	1.35
	Sub Total			5.40	13.50	8.10	0.00	27.00
D.	LIVILHOOD PROGRAMME(Community based)							
	Income generating activities through SHG's for landless and marginal farmers and livestock's development works.			5.40	0.00	0.00	0.00	5.40
	Sub Total			5.40	0.00	0.00	0.00	5.40
E	PRODUCTION SYSTEM AND MICRO ENTERPRISES							
	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system			1.40	3.51	2.11	0.00	7.02
	Sub Total			1.40	3.51	2.11	0.00	7.02
F	CONSOLIDATION PHASE			0.00	0.00	2.70	0.00	2.70
	Sub Total			0.00	0.00	2.70	0.00	2.70
	GRAND TOTAL			17.28	21.33	15.39	0.00	54.00

BURAGOUN-Ist

S. No	Component	Unit	Unit cost (Rs.)	1 st year	2 nd year	3 rd year	4 th year	Total
A	ADMINISTRATIVE COSTS			-	-	-	-	-
	Administrative cost- TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency			0.80	2.01	1.21	0.00	4.02
	DPR PREPRATION			0.40	0.00	0.00	0.00	0.40
	Expert for monitoring and evaluation			0.16	0.40	0.24	0.00	0.80
	Sub Total			1.37	2.41	1.45	0.00	5.23
B	PREPARATORY PHASES							
	Entry Point Activities like improvement in drinking water system, & water harvesting etc.			1.61	0.00	0.00	0.00	1.61
	<u>Institutional and capacity building</u>			0.40	1.01	0.60	0.00	2.01
	Sub Total			2.01	1.01	0.60	0.00	3.62
C	WATERSHED WORKS							
a	Soil & water conservation works							
1	Submergence bund	Ha.	4500/-	0.51	1.29	0.77	0.00	2.57
2	Periferal bund	Ha.	4500/-	0.48	1.19	0.72	0.00	2.38
3	Gully Plug	Ha.	5500/-	1.20	3.01	1.81	0.00	6.02
b.	Water harvesting & water resources works							
1	Earthen check dam.	Ha.	6000/-	0.70	1.74	1.05	0.00	3.49
2	Water harvesting bund	Ha.	12700/-	0.87	2.16	1.30	0.00	4.33

c.	A forestation works							
1	Horticulture works	Ha.	10000/-	0.06	0.15	0.09	0.00	0.30
2	Agro forestry works	Ha.	5000/-	0.20	0.50	0.30	0.00	1.01
	Sub Total			4.02	10.05	6.03	0.00	20.10
D.	LIVILIHOD PROGRAMME(Community based)							
	Income generating activities through SHG's for landless and marginal farmers and livestock's development works.			4.02	0.00	0.00	0.00	4.02
	Sub Total			4.02	0.00	0.00	0.00	4.02
E	PRODUCTION SYSTEM AND MICRO ENTERPRISES							
	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system			1.05	2.61	1.57	0.00	5.23
	Sub Total			1.05	2.61	1.57	0.00	5.23
F	CONSOLIDATION PHASE			0.00	0.00	2.01	0.00	2.01
	Sub Total			0.00	0.00	2.01	0.00	2.01
	GRAND TOTAL			12.46	16.08	11.66	0.00	40.20

BURAGOUN-IIInd

S. No	Component	Unit	Unit cost (Rs.)	1 st year	2 nd year	3 rd year	4 th year	Total
A	ADMINISTRATIVE COSTS			-	-	-	-	-
	Administrative cost- TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency			0.80	2.01	1.21	0.00	4.02
	DPR PREPRATION			0.40	0.00	0.00	0.00	0.40
	Expert for monitoring and evaluation			0.16	0.40	0.24	0.00	0.80
	Sub Total			1.37	2.41	1.45	0.00	5.23
B	PREPARATORY PHASES							
	Entry Point Activities like improvement in drinking water system, & water harvesting etc.			1.61	0.00	0.00	0.00	1.61
	<u>Institutional and capacity building</u>			0.40	1.01	0.60	0.00	2.01
	Sub Total			2.01	1.01	0.60	0.00	3.62
C	WATERSHED WORKS							
a	Soil & water conservation works							
1	Submergence bund	Ha.	4500/-	0.51	1.29	0.77	0.00	2.57
2	Periferal bund	Ha.	4500/-	0.48	1.19	0.72	0.00	2.38
3	Gully Plug	Ha.	5500/-	1.20	3.01	1.81	0.00	6.02
b.	Water harvesting & water resources works							
1	Earthen check dam.	Ha.	6000/-	0.70	1.74	1.05	0.00	3.49
2	Water harvesting bund	Ha.	12700/-	0.87	2.16	1.30	0.00	4.33

c.	A forestation works							
1	Horticulture works	Ha.	10000/-	0.06	0.15	0.09	0.00	0.30
2	Agro forestry works	Ha.	5000/-	0.20	0.50	0.30	0.00	1.01
	Sub Total			4.02	10.05	6.03	0.00	20.10
D.	LIVILIHOD PROGRAMME(Community based)							
	Income generating activities through SHG's for landless and marginal farmers and livestock's development works.			4.02	0.00	0.00	0.00	4.02
	Sub Total			4.02	0.00	0.00	0.00	4.02
E	PRODUCTION SYSTEM AND MICRO ENTERPRISES							
	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system			1.05	2.61	1.57	0.00	5.23
	Sub Total			1.05	2.61	1.57	0.00	5.23
F	CONSOLIDATION PHASE			0.00	0.00	2.01	0.00	2.01
	Sub Total			0.00	0.00	2.01	0.00	2.01
	GRAND TOTAL			12.46	16.08	11.66	0.00	40.20

BAR-II

S. No	Component	Unit	Unit cost (Rs.)	1 st year	2 nd year	3 rd year	4 th year	Total
A	ADMINISTRATIVE COSTS			-	-	-	-	-
	Administrative cost- TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency			1.37	3.42	2.05	0.00	6.84
	DPR PREPRATION			0.68	0.00	0.00	0.00	0.68
	Expert for monitoring and evaluation			0.27	0.68	0.42	0.00	1.37
	Sub Total			2.33	4.10	2.47	0.00	8.89
B	PREPARATORY PHASES							
	Entry Point Activities like improvement in drinking water system, & water harvesting etc.			2.74	0.00	0.00	0.00	2.74
	<u>Institutional and capacity building</u>			0.68	1.71	1.03	0.00	3.42
	Sub Total			3.42	1.71	1.03	0.00	6.16
C	WATERSHED WORKS							
a	Soil & water conservation works							
1	Submergence bund	Ha.	4500/-	0.88	2.19	1.31	0.00	4.38
2	Periferal bund	Ha.	4500/-	0.81	2.03	1.22	0.00	4.06
3	Gully Plug	Ha.	5500/-	2.05	5.12	3.07	0.00	10.24
b.	Water harvesting & water resources works							
1	Earthen check dam.	Ha.	6000/-	1.19	2.97	1.78	0.00	5.94
2	Water harvesting bund	Ha.	12700/-	1.47	3.68	2.21	0.00	7.36

c.	A forestation works							
1	Horticulture works	Ha.	10000/-	0.10	0.25	0.15	0.00	0.51
2	Agro forestry works	Ha.	5000/-	0.34	0.86	0.51	0.00	1.72
	Sub Total			6.84	17.10	10.26	0.00	34.20
D.	LIVILIHOD PROGRAMME(Community based)							
	Income generating activities through SHG's for landless and marginal farmers and livestock's development works.			6.84	0.00	0.00	0.00	6.84
	Sub Total			6.84	0.00	0.00	0.00	6.84
E	PRODUCTION SYSTEM AND MICRO ENTERPRISES							
	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system			1.78	4.44	2.67	0.00	8.89
	Sub Total			1.78	4.44	2.67	0.00	8.89
F	CONSOLIDATION PHASE			0.00	0.00	3.42	0.00	3.42
	Sub Total			0.00	0.00	3.42	0.00	3.42
	GRAND TOTAL			21.20	27.35	19.85	0.00	68.40

DASRARA

S. No	Component	Unit	Unit cost (Rs.)	1 st year	2 nd year	3 rd year	4 th year	Total
A	ADMINISTRATIVE COSTS			-	-	-	-	-
	Administrative cost- TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency			1.54	3.84	2.30	0.00	7.68
	DPR PREPRATION			0.77	0.00	0.00	0.00	0.77
	Expert for monitoring and evaluation			0.31	0.77	0.46	0.00	1.54
	Sub Total			2.61	4.61	2.76	0.00	9.98
B	PREPARATORY PHASES							
	Entry Point Activities like improvement in drinking water system, & water harvesting etc.			3.07	0.00	0.00	0.00	3.07
	<u>Institutional and capacity building</u>			0.77	1.92	1.15	0.00	3.84
	Sub Total			3.84	1.92	1.15	0.00	6.91
C	WATERSHED WORKS							
a	Soil & water conservation works							
1	Submergence bund	Ha.	4500/-	0.98	2.46	1.48	0.00	4.92
2	Periferal bund	Ha.	4500/-	0.91	2.28	1.37	0.00	4.55
3	Gully Plug	Ha.	5500/-	2.30	5.75	3.45	0.00	11.50
b.	Water harvesting & water resources works							
1	Earthen check dam.	Ha.	6000/-	1.33	3.33	2.00	0.00	6.67
2	Water harvesting bund	Ha.	12700/-	1.65	4.13	2.48	0.00	8.27

c.	A forestation works							
1	Horticulture works	Ha.	10000/-	0.11	0.28	0.17	0.00	0.57
2	Agro forestry works	Ha.	5000/-	0.39	0.96	0.58	0.00	1.93
	Sub Total			7.68	19.20	11.52	0.00	38.40
D.	LIVILIHOD PROGRAMME(Community based)							
	Income generating activities through SHG's for landless and marginal farmers and livestock's development works.			7.68	0.00	0.00	0.00	7.68
	Sub Total			7.68	0.00	0.00	0.00	7.68
E	PRODUCTION SYSTEM AND MICRO ENTERPRISES							
	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system			2.00	4.99	3.00	0.00	9.98
	Sub Total			2.00	4.99	3.00	0.00	9.98
F	CONSOLIDATION PHASE			0.00	0.00	3.84	0.00	3.84
	Sub Total			0.00	0.00	3.84	0.00	3.84
	GRAND TOTAL			23.81	30.72	22.27	0.00	76.80

BHAWNI

S. No	Component	Unit	Unit cost (Rs.)	1 st year	2 nd year	3 rd year	4 th year	Total
A	ADMINISTRATIVE COSTS			-	-	-	-	-
	Administrative cost- TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency			1.37	3.42	2.05	0.00	6.84
	DPR PREPRATION			0.68	0.00	0.00	0.00	0.68
	Expert for monitoring and evaluation			0.27	0.68	0.41	0.00	1.37
	Sub Total			2.33	4.10	2.46	0.00	8.89
B	PREPARATORY PHASES							
	Entry Point Activities like improvement in drinking water system, & water harvesting etc.			2.74	0.00	0.00	0.00	2.74
	<u>Institutional and capacity building</u>			0.68	1.71	1.03	0.00	3.42
	Sub Total			3.42	1.71	1.03	0.00	6.16
C	WATERSHED WORKS							
a	Soil & water conservation works							
1	Submergence bund	Ha.	4500/-	0.88	2.19	1.31	0.00	4.38
2	Periferal bund	Ha.	4500/-	0.81	2.03	1.22	0.00	4.06
3	Gully Plug	Ha.	5500/-	2.05	5.12	3.07	0.00	10.24
b.	Water harvesting & water resources works							
1	Earthen check dam.	Ha.	6000/-	1.19	2.97	1.78	0.00	5.94

2	Water harvesting bund	Ha.	12700/-	1.47	3.68	2.21	0.00	7.36
c.	A forestation works							
1	Horticulture works	Ha.	10000/-	0.10	0.25	0.15	0.00	0.51
2	Agro forestry works	Ha.	5000/-	0.34	0.86	0.51	0.00	1.72
	Sub Total			6.84	17.10	10.26	0.00	34.20
D.	LIVILHOOD PROGRAMME(Community based)							
	Income generating activities through SHG's for landless and marginal farmers and livestock's development works.			6.84	0.00	0.00	0.00	6.84
	Sub Total			6.84	0.00	0.00	0.00	6.84
E	PRODUCTION SYSTEM AND MICRO ENTERPRISES							
	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system			1.78	4.45	2.67	0.00	8.89
	Sub Total			1.78	4.45	2.67	0.00	8.89
F	CONSOLIDATION PHASE			0.00	0.00	3.42	0.00	3.42
	Sub Total			0.00	0.00	3.42	0.00	3.42
	GRAND TOTAL			21.20	27.36	19.84	0.00	68.40

LADWARI

S. No	Component	Unit	Unit cost (Rs.)	1 st year	2 nd year	3 rd year	4 th year	Total
A	ADMINISTRATIVE COSTS			-	-	-	-	-
	Administrative cost- TA&DA, POL / Hiring of vehicles/office and payment of electricity and phone bill etc. computer, stationary and office consumable and Contingency			1.34	3.36	2.02	0.00	6.72
	DPR PREPRATION			0.67	0.00	0.00	0.00	0.67
	Expert for monitoring and evaluation			0.27	0.67	0.40	0.00	1.34
	Sub Total			2.28	4.03	2.42	0.00	8.74
B	PREPARATORY PHASES							
	Entry Point Activities like improvement in drinking water system, & water harvesting etc.			2.69	0.00	0.00	0.00	2.69
	<u>Institutional and capacity building</u>			0.67	1.68	1.01	0.00	3.36
	Sub Total			3.36	1.68	1.01	0.00	6.05
C	WATERSHED WORKS							
a	Soil & water conservation works							
1	Submergence bund	Ha.	4500/-	0.86	2.15	1.29	0.00	4.30
2	Periferal bund	Ha.	4500/-	0.80	1.99	1.20	0.00	3.98
3	Gully Plug	Ha.	5500/-	2.01	5.03	3.02	0.00	10.06
b.	Water harvesting & water resources works							
1	Earthen check dam.	Ha.	6000/-	1.17	2.92	1.75	0.00	5.83
2	Water harvesting bund	Ha.	12700/-	1.45	3.62	2.17	0.00	7.23

c.	A forestation works							
1	Horticulture works	Ha.	10000/-	0.10	0.25	0.15	0.00	0.50
2	Agro forestry works	Ha.	5000/-	0.34	0.84	0.51	0.00	1.69
	Sub Total			6.72	16.80	10.08	0.00	33.60
D.	LIVILIHOD PROGRAMME(Community based)							
	Income generating activities through SHG's for landless and marginal farmers and livestock's development works.			6.72	0.00	0.00	0.00	6.72
	Sub Total			6.72	0.00	0.00	0.00	6.72
E	PRODUCTION SYSTEM AND MICRO ENTERPRISES							
	Crop production, diversification of agriculture and introduction of agro-forestry and Demonstration of improved composting system			1.75	4.37	2.62	0.00	8.74
	Sub Total			1.75	4.37	2.62	0.00	8.74
F	CONSOLIDATION PHASE			0.00	0.00	3.36	0.00	3.36
	Sub Total			0.00	0.00	3.36	0.00	3.36
	GRAND TOTAL			20.83	26.88	19.49	0.00	67.20

CHAPTER -8

QUALITATIVE ISSUES

PLAN FOR MONITORING OF THE PROJECT

The above project would be monitored regularly by the Watershed Development Team as per the norms of common guideline 2008. There will be every fortnight monitoring schedule have been proposed by the PIA of the project. A Web-based GIS system is being developed for monitoring and evaluating the project in its planning & implementation phases. The system would be available on a public domain and can be accessed by all the stakeholder of the project. The system shows the entire state of Uttar Pradesh and all of those areas selected over the next 18 years. Filtering allows the user to zoom onto one particular project. Details related to soil type, Land-use classification, inhabitation etc., can be obtained village-wise. Furthermore, survey-number wise details related to ownership, irrigation source, yield etc., can also be accessed by the users of the system. This system is being used for pooling up the details obtained from the DPR. In other words, the DPR is made available online in the form of a database which will help the stakeholders know areas of importance viz., already treated areas/historical works in the area, proposed areas for treatment etc., for further treatment and planning. The system would also show the satellite imageries of various years from the project inception stage to the project closing stages. This allows the user to evaluate the effectiveness of the treatment and thereby plan corrective measures for the project area. The system would serve as an aiding tool to the planners and evaluate the effectiveness of the treatment and thereby plan corrective measures for the project area. The system would serve as an aiding tool to the planners and evaluators for judging the efficacy of the project.

PLAN FOR EVALUATION OF THE PROJECT

The evaluation of the project would be done by the state and central agency as proposed by the SLNA of the state. The evaluation of the project would also be done by the expert of the respective field like Water Management and Land Resources Management after the completion of the project.

PLAN FOR PROJECT MANAGEMENT

The project management of a watershed programme is very important. It mainly depends upon the community organisation and the village level institutes. In watershed committee and various user groups have been formulated for post project operation and maintenance of assets created during project period. Major emphasis will on equity and sustainable benefit of the project even after implementation stage. A proper linkup will be built during project period with various institutes and capacity building organisation. They will act as a major kingpin during post implementation for scaling up the successful experience during project.

CHAPTER -9
CONSOLIDATION /
EXIT STRATEGY

WATERSHED DEVELOPMENT FUND

The major source of financial assistance after post implementation period is Watershed Development Fund. The contribution of it will come mainly from the fund generated .

USER CHARGES

Various user groups will be formed in village. These user groups will collect user according to the designated rules formed during the formation of user group. These funds will be transferred to the WDF funds as per these formulated rules. The secretary of watershed committee (WC) shall maintain the records.

Sustainability and Environmental Security

In the proposed watershed management plan of Sajnam proper blending of bio engineering measures will be applied. The proposed land use plan will improve the land utilization index and crop diversification index significantly as compared to existing one. It will help in maintaining ecosystem integrity on sustained basis.

Economic Analysis

Economic analysis of the project is carried out by taking direct benefits and costs, considering 30 year project life at 10% discount rate. For the purpose of economic analysis, whole watershed development plan is divided into four sectors namely agriculture (rain fed and irrigated), pure horticulture, agro-horticulture and silvi pastoral (Silvi-Pastoral + sericulture). Net present value (NPV), Benefit Cost Ratio (BCR), Pay Back Period (PBR) and Internal Rate of Return (IRR) criteria is employed to judge the economic efficiency of each enterprise, sector and project as a whole.

AGRICULTURE

In rain fed agriculture, the development cost can be recovered within one year as the present rain fed agriculture is being done on well maintained field, therefore, does not require much investment. In irrigated agriculture, investment of Rs. 818.00 lakhs is proposed to be made. The BC ratio of this sector is 1.6 : 1 within three years payback period.

Economics of agriculture sector

S. No.	Sector	Area (ha)	NPV (Rs.)	BC ratio
1	Irrigated agriculture	270.00	94500000	1.6:1
2	Rain fed agriculture	5080.00	828040000	1.2:1
3	Total	5350.00	922540000	1.4:1

HORTICULTURE

Economic analysis of horticulture plantation in Agri-horti system at Sajnam watershed. Project life is considered to be 25 years and discount rate for NPV estimation is 10%.

SN	Common Name	Scientific name	Area (ha)	NPV of Net Benefit (Rs)	B:C Ratio
1	Amala	Embelica officinalis	14	978721	3.97:1
2	Ber	Zyziphus mauritiana	14	705492	2.81:1
3	Bael	Aegle marmelos	12	407728	2.84:1
	Total		40	2051941	3.512

FOREST/ FUEL WOOD PLANTATION

Economic analysis of fuel wood plantation at Sajnam watershed. Project life is considered to be 25 years and discount rate for NPV estimation is 10 %.

S.N.	Common Name	Scientific name	Area (ha)	NPV of Net Benefit (Rs)	B:C Ratio
1	Vilayati Babul, Kanji, Shesome, Sagon	<i>Prosopis juliflora</i>	329	45176618	2.11:1

FOOD SUFFICIENCY

Achieving self sufficiency in food production is one of the prime objectives of the project.

Status of food requirement and availability per annum in watershed

Sr. No.	Items	Requirement (q/yr)	Before project		Proposed	
			Availability (q/yr)	Deficit or surplus (q/yr)	Availability (q/yr)	Deficit or surplus (q/yr)
1	Cereals	93991	39476	54515	99838	+5847
2	Pulses	11738	10212	1526	12868	+1130
3	Oil seeds	12059	16882	4823	17659	+5600
4	Vegetable	1172	246	926	1302	+130

CHAPTER -10

EXPECTED OUTCOME

EMPLOYMENT RELATED OUTCOMES

Employment has always been a problem in the village. The principal occupations of the people are dry land agriculture, animal husbandry and casual labour work. Animal husbandry does not keep them engaged full time, Thus the people mainly depend upon casual labour, either in the village itself or outside it.

The project plans for creation of both wage employment and self employment opportunities. Wage employment would be created by engaging people in watershed physical works like construction of earthen bunds, farm bunds, village pond, plantation, etc. Self employment would be created by providing the people with cash support in the form of direct livelihood activities like agriculture, animal husbandry and other enterprise development.

Labour migration in search of gainful employment is one of the major problems in the remote watershed in particular. Casual employment opportunities will be generated during the implementation of the project activities. However, the changes in land use pattern and adoption of other subsidiary enterprises will generate employment opportunities for persons in the watershed. The details of the employment generation is given in below.

Table-10.1: EXPECTED EMPLOYMENT RELATED OUTCOMES

S.No.	No. of the Villages	Wage employment										Self employment				
		No. of mandays (Lakhs)					No. Of beneficiaries					No. Of beneficiaries				
		SC	ST	Others	Women	Total	SC	ST	Others	Women	Total	SC	ST	Others	Women	Total
1	13	1.160	0	1.492	0.238	2.890	1160	0	1492	238	2890	105	0	138	27	270

MIGRATION PATTERN

On account of agriculture and animal husbandry providing only part time employment for some part of the year, the people migrate for a better half of the year for wage labour. Employment opportunities in the local area as mentioned above will ensure lessening seasonal migration from the area. The detail of the migration is given below.

Table-10.2:DETAILS OF MIGRATION (I.W.M.P-X) LALITPUR

S.No.	No. of the villages	No. of persons migrating	No. of days per year of migration	Main reason for migration	Expected reduction in no. of persons migrating
1	13	260	150	Poverty & Unemployment	144

WATER RELATED OUTCOMES

As a result of the watershed activities, it is expected that the quantity and quality of drinking water would be improve. The ground water quality of the project area is normal to good, the average Ph value is 6.7 to 7.8, the Electric conductivity of the ground water is about 957 to 1125 μ . The overall analysis of the ground water shows that the water is good for the drinking purpose. The water level in the project area ranges from 10 to 12 metre. Status of the drinking water is given in below.

Table-10.3:STATUS OF DRINKING WATER

S. N.	No. of the villages	Availability of drinking water (no. of months in a year)		Quality of drinking water	
		Pre-project	Expected Post-Project	Pre-project	Expected Post-Project
1	13	08 months	10 months	Hard + Soft	Soft water

Table-10.4:DETAILS OF AVERAGE GROUND WATER TABLE DEPTH IN THE PROJECT AREAS (IN METERS)

S. N.	No. of the villages	Sources	Pre-project	Expected Post-Project	Remarks
1	13	Open wells	10-12 mtr.	9-11 mtr.	-
		Bore wells	-	-	-

VEGETATION/ CROP RELATED OUTCOMES

Food crop production is a major land based activity in the watershed. Traditional cultivation practices, coupled with poor quality seeds and long duration crops varieties result in low crop yields. Crops are taken under rainfed as well as irrigated conditions. The yield levels of rainfed crops are particularly very poor. Large variation has been noticed in productivity of wheat and Jowar under rainfed and irrigation, condition respectively. At present level of rainfed farming, the total produce from Rabi and Kharif crops obtained by a medium size of holding owning family can meet food requirements for up to 6 to 7 months only.

The farmers also do not have suitable cropping systems to deal aberrant weather. Weeds impose considerable constraints in producing of both Kharif and rabi crops under irrigation as well as rain-fed production system. Use of weedicide is rare in the watershed. It is expected that the post project period would see a substantial increase in agriculture production and yield from them. It is expected that after compilation of the project, the crop productivity of Rabi-Kharif will certainly enhance. There will be an improvement in soil health of the study area after conservation measures

Table-10.5: MAJOR CROPS GROWN AND THEIR PRODUCTIVITY IN THE PROJECT AREA

S. N.	Names of the crop		Current status		Expected Post-Project Status	
			Area (ha)	Productivity (kg/ha)	Area(ha)	Productivity(kg/ha)
1	Rabi	Wheat	13250	1350	17090	1860
		Pulses	9710	680	12180	960
		Mustard	2195	350	2880	580
2	Kharif	Maize	9735	640	11040	930
		Jowar	2765	830	3200	1150
		Pulses	14395	370	18190	690

LIVESTOCK

The village has quite a good of livestock population. These include cows, bullocks, buffaloes, goats. The interventions like provision of good quality cows and buffaloes, the establishment of a fodder bank and other such related activities would spur up the dairy development in the village. It is expected that the post project period would see a substantial increase in livestock population and yield from them.

FOREST/VEGETATIVE COVER RELATED OUTCOMES

There is 52.86 % land under forest cover. The village has a forest area which consists of only *Prosopis Juliflora* (babool). Trees like Neem and *Alianthus* are seen just here and there, not concentrated in any area. It is planned that land to be covered under new plantation.

ABTRACT OF OUTCOMES

The over all assessment of the project certain parameters have been evaluated on the present and future basis. As mentioned in the above the food grain production according to the expenditure have been analysed after the completion of the project.

Table-10.6: SUMMARY OF EXPECTED/ESTIMATED OUTCOMES (MIS TABLE-M (PO) F1)

Sl.N o.	Name of District	Item	Unit of Meadurement	Pre-Project Status	Expected Post Project Status	Rema-rks
1	2	3	4	5	6	7
1	LALITPUR IWMP -X	Status of Water Table	Miter	10-12	9-11	
2		Ground Water Structures repaired/rejuvenated	No.	--	70	
3		Quality of Drinking water	--	Hard+Soft	Soft	
4		Availability of Drinking Water	Days	8 Month	10 Month	
5		Increase in Irrigation Potential	%	--	5%	
6		Change in Corpping/land use pattern	--	--	--	
7		Area under agricultural crop	Ha.	4604.57	5055.00	
8		i. Area under single crop.	Ha.	2200.00	2864.00	
9		ii. Area under double crop	Ha.	1650.00	1965.00	
10		iii. Area under multiple crop	Ha.	600.00	850.00	
11		Net increase in crop production area	Ha.	--	--	

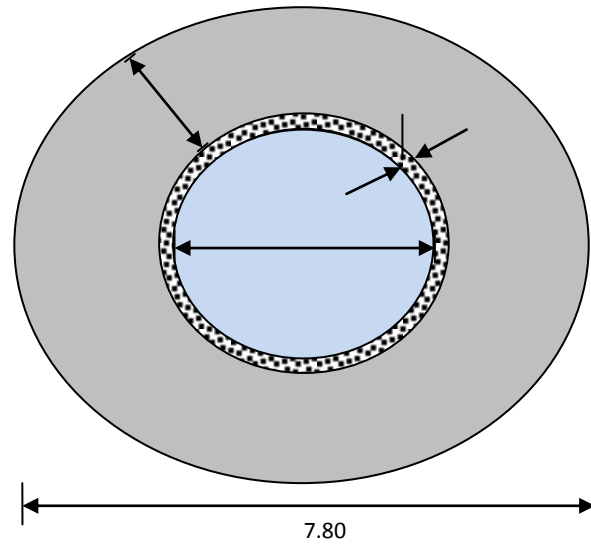
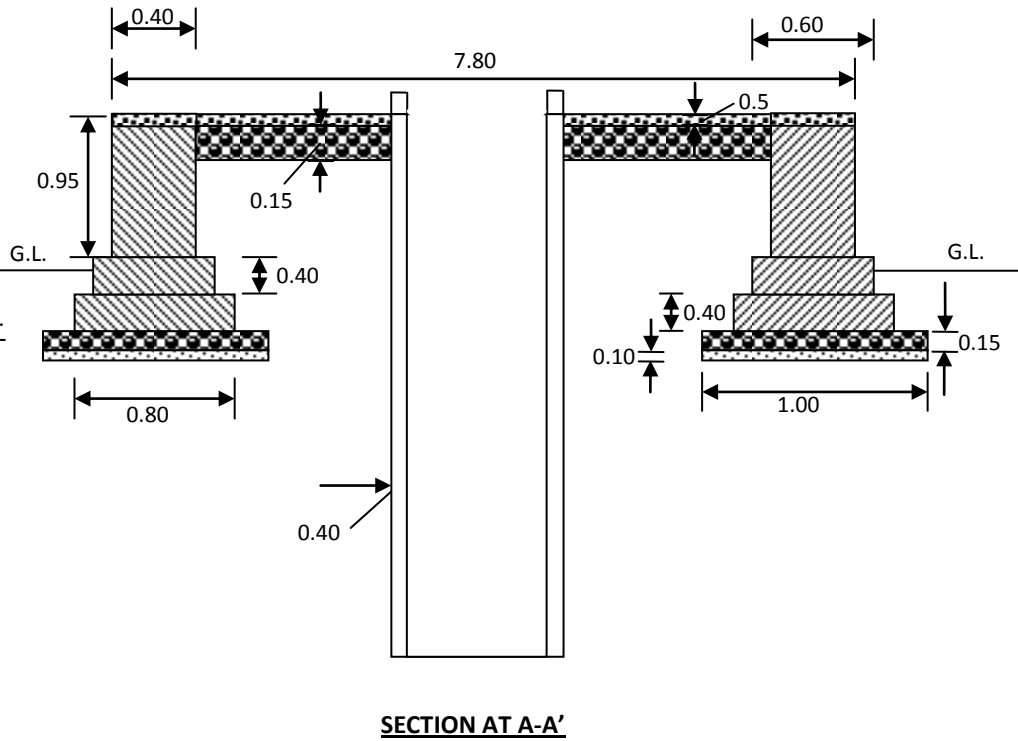
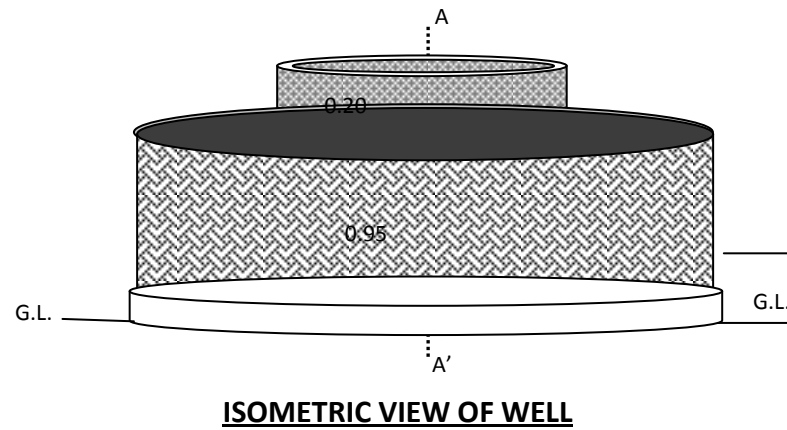
12		Increase in area under vegetation	Ha.	30	70	
13		Increase in area under horticulture	Ha.	25	85	
14		Increase in area under fuel & fodder	Ha.	--	--	
15		Increase in milk Production	Av/Lt/Days/Cattle	--	5%	
16		No. of SHGs	No.	22	44	
17		Increase in no. of livelihoods	No.	--	--	
18		Increase in income	Rs.	6230	9130	
19		Migration	No.	260	144	
20		SHG Federations formed	--	--	--	
21		Credit Linkage with banks	--	--	4	
22		Resource use agreements	--	--	Agreed	
23		WDF collection & Management	5% to 10%		5% to 10%	

Chapter-11

COST NORMS & DESIGN OF STRUCTURE

PROPOSED

DRAWING OF WELL



DESCRIPTION

1. C.C.W. - 1:4:8.
2. Brick Work- 1:4
3. Plastering- 1:4
4. Raised Pointing- 1:3.

DETAIL ESTIMATE OF JAGAT OF WELL

S.No.	Description of Work	No.	L	B	D/H	Quantity
1.	Earth work in foundation	1	3.14 × 7.4	1.20	1.00	27.88
2.	Laying of sand	1	3.14 × 7.4	1.00	0.10	2.32
3.	C.C.W. 1:4:8	1	3.14 × 7.4	1.00	0.15	3.48
4.	Brick Work 1:4	1	3.14 × 7.4	0.80	0.40	7.43
			3.14 × 7.4	0.60	0.40	5.57
			3.14 × 7.4	0.40	0.90	8.36
			3.14 × 3.4	0.40	0.20	0.85
						22.21
5.	Filling of earth work	1	3.14 × 5.4	1.60	0.75	20.34
6.	C.C.W. 1:4:8	1	3.14 × 5.4	1.60	0.15	4.06
7.	C.C.W. 1:2:4	1	$\{(3.14 \times 7.8 \times 7.8)/4 - (3.14 \times 3.8 \times 3.8)/4\} \times 0.05$			1.821
8.	Raised pointing	1	3.14 × 7.8	-	0.90	22.04

CONSUMPTION OF MATERIALS

S. No.	Description of Work	Quantity	Cement Bags	Coarse Sand (cum)	Brick (cum)	G.S.B. 25-40 mm (cum)	Grit 10-20 mm (cum)
1.	Sand Laying	2.32 cum	-	2.320	-	-	-
2.	C.C.W. 1:4:8 (4.06 + 3.48)	7.54 cum	25.63	3.393	-	7.012	-
3.	Brick Work 1:4	22.21 cum	53.30	7.551	22.21	-	-
4.	C.E.W. 1:2:4	1.821 cum	11.10	0.764	-	-	1.547
5.	Raised Pointing	22.04 m ²	1.01	0.103	-	-	-
Total			91.04	14.131	22.21	7.012	1.547
Say			91 bags	14.13 cum	22.20	7.01	1.55

COST OF MATERIALS

S.No.	Particulars	Quantity	Rate	Amount
1.	Cement	91 Bags	285.00/bag	25935.00
2.	Coarse Sand	14.13 cum	2500.00/cum	35325.00
3.	Coarse	20.20 cum	950.00/cum	19190.00
4.	Brick Ballast 25-40 mm	7.01 cum	855/cum	5993.55
Total				Rs. 86443.00

LABOUR CHARGES

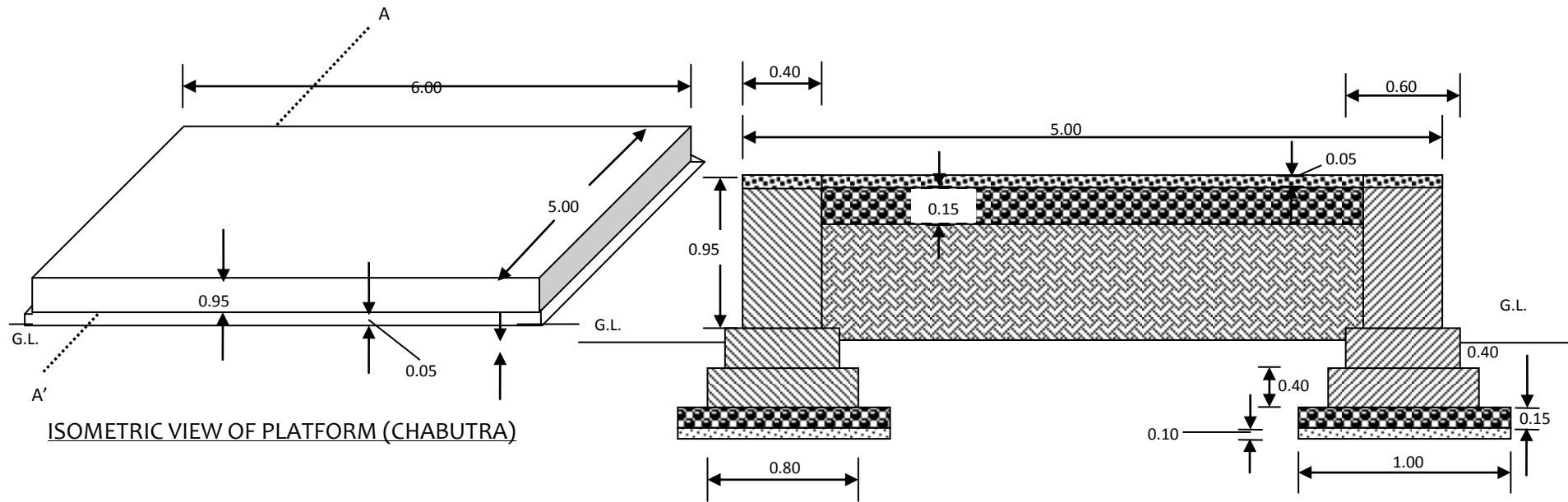
S.No.	Particulars	Quantity	Rate	Amount
1.	Earth Work	48.22 cum	36.66/cum	1769.01
2.	Sand Laying	2.32 cum	33.33/cum	77.32
3.	C.C.W. 1:4:8	7.54 cum	492.00/cum	3709.68
4.	C.C.W. 1:2:4	1.821 cum	492.00/cum	894.11
5.	Brick Work	22.210 cum	370.00/cum	8217.70
6.	Raised Pointing	22.04 m ²	51.61/m ²	7.48
7.	Curing 22.21	22.210 cum	25.00/cum	555.25
8.	Chowkidar	13 Man days	100.00/man day	1300.00
9.	Head load & transportation charges 10% of cost of materials			6674.90
Total				Rs. 24,335.45

TOTAL EXPENDITURE	
1. Cost of materials	65,914.00
2. Labour charges & transportation	24,335.45
Total	Rs. 90,249.45
Say Rs. 90,250.00 only	

DETAIL ESTIMATE OF INDIA MARK-II HAND PUMP FOR WATER SHED AREA, DISTRICT - LALITPURU.P.

S.No.	Description of work	Unit	Quantity	Rate	Amount
1	Transportation of rig machine, hand Pump material, P.V.C. Pipe, strainer and cement from store to work site.	work	1	3000.00	3000.00
2	Supply of material to install Hand Pump i- Lowering and installation of India mark-II Hand Pump with G.I. Pipe & connecting rods. ii- 140 mm P.V.C. Pipe 8kg/cm ² . iii- medium G.I.Pipe of the 32 mm Ø.	No. metre metre	1 20 30	5380.00 240.00 202.90	5380.00 4800.00 6087.00
3	Boring work by D.T.H. Rig machine and lowering of P.V.C. assembling	meter	50	396.00	19800.00
4	Development of Hand Pump after installation	work	1	100.00	100.00
5	work after development with material	work	1	50.00	50.00
6	construction of Platform of 1.86 m Ø with all material and cement	work	1	2525.00	2525.00
7	construction of channel with all material and labour	meter	3	125.00	375.00
8	Embossing work	work	1	50.00	50.00
9	Water testing work	work	1	400.00	400.00
				Total	Rs. 42,567.00
				Says	Rs. 42,600.00

DRAWING OF PANCHAYATI CHABUTARA



ISOMETRIC VIEW OF PLATFORM (CHABUTRA)

SECTION AT A-A'

DESCRIPTION

1. C.C.W. - 1:4:8.
2. Brick Work - 1:4
3. Plastering- 1:4
4. Raised Pointing- 1:3.

DETAIL ESTIMATE OF WATERSHED VILLAGE CHABUTARA

S.No.	Description of Work	No.	L.	B.	D/H	Quantity
1.	Earth work in foundation					
	Long Wall	2	8.00	1.20	1.15 1.15	22.08
	Short Wall	2	4.00	1.20		11.04
Total						33.12 cum
2.	Laying of Sand					
	Long Wall	2	6.60	1.00	0.10	1.32
	Short Wall	2	3.60	1.00	0.10	0.72
Total						2.04 cum
3.	C.C.W. 1:4:8					
	Long Wall	2	6.60	1.00	0.15	1.98
	Short Wall	2	3.60	1.00	0.15	1.08
Total						3.06 cum
4.	Brick masonry work 1:4 in foundation & super structure					
	1st Footing.					
	Long Wall	2	6.40	0.80	0.40	4.096
	Short Wall	2	3.80	0.80	0.40	2.432
	2nd Footing					
	Long Wall	2	6.20	0.60	0.40	2.976
	Short Wall	2	4.00	0.60	0.40	1.920
	Super Structure					

	Long Wall	2	6.00	0.40	0.90	4.320
	Short Wall	2	4.20	0.40	0.90	3.024
Total						18.768 cum
5.	Earth work in filling	1	5.20	4.20	0.75	16.38 cum
6.	C.C.W. 1:4:8	1	5.20	4.20	0.15	3.276 cum
7.	C.C.W. 1:2:4	1	6.00	5.00	0.05	1.500 cum
8.	Raised Pointing 1:3					
	Long Wall	2	6.00	-	0.90	10.80
	Short Wall	2	5.00	-	0.90	9.00
Total						19.80 m²

ABSTRACT OF WORK

1.	Earth Work	33.12 + 16.38	49.50 cum
2.	Sand Laying		2.040 cum
3.	C.C.W. 1:4:8	3.060 + 3.276	6.336 cum
4.	Brick Work 1:4		18.568 cum
5.	C.C.W. 1:2:4		1.500 cum
6.	Raised Pointing 1:3		19.80 m ²

CONSUMPTION OF MATERIALS

S.No.	Particulars	Quantity	Cement (cum)	Coarse Sand (cum)	Brick (cum)	G.S.B. 25-40 mm (cum)	Brick Grit 10-20 mm (cum)
1.	Sand Laying	2.040 cum	-	2.040	-	-	-
2.	C.C.W 1:4:8	6.336 cum	21.54	2.851	-	5.892	-
3.	Brick Work	18.768 cum	45.04	6.381	18.768	-	-
4.	C.C.W. 1:2:4	1.500 cum	9.15	0.630	-	-	1.275
5.	Raised Pointing	19.800 m ²	0.91	0.093	-	-	-
Total			76.64	11.995	18.768	5.892	1.275
Say			77 Bags	12.000	18.768	5.900	1.280

COST OF MATERIALS

S.No.	Particulars	Quantity	Rate	Amount
1.	Cement	77 Bags	285/Bag	21945.00
2.	Coarse Sand	12.00 cum	910.00/cum	10920.00
3.	Coarse	11.04 cum	950.00/cum	10490.40
4.	G.S.B. 25-40 mm	5.900 cum	855.00/cum	5044.00
5.	G.S. Grit 10-20 mm	1.280 cum	1250.00/cum	1600.00
Total				Rs. 50000.00

LABOUR CHARGES

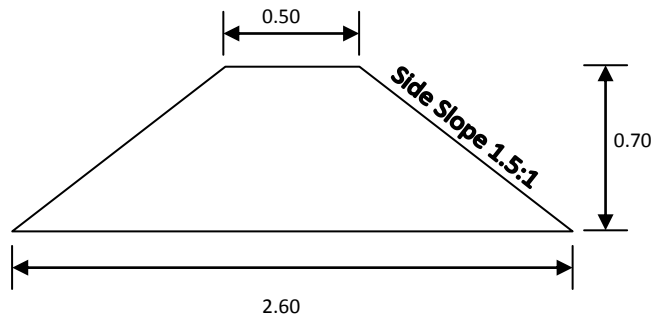
S.No.	Particulars	Quantity	Rate	Amount
1.	Earth Work	49.50 cum	36.66/cum	1814.67
2.	Sand Laying	2.060 cum	33.33/cum	68.65
3.	C.C.W. 1:4:8	6.336 cum	494.00/cum	3129.98
4.	C.C.W. 1:2:4	1.500 cum	494.00/cum	741.00
5.	Brick Work 1:4	18.768 cum	370.00/cum	6944.16
6.	Raised Pointing 1:3	19.800 m ²	51.61/cum	1021.87
7.	Curing Charges	18.768 cum	25.00/cum	469.20
8.	Chowkidar	6 Man Days	100.00/Man Day	600.00
Total				Rs. 14,789.53

Total Expenditure	
1. Cost of Materials	57,338.60
2. Labour Charges	14,789.53
Total	Rs. 72,128.13
Say	Rs. 72,130 only

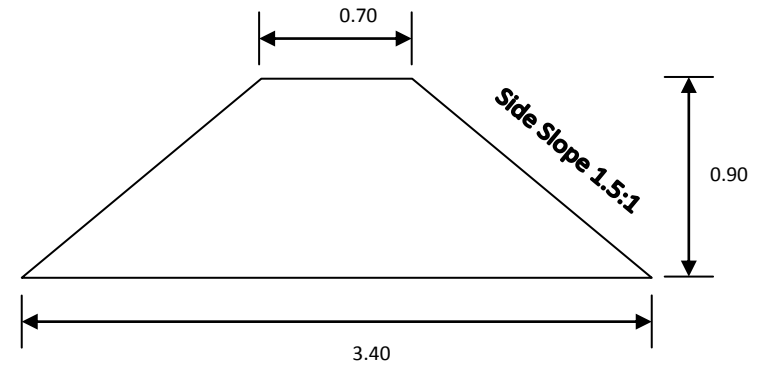
DETAILS ESTIMATE OF WATERSHED DEVELOPMENT WORK PHASE

DRAWING OF C.B., S.B., P.B., AND M.B.

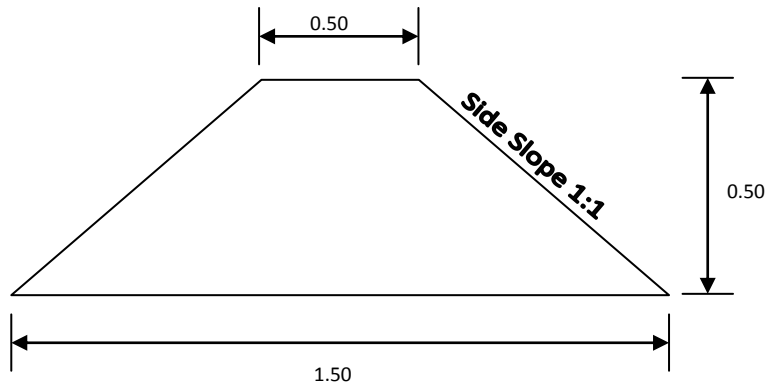
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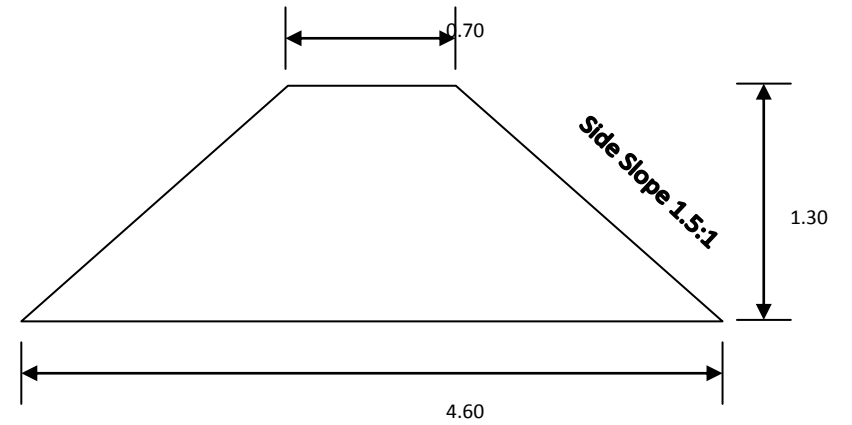
(C.B., Cross-Section – 1.085 m²)



(S.B., Cross-Section – 1.845m²)



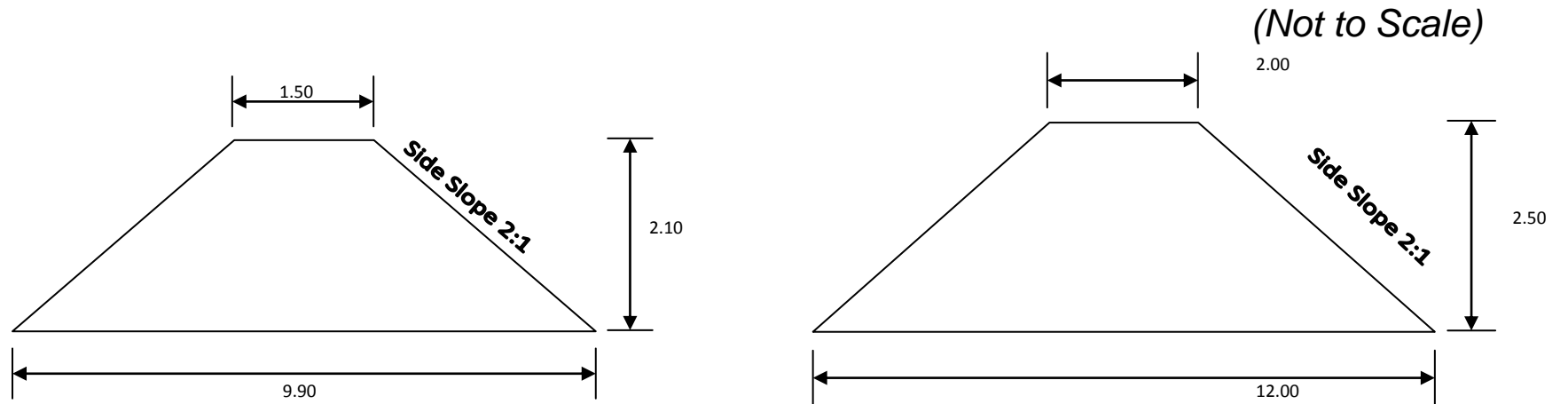
(Field Bund, Cross-Section – 0.50 m²)



(S.B. /P.B. /M.B., Cross-Section – 3.445 m²)

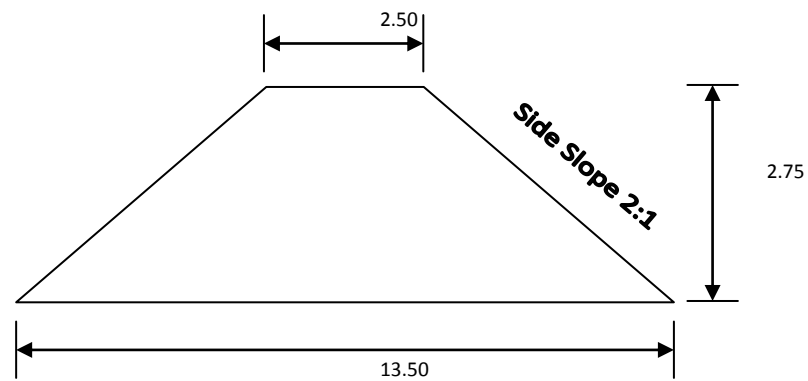
(All dimensions in Metre)

DRAWING OF EARTHEN CHEKDAM / GULLY PLUG



(C.D. /G.P., Cross-Section – 11.97 m²)

(C.D. /G.P., Cross-Section – 17.50 m²)



(W.H.B., Cross-Section – 22.00 m²)

(All dimensions in Metre)

DESIGN OF CONTOUR BUND

Type of Soil	-Loam, Sandy Loam	
Rain fall	-24 hr in cm -25 cm	
Field Slope -1%		
Vertical Interval (VI)	$= [s/3+2] \times 0.3$ $= [1/3+2] \times 0.3$ $= 0.70 \text{ m}$	
Horizontal Interval (HI)	$= 100 \times V.I/s$ $= 100 \times 0.7/1$	
Height of bund h	$= \sqrt{(Re \times VI)/50}$ $= \sqrt{(25 \times 0.7)/50}$ $= \sqrt{0.35}$ $= 0.59$	Re=maximum rainfall in cm
Free board	=15% of height minimum -10 cm	
Height	$= 0.60 + 0.10$ $= 0.70 \text{ m}$	
Taking top width of bund 0.50 m and side slope 1.5:1		
Then base of Bund	$= 0.50 + (1.50 d) \times 2$ $= 2.60 \text{ m}$	
Cross-Section of bund	$= (0.50 + 2.60) \times 0.70 / 2$ $= 1.085 \text{ m}^2$	
Length of bund	$= 100 s / V.I.$ $= 100 \times 1 / 0.70$ $= 142.85 \text{ m/ha}$	
	Say 150 m/ha	
Earth work/ha	$= 150 \times 1.085$ $= 162.75 \text{ cum}$	
Cost Rs. / ha	$= 162.75 \times 39.16 = 6373.29$	
	Say 6375.00	

DESIGN OF SUBMERGENCE BUND

Types of soil – -Loam,Sandy Loam	Rainfall intensity for 24 hrs – 25cm
Field slope 3%	$V.I. = [s/3+2] \times 0.30$ $= 0.90 \text{ m}$
Horizontal Interval = $(100 \times V.I.) / s$	$= (100 \times 0.90) / 3$ $= 30 \text{ m}$
Height of bund $h = \sqrt{(Re \times V.I.) / 50}$	$= \sqrt{(25 \times 0.90) / 50} = \sqrt{0.45} = 0.67 \text{ m. Say } \mathbf{0.70m}$
Free board 20% of height minimum 20cm	
Total Height	= 0.90m
Taking top width of bund 0.70m and side slope 1.5:1	
Bottom of bund	$= 0.70 + 2 \times 1.5d$ $= 0.70 + 2.70$ $= 3.40$
Cross Section of Submergence Bund	$= (0.70 + 3.40) \times 0.90 / 2$ $= 1.845 \text{ m}^2$
Length of bund	$= 100 \text{ s} / V.I.$ $= (100 \times 3) / 0.90$ $= 333 \text{ m}$
Feasible length	$100 + 25 + 25$ $= 150 \text{ m}$
Earth work/ha	$= 150 \times 1.845$ $= 276.75$
Cost per ha	$= 276.75 \times 39.16$ $= 10,837.53$ Say 10,850=00

TYPICAL SECTION OF FIELD BUND

Top width	= 0.50 m
Side slope	= 1:1
Height of bound	= 0.50 m
Bottom Width	= 1.50 m
Cross section	= $(0.50+1.50) \times 0.50 / 2 = 0.50 \text{ m}^2$
Length per hectare	= 200 m
Earthwork	= $200 \times 0.50 = 100 \text{ cum}$
Cost 39.16/cum	= Rs. 3916.00
Cost per hectare	= Rs. 3916.00

TYPICAL SECTION OF P.B., M.B., S.B.

Top width	= 0.70 m
Side slope	= 1.5:1
Height	= 1.30 m
Bottom	= 4.60 m
Cross section	= $(0.70+4.60) \times 1.30 / 2$ = 3.445 m^2
Cost/ meter	= Rs. 142.00

TYPICAL SECTION OF EARTHEN CHECK DAM / GULLY PLUG

Top width	= 1.50 m
Side slope	= 2:1
Height	= 2.10m
Bottom Width	= 9.90 m
Cross section	= $(1.50 + 9.90) \times 2.10 / 2$ = 11.97 m ²
Cost per meter	= Rs. 551.45

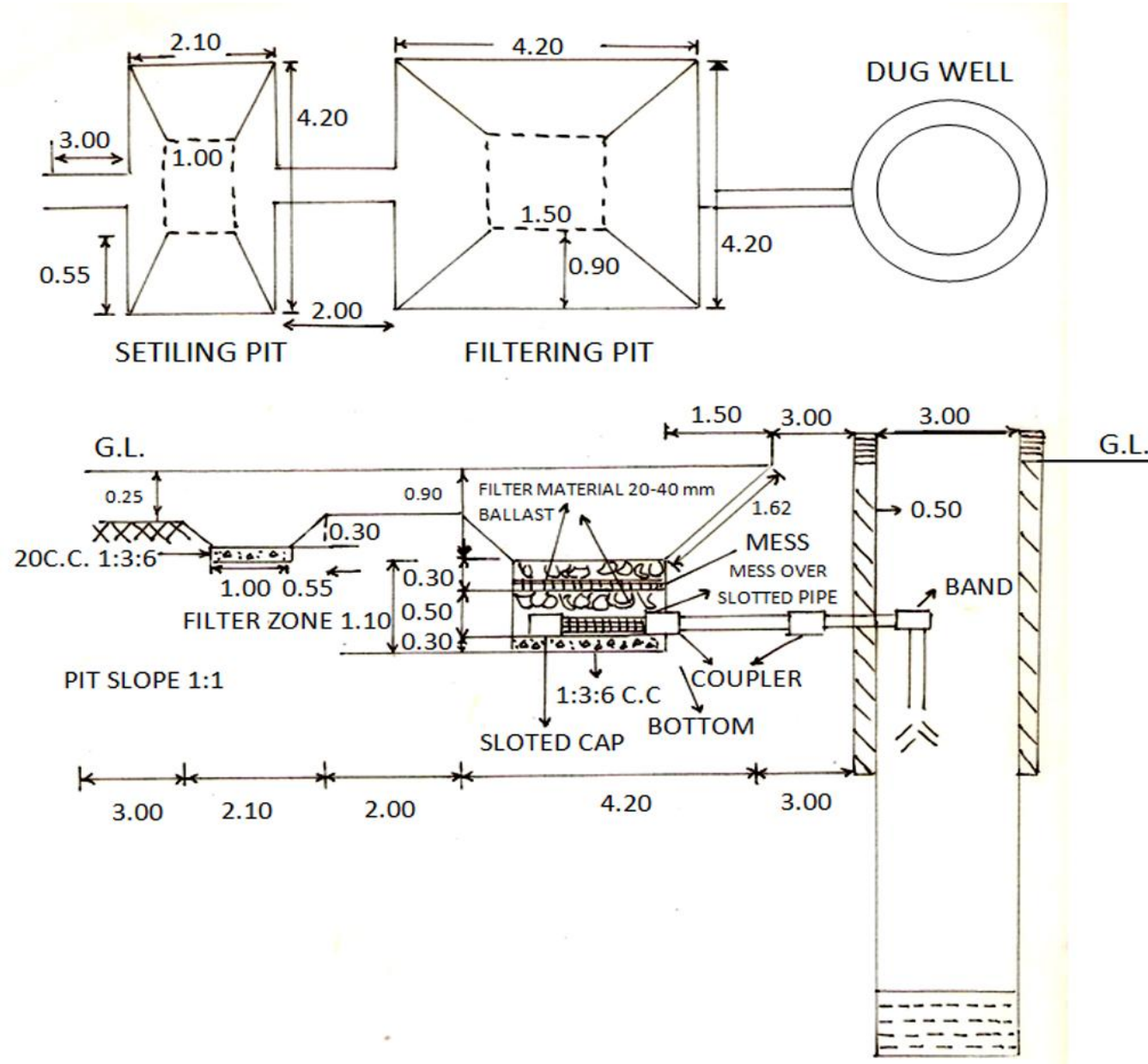
TYPICAL SECTION OF CHECK DAM / GULLY PLUG

Top width	= 2.00m
Side slope	= 2:1
Height	= 2.50 m
Bottom Width	= 12.00 m
Cross Section	= $(2.00 + 12.00) \times 2.50 / 2$ = 17.50 m ²
Cost /meter	= Rs. 839.12

TYPICAL SECTION OF W.H.B

Top width	= 2.50 m
Side slope	= 2:1
Height	= 2.75 m
Bottom Width	= 13.50 m
Cross section	= $(2.50 + 13.50) \times 2.75 / 2$ = 22.00 m ²
Per meter cost	= Rs. 1085.92

DUG WELL RECHARGING STRUCTURE



ABSTRACT OF COST BRICK WORK JAGAT

S.No.	Name of Work	Quantity	Unit	Rate	Amount
1.	Earth Work	25.84	M ³	36.36	947.29
2.	C.C.W. Work in 1:3:6	1.49	M ³	2766.00	4121.34
3.	Laying Brick Supply & fixing	1.16	M ³	4000.00	4640.00
4.	Plaster work in 1:2	9.00	M ³	81.98	737.80
5.	S/F of 110 mm P.V.C. pipe	6.00	R.M	150.00	900.00
6.	Slotted Cap 110 mm P.V.C	1	No.	150.00	150.00
7.	P.V.C. bend 10 mm	1	No.	130.00	130.00
8.	P.V.C. Coupler 110 mm	2	No.	100.00	200.00
9.	Mesh ss S/F between	2	Job	100.00	200.00
10.	S/O fixing of sign board	1	Job	1850.00	1850.00
11.	Filter material 20-40 mm blast	1.8	M ³	855.00	1539.00
12.	Slotted P.V.C. pipe 110 mm	1	R.M.	250.00	250.00
Total					Rs. 15,665.43
Say					Rs.15,670.00 only

DETAILS OF MEASUREMENT (DUG WELLS RECHARGING)

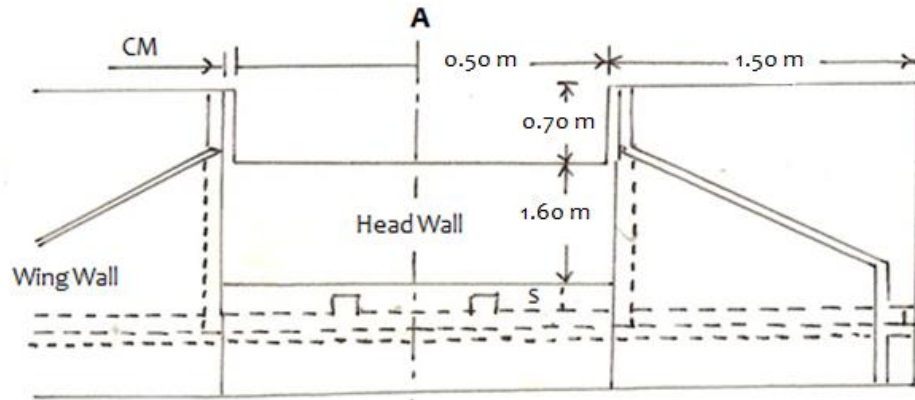
S.No.	Name of Work	No.	L B D/H	Unit	Quantity
1.	Earth work in excavation hard soil mixed with <i>kanker</i> gravel, etc. in foundation.				
a	Settling pit (i) Long Wall	4	0.65 x 1.75 x 0.10/2	M ³	0.09
		2	1.50 x 0.62 x 0.75	M ³	1.39
	(ii) Short Wall	4	0.55 x 0.75/2 x 0.10	M ³	0.08
		2	1.00 x 0.55 x 0.75	M ³	0.82
b	Filtering pit	8	1.85 x 1.00 x 1.00 x /2 x 0.10	M ³	1.19
		2	1.50 x 1.62 x 0.90	M ³	4.37
c	Drain-Filter zone	1	1.50 x 1.50 x 1.10	M ³	2.47
		1	7.10 x 0.75 x 0.25	M ³	1.86
d	Excavation for laying of P.V.C. pipe & filling after laying of P.V.C. pipe				

		1	4.35 x 2.00 x 0.80	M ³	6.96
		1	1.35 x 0.90 x 2.00/2	M ³	1.21
		1	3.00 x 2.00 x 0.90	M ³	5.40
	Total				25.84
2	C.C. in 1:3:6 settling pit	1	1.00 x 1.50 x 0.20	M ³	0.30
	Filtering pit filter zone	1	1.50 x 1.50 x 0.30	M ³	0.67
	Drain –Filter Zone	1	7.00 x 0.75 x 0.10	M ³	0.52
				M ³	1.49
3	Cut- Brick work 1:4				
a	Settling pit Long wall	4	1.05 x 0.55 x 0.10/2		0.11
		2	1.50 x 0.62 x 0.05		0.09
	Settling pit Short wall	4	0.55 x 0.55 x 0.10/2		0.06
		2	1.00 x 0.62 x 0.05		0.06
b	Filtering pit	8	1.85 x 1.62 x 0.05/2		0.60
		2	1.50 x 1.62 x 0.05		0.24
				M ³	1.16
4	Plaster work 1:2				
	Drain-Bottom	1	7.00 x 0.25	M ²	1.75
	Drain-Side	2	7.00 x 0.25	M ²	3.50
	Selting base	1	1.50 x 1.00	M ²	1.50
	Filtering base	1	1.50 x 1.50	M ²	2.25
	Total			M ²	9.00
5	Supply & Fixing of 110 mm P.V.C. Pipe	1	6.00	M	6.00
6	Slotted cap of 110 mm P.V.C.	1		No.	1.00
7	P.V.C. Bend 110 mm	1		No.	1.00
8	P.V.C. coupler 110 mm	1x2		No.	2.00
9	Mesh ss S/F between	1x2		Job	2.00
10	S/O Brick sign board	1		Job	1.00
11	Filter Material of 20-40 mm blast	1	1.50 x 1.50 x 0.80	M ³	1.80
12	Slotted pipe P.V.C. 110 mm	1	1 x 1	M	1.00

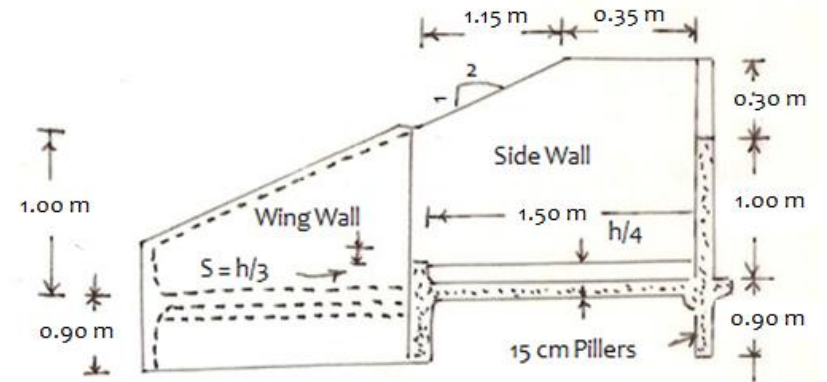
DRAWING OF SPILLWAY OF CREST LENGTH 0.5 m

All Dimensions in Metre

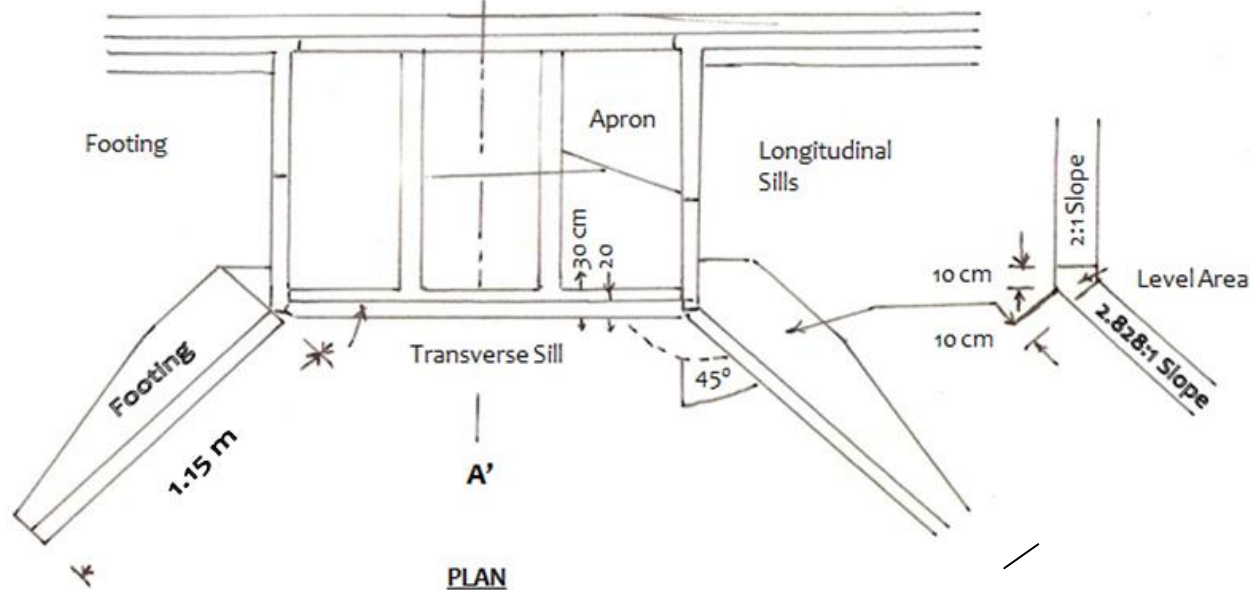
Not to Scale



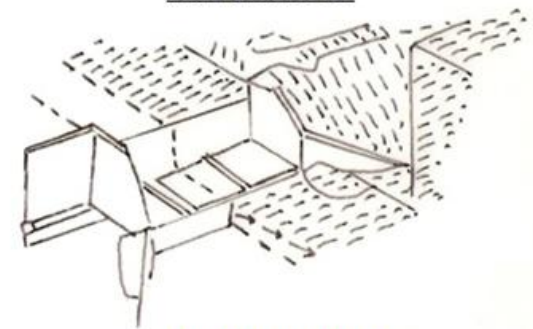
DOWNSTREAM ELEVATION



SECTION ON A-A'



PLAN



PERSPECTIVE VIEW

Design of Drop Spillway for 1.00 ha Catchment Area

Design of Drop Spillway to be constructed at a place in a gully having width of 1.0 m and catchment area 1.00 ha and net drop 0.50 m Taking rainfall intensity for duration equal to time of concentration of watershed and design return period of 25 years , as 120mm/hr. The coefficient of runoff for the watershed is 0.3.

1. Hydrologic design- The design peak runoff rate (m^3/s) for the watershed from Rational formula is

given as:

$$Q = \frac{C.I.A.}{360} = \frac{0.3 \times 120 \times 1.00}{360} = \frac{36}{360} = 0.10 \text{ cum/second}$$

2. Hydraulic design- The maximum discharge capacity of the rectangular weir given by

$$Q = \frac{1.711 L H^{3/2}}{(1.1 + 0.01 F)}$$

To find suitable value of L & H

Let us assume $L = 0.50 \text{ m}$ (since width of gully is 1.00 m)

$$0.10 = \frac{1.711 L H^{3/2}}{(1.10 + 0.01 \times 0.5)} = \frac{1.711 L H^{3/2}}{(1.105)}$$

$$L H^{3/2} = \frac{1.105 \times 0.10}{1.711} = \frac{0.1105}{1.711} = 0.064$$

$$H^{3/2} = \frac{0.064}{1.711} = 0.128$$

$$H = \frac{0.50}{(0.128)^{2/3}} = 0.25 \text{ m}$$

$$\text{Test: } L/h = \frac{0.50}{0.25} = 2.0 \geq 2.0 \text{ hence O.K.}$$

$$h/f = \frac{0.25}{0.50} = 0.50 \leq 0.5 \text{ hence O.K.}$$

3. Structural design –

1- Minimum headwall extension, $E = (3h + 0.6)$ or $1.5 f$ whichever is greater

$$E = 3 \times 0.5 + 0.6 \quad \text{or} \quad 1.5 \times 0.50$$

$$E = 2.10 \text{ m} \quad \text{or} \quad 0.75 \text{ m}$$

Adopted 2.10 m

2- Length of apron basin $L_B = f (2.28 h/f + 0.54) = 0.50 (2.20 \times \frac{0.5}{0.5} + 0.54)$

$$= 0.50 \times 2.74 = 1.37 \text{ m says } 1.40 \text{ m}$$

3- Height of end sill, $S = \frac{h}{3} = \frac{0.50}{3} = 0.16 \text{ m says } 0.20 \text{ m}$

4- Height of wing wall and side wall at Junction :

$$\begin{aligned} J &= 2h \text{ or } [f + h + S - (L_B + 0.10)/2] \text{ whichever is greater} \\ &= 2 \times 0.50 \text{ or } [0.50 + 0.50 + 0.16 - (1.37 + 0.10)/2] \\ &= 1.0 \text{ or } [1.16 - 0.735] \end{aligned}$$

$$= 1.0 \text{ or } 0.425$$

adopt $J = 1.00 \text{ m}$

$$\begin{aligned} 5- \quad M &= 2(f + 1.33h - J) = 2(0.50 + 1.33 \times 0.25 - 1.00) \\ &= 2 \times (-0.167) = -0.335 \text{ m} \end{aligned}$$

$$\begin{aligned} 6- \quad K &= (L_B + 0.1) - M = (1.37 + 0.1) - 0.335 \\ &= 1.47 - 0.335 \\ &= 1.135 \text{ m} \end{aligned}$$

Toe and cut off walls

$$\begin{aligned} \text{Normal scour depth (N S D)} &= 0.473 \times (Q/f)^{1/3} \\ &= 0.473 \times (0.1/1)^{1/3} \\ &= 0.473 \times 0.464 \\ &= 0.219 \end{aligned}$$

$$\begin{aligned} \text{Maximum Scour depth (M S D)} &= 1.5 \times \text{N S D} \\ &= 1.5 \times 0.219 \\ &= 0.328 \text{ m} \\ &\text{says } 0.35 \text{ m} \end{aligned}$$

$$\text{Depth of cutoff /Toe wall} = 0.35 \text{ m}$$

Apron thickness : For an over fall of 0.5 m. The Apron thickness in concrete construction is 0.20 m since the structure is constructed in masonry, the Apron thickness will be $0.20 \times 1.50 = 0.30$ m

Wall thickness: The thickness of different wall of the structure (masonry construction) is given below:

Description	Thickness of wall	
	Top width	Bottom width
Head wall	0.40	1.00
Side wall	0.30	0.80
Wing wall and head wall extension	0.30	0.60

**DRAWING OF DETAIL ESTIMATE OF
PRODUCTION SYSTEM AND MICRO-
ENTERPRISES IN WATERSHED
WORK PHASE**

Goat Rearing Project

S.No.	Particulars	Amount
1	Thatch Structure/Khaprel Shed (size 15 x 300 feet) with partisan for One male <ul style="list-style-type: none"> • Khapperel/Bamboo • Thatch, Puwal etc. • Rope Band & Patera • Boundra (Kaccha/Pakka) • Miscelleneous TOTAL	4000.00 1000.00 500.00 3000.00 1500.00 10000.00
2	Input Involvement <ul style="list-style-type: none"> • Adult Female No. 10 @ 3000.00/female • Adult Male 	30000.00 3000.00
3.	Recurring Cost <ul style="list-style-type: none"> • Grazing of goat (Mandate yearly:One person/day @ Rs. 100/day • Feed cost @ Rs. 4000/month annually (Barley wheat under size, Chickpea under size, Green fodder (Leaf subabool, Lobia, Grasses etc., Wheat straw) • Medicines & Health care (FMD, Deworming, Vaccinations) • Insurance (annually) TOTAL	48000.00 6000.00 1200.00

		91200.00
	Total Expenditure (1 + 2 + 3)	134200.00

Output/Received

S.No.	Particulars	Amount
1.	<p>Milk Production</p> <p>Milk Production (10 Goat)</p> <p>(5 Month @ 1Ltr./day/Goat = 1500 Ltr. Sale @ Rs. 15/Ltr.)</p> <p>Milk Production</p> <p>(4 month @ 1Ltr./day/Goat = 1200 Ltr. Sale @ Rs. 15/Ltr.)</p> <p>TOTAL</p>	<p>22500.00</p> <p>18000.00</p> <p>40500.00</p>
2.	<p>Selling of Goat Kids (From six month to 12 year)</p> <ul style="list-style-type: none"> • First Production (after six month from starting) Average two kids (Assumed that ration of male & female in 50:50) <p>10 Male to be sale @ 1800/kid</p> <p>10 Female Kids retain for next rearing (Rate calculated for next unit)</p> <ul style="list-style-type: none"> • Second Production (Average two kids) 	<p>18000.00</p> <p>30000.00</p>

	10 Old Stock Production – 20 kids (Assumed that ration of male & female in 50:50) 10 Male to be sale @ 1500/kid 10 Female Kids retain for next rearing @ 2000/kids TOTAL	15000.00 20000.00 83000.00
3.	Goat Manure After one year 50 q. (if not grazed) if grazing is going on then vermicompost/NADEF Unit is compulsory with each unit TOTAL	15000.00 15000.00
4.	Permanent Parrent Stock 11 Parent – One unit @ Rs. 4000/Goat TOTAL	44000.00 44000.00
	TOTAL Output/Receipts (1+2+3+4)	182500.00

Net return = 182500 – 134200 = 48300.00

PAPAD Making

1. Land requirement 1000 Sq feet Rent Rs.1000.00 per month
2. Capacity 300 working days
6960 Kg Urd Papad
4620 Kg. Moong Papad

3. Machinery Required

S.No.	Particulars	No.	Rate	Amount
1.	Papad making machine (with ¼ HP motor	01	28000.00	28000.00
2.	Aata mixing machine (with motor)	01	25000.00	25000.00
3.	Loi making machine (with motor)	01	27000.00	27000.00
4.	Loi passing machine hand running	01	3500.00	3500.00
5.	Other Pans & Apparatus			5000.00
6.	Electrification			7500.00
7.	Furniture & Others			7500
	TOTAL			103500.00

4. Working Capital (Raw Material)

S.No..	Items	Quantity	Rate	Amount
1.	Moong Aata	350 kg.	30.00	10500.00
2.	Urd Aata	495 Kg.	35.00	17352.00

3.	Jeera	20 Kg.	55.00	1100.00
4.	Papad khar	33 kg.	20.00	660.00
5.	Salt	33 Kg.	10.00	330.00
6.	Hing			150.00
7.	Lal Mirch-Kali Mirch			2000.00
8.	Other packing material			5000.00
	TOTAL			37092.00

Workers & Labours

Skilled Labour 01 @ Rs. 185/day	5550.00
Helper 02 @ Rs. 100/day	5200.00
Total	10750.00
5. Utility Expenditure/month	
Electricity Expenditure	750.00
Water etc.	1000.00
Total	1750.00
6. Other Expenditure/month	
Rent	1000.00
Postage/Stationary/phone	500.00
T.A./Transportation	2000.00

Insurance	500.00
Administrative Exp.	1200.00
Total	5200.00

7. Capital Required/month

Raw Material	37092.00
Worker & Labour	10750.00
Utilities Exp.	1750.00
Other Exp.	5200.00
Total	54792.00

Total Project cost

Machinery & Tools	103500.00
Running Capital	54792.00
Total	158292.00

Assumed Profit

Particulars	Quantity	Rate	Amount (Rs.)
Moong Papad	4620 Kg.	66/Kg.	304920.00
Urd Papd	6960 Kg.	75/Kg.	522000.00
		TOTAL	826920.00

WOODEN FERNITURE UNIT

1. Land requirement 1000 Sq feet Rent Rs.1000.00 per month
2. Capacity 300 working days
3. Machinery Required

S.No.	Particulars	No.	Rate	Amount
1.	Aari, Hammer etc.	01	-	18000.00
2.	Small Aara machine (1/2 HP motor)	01	38000.00	38000.00
3.	Other Pans etc.	-	-	5000.00
	TOTAL			61000.00

4. Working Capital (Raw Material)

S.No..	Items	Quantity	Rate	Amount
1.	Sheesham, Teak wood etc.	-	-	150000.00
2.	Keel, Pench, Primar etc.	-	-	12000.00
3.	Favicol, Plywood, Sun Mica etc.	-	-	25000.00
	TOTAL			248000.00

Workers & Labours

Skilled Karigar @ Rs. 250/day	7500.00
Helper 02 @ Rs. 100/day	5200.00
Total	12700.00
5. Other Expenditure/month	
Rent	2000.00
Postage/Stationary/phone	500.00
T.A./Transportation	2000.00
Insurance	500.00
Administrative Exp. & Sale Rapper etc.	2500.00
Total	7500.00
6. Capital Required/month	
Raw Material	248000.00
Worker & Labour	12700.00
Other Exp.	7500.00
Total	268200.00
Total Project cost	
Machinery & Tools	61000.00

Running Capital 268200.00

Total 329200.00

Assumed Profit

Particulars	Quantity	Rate	Amount (Rs.)
Furniture Made		Per month	262000.00
	300 days/years		2620000.00

Small dairy Farm UNIT

1. Land requirement 5 Buffaloes/Cow Unit Requires : 400 Sq. feet covered area made by local material and approximately 1000 sq. feet open area
2. Capacity 5 Animal Unit
3. Live Stock 7 Machinery Required

S.No.	Particulars	No.	Rate	Amount
1.	Buffaloes/Cows	05/05	30000/animal	150000.00
2.	Milk Cane	06	500	3000.00
3.	Balty	10	150	1500.00
4.	Chaff cutter (with motor)	01	3500	3000.00

5.	Other pans etc.	-	-	2000.00
	Total			159500.00

4. Working Capital (Raw Material)

S.No..	Items	Quantity	Rate	Amount
1.	Bhusha/month	20 qtl.	180/Qtl.	3600.00
2.	Green fodder/Concentrate feed etc.	6 kg. buffalo & 4 Kg./Cow Appro 1000kg.	10 kg	10000.00
	TOTAL			13600.00

Workers & Labours

Skilled Labour @ Rs. 185/day	5550.00
Helper 02 @ Rs. 100/day	2600.00
Total	8150.00

5. Other Expenditure/month

Rent	2000.00
Postage/Stationary/phone	500.00
T.A./Transportation	2000.00
Insurance	1200.00

Administrative Exp. 1200.00

Total 6900.00

6. Capital Required/month

Raw Material 13600.00

Worker & Labour 8150.00

Other Exp. 6900.00

Total 28650.00

Total Project cost

Livestock & Machinery Tools 159500.00

Running Capital 28650.00

Total 188150.00

Assumed Profit

Particulars	Quantity	Rate	Amount (Rs.)
Milk Sale (peak)	9000 Ltr.	15/Ltr	135000.00
Dry spell	4500 Ltr.	15/Ltr.	67500.00
	Total		202500.00

Small Poultry UNIT

1. Capital Investment

• Broiler House Tubelar Structure Approximately 1000 sq. feet @ Rs. 100/sq. feet	100000.00
• Broiler apparatu Adult feeder 25 Nos. @ 250/No.	6250.00
Chick feeder 25 Nos. @ 75/No	1875.00
• Brooder Automatic 03 Nos. @ Rs. 1250/No	3750.00
• Electric fitting etc.	7500.00
Total	119375.00

2. Working Capital

• 1000 Chicks one day old @ 12/chick	12000.00
• Balanced Broiler feed for 45 days @ 2.5 gm/chick Rs. 6.00/Kg	15000.00
• Poultry LITER (wooden powder)	2500.00
• Medicines	2000.00
• Transport	1000.00
• Working staff 7 Labour	5500.00
• Other exp.	5000.00
Total	43000.00

Total Unit Cost

• Capital Investment	119375.00
• Working Capital	43000.00
Total	162375.00

Returns

• Broiler 1000 birds (Live weight 1.30 kg) @ Rs. 70/Bird	70000.00
• Poultry Manure	1500.00
• Feed Blank Gunny Bags	2500.00

Total

74000.00

Total Five Crops will made in a year, so Net Return

370000.00

Seed Production and Seed Bank

Existing Problem: seed replacement

S. No.	Particulars	Analysis of Problem	
1.	Quality of seed	Very Poor	Low yield o Crops
2.	Availability of Seed	Untimely	Effec the Yield of crops
3.	Seed Rate (at the time of sowing)	Higher 1.5 to 2.0 times then recommendation	Money loss
4.	Productivity	Very Low	Lack of awareness about seed nd ICM
5.	Replacement rate of seed	Nil	Low Productivity

Objectives:

- To improve the quality of uncertified seed (farmer's seed) or truthfull seed at village level.
- To increase the production and productivity.
- To create awareness among the farmers about quality seed, seed rate and method of sowing.
- To generate employment for unemployed rural youth.
- To save grain for extra use and income.
- Multiplication of seed of newly released varieties suitable for microelimate.

Work Plan:

- Formation of Advisory committees.
- Selection of farmers for seed production in groups.
- Selection of land according to crops requirement.
- Arrangement of seed before the main season from different universities/states.
- Field visit of farmers for truthful seed and for certification by certified agencies.
- Marketing of seed by groups or e-marketing.

S.No.	Crop	Required seed (Qt./ha)	Productivity Qt/ha.	Area sown (ha)	Required seed Qt.
1.	Durum wheat	1.00	18.00	40	40.00
2.	Lentil	0.60	11.00	20	12.00
3.	Urd	0.50	4.00	10	5.00
4.	Moong	.050	4.00	10	5.00

Input Required

S.No.	Crop	Required seed (in Qtl.)	Approximately Rate of seed (Rs./Qtl.)	Amount (Rs.)
1.	Durum wheat	40.00	2500	100000
2.	Lentil	12.00	6000	72000
3.	Urd	5.00	5500	27500
4.	Moong	5.00	5600	28000
	TOTAL			227500

Cost of cultivation:

From sowing to harvesting all activities should be done by the individual farmer under the self help group.

Drying, Sorting and Cleaning at village level:

10 Labour @ Rs. 100 for one day for each crop for one ha produce for wheat

5 Labour @ Rs. 100 for one day for each crop for one ha produce for pulses

Crop	Area (ha)	Labour for one ha.	Amount
Durum Wheat	40.00	1000	40000.00
Lentil	12.00	500	6000.00
Urd	5.00	500	2500.00
Moong	5.00	500	2500.00
TOTAL	62.00		51000.00

Registration fees @ rs. 450/ha	45900.00
Packaging (hand sieving machine)	5500.00
Jute Bags (Bag of 40 kg total no 2230	33450.00
Transport Services Charges etc.	15000.00
TOTAL	99850.00

Income from one Unit & Area Expansion with good productivity

S.No.	Crop	Production	Rate/Qtl.	Total Amount	Area can be sown
1.	Durum Wheat	720	2000	1440000	720
2.	Lentil	132	4500	594000	220
3.	Urd	20	4000	80000	40
4.	Moong	20	4200	84000	40
	Total	892		2198000	1020

- At least 2 units will be established in the whole cluster of watershed by the self help groups.
- Interested SHGs will be preferred and village community work for seed bank and deposit seeds for higher production and increasing the area of the watershed under the cluster approach.
- The production from seed production unit will be used as seed bank by SHGs and other villagers of productivity enhancement The SHGs will get money from other farmers on behalf of their seed and the benefited farmers will make an oath to spread these seed for higher productivity in the watershed to other farmers.

Outcomes from seed production & seed bank programme:

S. No.	Crop	Production	Total Amount (Rs.)	Two unit in cluster	Area can be sown (ha)
1	Durum Wheat	720	1440000	2880000	1440
2	Lentil	132	594000	1188000	440
3	Urd	20	80000	160000	80
4	Moong	20	84000	168000	80
	Total	1784	2198000	4396000	2080

It is very clear from the production of seed and their bank which will run in participatory mode in the watershed.

Estimate for development of agro forestry system (100 trees/ha)

Aula (100 trees/ha)

S. No.	ITEM	Cost/unit (Rs.)	Amount (Rs/ha)
1	Digging of pits of 0.75 x 0.75 x 0.75 m ³	25.00	2500.00
2.	Average of cost of planting material	20.00	2000.00
3.	Carriage charges from nursery to the planting site	2.50	250.00
4.	Cost of planting + 1 st watering	4.00 per plant	400.00
5.	Cost of raising agricultural crops @ rs. 15000.00 ha ⁻¹ Yr ⁻¹	15000.00	15000.00
6	Miscellaneous	Lump sump	2000.00
	TOTAL		22150.00

Guava (100 trees/ha)

S. No.	ITEM	Cost/unit (Rs.)	Amount (Rs/ha)
1	Digging of pits of 0.75 x 0.75 x 0.75 m ³	25.00	2500.00
2.	Average of cost of planting material	15.00	1500.00
3.	Carriage charges from nursery to the planting site	2.50	250.00
4.	Cost of planting + 1 st watering	4.00 per plant	400.00
5.	Cost of raising agricultural crops @ rs. 15000.00	15000.00	15000.00

	ha ⁻¹ Yr ⁻¹		
6	Miscellaneous	Lump sump	2000.00
	TOTAL		21650.00

Lemon (150 trees/ha)

S. No.	ITEM	Cost/unit (Rs.)	Amount (Rs/ha)
1	Digging of pits of 0.75 x 0.75 x 0.75 m ³	25.00	3750.00
2.	Average of cost of planting material	7.00	1050.00
3.	Carriage charges from nursery to the planting site	2.50	375.00
4.	Cost of planting + 1 st watering	4.00 per plant	600.00
5.	Cost of raising agricultural crops @ rs. 15000.00 ha ⁻¹ Yr ⁻¹	15000.00	15000.00
6	Miscellaneous	Lump sump	2500.00
	TOTAL		23275.00

Beal (100 trees/ha)

S. No.	ITEM	Cost/unit (Rs.)	Amount (Rs/ha)
1	Digging of pits of 0.75 x 0.75 x 0.75 m ³	25.00	2500.00
2.	Average of cost of planting material	10.00	1000.00

3.	Carriage charges from nursery to the planting site	2.50	250.00
4.	Cost of planting + 1 st watering	4.00 per plant	400.00
5.	Cost of raising agricultural crops @ rs. 15000.00 ha ⁻¹ Yr ⁻¹	15000.00	15000.00
6	Miscellaneous	Lump sump	2000.00
	TOTAL		21150.00

Ber (150 trees/ha)

S. No.	ITEM	Cost/unit (Rs.)	Amount (Rs/ha)
1	Digging of pits of 0.75 x 0.75 x 0.75 m ³	25.00	3750.00
2.	Average of cost of planting material	7.00	1500.00
3.	Carriage charges from nursery to the planting site	2.50	375.00
4.	Cost of planting + 1 st watering	4.00 per plant	600.00
5.	Cost of raising agricultural crops @ rs. 15000.00 ha ⁻¹ Yr ⁻¹	15000.00	15000.00
6	Miscellaneous	Lump sump	2500.00
	TOTAL		23725.00

DEMONSTRATION OF WHEAT

- 1- Variety recommended for District-LALITPUR
 Irrigated-RR-21
 Unirrigated –HD2285, K68
- 2- Seed rate -100 -125 Kg/hectare
- 3- Requirement of fertilizers/ha N-125 Kg, P-70-75 Kg, K-70-75 Kg

ESTIMATE OF DEMONSTRATION OF WHEAT IN WATERSHED (PER ha)

S.No.	Particulars	Quantity	Rate	Amount	Remark
1	Tillage operation or preparation of field for sowing	1.0ha	1000.00/ha	1000.00	Since the project is to be operated in a participatory Mode, contribution in form of the tillage, sowing, irrigation and harvesting done by farmer is not included in the estimates
2	Cost of seed	100.00kg	18.00/kg	1800.00	
3	Sowing by seed drill	1.0ha	1000.00/ha	1000.00	
4	D.A.P. 18:46	160kg	573.00/ 50 kg	1833.60	
5	Urea	210kg	270.00/ 50 kg	1134.00	
6	Potash(M.O.P.)	150kg	300.00/50kg	900.00	
7	Irrigation(three irrigation)	1.00ha	650.00/ha	650.00	
8	Harvesting	1.00ha	2000.00/ha	2000.00	
Total				10317.60	
Say				10318.00	

Hence demonstration cost of wheat /ha is Rs. 10318.00

DEMONSTRATION OF ARHAR IN WATERSHED AREA(PER ha)

- 1- Variety - Malviya-13, narendra-1, Amar
- 2- Seed rate/ha -30 kg
- 3- Requirement of fertilizers/ha N-20.0 kg, P-50 kg, K-40 kg

ESTIMATE FOR DEMONSTRATION OF ARHAR (PER ha)

S.No.	Particulars	Quantity	Rate	Amount	Remark
1	Tillage operation in preparation of field and seed sowing	1.0ha	1000.00/ha	2000.00	Since the project is to be operated in participatory Mode, contribution by the farmer in the form of tillage, operation, sowing and harvesting provided by participating farmers, hence this cost is not included in the estimates.
2	Cost of seed	30.0kg	120.00/kg	3600.00	
3	Nitrogen N.P.K 16:32:16	190.0kg	470.00/50kg	1786.00	
4	Urea	-	-	-	
5	M.O.P.	-	-	-	
6	Harvesting	1.00 ha	650.00	650.00	
7	Medicine	1.00 ha	Lump sum	1000.00	
Total				9036.00	
Say				Rs. 9036.00	

Hence per hectare of demonstration –Rs. 9036.00

DEMONSTRATION OF HYBRID BAJRA IN WATERSHES (per ha)

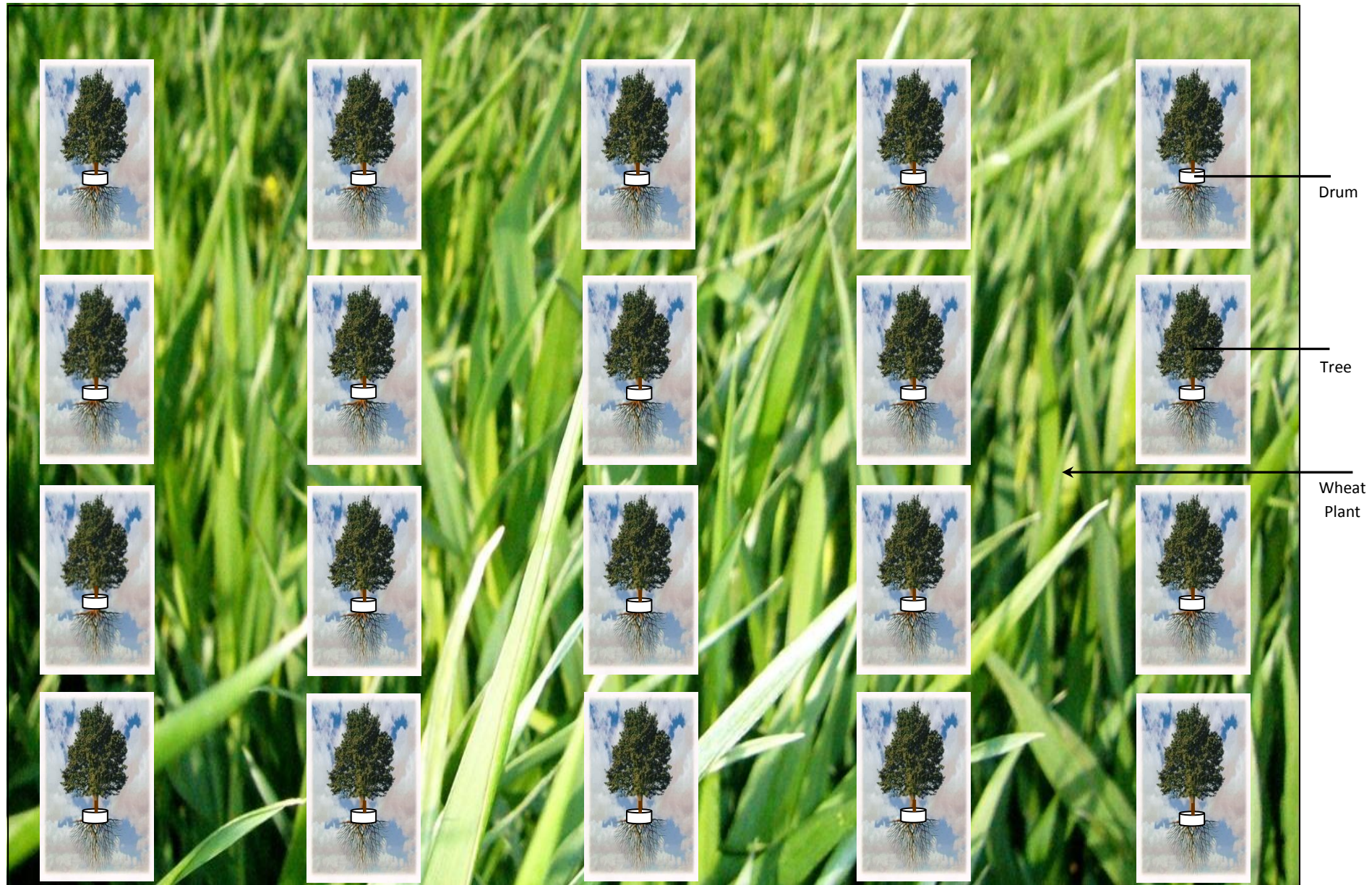
- 1- Requirement of Seed / ha -10kg
- 2- Requirement of fertilizers/ ha N- 60.00 kg, P- 40.00 kg, K-40.00 kg
- 3-

ESTIMATE FOR DEMONSTRATION OF BAJRA (per ha) RAINFED

S.No.	Particulars	Quantity	Rate	Amount	Remark
1	Tillage operation in preparation of field and for sowing	1.0ha	1000.00/ha	2000.00	Since the project is to be operated in participatory Mode, contribution of tillage operation, and harvesting cost
2	Cost of seed	10.0kg	130.00/kg	1300.00	
3	Nitrogen N.P.K 16:32:16	125.0kg	470.00/50kg	1175.00	
4	Urea	90kg	270.00/50 kg	486.00	
5	M.O.P.	40kg	300.00/50kg	240.00	
6	Harvesting	1.00Ha	650.00/ha	600.00	
Total				5801.00	
Say				Rs. 5800.00	

Hence per hectare of demonstration of Bajra is Rs. 5800.00/ha

DEMONSTRATION OF AGRO-FORESTRY / HORTICULTURE



DEMONSTRATION OF AGRO-HORTICULTURE USING PLASTIC DRUM OF 200 LITRES CAPACITY

District LALITPUR is situated in Eastern U.P., where there is water problem and in summer temperature rises up to 48°C causing upper layer of fields dry and therefore mortality rate of plants is very high. Farmers usually like to grow grain crops only. They are not interested in horticulture because of Anna Pratha and less holding. The production of crops decreases below the tree.

Therefore to promote horticulture with crops a demonstration model using plastic drums for horticulture is made. Mainly crops roots go in to the soil up to “4-5” in cereal crops and “6-9” in pulses. Using plastic drums the plants will be planted 50-60 cm below the ground level which is below the root zone of crops. Therefore trees will not be able to take nutrients from upper layer of fields and there will be no effect of plants on crops.

In summer season up to 1 to 1.50m depth of soil becomes dry causes more mortality rate of plants, using drums plants are planted below 50-60 from Ground level and in rainy and winter season up to February roots of plants go below 2.10m below where moisture will be available and plants will be safe in summer also. Using barbed wire fencing the plants will be protected by Anna Pratha.

Therefore, it is hoped that farmers will adapt this procedure for Agro-forestry and will become prosperous.

DETAIL ESTIMATE OF DEMONSTRATION OF HORTICULTURE AND MIXED CROPPING

For 1.00 Hectare

S.No.	Description of Work	No.	L.	B.	D./H.	Quantity
1.	Earth work in cutting	156	3.14 x 1.20	-	1.35	793.54
	Trench	156	1.50	0.75	0.75	131.62
	Fencing Poll	133	0.20	0.20	0.20	1.064
	Total					926.22 cum
2.	Farm yard manure	156x10				1560 kg
3.	Filling of earth work with farm yard manure	156	3.14 x 1.00	-	1.20	587.80 cum
4.	C.C.W. 1:2:4 for fencing poll	133	0.20	0.20	0.20	1.064 cum
5.	Angle iron for poll	133	1.80	-	-	239.40 m
6.	Barbed wire	3	400	-	-	1200.00 m
7.	Plants	156	-	-	-	156 nos.
8.	Plastic drums (200 litre)	156	-	-	-	156 nos.

CONSUMPTION OF MATERIALS

S.No.	Description of Work	Quantity	Farmyard Manure (kg)	Cement Bags (nos)	Coarse Sand (cum)	G.S.Grit 10-20 mm	Angle Iron (m)	Barbed Wire (kg)	Planting Drum (nos)
1.	C.C.W. 1:2:4	1.064 cum	-	6.49	0.446	0.883	-	-	-
2.	Angle iron	239.4 m	-	-	-	-	239.40	-	-
3.	Barbed wire	1200.0 m	-	-	-	-	-	1200.0	-
4.	Farmyard manure	1560.0 kg	1560 kg	-	-	-	-	-	-
5.	Plastic drum	156 nos.	-	-	-	-	-	-	156
Total			1560.0 kg	6.49	0.446	0.883	239.40	1200.0	156
Say			1560.0 kg	6.50 bags	0.450 cum	0.900 cum	239.40	1200.0 m	156

COST OF MATERIALS

S.No.	Particulars	Quantity	Rate	Amount
1.	Farm yard manure	1560.0 kg	10.00/kg	15600.00
2.	Barbed wire	1200.0 m/120.0 kg	60.50/kg	7260.00
3.	Angle iron	239.40 m/785 kg	40.50/kg	31792.50
4.	Plastic drum	156 nos	690.00 each	107640.00
5.	Cement	6.50 bags	285.00/bag	1852.50
6.	Coarse sand	0.450 cum	2500.00/cum	1125.00
7.	G.S.Grit 10-20 mm	0.900 cum	1250.00/cum	1125.00
8.	Plants	156 nos	18.00 each	2808.00
Total				Rs. 1,69203.50

LABOUR CHARGES

S.No.	Particulars	Quantity	Rate	Amount
1.	Earth work	1514.02 cum	36.66/cum	55503.97
2.	C.C.W. 1:2:4	1.064 cum	492.00/cum	523.88
3.	Fixing of angle iron	10 Man Days	100/Man Day	1000.00
4.	Fixing of barbed wire	15 Man Days	100/Man Day	1500.00
Total				Rs. 58,527.85

Total Expenditure	
1. Cost of materials	1,69,203.50
2. Labour Charges	58,527.85
Total	Rs. 2,27,730.35
Say	Rs. 2,27,730.00 only

DEMONSTRATION OF GREEN MANURING

Green Manuring is very useful but due to sowing of Kharif season crop, lack of suitable type of seeds, and limitation of moisture, it is not widely practiced. Green Manuring brings immediate advantage because of its quick decomposition where as FYM and compost improves the soil physical condition in the long-run. Benefits of Green Manuring accrue from substitution of chemical fertilizers, enhance soil biological activities and erosion control due to vegetative cover.

Sesbania Species (Dhaincha) and *Crotolaria Juneea* (Sunhemper Sanai) are most common green manure crops. They accumulate about 100 kg N/ha in their biomass and 64-88% of this is derived from atmosphere. Apart from direct benefit of green Manuring as a source of nutrients and organic matter, it has the capacity to mobilize soil phosphorus and other nutrients. It also helps in reclamation of problem of soil, e.g., *Sesbania* helps in removing exchangeable sodium and reclamation of salt affected soils.

In I.W.M.P. Ist Project, efforts will be made to oblige the farmers for Green Manuring.

A typical estimate is made for Green Manuring is given below:

ESTIMATE FOR GREEN MANURING IN THE WATERSHED (PER ha)

S.No.	Particulars	Rate	Cost	Remark
1	Seed of Sesbania (Dhaincha)25Kg/ha	25.00/Kg	625	Since the project is to be operated in a participatory mode, contribution in the form of tillage will be done by farmers is not included in the estimate.
2	Tillage operation before sowing and to plough the plants of Dhaincha after 40-45 days of sowing for Green Manuring.	1000/ha Before and after saring	2000.00	
Total			Rs. 625.00	

Therefore cost per hectare of Green Manuring is Rs. 625.00/ha

CHAPTER -12

MAPS

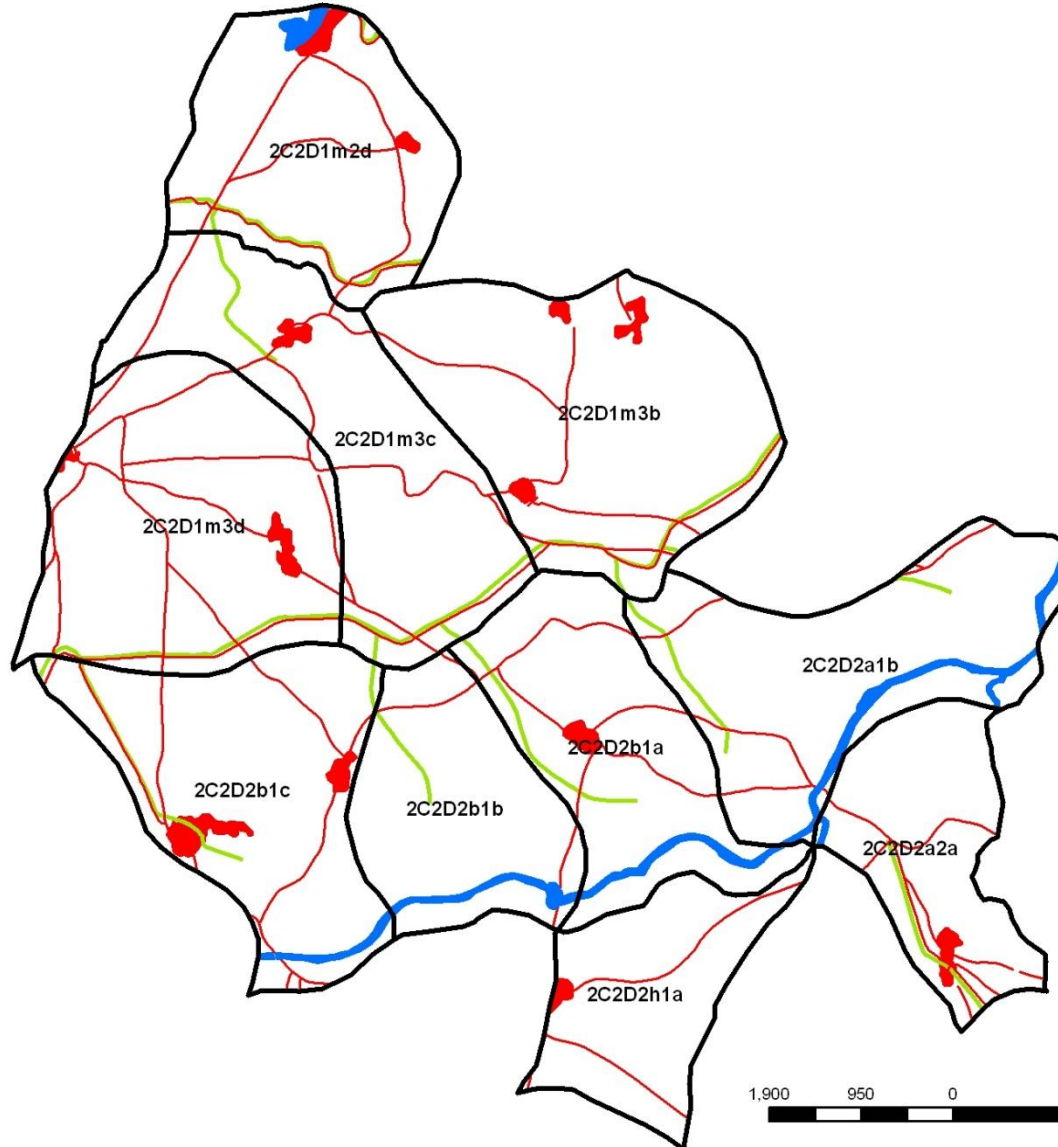
MAPS

An attempt has been to map the surface details of the project area, as per the instruction of the common Guide lines-2008, All the thematic maps of the study area have been prepared through using remote sensing and geographical information system(G.I.S.) technique, following the fundamental norms of the National Map Policy-2006. The details of the thematic maps have been given below.

- 1- Base map
- 2- Transportation map
- 3- Drainage map
- 4- Land use/ Land cover map
- 5- Contour map
- 6- Slope map.
- 7- Soil Depth map.
- 8- Soil Erosion map.
- 9- Village Boundry map.

These maps were interpreted from the high resolution satellite data freely available on internet.

BASE MAP OF THE PROJECT AREA
IWMP - X(2010-11), DISTRICT - LALITPUR

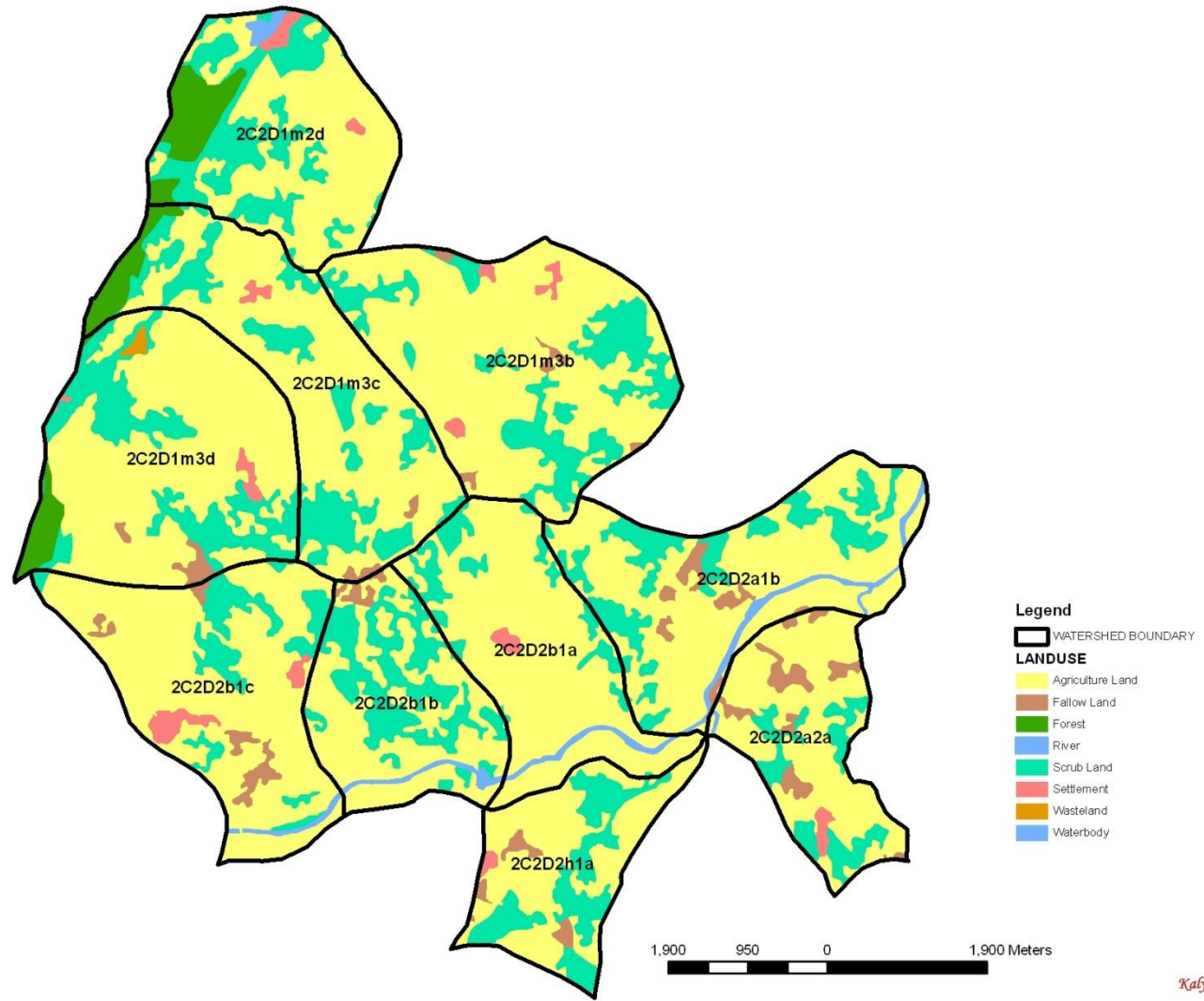


Legend

- WATERSHED BOUNDARY
- River/Waterbody
- Road
- Canal
- Settlements



LANDUSE/LANDCOVER MAP OF THE PROJECT AREA
IWMP - X(2010-11), DISTRICT - LALITPUR

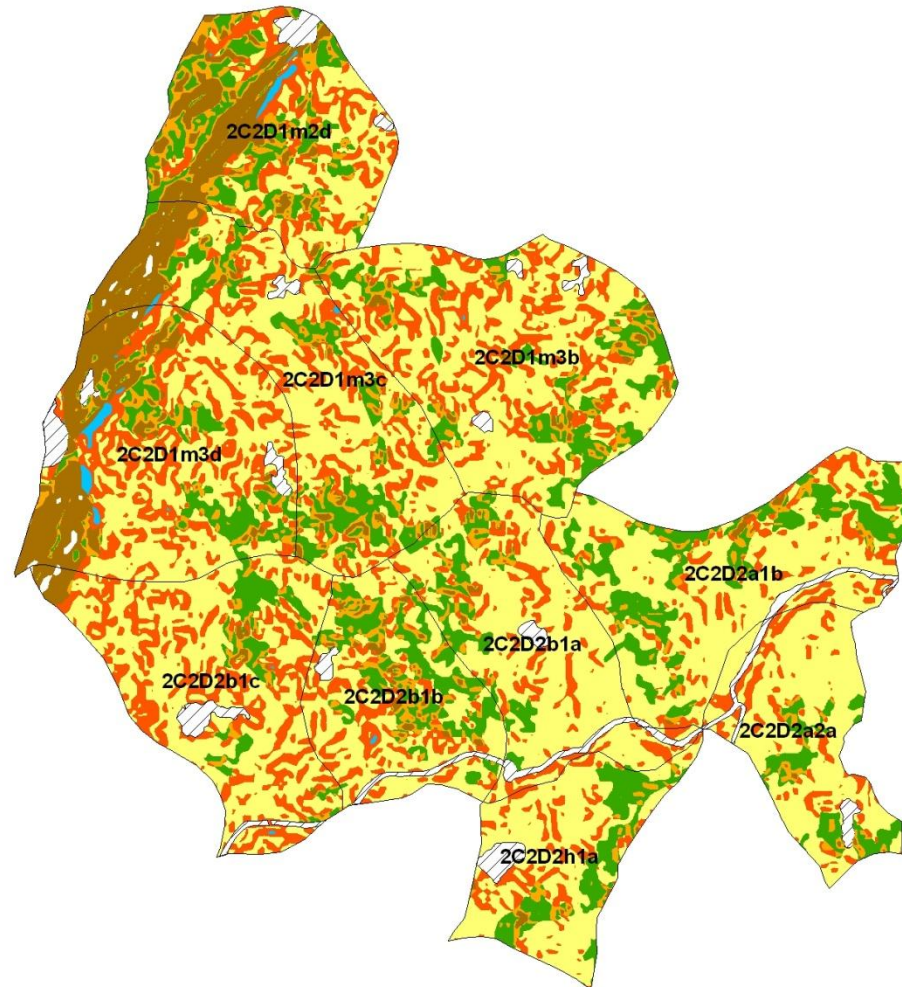


- Legend**
- WATERSHED BOUNDARY
 - LANDUSE**
 - Agriculture Land
 - Fallow Land
 - Forest
 - River
 - Scrub Land
 - Settlement
 - Wasteland
 - Waterbody

1,900 950 0 1,900 Meters

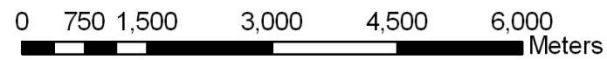


LAND CAPABILITY MAP OF THE PROJECT AREA IWMP - X (2010 - 11), DISTRICT - LALITPUR

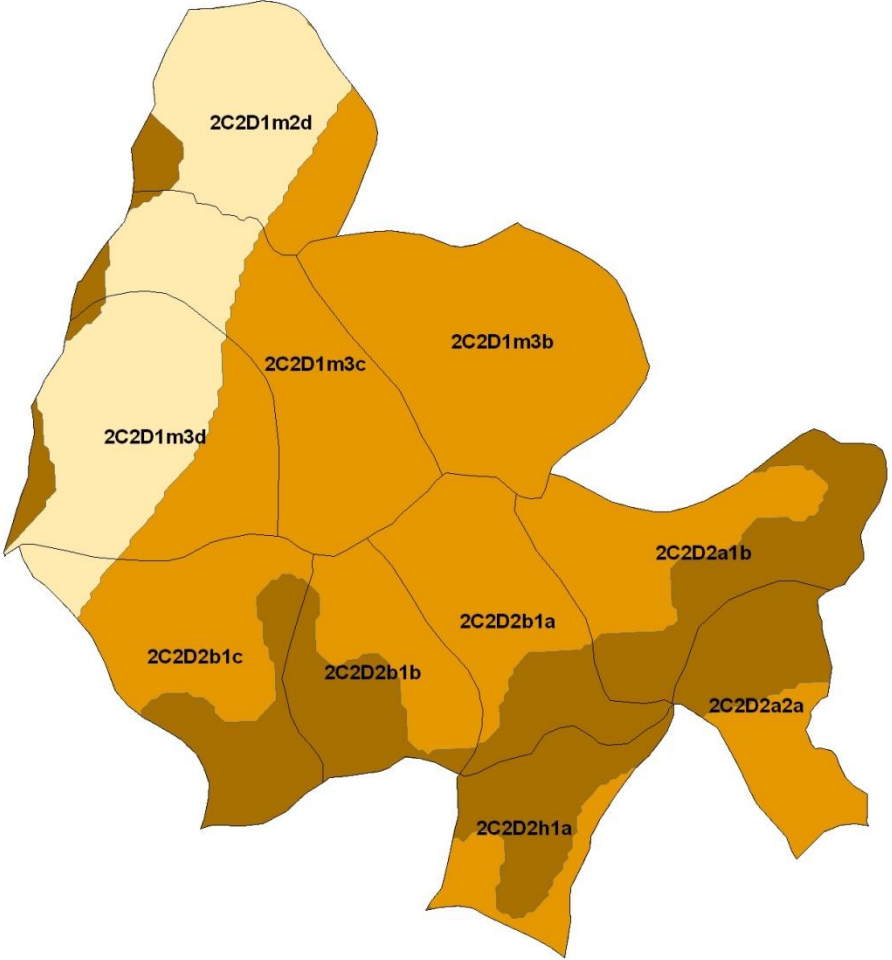


Legend

-  Micro Watershed Boundry
- Land Capability Class**
-  YELLOW - II_s/II_w
-  RED - III_s/III_w
-  BLUE - IV_e
-  DARK GREEN - V
-  ORANGE - VI
-  BROWN - VII
-  SETTLEMENT/RIVER/WATERBODY

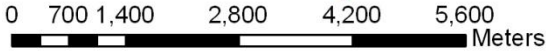


**SOIL DEPTH MAP OF THE PROJECT AREA
IWMP - X (2010 - 11), DISTRICT - LALITPUR**



Legend

-  Micro Watershed Boundry
-  Shallow
-  Moderately Shallow
-  Moderately Deep



SOIL EROSION MAP OF THE PROJECT AREA IWMP - X (2010 - 11), DISTRICT - LALITPUR



Legend

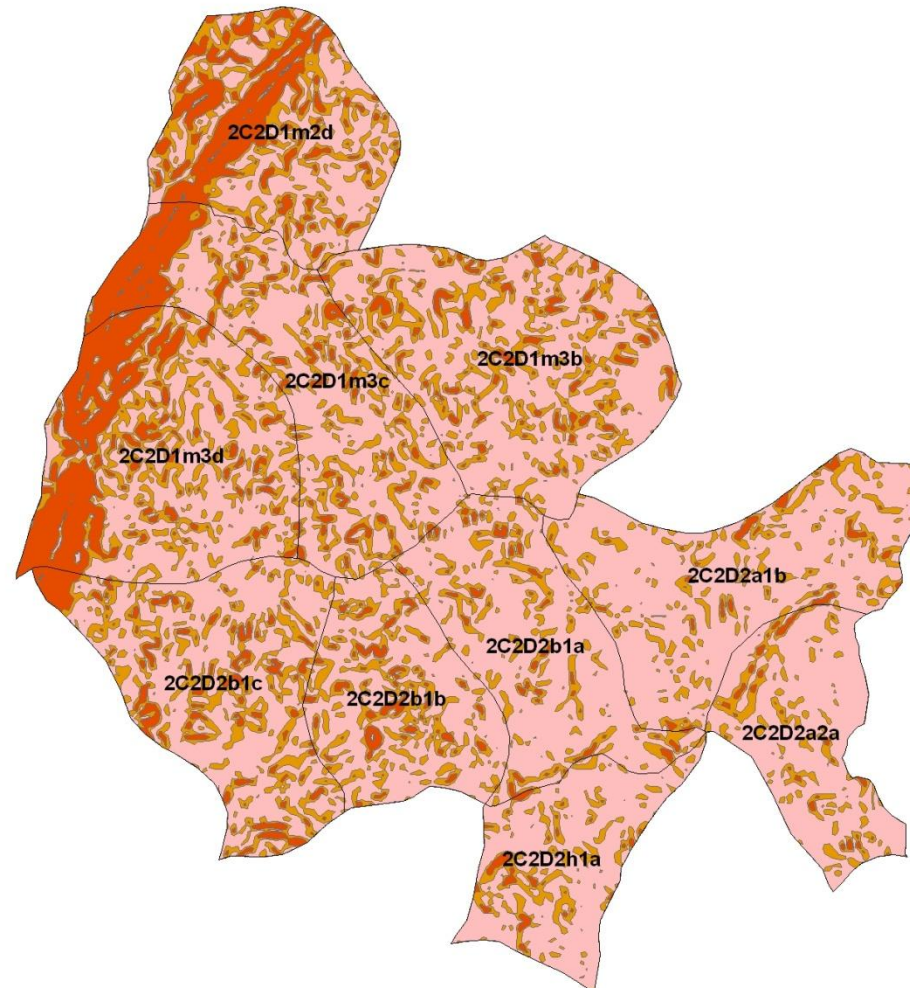
 Micro Watershed Boundry

Soil Erosion

 Slight

 Moderate

 Severe



0 750 1,500 3,000 4,500 6,000 Meters



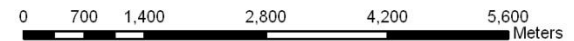
Kalyani Geomatics

TOPOGRAPHIC CONTOUR MAP OF THE PROJECT AREA IWMP- X (2010 - 11), DISTRICT - LALITPUR



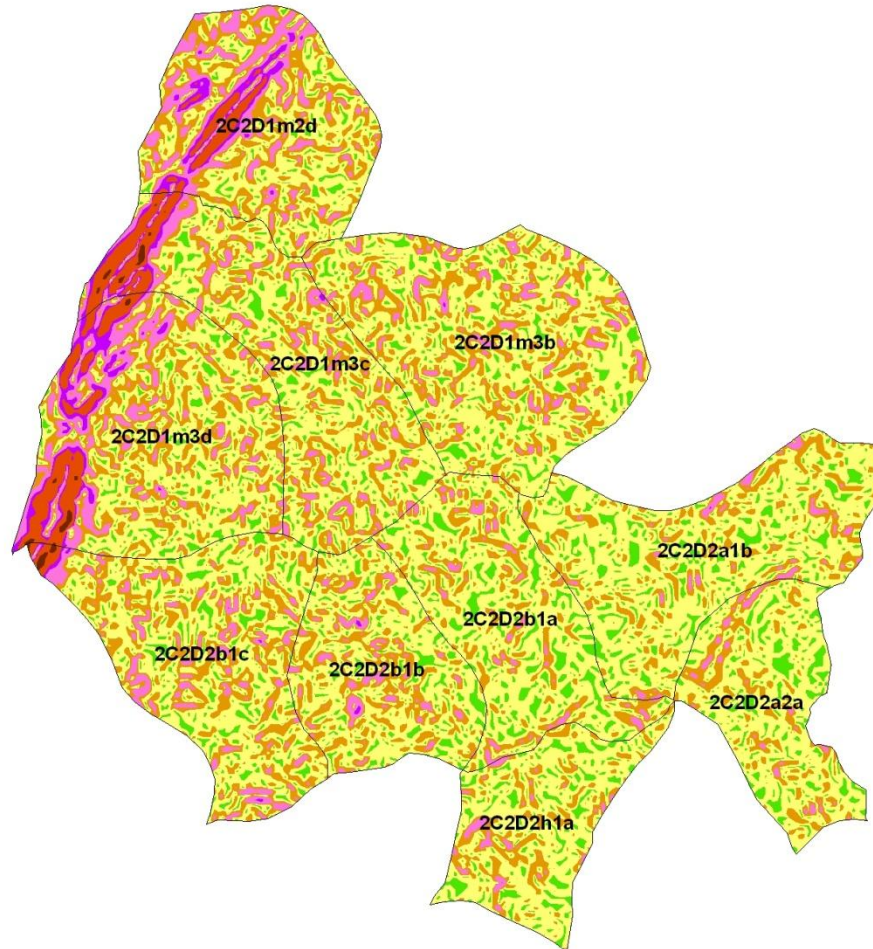
Legend

- Watershed Boundry
- Contour at 5 m interval



Kalyani Geomatics

SLOPE MAP OF THE PROJECT AREA IWMP - X (2010 - 11), DISTRICT - LALITPUR

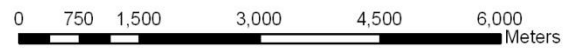


Legend

□ Watershed Boundry

Slope Classes

- 0 % to 1% (Nearly Level)
- 1 % to 3% (Very gently sloping)
- 3 % to 5 % (Gently sloping)
- 5 % to 10 % (Moderate sloping)
- 10 % to 15 % (Strong sloping)
- 15 % to 35 % (Moderate steep to steep sloping)
- > 35 % (Very steep sloping)



Kalyani Geomatics

CHAPTER -13

ABBREVIATIONS/REFERENCES

LIST OF ABBRIVIATIONS/REFERENCES

DOLR	Department of Land Resources
IWMP	Integrated Watershed Management Programme
SLNA	State Level Nodal Agency
CGL	Common Guidelines
PIA	Project Implementing Agency
BSA	Bhoomi Sangrakshan Adhikari
WDT	Watershed Development Team
WC	Watershed Committee
UC	User Group
SHG	Self Help Group
CB	Countour Bund
MB	Marginal Bund
PFB	Peripheral Bund

REFERENCES

- Common Guideline of watershed development-2008.
- Jila Sankhikiya Patrika
- Census 2001
- www.lalitpur.nic.in

Preparation of DPR

Detail Project Report of Integrated Watershed Management Programme IWMP-X had been prepared through base line/ bench Mark survey for physiography climate, soil, land use, vegetation, and hydrology and socio economic data analysis. PRA have been exercised to collect primary data, secondary data have been collected from Revenue, Statistics department, Statistical Magazine of the district, LALITPUR, Topo sheet (1 : 50000) survey of India- Deheradoon and technical & specific input and health with preparation and drafting of detail project report.

S.No.	Name	Designation
1	Sri A.K. Srivastava	Ex. Scientist, RSAC-UP, Lucknow
2	Sri Laxman Singh	LandUse/GIS Expert
3	Km Sunita	GIS Expert
4	Km. Ashanvi Dubey	GIS Expert
5	Sri. R.K. Singh	System In-charge
6	Sri C. D, Ram	BSA
7	Sri Raja Ram Rajput	JE
8	Sri M. P. Yadav	JE
9	Sri Rajendra Prasad Panday	Accountant
10	Sri Dharam Pal Singh	Senior Clerk
11	Sri Pramod Kumer Singh	Junior clerk
12	Sri Shyam Lal Saroj	ASCI
13	Sri Raj bali Singh Yadav	ASCI
14	Sri Santosh Kumar Sigh	Seench Parvekshak
15	Sri Ram Dhani Ram	Seench Parvekshak
16	Sri Nitya Nand Srivastava	Seench Parvekshak
17	Sri Santosh Kumar srivastava	Seench Parvekshak
18	Sri Azaz ahmad	Seench Pal
19	Sri Pradeep Kumar Singh	Seench Pal
20	Sri Gyan shankar Mishra	Treasure
21	Sri Vinod Kumar singh	Fourth Class
22	Sri Ram Dev Pal	''
23	Sri sanjay Kumar Singh Yadav	''
24	Sri Manoj	''