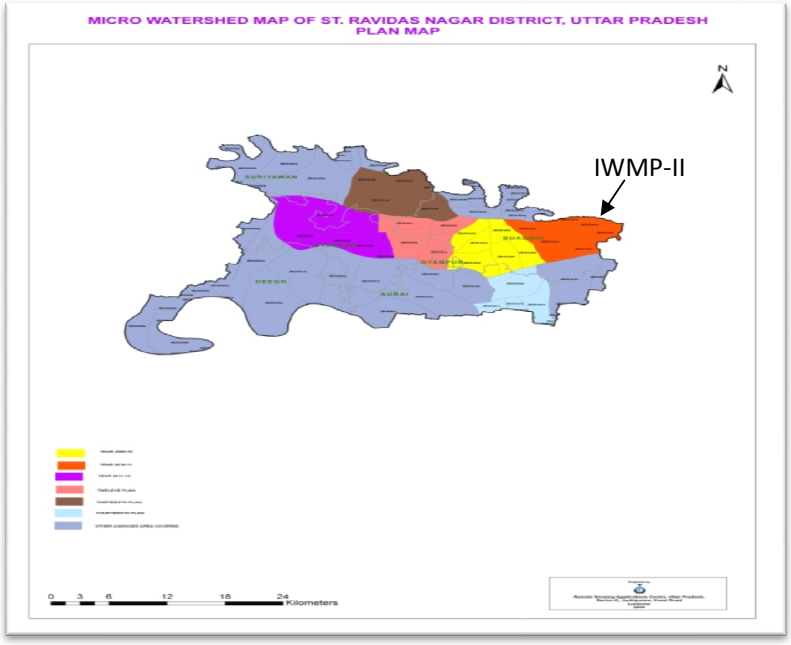
TABLE OF CONTENTS

IWMP-II (2010-11) DISTRICT – ST. RAVIDAS NAGAR

PROJECT AT A GLANCE

Name of the project	Weigh -tage	No.of MWS	Geographial Area (ha)	Rainfed Area (ha)	Treatable area (ha)
I.W.M.P. II	100	6	6310.00	4565.00	4278.00



1.	Name of Block	**BHADOHI**
2.	No. of Gram Panchayats	23
3.	Four reasons for selection of Watershed	i. Major % of SC ii. Actual wages are significantly lower than minimum wages. iii. More than 80% small and margina farmers. iv. Above 5 micro watersheds in cluster
4.	Date of approval of watershed Development Plan by DRDA/DPC	
5.	Area proposed to be treated (ha.)	4278.00
6.	Date of sanction of PPR & Date of release of Ist Instalment	10-03-2010 & 15-06-2010
7.	Project duration	2010-2011 to 2014-2015
8.	Project Cost (in lac.)	**513.36**
9.	Proposed mandays	**250000**

EXECUTIVE SUMMARY

1. Breif about area

Food security and enhanced farm income is the supreme national mission for any government in the country beset with the problem of burgeoning human population and constrained productivity of the agriculture lands due to gradually depleting ground water resources, soil degradation, denudation & degradation of forestlands, etc. and resultant perpetuation of the vicious cycle of poverty-degradation.. About 60% net sown area in India is rainfed, risky, complex, diverse, fragile, under-invested and highly vulnerable to climate change and contributes 40% to the food-grain production and support 40% population. The average food-grain productivity of predominantly irrigated States is about 3 tonnes per ha compared to about 1 tonne per ha under rainfed conditions. Productivity of 100% grazing and forest lands and raindependent80% area under fruits is also low.

The Indo-gangetic plains of U.P. have undergone stress for natural resources, which are witnessing degradation at an alarming rate. The watershed approach has conventionally aimed at treating degraded lands with the help of low cost and locality accessed technologies such as in-situ soil and moisture conservation measures, afforestation etc. and through a participatory approach that seeks to secure close involvement of the user communities

The Study has been carried out villages namely – Ahopur, Araji Amani, Chauri Danu Patti, ChaurinipurPatti, Gopalpur, Narpatpur, Udhopur, Amawa kala, Arajidibui, Bardha, Chakbasawan, Hari Chandanpur, Maihardo Patti, Manjhilapur, Parsottampur Z Bargaom, Rajputan z raveli, Jabupur z bahari, Jhuri Sonbarsa, Lacchapur,Lohchanda, Manapur, Chak Bhuidhar, Chandaipur or Chanaipur, Chauri Khas, Kolahd, Narharpur, Parsotampur Patti, Bhagwanpur Kunhari, Horila, Kantapur, Kataldeeh, Raghupur, Sewapur or Senabodpura, Chak Muglai, Daraunha, Govindpur, Chandi Gahana, Surhan, Gouda chamar hatta of Bhadohi block of Sant Ravidas Nagar district of Uttar Pradesh. . The watershed is located along, Bhadohi - Gyanpur Road, about 12 Km from the district Head quarter. It lies between the longitude of 82^0 35′ 20″ to 82^0 42' 51″ and latitudes 25^0 19′ 27″ to $25^0$23′56″, having watershed code no 2B3A3a1a, 2B3A3a1c, 2B3A3a1d, 2B3A3a1e, 2B3A1f3a, 2B3A1f3b. Its altitude ranges from 74 to 94 m above mean sea Level (MSL). The total area of watershed is 6310.00 Ha.

The climate of the region is characterized as semi-arid with average annual rainfall less than 988 mm annually, out of which about 90 percent is received during the monsoon season from July to September. Temperature ranges from very high as 45ºC in the May-June to as low as 5.1^{0}C during December-January. The trend of rainfall is highly erratic and maximum (62%) water goes as runoff. The soils are mainly sandy, loamy and clayey.

Agriculture is the main source of income of the farmers of the watershed. Kharif is the main crop consist of Sugarcane, Arhar, Paddy and Maize, In Rabi crop mainly Wheat, Mustered and Gram are main crop.

2. Institutional arrangement

This watershed has been identified by the state department under NWDPRA 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 St. Ravidas Nagar for integrated watershed management programme (IWMP) starting from the year 2010-11. The project will be completed by 2014-15.

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 certaine measures like contour bund, marginal bunds, 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 propsed 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.

4. Physical target and Financial outlays

YEAR WISE PHASING (PHYSICAL & FINANCIAL) OF I.W.M.P. II SANT RAVIDAS NAGAR (U.P.)

Area-Ha & Rs. In Lakh

Sl. No.	**Item**	**1st Year (**2010-11)		**IInd Year (**2011-12)		**IIIrd Year (**2012-13)		**1Vth Year** (2013-14)		**Vth Year (**2014-15		**Total**	
		Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy	Fin.	Phy.	Fin.	Phy
1	Administrative 10%		-	10.27	-	10.27	-	15.40	-	15.40	-	51.336	-
2	Monitoring 1%	-	-	1.03	-	1.03	-	1.54	-	1.54	-	5.134	-
3	Evaluation 1%	-	-	1.54	-	1.54	-	1.54	-	0.51	-	5.134	-
4	Entry Point Activity 4%	20.53	-	-	-	-	-	-	-	-	-	20.534	-
5	Institutional and Capacity building 5%	5.13	-	10.27	-	10.27	-	-	-	-	-	25.668	-
6	D.P.R Preparation 1%	5.13	-	-	-	-	-	-	-	-	-	5.134	-
7	Watershed Dev. Works 50%	-	-	38.50	-	77.00	-	77.00	-	64.17		256.680	-
8	Livelihood & Income Generating 10%		-	5.13	-	20.53	-	15.40	-	10.27	-	51.336	-
9	Production System development 13%	-	-	5.13	-	15.40	-	25.67	-	20.53	-	66.737	-
10	Consolidation Phase 5%	-	-	-	-	-	-	-	-	25.668	-	25.668	-
	Total	**30.79**		**71.87**		**136.04**		**136.55**		**138.088**	**-**	**513.36**	**-**

RESOURCE CONSERVATION AND WATER MANAGEMENT IN BAMA & BISUHI WATERSHED, BLOCK – BHADOHI, DISTRICT SANT RAVIDAS NAGAR (U.P.)

Budget for the various components is given below (I.W.M.P.- II, SANT RAVIDAS NAGAR)

S. No.	Budget Component	Total (Lakhs)
A	**1. Administrative**	51.336
	2. Monitoring	5.133
	3. Evaluation	5.133
B	**Preparatory Phases**	
	Entry point activities,	20.534
	Institution and capacity building,	25.668
	Detailed project reports	5.133
C.	**WATERSHED WORKS**	**256.68**
(i)	**Livelihood Programm**	51.336
(ii)	**Production System and microenterprises**	**66.736**
D.	**CONSOLIDATION PHASE**	25.668
	GRAND TOTAL	**513.36**

5. Treatment area and details

The above project area the problem of land degration is caused not only by soil erosion, but also by water logging and excessive salinity. 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 rivers 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. Vegtation 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 deteriorating environmental condition. BANAThere fore it is an urgent need, that rainwater should be harvested for crops and re-charged to improve the quality of the water.

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 moistures various type earthen bunds in the watershed field, necessity has been observed, **Stabilize Disturbed Areas immediately.** Permanentstructures, 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.

7. Action plan at a glange

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

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

Paticipatry 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 lavel, 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 out-comes and benefits specialy in the respect of livelihood for different segments.These are the target and and performers, indicators for the project area,

The draft of the detailed project report has been prepared for the approvel 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 6 (Six) micro- watershed, with code No. 2B3A3a1a, 2B3A3a1c, 2B3A3a1d, 2B3A3a1e, 2B3A1f3a, 2B3A1f3b having area of 6310.00 Ha, is located in East of the St. Ravidas Nagar district of U.P Most of the land comes under agriculture. The area in the watershed is relatively flat plain with shallow river-valleys. The above project area is very well known in the entire world for its specilisation in viewing of carpets. The carpets of the area have been exported in Germeny; USA, UK and other western countries and gulf also. The soils are mainly sandy, loamy and clayey.

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 erosin 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 over come them.

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 Akohari, Allipur Gokula, Bardaha, Bartara, Basantpur Anta, Basariya, Bel Matthar, Bhant Purwa, Bhauri Ganj, Chandrabhanpur, Charsadi, Changeriya, Narayanpur Sal, Dhaurahara, Dudi, Fatehpur Kotahana, Harigaon, Kaitholi, Katra Shahbajpur, Kuri, Malauli, Masauliya, NarayanpurJaisingh, Narayanpur Lalak, Dhanawa, Para, Pareta, Parsauli, Rajapur, Rampur, Rek Sadiya, Rudauli, Sakatpur, Saraiya, Shahpur, Tenganwa, Yakubpur 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.

3. Weightage of the project

Project name	Project Type	Weightage													
IWMP St. Ravidas Nagar II[nd]	IWMP-II	i	ii	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	xiv
		7.5	10	5	10	0	0	10	7.5	10	15	10	15	0	100

Criteria and weightage for selection of watershed

Criteria	Maximum Score	Ranges & Scores			
Poverty index (% of poor to population)	10	Above 80 % (10)	80 to 50 % (7.5)	50 to 20 % (5)	Below 20 % (2.5)
% of SC/ ST population	10	More than 40 % (10)	20 to 40 % (5)	Less than 20 % (3)	
Actual wages	5	Actual wages are significantly lower than minimum wages (5)	Actual wages are equal to or higher than minimum wages (0)		
% of small and marginal farmers	10	More than 80 % (10)	50 to 80 % (5)	Less than 50 % (3)	
Ground water status	5	Over exploited (5)	Critical (3)	Sub critical (2)	Safe (0)
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	
Area under	15	More than 90 %	80 to 90 %	70 to 80%	Above 70 %

rain-fed agriculture		(15)	(10)	(5)	(Reject)
Drinking water	10	No source (10)	Problematic village (7.5)	Partially covered (5)	Fully covered (0)
Degraded land	15	High – above 20 % (15)	Medium – 10 to 20 % (10)	Low- less than 10 % of TGA (5)	
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)	
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)	
Cluster approach in the plains (more than one	15	Above 6 micro-watersheds in cluster (15)	4 to 6 micro watersheds in cluster (10)	2 to 4 micro watersheds in cluster (5)	

contiguous micro-watersheds in the project)					
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)	
	150	150	90	41	2.5

PROBLEM IDENTIFICATION AND PRIORITIZATION FOR WATERSHED

S. No.	Problem	Rank
1.	Low production of field crops	3
2.	Lack of drinking water	4
3.	Lack of irrigation water	1
4.	Lack of fodder availability	7
5.	Non-availability of fuel wood	6
6.	Lack of inputs like quality seeds, fertilizer, pesticides etc.	2
7.	Lack of market facility	9
8.	Lack of medical, educational and transportation facilities	8
9.	Medical and Health care facilities for and low animal productivity.	5

Strength, weakness, opportunity and threat (SWOT) analysis is a useful decision support tool, A SWOT analysis of the watershed is presented in Table below.

SWOT analysis of the watershed

Strengths (S)	**Weakness (W)**
i. Cooperative work culture in traditional activities ii. Close ethic ties iii. Road at the top as well as outlet of the watershed iv. Hard working v. Resource pool of crop genetics diversity vi. Awareness of farmers about watershed management programme vii. Well established CPR maintaining and sharing system viii. Good productivity of soil ix. Social outlook of the community towards land less	i. Poor water management ii. Resource poor farmers iii. Out migration of youth iv. Low and erratic rainfall v. Fragile geography vi. Fragmented land holding vii. Heavy infestation of wild animals viii. Problem of fuel and fodder
Opportunities (O)	**Threats (T)**
i. Wide range of annual and perennial crops ii. Scope of regular employment opportunities to check out migration iii. Strengthening of existing irrigation system iv. Conducive climate for rainfed crop diversification v. Good scope for Agro forestry and dry land horticulture vi. Potential for collective action and management of CPR	i. Prone to adverse climate like Flood ii. High market risk iii. Social conflicts owing to PRI and WSM polices and local politics iv. Weak coordination among line departments v. Lack of expertise of implementing agency in different aspects of WSM

4. WATERSHED INFORMATION

Name Of the Project	No. of water sheds to be treated	Watershed Code	Watershed regime/type/order
IWMP-II, St. Ravidas Nagar	6	2B3A3a1a,2B3A3a1c,2B3A3a1d,2B3A3a1e, 2B3A1f3a, 2B3A1f3b	MicroWatershed

The watershed falls under the semi arid region of Tropical climate. The average annual rain fall is 988 mm. Most of the rainfall (about 90 %) is received during July to September. The intensity of Rainfall is moderate to high. The Temperature ranges from as high as 46.6°c in the month of May – June to as low as 3.3°c in December - January.

5. 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 Swarojgar 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.

The basic information regarding project area are given as under-

a) Project at a glance **(Table 1.1)**

b) Details of ongoing watershed/development programes **(Table 1.2)**

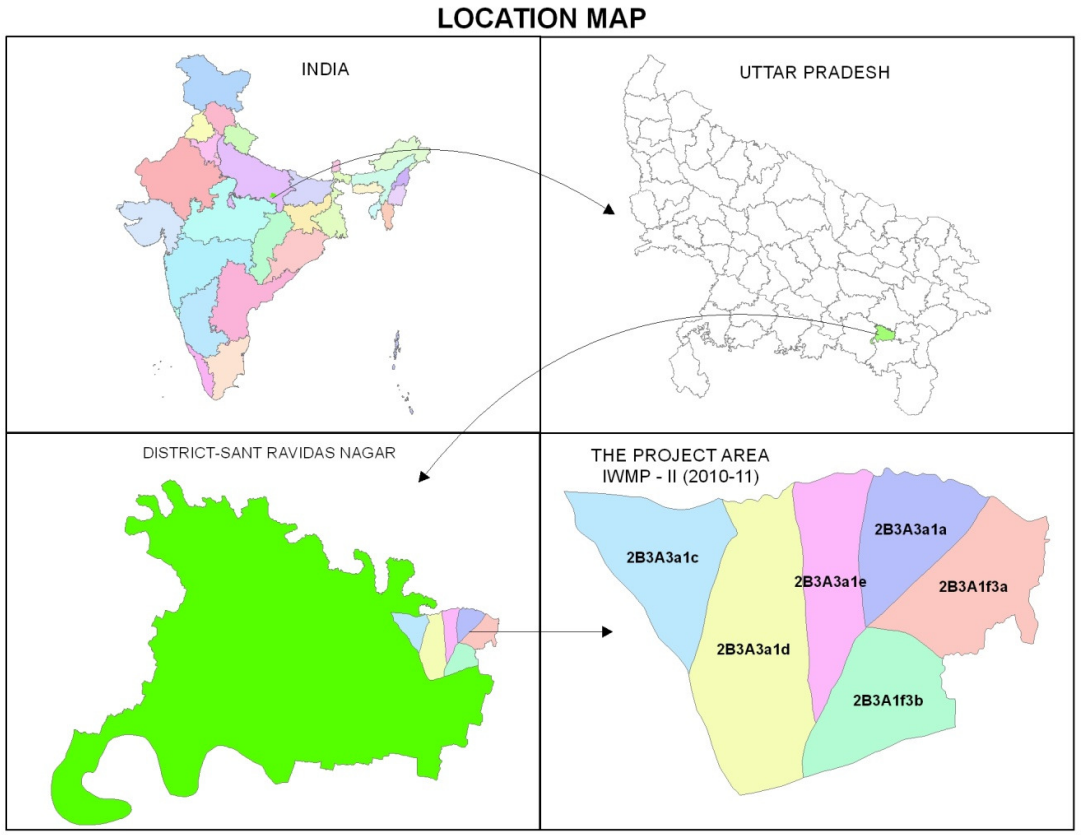
CHAPTER – 2

GENERAL DESCRIPTION OF PROJECT AREA

1. LOCATION

The selected watershed IWMP-II of St. Ravidas Nagar district (U.P.) is located along, Varanasi -St. Ravidas Nagar road about 8 Km from the block Bhadohi, it is more or less 15 km away from the district head quarter. It lies between the longitude of 82^0 35' 20" to 82^0 42' 51'' and latitudes 25^0 19' 27'' to $25^0$23'56''.

LOCATION MAP OF THE PROJECT AREA



2. Area

The project is a cluster of six (6) micro- watersheds with code No. 2B3A3a1a, 2B3A3a1c, 2B3A3a1d, 2B3A3a1e, 2B3A1f3a, 2B3A1f3b, having an area of 6310.00 ha out of which 4278.00 ha, has been undertaken to be treated under Integrated Watershed Management Programme (IWMP) starting year 2010-2011. There are 23 gram panchayat and more than 90 revenue villages in the project.

3. PHYSIOGRAPHY

The project area falls under the central Ganga alluvial plain of Eastern-Uttar Pradesh, which is a level plain densely populated and most parts of the land is available for cultivation. The study area has moderate slopes into the river Bisuhi. About 60% of the watershed area has 3 % slopes, 20% area has 1% slope and remaining area has slopes varying from 3 to 5 %. All the streams of the project area finaly join the main perennial river the Ganga. Most of the agricultural land is dependent on monsoon. The plains form a level tract which slopes gently from west to south-east. The elevation of mean sea-level ranges from 92 to 74 meters. Higher elevations appear at places where the general flat surface is broken by irregular ranges of sandhills. In contradiction to the high ridge are low and often broad valleys of rivers known as kachhar. The valleys of the larger rivers are not only depressed well below the general level of the country but are of considerable breadth. Thus there is a wide area of low land which is inundated in years of heavy rainfall.

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	2B3A3a1a	Samalkot,Lakhanpur Urf Abhayanpur, Bag Amani, Kolahd, Manikpur, and others	25^0 21′ 48″ to 25^0 23′ 53″	82^0 39′40″ to 82^0 41′ 33″	92	74	18
2	2B3A3a1c	Chak Bhuidhar,Badamanpur,Manapur, Bankat Z.Madho Rampur, Deeh Koiran, Lachhapur, and others	25^0 21′ 14″ to 25^0 23′ 43″	82^0 35′19″ to 82^0 37′ 57″	90	76	14
3	2B3A3a1d	Madho Rampur, Jolhapur, Jagdishpur Sujan, Bhadarmanpur, Palheya, Kantapur, and others	25^0 19′ 28″ to 25^0 23′ 41″	82^0 37′12″ to 82^0 39′ 07″	92	75	17
4	2B3A3a1e	Madho Singhpur, Suwajag, Gobindpur, Horila, Dubha, Hadha, Darunha, Darunha, and others	25^0 20′ 30″ to 25^0 23′ 41″	82^0 38′50″ to 82^0 40′ 04″	92	75	17
5	2B3A1f3a	Kochari, Sewapur Or Senabarpura, Arajidibui, Ramdeo Patti, Araji Amani, Majhilapu, and others	25^0 21′ 17″ to 25^0 23′ 33″	82^0 39′50″ to 82^0 42′ 51″	90	74	16
6	2B3A1f3b	Loh Chanda, Chaudharipur, Jallapur, Anangpur, Jamunipur Badfaros, Ahamadpur and others	25^0 19′ 42″ to 25^0 21′ 47″	82^0 38′59″ to 82^0 41′ 22″	88	81	7

SLOPE ANALYSIS

The Project area an uneven terrain with higher elevations on the north - West side of the watershed. Since slope is the most important terrain characteristic and plays a vital role in geomorphological and runoff processes, soil erosion and land use planning, it is very important to have an understanding of the spatial distribution for the development and management of both land and water resources. The general slope of the watershed is towards south - East. In the present study Seven (7) Slope classes were identified through the analysis of Aster Digital Elevation Model. One such map of Slope of the watershed is shown in Annexure Map.

4. CLIMATE

The watershed lies in the sub tropical climate. The average annual rainfall less than 988 mm. Most of the annual rain fall (about 90%) is received during the rainy season (July to September) accompanied with high intensity storm. The temperature in the area rarely goes up to 46°c during summer and reaches 4.1°c in winter.

The year may be divided into four seasons. The cold season from mid November to February is followed by the summer season from March to mid June. The period from mid June to the end of September is the south-west monsoon season and the October and the first half of November constitute the post-monsoon season.

AGRO-CLIMATE CONDITIONS

The Agro-Climate Condition of the project area including the Agro-Climate Zone of the project area, soil type, rainfall, major crops etc., of St. Ravidas Nagar district is briefly described below:

S. No.	Name of Project	Name of Agro-climate Zone covered	Area (Ha)	No. of the Villages	Major Soil Type (Ha)		Topography	Average Rainfall (mm)	Major crops	
					Type	Area (ha)			Name	Area (ha)
1	IWMP -II	East Plain	6310	96	Sandy Loam	4518	Undulating with	988 mm	Rice, Wheat	2956

TEMPERATURE

The data of St. Ravidas Nagar raingauge centre may be taken as representative of the meteorological conditions in the district. From mid November there is a rapid fall in temperature. January is the coldest month with the mean daily maximum temperature at 22.8º C and the mean daily minimum temperature at 9.3º C. In association with cold waves in the wake of the western disturbances passing eastwards in the winter season, temperature tends to go down to a degree or two above the freezing point. Day temperature begins to rise rapidly after February. May is the hottest with mean daily maximum temperature at 38.4 C and the mean daily minimum at 25.1º C. With the advent of the monsoon by about the middle of June there is appreciable drop in the day temperature, however, the nights continue to be warm. In September there is a slight increase again in the day temperature but the night temperature decreases after September. With the withdrawal of monsoon by the beginning of October it decreases progressively.

HUMIDITY

During the monsoon and the post monsoon seasons the relative humidity are high ranging between 70 and 85 per cent. In the winter months humidity decreases and in summer the air is comparatively drier. The climate condition of the project area is given in **Table 2.1**.

5. WATERSHED CHARACTERISTICS

Shape and Size

The shape of watershed (IWMP - II, St. Ravidas Nagar) is more or less rectangle in north direction and rest are more or less trainglular in shape. The direction of the slope in the project area is north-west to south- east. The maximum length and width of IWMP -II watersheds, are 12616 m and 8639 m, respectively with the length: width ratio 1.46:1

SHAPE AND SIZE OF WATERSHED

S. N.	Micro watershed Code	Area (ha)	Shape	Approximate size in meter		Ratio Length: width
				Length	Width	
1	2B3A3a1a	765.59	Traingle	4099	2718	1.50:1
2	2B3A3a1c	1017.93	Traingle	4297	3643	1.17:1
3	2B3A3a1d	1812.91	Elongate	7718	3140	2.45:1
4	2B3A3a1e	813.99	Elongate	6334	1472	4.30:1
5	2B3A1f3a	994.97	Rectangle	4074	3254	1.25:1
6	2B3A1f3b	904.61	Traingle	4137	3672	1.12:1

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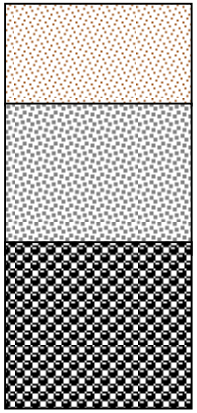
6. SOIL AND LAND CAPABILITY CLASSIFICATION

Soil Morphology:

The study area is situated in the North - East of District-St. Ravidas Nagar. The entire watershed topographically divided into three major land forms. Accordingly, the soils of watershed have been group in the three major categories.

1- Plain land
2- Moderate sloppy land
3- Strong

Soil Profile: A Representative Soil Profile



1-1.5 (Heavy texture clay-soil yellowish Brown in color)

5 -8m (Locally called "Clay")

7 –8 m(Sandy Clay)

MORPHOLOGY OF TYPICAL SOLID PROFILE OF WATERSHED

Horizon	Depth(Cm)	Morphology
A	0-150	Yellowish 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	(Saline soil)

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. This demonstration of crop in Kharif and Rabi both seasons have been proposed under agriculture production activity.

LAND CAPABILITY CLASSIFICATION (LCC)

Land capability classification is an interpretative grouping of lands made to show their relative suitabilities for various crops, pasture, forestry and wildlife and recreation. The inherent characteristics, limitations and risk of damage to the soils and also their response to manage-ment are taken into consideration for classifying them under various land capability classes.

Land capability class is the broadest category in the land capability classification system. Class codes I, II, III, IV, V, VI, VII, and VIII are used to represent arable and non-arable land as defined below.

Class I lands have slight limitations that restrict their use.

Class II lands have moderate limitations that reduce the choice of plants or require Land capability classification is an interpretative grouping of lands made to show their relative suitabilities for various crops, pasture, forestry and wildlife and recreation. The inherent characteristics, limitations and risk of damage to the soils and also their response to management are taken into consideration for classifying them under various land capability classes.

Land capability class is the broadest category in the land capability classification system. Class codes I, II, III, IV, V, VI, VII, and VIII are used to represent arable and non-arable land as defined below.

Class I lands have slight limitations that restrict their use.

Class II lands have moderate limitations that reduce the choice of plants or require moderate conservation practices

Class III lands have severe limitations that reduce the choice of plants or require special conservation practices, or both.

Class IV lands have very severe limitations that restrict the choice of plants or require very careful management, or both.

Classes V to VII cover lands that are unsuitable for agriculture but suitable for pasture.

Class VIII lands are suitable neither for agriculture nor for forestry and are best left for wildlife and recreation.

Land capability classes are divided into land capability subclasses, groupings of soils that have the same kind of limitations for agricultural use. Subclass codes used are e, w, s and c.

'e' represents susceptibility to erosion by water or wind,

'w' represents drainage difficulties including wetness or overflow,

's' represents soil limitations for plant growth and

'c' represents climatic limitations.

Land capability subclasses are subdivided into land capability units that are groupings of one or more individual soil map units having similar limitations or hazards. They are denoted by appending a numeral from 0 to 9 to the land capability subclass to specify the kind of limitation. The specific limitations are

– Stony or rocky (0),

– Erosion hazard/slope (1),

– Coarse texture (2),

– Fine texture (3),

– Slowly permeable subsoil (4),

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 watershed brought out the prevailing LCC classes as I,II,III,IV

CONCLUSION

The land capability classification of the watershed provides reasonable good information with regard to capability of

soil that could be used for agriculture, agri-horticulture, and silvi-culture and pasture development. The majority of land form is coming under class II, which give an insight of good agriculture production potential of these watersheds. The productivity of these lands could be further enhanced by adoption of simple soil & water conservation measures like contour bunding *in-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.

GEOMORPHOLOGY

The area lies in the North-East of the District- St. Ravidas Nagar of Bama and Bisuhi Basin. The soil is mainly sandy loam soil which is easily transportable after detaching causing soil erosion by water erosion and wind erosion. The details of the soil erosion is given in **Table (2.2)**

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

SOCIO-ECONOMIC ANALYSIS OF THE PROJECT

In the proposed watershed management plan of proper blending of bio- engineering measures will be applied. Based on the results of studies conducted in this region, it is estimated that more than 50 % of the watershed area will be treated and consequently the soil loss and runoff from the area is expected to be reduced by 70 % and 65 % respectively. The proposed land use plan will improve the land utilization index and crop diversification index significantly as compared to the existing one. It will help in maintaining ecosystem integrity on sustained basis along with improving the livelihood security of the farming community.

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 (rainfed and irrigated), pure horticulture, agro-horticulture and silvi pastoral (Silvi-Pastoral + sericulture). Net present value (NPV), Benefit Cost Ratio (BCR) , Payback 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

Human Population

The total population of the study area is about 83202, there area total number of 96 villages of the project area with average family size of 6 persons.

The details of the overall population is given in **Table 3.1(i)**.

Area wise details of the villages in the watershed is given in **Table 3.1(ii)**.

Migration Status

The details of migration status in the project area is given in **Table – 3.2**.

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 classes in the project area is given in **Table 3.3**.

Present Landuse/Landcover of the project area

S.N	Landuse	Area (ha)	%
1	Built-up land	364.22	5.77
2	Waste Land	470.72	7.45
3	Water Bodies	63.45	1.03
4	Plantation	186.40	2.95
5	Agricultural Land	5225.21	82.80
Total		**6310**	**100**

DESCRIPTION

The present LU/LC map has been depicted through the satellite data of January, 2010 (Google). A total no. of 6 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 364.22 Hectare which is 5.77 % 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 470.72 Hectare which is 7.45 % 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 impounder in the form of ponds, lake & reservoirs. The total area under this category comes about 63.45 Hectare which is 1.03 % of the total mapped area.

PLANTATION

These areas are separable from crop land especially with the data acquired during rabi/zaid season. Plantations appear with different size and regular and sharp edges indication the presence of a fence around it. Depending on the location, they exhibit a disbursed or contiguous pattern. The total area under this category comes about 186.40 Hectare which is 2.95% of the total mapped area.

AGRICULTRAL 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. The study area is predominantly paddy producing area being its flatness in 2007-08 maximum production of paddy recorded in this region under the double crop area, sugarcane belt capture 561 Hectare total agriculture land. 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 5225.21 Hectare which is 82.80 % of the total mapped area.

AGRICULTURE : CROPS, YIELDS, HORTICULTURE ETC.

Various agriculture land uses in the watershed are extended to diversified land capabilities starting from marginal to good class IInd lands. The watershed distinctly has three types of land i.e. leveled, sloping and

degraded and undulating. The water (both for irrigation 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 for watershed.

The agricultural soils in the watershed have diversified texture i.e. clay, silty clay, sand mixed with gravel and loam which are located in patches throughout the watershed. Four types of sandy, loam, Clay, clayloam are the main soil of district-St. Ravidas Nagar. The heavy soils are almost kept fallow during rainy season. The irrigation water is conveyed in earthen channels and surface irrigation methods following mainly border method of free flooding method of irrigation by farmers in the watershed. The factors substantially reduce the water use efficiency of limited available and valuable irrigation water in the watershed. To test the quality of irrigation water samples of water of each selected village has sent to laboratory for testing.

Rehabitation of waste lands with appropriate drought hardy species like Prosopis ju liflora, introduction of suitable multipurpose tree, promoting agro foresting 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, Rehabitation of wasteland and substantial income generation for socio-economic uplift of farmers in the watershed.

One Year Crop Rotation

Single Cropping: Sugarcane Fallow, Paddy

Double Cropping: Sugarcane, wheat, Maize, Potato

Irrigated Agriculture

One Year Crop Rotation: Sugarcane-fallow, Urad/Moong-Vegetables, Paddy-Gram, Paddy-Lentil, Maize-Potato.

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 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 (18-24Qu./ha) and rice (14.5-18 Qu/ha.) 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 upto 6 to 7 months only.

The farmers also do not have suitable cropping systems to deal aberrant weather. Weeds impose considerable constrant 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 Sugarcane, Maize+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 , biofertilizers , 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, weed mulching, agro-forestry, vegetative barriers etc. also completely lack in the watershed.The cropping intensity in the project area is about 135%.

INDIGENOUS TECHNOLOGICAL KNOWLEDGE: (I.T.K.)

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 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. Seed drill, seed comfort drills are 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 adopt to the prevailing adverse conditions.

HORTICULTURE

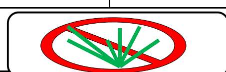
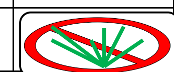
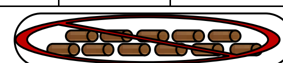
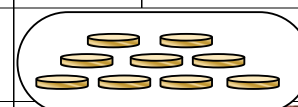
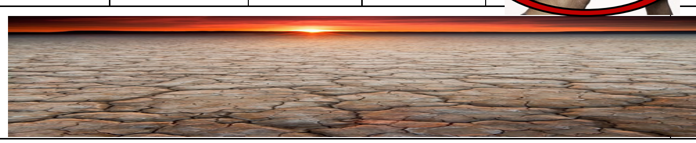
Though no organized orchards are present in the watershed, homestead planting of fruit trees of mango, papaya, banana and guava etc. has been practiced by farmers.

AGRO-FORESTRY

The agriculture fields of the village do not have any forest or horticultural plantation. At some places isolated trees of Mahua, Babool, Ber, can be seen, whose frequency is less than one tree per running length of 100 m.

SEASONAL ANALYSIS

Seasonal analysis has done with the help of farmers about rainfall patterns, cultivated crops, employment, incom availability of fuel, fodder, migration, transport and health hazards, etc. with respect to seasonal variation in 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 watershed farmers are in category of marginal (< 1 ha) and small (1-2 ha). These small land holding are further scattered in different places which makes cultivation very difficult.

The details of the land holding of the project area is given in **Table. 3.6**.

Livestock population

Total live stock population of the watershed is 23902. Buffalo is preferred as milch animal compare to cow but milk yield is very low. Goats are kept mainly for the meat purpose. Homestead poultry rearing is common among marginal farmers.

LIVELIHOOD ACTIVITIES

Out of the total population 83202 in the watershed, a majority i.e. more than 45% has farming as their major source of livelihood followed by 33% engage in carpet making, labourer and remaining service+ business class.

Income generating activities through Self Help Group, landless and marginal farmers like farming, Animal husbandry, Fisheries, Carpentary, Barberry & Self-Help Group, Carpet etc. will be executed in the villages of watershed through the involvement of Krishi Vigyan Kendra, Bhadohi, St. Ravidas Nagar. Training of farmers, women, landless rural youth and field level workers will be given at Krishi Vigyan Kendra, Bhadohi, St. Ravidas Nagar.

SUMMARY OF LIVLIHOOD

No. of Villages	Existing livelihood activities	Possible livelihood intervention under the project	Current status of migration(No. of people)	Main reason of migration
96	Agriculture	Animal husbandry, Fisheries, Carpentary, Barberry & Self-Help Group, Carpet etc.	260	Due to Unemployment in village & High wages in city

INFRASTRUCTURE SOCIAL FEATURES

The watershed has moderate communication facilities and all 96 villages are approachable through motorable road. Literacy rate in the watershed is very low because except some village all villages are having education facilities up to Junior High School. Nearest small market is Bhadohi and district headquarter is St. Ravidas Nagar. Small land holdings (average less than 0.1 ha) with large family size (average 6 person) and more than 50% of the labour force of the total population living below poverty line indicate poor socio-economic status of the watershed community However a strong community spirit among the village show a positive indication for the success of any programme implemented in a participatory mode. Traditionally, the entire village community participates in the individual's work needing labor such as sowing, harvesting, house construction works etc.

MEANS OF COMMUNICATION

The watershed can approached from one main road Varanasi to St. Ravidas Nagar. An idenpendent transporation map has been annexed in the map section.

IMPORTANCE OF DEVELOPMENT INSTITUTION

In the Venn diagram, farmer's perception was recorded for importance and role of different development institutions is relation to infrastructure development in the villages. Importance has been depicted with the size of the circle and role with distance from the village circle.

DEPENDENCY ON FOREST FOR FUEL WOOD AND FODDER

(a) Fuel wood

Some villagers of the selected village are using LPG to meet their cooking energy requirements. The main source of fuel is form 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.

(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 here is Anna Pratha in this area which is the most important reason for more mortality rate of planted trees also.

This also leads to low productivity. There is a lot of ignorance about the use of new farming methods and technologies such as multiple cropping. They don't use FYM and other input in a proper way; that is why they don't get 100% output. So these factors contribute to low productivity.

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.

LACK OF FINANCES FOR FARMERS

In the project area most of the farmers are marginal and small. They do not have enough money to buy good quality seeds, machinery and other inputs.

LACK OF GOOD QUALITY SEEDS AND FERTILIZERS

Good quality seed, fertilizer and pesticide are important factor in agriculture productivity. The use of good quality leads to higher land productivity. In watershed, however, there are two limitations in the use of fertilizer. First these fertilizers are most useful in irrigated condition. But in watershed 100 per cent of land depend on rainfall. mostly farmers use nitrogenous fertilizers especially urea. This has resulted in disproportionate use of fertilizer depleting the quality of land.

LACK OF OTHER FACILITIES SUCH AS STORAGE AND MARKETING

5-10% of agriculture product damage after harvesting due to scarcity of proper storage and proper market for sale. So he sells to local traders at the low prices. Farmers mainly face proper means of transportation and roads. And second problem is farmers don’t have proper storage facilities.

The details of PRA exercise in the Project Area

Dwring of Social Map by villagers in Ramdeopatti

Discussion on watershed planning in Anantpur village

Meeting of Self Help Group in Ahmadpur Phulwariya

Transit work of the villagers in Badmanpur

Transit work of the villagers in Latiya village

Dicussion about soil conservation plan in Bardha

Meeting of Self Help Group in Bhulaipur

Meeting with farmers of Kachhuwa Bojh

CHAPTER - 4
INSTITUTION BUILDING & PROJECT MANAGEMENT

1. BRIEF DESCRIPTION ABOUT PIA:

PROJECT MANAGEMENT AGENCY (PIA):

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.

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.

STAFF AT 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 district St. Ravidas Nagar for IWMP.II.

The details of PIA and their staff pattern is given in **Table - 4.1.**

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 point 40 P. I. A. has been constituted Watershed Development Team as given in **Table -4.2.**

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.

Social Moibilization and Community Organisation

The participatory approach have been adopted for the community wise development of waterhshed area. Therefore a watershed committee for each micro watershed project have been formed. The details of watershed committee of project area is given **Table-4.3.**

SELF HELP GROUP

Self Help Groups are motivated, small homogenous groups organized together through credit and thrift activities. Self help group initiative especially for women, help 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.

The details of the self help groups of the project area is given in **Table 4.4**.

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. The details of the user groups of the project area is given in **Table 4.5**.

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:

3- They should preferably have prior experience in watershed related aspects or management of watershed development projects.
4- 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.

CHAPTER – 5

MANAGEMENT / ACTION PLAN

1. PROBLEM & NEED OF THE AREA:

The major crop in kharif is rice grown in the project area with productivity of 16.96 q/ Ha which is very low which is due todelay in rice transplantation, poor seed & variety replacement rate.Decreasing factor productivity in rice, wheat cropping system is a major challenge to accelerate the economy of farmer.Infestation of pod borer & poor varirty replacement rate in pulses is a major factor in low productivity of pulses & oil seeds.Broad coasting of seed & fertilizer in kharif pulses affect the yield of pulse.Most of the milch animal is local breed with low milk potential affect the milk productivity in the study area.

2. PROBLEM OF AGRICULTURAL LAND:

Low yield of rice and wheat crop,Infestation of pod borer, small size of agricultural fields, soil erosion and uneven character of serface of the land require better variety of seed,Deficiency of multy nutrient specially sulphur,iron,zink,cheking the wheat yield.Breed improvement of animal and training to the farmers of the study area are the fundamental need.

To deal with these problems A two-fold approach- physical and social,as they are complementaty to each other should be adopted because physical reclamation of land is achieved through chemical treatment of water logged soils and is 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.

Consolidation of land holdigs is one of the measures among many.

Soil erosion has become now one of the major environmental problems and a serious constraint for aricultural production. There are many physical and socialfactors which determine the extent and severity of soil erosion.the principal physical factor are erosivity of rainfall, erodibility of soil, severity of periodic floods, length and steepness of the slope. The important social factors are deforestation, over grazing, nature of land use and

mathods of cultivation.On the other hand, sheet erosion cause by rains and erosion due to winds are least visible but eqully serious as the too take a heavy toll of presious top soils.

Soil conservation:-

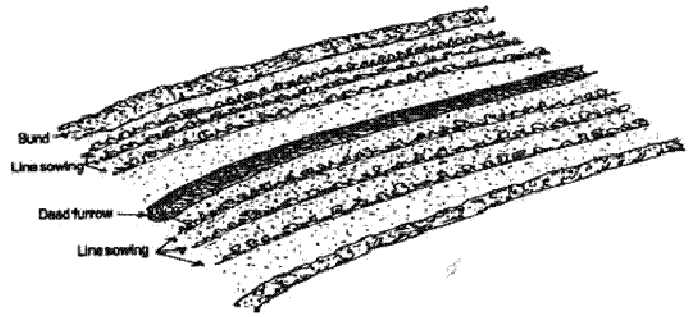
Soil and water conservation measures consist of agronomical and mechanical methods. Agronomic methods are supported with mechanical measures where land slope exceeds permissible limits and runoff gains erosive velocities.

The following boxes explain the nature of agronomic measures which are essential in inter-bunded or terraced areas. These practices enhance the utility value of all kinds of mechanical structures.

Contour Tillage

All agricultural operations such as ridging, ploughing, harrowing, sowing, trenching, etc., are recommended to be done on the contour wherever possible or at least generally across the direction of the slope where holdings are very small. Even though the operation is very simple, it plays a major role in retarding the process of soil erosion through runoff. It also conserves soil, and due to increased time of concentration, more rainwater seeps through the soil profile to recharge ground water. Summer ploughing leaves the soil highly absorbent of initial rains.

Contour cultivation in inter-bunded area



DeaFurrows

When all tillage operations are complete; it is advisable to leave a deep dead furrow at every 10 m interval. This should remain in position until the crop is harvested. Dead furrows aid in reducing the runoff velocity and they also conserve water.

Organic Matter

The study area soils are very poor in organic matter, especially in deob areas. This can be improved by leaving the crop residue in situ (on the fields).

Adding organic manures such as farmyard manure and compost every year as basal application to the soil improves the physical condition of the soil considerably. Soil – Air, Soil – Temperature, and Soil – Moisture relationships are well balanced with the presence of organic matter. Organic matter improves the activities of soil microorganisms and also provides the much needed micro plant nutrients of all kinds, besides nitrogen, phosphorus and potash.

Addition of large amounts of chemical fertilizers to study area crops should be discouraged as it damages the soil due to:

- excessive depletion of scarce soil moisture for its own transformation;
- reduction in all soil microorganism activity; and
- destruction of soil structure

Strip Cropping

Raising Erosion Permitting Crops (EPC) with Erosion Resistant Crops (ERC) having abundant adventitious root system and providing high percentage of canopy in strips in a ratio of 2:1 or 3:1 (i.e. 20 to 10 rows or 30 to 10 rows) helps in trapping soil from EPC strips to ERC strips

The increased resistance to runoff in ERC results in higher volume of water percolating through soil profile, due to increased time of (on-ground) concentration.

The close-growing ERC strips are generally legumes which fix nitrogen in the soil and enrich it.

The canopy of the ERC also protects the soil from beating action of rain drops. Strip cropping also helps in stabilizing crop production.

HORTICULTURE DEVELOPMENT

As per the current senerio of the country under the yellow revolution, 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 skillful 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 ie. 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).

Mango, 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 dug 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 dryfarrming 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 mare 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.

In Vedas, Upanishad and Puran, the importance of trees is said. There are 27 Nakshatras in a year and there is one of each Nakshtra. The people should planted the tree of their Nakshtra, And they should be never destroyed.

The name of Nakshtra and their tree are as follows:

S.No.	Name of Nakshatras	Name of Tree
1.	Bharini	Aamla
2.	Kritika	Goolar
3.	Rohini	Jaamun
4.	Mrigshira	Khair
5.	Aadra	Agar
6.	Punarvasu	Baans
7.	Pushya	Peepal
8.	Ashalekha	Chameli
9.	Magha	Bar (Banyan)
10.	Purvafalguni	Dhak
11.	Chitra	Bel
12.	Swati	Arjun
13.	Vishakha	Babool (Acacia)
14.	Mool	Raal Vriksha (Bitumen)

15.	Purvaabhadrapad	Aam (mango)
16.	Uttaraabhadrapad	Nimbu (Lemon)
17.	Revati	Mahua

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**

Agro-horticulture

Marginal lands do not produce good annual crop returns even in normal season. These kinds of soils are best used for raising trees of economic value and creating permanent assets. Some of these lands are also very good for raising horticultural crops such as mango, ber, pomegranate, tamarind etc. A part of the land could be earmarked specially for planting mixed tree species known in the area for providing fuel, fodder and timber for household needs and agricultural implements. Trees provide stable and sustained income every year, especially in drought years.

Role of Vegetation

Vegetation is crucial in preserving productive soil and conserving rain water for sustaining life. Soil and water need to be preserved for crop production (both annual and plantation crops) as well as plants that give fuel, fodder, fruits, industrial raw materials, medicinal and aromatic plants and the like.

Minor vegetation such as creepers, shrubs, various kind of grasses, legumes and plants like Agave, which yield fibre have an important role when grown in gullies of various kinds and also on upstream and downstream sides of mechanical structures such as gully checks, water harvesting structures, etc. These provide reinforcement and extend the life span of the structures by binding the soil through the network of their root systems. These plants also provide fodder to animals in the area.

Seed Rates

Normal season : Sowing is done with the normal seed rate. However, if there is a drought during the plant's growth period and wilting is likely to occur, selective thinning is recommended to reduce the plant population to effectively use the scarce soil moisture among fewer plants.

Late season : Where the monsoon is moderately delayed, normal cropping with reduced seed rate is advised.

Line Sowing

Line-sowing on contours is essential. It arrests runoff and conserves soil being eroded. It helps in the use of labour-efficient implements in weeding (i.e., removal of unwanted vegetation through use of different sizes of blade harrows between the rows).

Wider Spacing

In all drought-prone areas, the most important objective is to raise a successful crop under scarce soil moisture conditions. One of the recommended practices is wider spacing between rows and between plants within the row. This reduces plant population and competition between plants for scarce soil moisture. Fewer plants have greater access to limited available soil moisture.

Weeding

Frequent weeding is an important part of dryland agriculture. Line sowing and mechanical weeding, with appropriate size of blade harrows, remove unwanted vegetation which competes with the main crop. It is not uncommon to see the dryland farmer hitching several blade harrows to one yoke and a pair of bullocks. Weeding within rows can be done using hand hoes. Removal of unwanted vegetation helps the main crop obtain greater accessibility to soil moisture and plant nutrients for its own growth.

Mixed/Inter Cropping

Mixed cropping of different crops along with the main crops, such as millets and different legumes, is an insurance against the vagaries of the monsoon. The different root systems of mixed crop feed at different depths of the soil. Moreover, mixing cropping provides small quantities of grain of different kinds for home consumption at different times.

Mulching

Mulches are ground covers that prevent the soil from being washed away, reduce evaporation, increase infiltration, and control growth of unwanted weeds. Mulch can be organic crop residue, pebbles, or materials such

as polythene sheets. Mulching prevents the formation of hard crust after each rain. Organic mulches add plant nutrients to soil upon decomposition. Use of blade harrows between rows also creates "dust mulch" by breaking the continuity of capillary tubes of soil moisture.

Contingent Planning

With every care taken to undertake timely agricultural operations, it is still possible that the whole operation becomes a gamble due to unpredictable monsoons. The main crop could fall in the early part of its life cycle. In such cases, the farmer should come up with an alternate crop that can mature in a very short time and under hard conditions to take advantage of what is left of the rainy season. Contingent planning helps catch and make the best use of late rains. Advance planning is necessary in selecting a contingent crop. And all the requisites for its sowing should be ready within the main season itself. Credit for farmers must be made available at the right time.

Mechanical Methods

Where the slope of the soil is more than permissible, mechanical measures such as bunding, terracing and trenching are recommended in addition to agronomic methods. Agronomic methods are used in inter-bunded areas and mechanical practices complement to help boost crop yields in rainfed drylands.

Indigenous technical knowledge

Local technologies evolved by people over generations of experience should be used before any new recommendation is made.

WATERSHED DEVELOPMENT WORK

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 345.06 Lakh & 50% of the total cost has been made for watershed development works.

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).

FOOD SUFFICIENCY

Achieving self sufficiency in food production is one of the prime objectives of the project. The status of food requirement and production before and after the project is presented.

STATUS OF FOOD REQUIREMENT AND AVAILABILITY PER ANNUM IN WATERSHED

S. No.	Items	Requirement (q/yr)	Before Project		Proposed	
			Availability (q/yr)	Deficit or surplus	Availability (q/yr)	Deficit or surplus (q/yr)
1	Cereals	49915	39952	-9963	51235	+ 1320
2	Pulses	15050	19772	+4722	21877	+ 6827
3	Oil seeds	11452	9895	-1557	12581	+ 1129
4	Vegetable	37591	25675	-11916	38093	+ 502

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. 20.53 Lacs 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

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

S.No	Name and Code of the Project	Amount earmarked for EPA (%)	Entry point activities Planned	Estimated Total cost (in lac)	Expected month & year of completation	Remarks
1	Bardha 2B3A3a1a	4	1. Renovation of old well 2. Renovation of old plate form	3.885	Sept. 2011	
2	Badamanpur 2B3A3a1c	4	1. Renovation of old well 2. Renovation of old plate form	5.70	Oct. 2011	
3	Kachhuwa Bojh 2B3A3a1d	4	1. Renovation of old well 2. Renovation of old plate form	2.90	Aug. 2011	
4	Latiya 2B3A3a1e	4	1. Renovation of old well 2. Renovation of old plate form	2.65	Sept. 2011	
5	Chandapur 2B3A1f3a	4	1. Renovation of old well 2. Renovation of old plate form	2.58	Oct. 2011	
6	Bhakuda 2B3A1f3b	4	1. Renovation of old well 2. Renovation of old plate form	2.81	Dec. 2011	

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

The deails of capacity building of the project area is given in **Table -6.1.**

CHAPTER -7
PHASING OF PROGRAMME & BUDGETING

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 envisages integrated development of Geo-hydrological unit i.e. Treatment of cluster of micro – watershed. The IWMP St. Ravidas Nagar Project consist of 6 micro watersheds

Base line Survey

To access the impact of any watershed development programmed a detailed baseline survey has been conducted. This acts a benchmark for any intervention during and post 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 Talati – cum mantri. 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 and net consumption rate in the village, average milk production of the cattle and various schemes running and their benefits

Participatory Rural Appraisal (PRA)

PRA was developed for quick field – oriented results with objectives as follows :

(a) Appraising agricultural and other needs of rural community;

(b) Prioritizing areas of research tailored to such needs;

(c) Assessing feasibility of developmental needs and action plands;

(d) Implementing action plans, monitoring and evaluating them.

Use Of GIS And Remote Sensing For Planning

Use of various GIS and Remote Sensing Technologies has been promoted at various stages of watershed development.

Prioritization

Geographical Information System (GIS) has been used for prioritization process. Various maps were created using spatial and non spatial data like Geo-morphological maps, Soil data, Crop productivity data, Meteorological data, BPL Population, SC/ST population, Ground water Status, Drinking water situation, Slope percent. These were all given proper weightage according to the DoLR specification. This will be helpful for effective dissemination of information on land and water resources to the users.

Planning

An 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 positioning System (GPS) was used to identify each and every water conservation structures available in the project area. This 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. GIS study is used to identify the area require the degree of concentration for the implementation of Watershed Plan.

Hydrological modeling

Hydrology modeling technique was used for locating drainage, stream length, flow direction, sink and 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.

Bio-physical survey was undertaken to identify various natural resources available in the village. It included the soil typology, wells in the area, crop taken in the field, Cropping pattern, fertilizer used and various sources of irrigation in the field. The details of scientific planning and inputs of the projects area is given in **Table 7.1**.

WATER BUDGETTING

The over all information about the water budgeting is given below :

The total runoff of the water from ridge to value is about 437.00 (mm/year). The status is ground water is about 12 to 17 mtrs. The water harvesting structures have been proposed for the upliftment of ground water table.

RUNOFF VOLUME OF WATERSHED

To check the runoff the water the existing structure should be restrore like marginal bund, farm bund etc. A Planning for ridge to valley basis have been proposed and accordingly the structures should be made.

(i) Prepatory Phase

As per the requirement of the project area briefly discussed with watershed development teem and the farmers of the project area following activities as prepatory level are being given below :

- Repairment of existing wells.
- Construction of common chabutra.

- Repairment of chuckroad and other kharanja.
- Treatment of drainage.

Brief details is given in **Table 7.2.**

(ii) Watershed Work Phase :

As discussed in the earlier chapter the protection of watershed and maintenaning ecological balance the area should be treated by constructing countour bunds, marginal bunds, peripherals bunds etc. as required according the slope of the project area.

(iii) Livelihoods :

In income generating activities through Self Help Group, landless and marginal farmers are advised to use three or four cows of *SANKER* breed or two or three buffalos of *MURRA* breed, for their good life.

Establishment of Goat Units for S.H.G.'s formed in I.W.M.P. IInd Project

District St. Ravidas Nagar is situated in Eastern U.P. region where the number of sheep is very less and they are small in nature. Goat population is appreciable and in fact, it is the major source of livelihood for poor people of the district.

In the state, on an average, 16 kg of meat is obtained from a goat, if they are dewormmed twice, there shall be increment of 4 kg in meat on an average, benefiting the farmers of the state.

Deworming and vitamins, mineral- supplement to the goats shall enhance their productivity and also improve anti-body response and protection level through vaccination, i.e., importance in efficiency of vaccination. More productivity and assured health and low mortality shall result into adoption of more farmers to goat farming with the formation of more S.H.G.'s and in turn availability of goats for processing units.

Goat excreta shall be of immense help in enrichment of soil fertility.

Establishment of Goat Units for S.H.G.'s

In Eastern U.P. region, due to the geo-climate conditions and land pattern is favorable for goat husbandry. Goats thrive well in dry and semi-dry climate with bushes and thorny vegetation. Presently in this area, farmers rear goats for their livelihood. If goat husbandry would be transformed to intensive husbandry, there shall be more economic stability of farmers, more profit sharing and availability of running capital for future expansion. Keeping in view the above facts, goat units shall be formed in the area in intensive way.

16 Goat Units are proposed in I.W.M.P. IInd Project for S.H.G. One unit constituting 10 goats and 1 buck will be distributed to one S.H.G.

A register of S.H.G. will be maintained by Secretary of S.H.G. in the supervision of W.D.T. member. The details of beneficiaries of S.H.G. including the breed of goat reared, breeding and feeding status, deworming status, deaths, post mortem conducted claim settlement and working status of unit will be maintained in the register.

Preferences shall be given in consecutive years in purchasing the goats and bucks for new units, from old units for which database maintained shall be of use and it should be assured by buy back arrangement. The details of goat rearing estimate is given in **Table 7.3**.

Activities of Self Help Groups

Vebbing of carpets, goat rearing, sheep rearing and pheri of carpet are the main SHG activities of the project area.

Head & activity wise budget estimates

Year wise and headwise summery of budget expenditure may be given in **Table. 7.4**.

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 comes 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 ENVIRONMENT SECURITY

In the proposed watershed management plan of I.W.M.P.-2nd St. Ravidas Nagar watershed, proper blending of bio engineering measures will be applied on 60% of the total watershed area. Based on the results of studies conducted in this region, it is estimated that more 50% of the watershed area will be treated and consequently the soil loss and runoff from the area is expected to be reduced by 70% and 65% respectively. The proposed land use plan will improve the land utilization index and crop diversification index significantly as compared to the existing one. It will help in maintaining ecosystem integrity on sustained basis along with improving the livelihood security of the farming community.

ECONOMIC ANALYSIS

Economic analysis of the project was carried by taking direct benefits and costs considering 25 year project life at 10 per cent discount rate. For this purpose of economic analysis, whole watershed development plan was divided into three sectors namely,

Agriculture, horticulture and forest/fuel wood plantation. Net present value(NPV), Benefit cost ratio (BC) ratio criteria were employed to judge the economic efficiency of each enterprise and sector.

AGRICULTURE

In rainfed agriculture the development cost can be recovered within one year as the present rainfed agriculture is being done on well maintained field, therefore, does not require much investment.

HORTICULTURE

The Economic analysis of the horticulture plantation in agri-horticulture system at I.W.M.P.-2nd watershed has been done and it is expected that the Project life is considered to be 25 years and discount rate for NPV estimation is 10%.

CHAPTER -10
EXPECTED OUTCOME

EMPLOYMENT

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 enter prise development.

Labour migration in search of gainful employment is one of the major problems in the remote watershed in particular. Causal 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 **Table - 10.1.**

MIGRATION

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 in **Table 10.2**.

DRINKING WATER

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 U . 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 14.0 to 17.0 metre. Status of the drinking water is given in **Table -10.3(i).**

VEGETATIVE COVER

There is negligible area under tree cover. The village has a negligible 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. Status of the ground water is given in **Table -10.3(ii).**

AGRICULTURE

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. The details of crop area is given in **Table-10.4**.

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. The details of livestock is given in **Table- 10.5**.

ABTRACT OF OUTCOMES

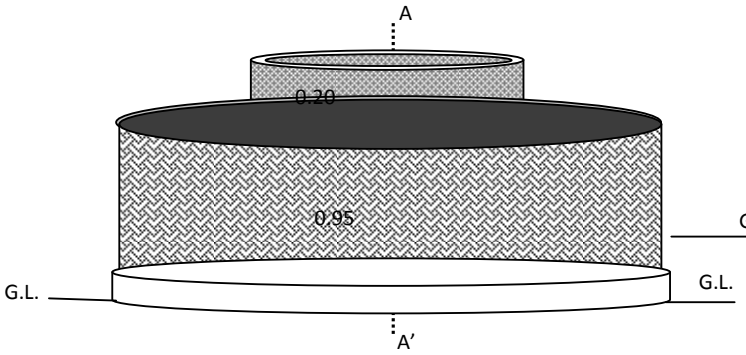
The over all assessment of the project certain parameters have been evaluated on the present and future basis. As mentioned in the above the food grain production according to the expenditure have been analysised after the completion of the project. The ratio of cost benefit is given in **Table – 10.9 (a)**.

Overall assessment of the project is given in the **Table-10.9(b)**.

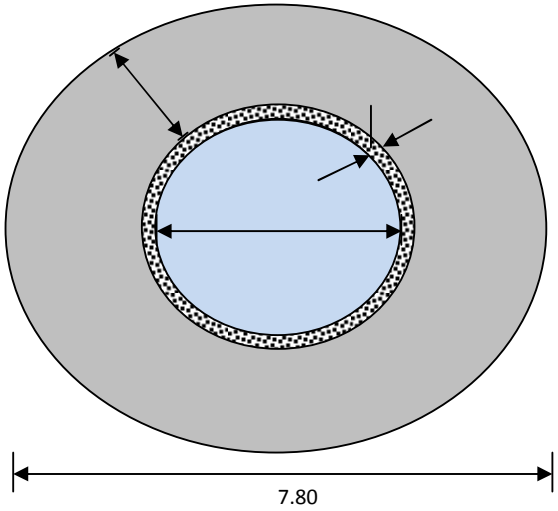
Chapter-11

COST NORMS & DESIGN OF STRUCTURE PROPOSED

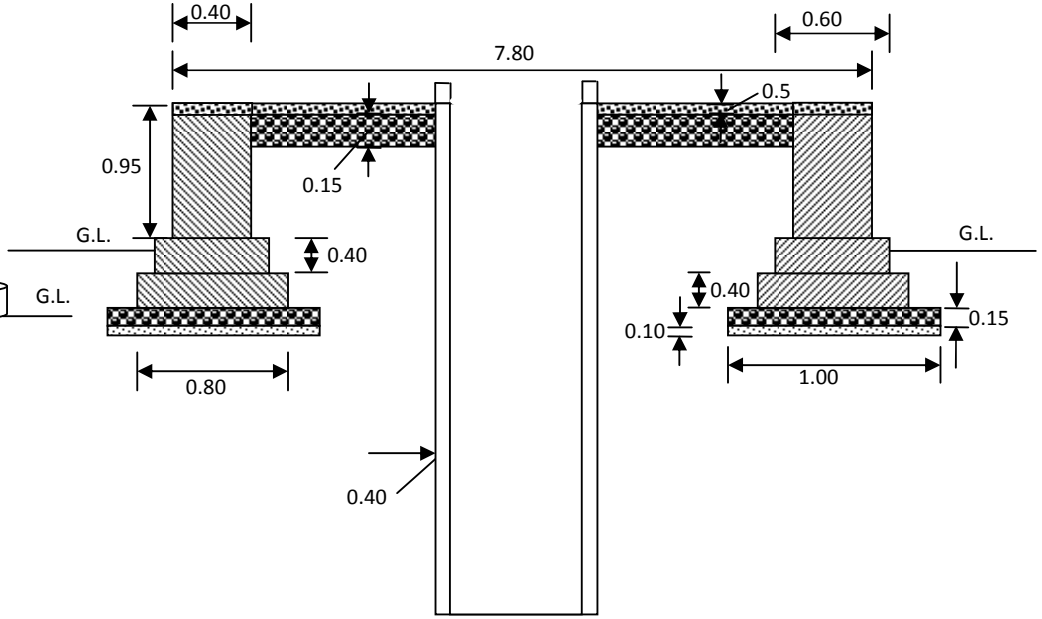
DRAWING OF WELL



ISOMETRIC VIEW OF WELL



PLAN



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 JAGAT OF WELL

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

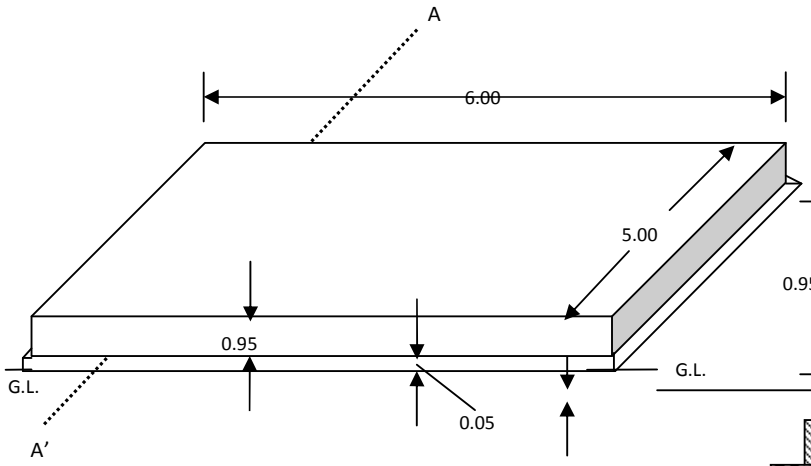
S.No.	Particulars	Quantity	Rate	Amount
1.	Earth Work	48.22 cum	36.66/cum	1769.01
2.	Sand Laying	2.32 cum	33.33/cum	77.32
3.	C.C.W. 1:4:8	7.54 cum	492.00/cum	3709.68
4.	C.C.W. 1:2:4	1.821 cum	492.00/cum	894.11
5.	Brick Work	22.210 cum	370.00/cum	8217.70
6.	Raised Pointing	22.04 m^2	51.61/m^2	7.48
7.	Curing 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

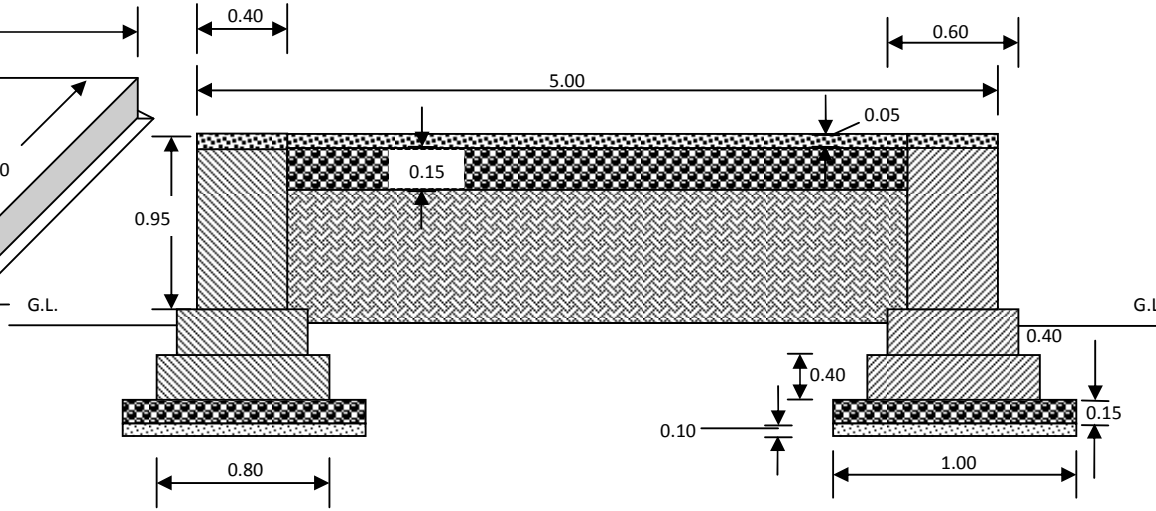
DETAIL ESTIMATE OF INDIA MARK-II HAND PUMP FOR WATER SHED AREA, DISTRICT - ST. RAVIDAS NAGAR U.P.

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/cm2. 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 masonary 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 m^2**

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

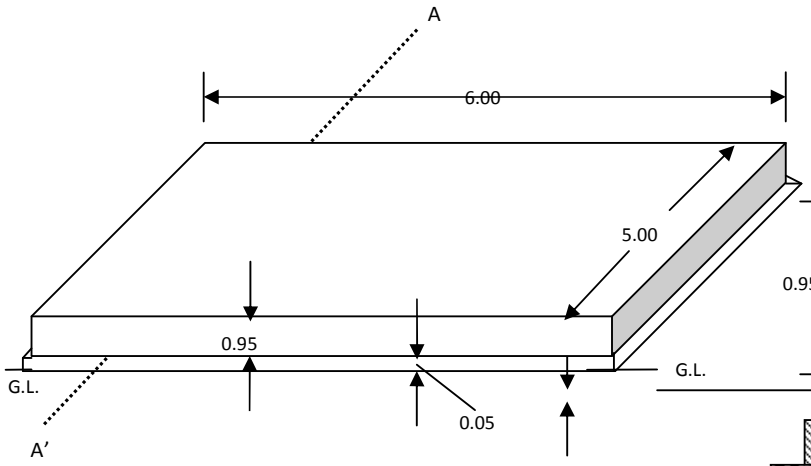
S.No.	Particulars	Quantity	Rate	Amount
1.	Cement	77 Bags	285/Bag	21945.00
2.	Coarse Sand	12.00 cum	910.00/cum	10920.00
3.	Coarse	11.04 cum	950.00/cum	10490.40
4.	G.S.B. 25-40 mm	5.900 cum	855.00/cum	5044.00
5.	G.S. Grit 10-20 mm	1.280 cum	1250.00/cum	1600.00
Total				**Rs. 50000.00**

LABOUR CHARGES

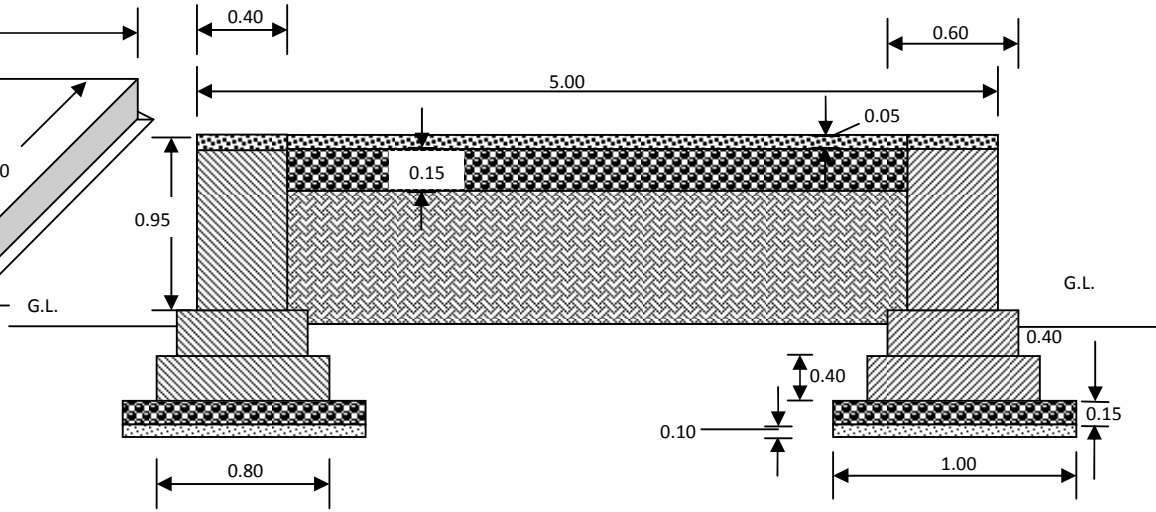
S.No.	Particulars	Quantity	Rate	Amount
1.	Earth Work	49.50 cum	36.66/cum	1814.67
2.	Sand Laying	2.060 cum	33.33/cum	68.65
3.	C.C.W. 1:4:8	6.336 cum	494.00/cum	3129.98
4.	C.C.W. 1:2:4	1.500 cum	494.00/cum	741.00
5.	Brick Work 1:4	18.768 cum	370.00/cum	6944.16
6.	Raised Pointing 1:3	19.800 m^2	51.61/cum	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**

DRAWING OF PANCHAYATI CHABUTARA



ISOMETRIC VIEW OF PLATFORM (CHABUTRA)



SECTION AT A-A'

DESCRIPTION

5. C.C.W. - 1:4:8.
6. Brick Work - 1:4
7. Plastering- 1:4
8. 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 masonary 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 m^2**

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

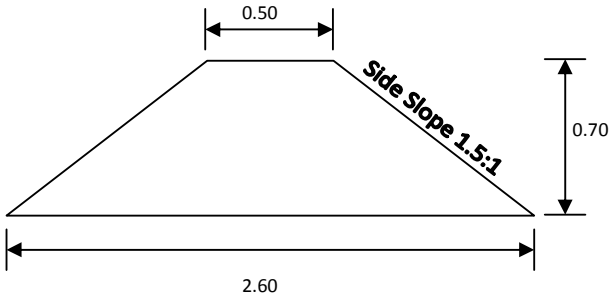
S.No.	Particulars	Quantity	Rate	Amount
1.	Earth Work	49.50 cum	36.66/cum	1814.67
2.	Sand Laying	2.060 cum	33.33/cum	68.65
3.	C.C.W. 1:4:8	6.336 cum	494.00/cum	3129.98
4.	C.C.W. 1:2:4	1.500 cum	494.00/cum	741.00
5.	Brick Work 1:4	18.768 cum	370.00/cum	6944.16
6.	Raised Pointing 1:3	19.800 m^2	51.61/cum	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**

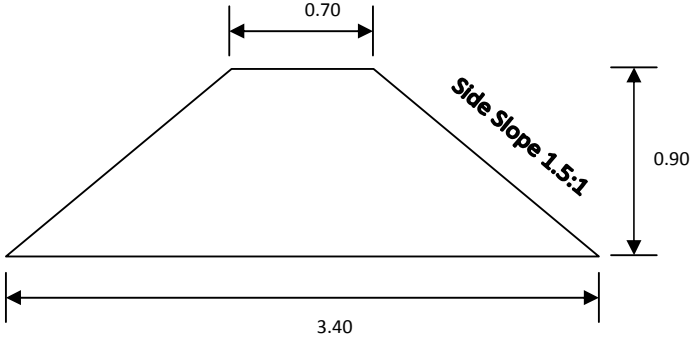
DETAILS ESTIMATE OF WATERSHED DEVELOPMENT WORK PHASE

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

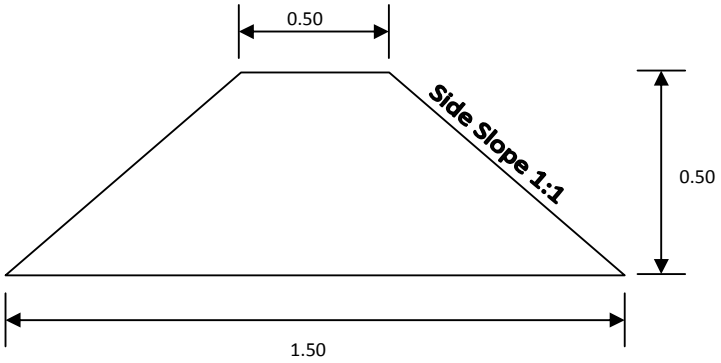
(Not to Scale)



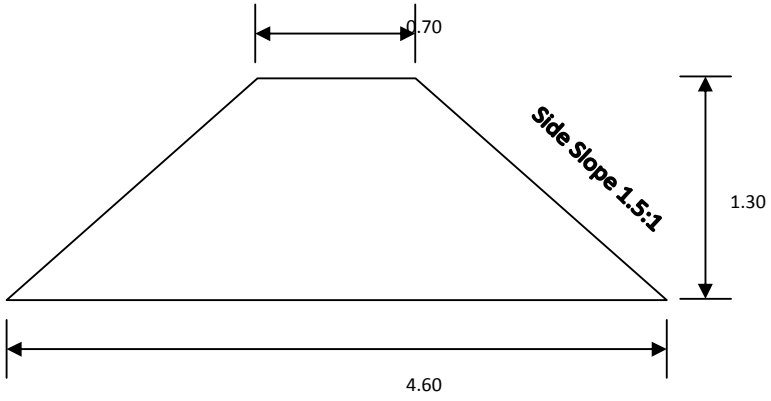
(C.B., Cross-Section – 1.085 m^2)



(S.B., Cross-Section – 1.845m^2)



(Field Bund, Cross-Section – 0.50 m^2)

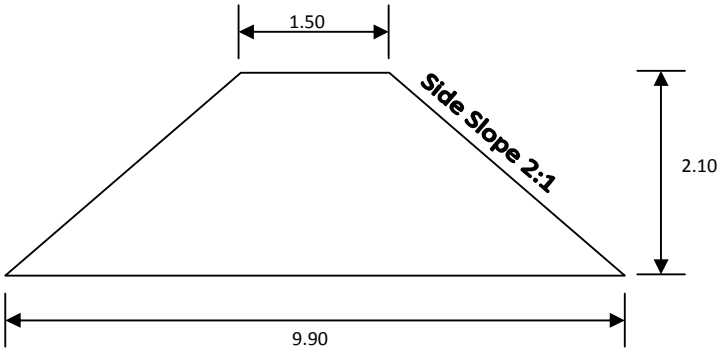


(S.B. /P.B. /M.B., Cross-Section – 3.445 m^2)

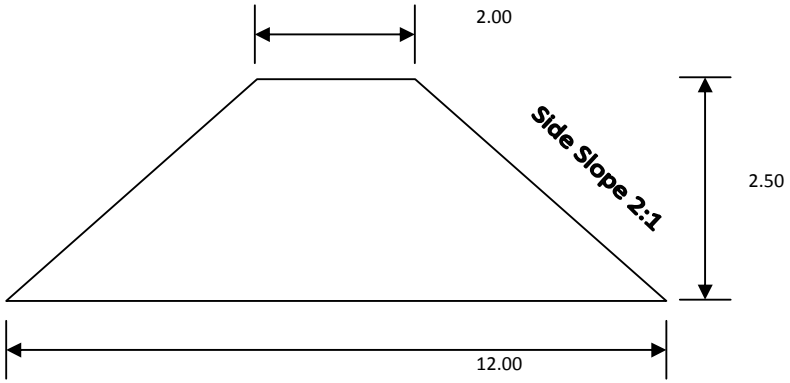
(All dimensions in Metre)

DRAWING OF EARTHEN CHEKDAM / GULLY PLUG

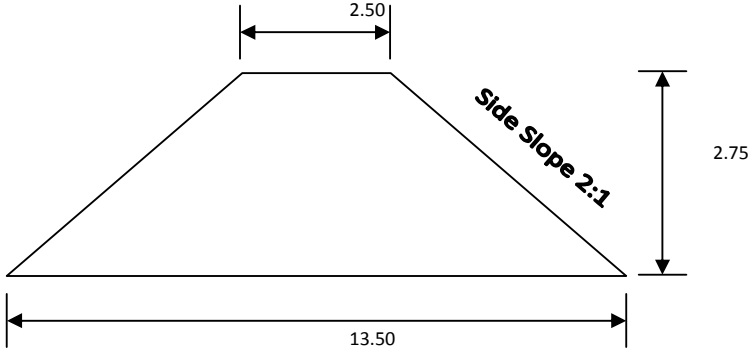
(Not to Scale)



(C.D. /G.P., Cross-Section – 11.97 m^2)



(C.D. /G.P., Cross-Section – 17.50 m^2)



(W.H.B., Cross-Section – 22.00 m^2)

(All dimensions in Metre)

DESIGN OF CONTOUR BUND

Type of Soil	-Loam,Sandy Loam
Rain fall	-24 hr in cm -25 cm
Field Stop -1%	
Vertical Interval (VI)	= [s/3+2] x 0.3
	= [1/3+2] x 0.3
	= 0.70 m
Horizontal Interval (HI)	= 100 x V.I/s
	= 100 x 0.7/1
Height of bund h	$= \sqrt{(\text{Re x VI})/50}$ Re=maximum rainfall in cm
	$= \sqrt{(25 \text{ x } 0.7)/50}$
	$= \sqrt{0.35}$
	= 0.59
	Say 0.60 m
Free board	=15% of height minimum -10 cm
Height	= 0.60 + 0.10
	= 0.70 m

Taking top width of bund 0.50 m and side slope 1.5:1

Then base of Bund	= 0.50 + (1.50 d) x 2
	= 2.60 m
Cross-Section of bund	= (0.50 + 2.60) x 0.70 / 2
	= 1 .085 m^2
Length of bund	= 100 s / V.I.
	= 100 x 1 / 0.70
	=142.85 m/ha
	Say 150 m/ha
Earth work/ha	= 150x1.085
	= 162.75 cum
Cost Rs. / ha	= 162.75 x 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]x0.30
	=0.90 m
Horizontal Interval = (100xV.I.)/s	= (100x0.90)/3
	=30 m
Height of bund $h=\sqrt{(\mathrm{Re} \times \mathrm{V.I.})/50}$	$=\sqrt{(25 \times 0.90)/50}$ $=\sqrt{0.45}$ = 0.67 m. **Say 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 x 1.5d
	= 0.70+2.70
	= 3.40
Cross Section of Submergence Bund	= (0.70+3.40) x 0.90 / 2
	= 1.845 m^2
Length of bund	= 100 s / V.I.
	= (100 x 3) /0.90
	= 333 m
Feasible length	100 + 25 + 25
	= 150 m
Earth work/ha	=150 x 1.845
	=276.75
Cost per ha	=276.75 x 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)x0.50/2 = 0.50 m^2
Length per hectare	= 200 m
Earthwork	= 200 x 0.50 = 100 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)x1.30/2
	= 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) x 2.10 / 2
	= 11.97 m^2
Cost per meter	= Rs. 551.45

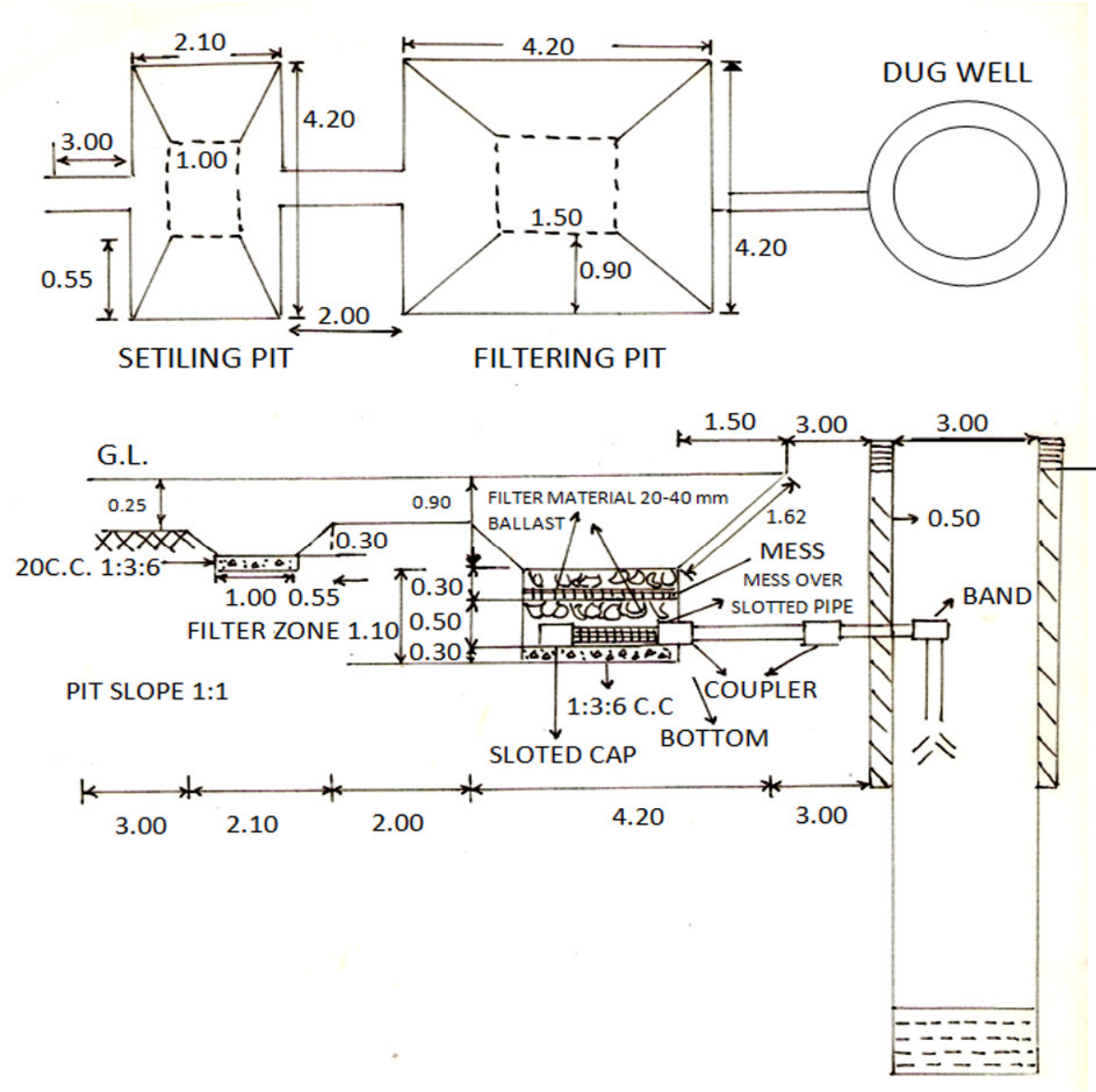
TYPICAL SECTION OF CHECK DAM / GULLY PLUG

Top width	= 2.00m
Side slope	= 2:1
Height	= 2.50 m
Bottom Width	= 12.00 m
Cross Section	= (2.00 + 12.00) x 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) x 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)

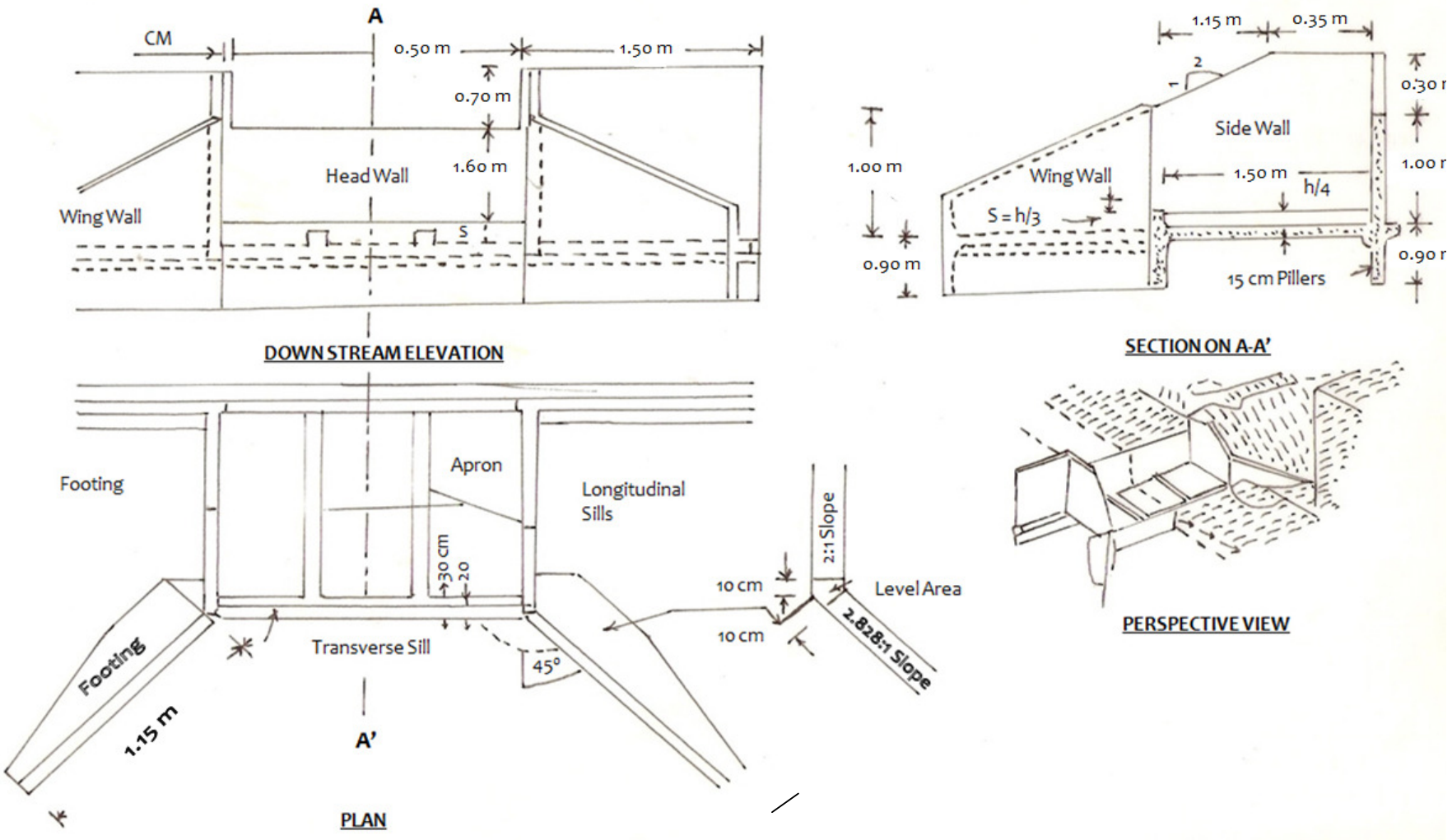
S.No.	Name of Work	No.	L B D/H	Unit	Quantity
1.	Earth work in excavation hard soil mixed with *kanker* gravel, etc. in foundation.				
a	Settling pit (i) Long Wall	4	0.65 x 1.75 x 0.10/2	M^3	0.09
		2	1.50 x 0.62 x 0.75	M^3	1.39
	(ii) Short Wall	4	0.55 x 0.75/2 x 0.10	M^3	0.08
		2	1.00 x 0.55 x 0.75	M^3	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



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:

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

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 m (since width of gulley is 1.00 m)

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

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

$$H^{3/2} = \frac{0.064}{0.50} = 0.128$$

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

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

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

3. Structural design –

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

E = 3x0.5+0.6 or 1.5x0.50

E = 2.10 m or 0.75 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 x 2.74 = 1.37 m says 1.40 m

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

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

$J = 2h$ or $[f + h + S – (L_B + 0.10)/2]$ whichever is greater

= 2 x 0.50 or [0.50+0.50+0.16 – (1.37+0.10)/2]

= 1.0 or [1.16 – 0.735]

= 1.0 or 0.425

adopt J = 1.00 m

5- $M = 2(f + 1.33\,h - J) = 2(0.50 + 1.33 \times 0.25 - 1.00)$

$= 2 \times (-0.167) = -0.335$ m

6- $K = (L_B + 0.1) - M = (1.37 + 0.1) - 0.335$

$= 1.47 - 0.335$

$= 1.135$ m

Toe and cut off walls

Normal scour depth (N S D) $= 0.473 \times (Q/f)^{1/3}$

$= 0.473 \times (0.1/1)^{1/3}$

$= 0.473 \times 0.464$

$= 0.219$

Maximum Scour depth (M S D) = 1.5x N S D

$= 1.5 \times 0.219$

$= 0.328$ m

says 0.35 m

Depth of cutoff /Toe wall = 0.35 m

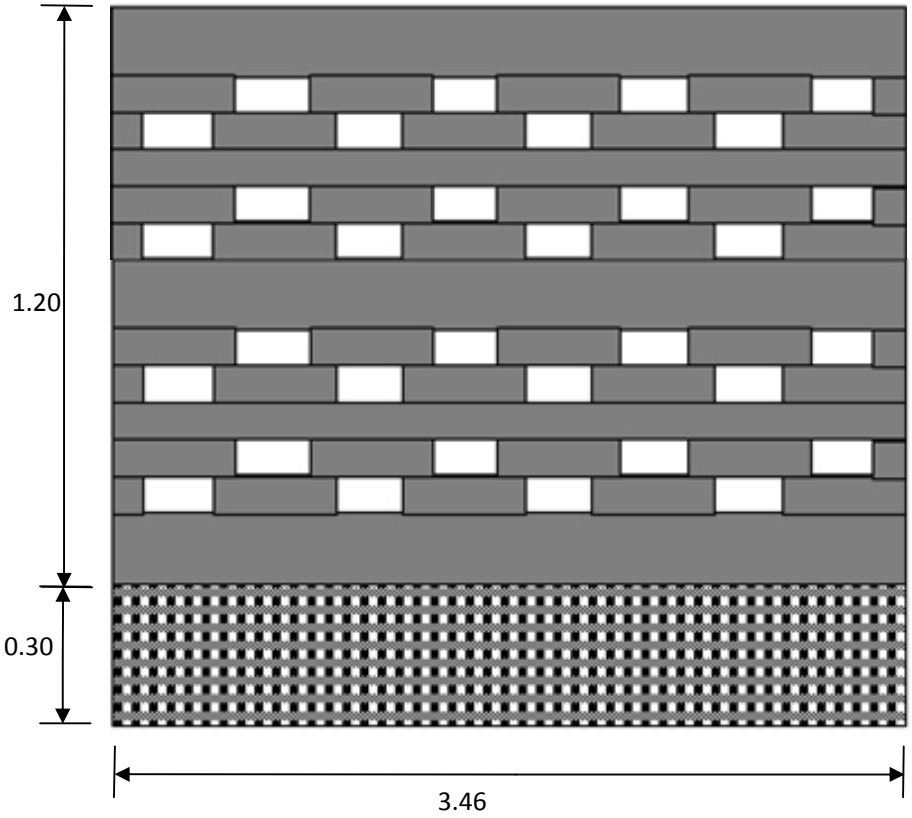
Apron thickness : For an over fall of 0.5 m. The Apron thickness in concrete construction is 0.20 m since the structure is constructed in masonry, the Apron thickness will be 0.20 x 1.50 = 0.30 m

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

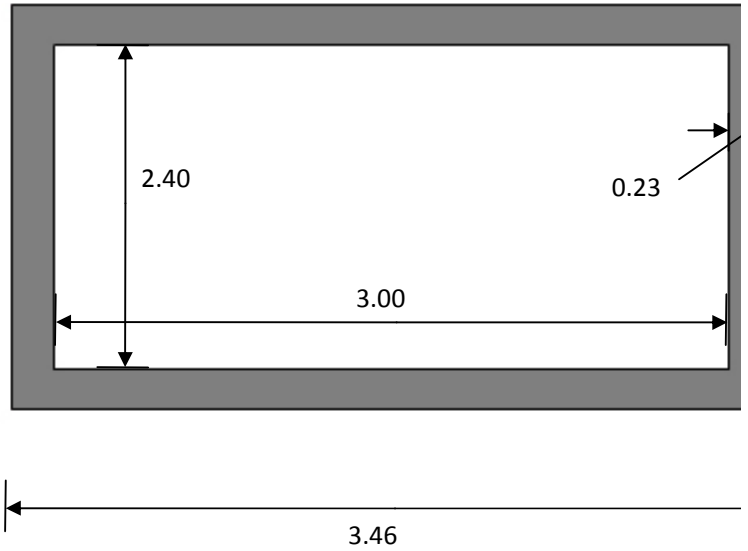
Description	Thickness of wall	
	Top width	Bottom width
Head wall	0.40	1.00
Side wall	0.30	0.80
Wing wall and head wall extension	0.30	0.60

DRAWING AND DETAIL ESTIMATE OF LIVELIHOOD PROGRAMME IN WATERSHED WORK PHASE

DRAWING OF NADEF COMPOST STRUCTURE



ELEVATION



PLAN

DESCRIPTION.

1. Brick work = 1:4.
2. Plastering = 1:4.
3. Thickness of wall = 0.23 m.
4. Total height of Structure = 1.20 + 0.30 = 1.50 m.

(Not to Scale)

PREPARATION OF COMPOST BY NADEF METHOD

Nadef is the name of inventor of this method. In this method glazed pit of brick masonry above Ground level is made as shown in the drying. In this method by using a little quantity of cow during, and crop residue, leaf of trees, straw and other organic materials. The method of filling up the pit is below.

First of all best soil of pond or field is spread in the bottom of pit as least 3" thickness and then one layer of 6" thickness and other agriculture waste is made then best soil is spread on it and on this layer the liquid made of cow dung is spread to wet the crop residue, straw etc. this method is repeated until the pit is net completely filled up. On the top layer of this material a bulk is made and then the pit is closed by earthen gara. Water is spread on the top of bulk and from glazed side weekly. This process is repeated to moist the filling material always. The decomposition in filling material started and within six month filled material becomes compost khad.

ESTIMATE OF COMPOST BY NADEF METHOD

S.No.	Description of Work	No.	L.	B.	D./H.	Quantity
1.	Earth Work					
	Long Wall	2	3.60	0.30	0.30	0.648
	Short Wall	2	2.33	0.30	0.30	0.419
	Total					**1.067 cum**
2.	Brick Work 1:4					
	Long Wall Solid	2	3.46	0.23	0.90	1.432
	Short Wall Solid	2	2.40	0.23	0.90	0.993
	Total					**2.425 cum**
	Long Wall Glazed	2	3.46	0.23	0.60	0.954
	Short Wall Glazed	2	2.40	0.23	0.60	0.662

	Total					**1.616 cum**
3.	Plastering Work					
	Long Wall	2	3.46	-	0.60	4.152
	Short Wall	2	2.40	-	0.60	2.880
	Top of Long Wall	2	3.46	0.23	-	1.591
	Top of Short Wall	2	2.40	0.23	-	1.104
	Total					**9.727 m^2**

ABSTRACT OF WORK

S.No.	Particulars	Quantity
1.	Earth Work	1.06 cum
2.	Brick Work 1:4 2.425 + 1.616/ 2	3.233 cum
3.	Plastering 1:4	9.727 m^2

CONSUMPTION OF MATERIALS

S.No.	Particulars	Quantity	Cement (Bags)	Coarse Sand (cum)	Bricks (nos.)
1.	Brick work 1:4	3.233 cum	5.82	0.873	1487
2.	Plastering 1:4	9.727 m^2	1.07	0.146	-
	Total		**6.89**	**1.019**	**1487**
	Say		**7 Bags**	**1.02 cum**	**1500 nos.**

COST OF MATERIALS

S.No.	Particulars	Quantity	Rate	Amount
1.	Cement	7 Bags	285.00/ Bag	1995.00
2.	Coarse Sand	1.02 cum	2500.00/ cum	2550.00
3.	1^{st} class Brick Work 1:4	1500 nos.	4500.00/ Thousand	6750.00
	Total			**Rs. 10795.00**

LABOUR CHARGES

S.No.	Particulars	Quantity	Rate	Amount
1.	Earth Work	1.06 cum	36.66/ cum	30.85
2.	Brick Work	3.233 cum	370.00/ cum	1196.21
3.	Plastering	9.727 m^2	40.00/ m^2	389.08
	Total			**Rs. 1616.14**

Total Expenditure	
1. Cost of Materials	10795.00
2. Labour Charges	1616.14
Total	**Rs. 12411.14**
	Say Rs. 12411.00 only

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

DEMONSTRATION OF WHEAT

1- Variety recommended for District-St. Ravidas Nagar

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				**5667.60**	
Say				**5700.00**	

Hence demonstration cost of wheat /ha is Rs. 5700.00

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				**6386.00**	
Say				**Rs. 6400.00**	

Hence per hectare of demonstration –Rs. 6400.00

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				**3201.00**	
Say				**Rs. 3200.00**	

Hence per hectare of demonstration of Bajra is Rs. 3200.00/ha

DEMONSTRATION OF AGRO-FORESTRY / HORTICULTURE

DEMONSTRATION OF AGRO-HORTICULTURE USING PLASTIC DRUM OF 2OO LITRES CAPACITY

District St. Ravidas Nagar 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 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**

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 2nd year onwards – 15 % of 1st 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 2nd year onwards – 15 % of 1st 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 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 oblise 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.	Particulurs	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

PASTURE MANAGEMENT

Introduction: The sound animal industry in any country centers around good quality feed and fodders. The livestock population in India is nearly 15%of the total livestock population of the world, tough 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 L.B. Ghaghra, Sarju Branch, Soti Jori 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 either for grazing, for gay and silage making or for both.

Intensive Fodder Production: In areas where the major enterprise of the farmers centers around 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

Zone wise crop rotations	Green fodder yield(t / ha)
Central region	
1- Hybrid napier +Cowpea-Berseem+Japanrape	286.3
2- Maize+Cowper-Jowar-Berseem+Japanrape	197.2
3- Jawar+Cowper-Berseem+Japanrape-Jawer+Cowpea	168.6

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. Stage of maturity to feed the animals adequately during the lean period. 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.

CHAPTER -12
LIST OF TABLES

LIST OF TABLES

25.	4.5	Details of Users Groups (UGs) in Project Area.	165
26.	4.6	Details of Project Fund Account of Watershed Committee.	NA
27.	4.7	Details of Convergence of other schemes in the Project Area with IWMP Project.	NA
28.	6.1	List of approved training institutes for Capacity Building in the Project Area.	166
29.	6.2	Capacity Building Activities undertaken in the Project Area.	167
30.	6.3	Developing resource materials, training manuals etc.	NA
31.	7.1	Details of Scientific Plannng and Inputs in IWMP Project.	168
32.	7.2	Entry Point Activities (EPA)	NA
33.	7.3	Other activities of preparatory Stage.	170
34.	7.4	Activities releated to surface water resources in the project areas.	NA
35.	7.5	Activities related to recharging ground water resources in the project	NA
36.	7.6	Details of engineering structures in watershed works.	NA
37.	7.6 a	Survey numberwise Net Planning (Soil and Moisture Conservation Measures)	NA
38.	7.7	Details of activities connected with vegetative cover in watershed works.	NA
39.	7.7a	Survey numberwise vegetative cover/activities in the watershed works.	NA
40.	7.8	Details of allied / other activities.	NA
41.	7.9	Activities executed by Users Groups in the project.	NA
42.	7.10	Activities related to Livelihood by Self Help Groups (SHGs) in the Project Area.	NA
43.	7.11	Details of Livelihoods created for landless people including micro enterprises.	NA
44.	7.12	Details of other livelihoods created for famers.	NA
45.	7.13	Head-wise / Yearwise Summary of percentage expenditure.	171
46.	7.14	Yearwise, Treatmentwise phasing of activities and funds requirement.	NA
47.	7.15	Funding for the IWMP project.	NA
48.	7.16	Public-Private partnership in the Projcet Area with IWMP Project.	NA
49.	7.17	Details of convergence of IWMP with other schemes.	NA
50.	9.1	Details of rights conferred in the CPRs of the Project Area.	NA
51.	9.2	Details of activities in the CPRs in the Project Area.	NA

52.	10.1	Employment Generation.	NA
53.	10.2 (i)	Details of seasonal migration form Project Area, Pre project status.	NA
54.	10.2(ii)	Details of seasional migration from Project Area – Proposed post project status.	NA
55.	10.3(i)	Details of average ground water status in the Project Area (in Meters)	175
56.	10.3(ii)	Details of average ground water table depth in the Project Area (in Meters)	175
57.	10.3(iii)	Status of drinking water.	NA
58.	10.3(iv)	Water Use Efficiency.	NA
59.	10.4(i)	Details of Kharif Crop area and yield in Project Areas.	NA
60.	10.4(ii)	Details of Rabi crop area and yield in the Projcet areas.	NA
61.	10.4(iii)	Details of Summer season crop area and yield in the Project Area.	NA
62.	10.4(iv)	Change in area under horticulture.	NA
63.	10.4(v)	Change in area under fodder.	NA
64.	10.4(vi)	Change in area under fuel wood.	NA
65.	10.5	Details of the livestock in the Project Area.	172
66.	10.6	Change in area under forest/vegative cover.	NA
67.	10.7(i)	Details of other Livelihood to be created for landless people.	NA
68.	10.7(ii)	Details of other Livelihood to be created for farmers.	NA
69.	10.8	Backward-Forward linkages	NA
70.	10.9 (a)	Abstract of outcomes (Ratio of cost and benefits)	176
	10.9 (b)	Abstract of outcomes	177
71.	11.1	Cost effectiveness of structures/ activities	NA

Table-1.1: Project at a Glance IWMP-II[nd] (Sant Ravidas Nagar (Bhadohi)

Sr. No.	Particulars	IWMP - II	Total
1	Name of the State	Uttar Pradesh	
2	Name of the project	I.W.M.P. -II St. Ravidas Nagar	
3	Name of the District	St. Ravidas Nagar	
4	Names of the Blocks	Bhadohi	
5	Names of Gram Panchayats	Total number of Gram panchayat in the project area are -	**23**
6	Names & Census Code of Villages covered	Total number of revenue Villages in the project area are -	**96**
7	Four major reasons for selection of watershed	1. Population are poor 80% to 50% 2. Rain fed area more then 90% 3.% of small and Marginal farmer>80% 4. Land with moderate production	
8	Name, Address & Phone No. of the PIA(s)	Satish Chandra Srivastava Bhoomi Sanrakshan Adikhari, DPAP- I, Uttar Mohal, Near Chandi Hotel, Rabatsganj, Sonabhadra Ph. : 0544-225389	
9	Date of approval of Watershed Development Plan by the DPC	19-10-2010	
10	Area of the Project (ha.)	6310 ha	
11	Area proposed to be treated (ha.)	**4278 ha**	
12	Financial Year of sanction	2010-2011	
13	Project duration from ----- to …	2010-2011 to 2014-2015	
14	Project Cost (Rs. in Lakhs)	513.36	
15	Date of Sanction of state authority		

Table-1.2 : Details on ongoing Development Programme

Sr. No.	Name of Programme	Impleme-nting agency	Objectives of the programme	Year of Commencement	Villages covered	Project Cost
1	Swarnajayanti Gram Swarojgar Yojana (SGSY)	DRDA	Farmulation of groups for weaker section of the BC/SC	On going	All the villages of the project area	-
2	Indira Awas Yojana (IAY)	DRDA	Provide low cast houses to the weaker section SC/ST	On going	All the villages of the project area	-
3	Drought Prone Area Programme (DPAP)	B.S.A DOLR	To improvement of environmental condition of the watershed	1995 onwords	-	-

Table- 1.3 : Ongoing Watershed Programmes in the project area

Sr. No.	Name of Project	Year if Commence ment	Villages covered	No. of Micro Water sheds	Watershed Code	Area under treatment	Funding Source	PIA	Status of completion
1	**IWMP- I**	**2009-2010 to 2013- 2014**	**More than 80**	**6**	2B3A3a3c 2B3A3a3a 2B3A3a2b 2B3A3a2c 2B3A3a2a 2B3A3a3b	5082 ha.	DOLR	B.S.A DOLR St. Ravidas Nagar	**2013-2014**

Table 2.1 : Climatic condition of last five year

Sr. No.	Year	Average Rainfall (mm)	Highest Rainfall intensity in a day (mm)	Temperature (C)		Relative humidity %
			Max.	Min.	Max.	Min.
	2007 - 2008	**1393.1**	**-**	**3.5**	**42.4**	**96**
	2008 -2009	**1291**	**-**	**4.2**	**43.3**	**90**
	2009-2010	**1172.5**	**-**	**3.8**	**42.6**	**94**
	2010-2011	**1200**	**-**	**3.7**	**41.2**	**89**

Table - 2.3 : Details of soil erosion in the project area

1	2	3	4	5
Cause	Type of erosion	Area affected (ha)	Run off (mm/ year)	Average soil loss (Tonnes/ ha/ year)
Water erosion				
a	Sheet	3230	800	16.50
b	Rill	950		
c	Gully	385		
Sub-Total		4565	800	16.50
Wind erosion		NA	-	-

Table- 3.1 (i) : Human Population of the Project Area IWMP-II Sant Ravidas Nagar, U.P.

Census CODE	Village Name	Total House Hold	Total Population	Male	Female	Total Popula. SC	Male	Female
10309600	Ahamadpur Phulwariya	233	1675	878	797	799	414	385
10310900	Ahopur	46	472	239	233	29	15	14
10315400	Amawa Kala	241	2158	1108	1050	171	97	74
10315500	Amawa Khurd	358	2791	1422	1369	394	198	196
10310300	Anangpur	191	1702	902	800	774	403	371
10310600	Araji Amani	1	12	5	7	0	0	0
10313700	Arajidibui	19	140	73	67	26	15	11
10314800	Asogapur	36	372	172	200	0	0	0
10312200	Badamanpur	242	2136	1114	1022	332	168	164
10315000	Bag Amani	0	0	0	0	0	0	0
10318800	Bagahi	67	494	276	218	28	16	12
10314600	Bahari	75	582	290	292	75	42	33
10312000	Bankat Z.Madho Rampur	30	301	153	148	19	10	9
10313100	Baraila	198	1601	822	779	202	113	89
10312900	Bardha	476	3693	1837	1856	525	262	263
10317800	Basantpur	84	575	318	257	251	140	111
10311800	Bhadarmanpur	65	507	255	252	272	138	134
10311600	Bhakuda	90	808	459	349	302	164	138
10310000	Bhikharipur	56	433	238	195	255	132	123

10314400	Bhulaipur	62	704	369	335	0	0	0
10326700	Chainsinghpur	6	52	26	26	0	0	0
10315100	Chak Basawan	2	7	2	5	0	0	0
10312300	Chak Bhuidhar	220	2015	1055	960	46	24	22
10315200	Chak Muglani	0	0	0	0	0	0	0
10317900	Chak Nanhu	32	201	100	101	189	95	94
10317700	Chak Sanath	19	143	81	62	78	47	31
10313300	Chandaipur Or Chanaipur	65	653	336	317	38	20	18
10314200	Chandapur	32	297	157	140	10	6	4
10316800	Chandi Gahana	152	1036	516	520	55	31	24
10310200	Chaudharipur	9	101	53	48	101	53	48
10312400	Chauri Khas	67	761	399	362	62	36	26
10311000	Chauridanu Patti	241	1948	1053	895	386	205	181
10311100	Chaurinipur Patti	59	528	268	260	35	16	19
10316900	Darunha	111	704	364	340	263	131	132
10314700	Dattipurz.Bahari	42	321	166	155	197	102	95
10311900	Deeh Koiran	103	737	385	352	0	0	0
10315900	Dhanapur	79	580	332	248	175	104	71
10317500	Domanpur Chiwathiya	209	1583	823	760	257	124	133
10318100	Dubha	81	580	299	281	175	85	90
10309000	Dudawa Kukruthi	353	2881	1494	1387	639	349	290
10328300	Gobindpur	82	562	306	256	98	59	39

10316300	Gondamir Imamali	1	26	15	11	0	0	0
10313000	Gopalpur	20	264	143	121	0	0	0
10313500	Gouda Chamarhatta	0	0	0	0	0	0	0
10318700	Hadha	4	41	24	17	0	0	0
10328100	Hadhi Bari	28	304	163	141	156	84	72
10315300	Hari Chandanpur	45	356	176	180	0	0	0
10316600	Horila	13	80	44	36	61	34	27
10314500	Jadupur Z.Bahri	156	1385	733	652	0	0	0
10313600	Jagdishpur Sujan	107	719	365	354	267	135	132
10309900	Jallapur	40	346	190	156	85	45	40
10312500	Jamua	206	1615	869	746	262	146	116
10309700	Jamunipur Badfaros	401	2517	1403	1114	247	126	121
10318600	Jawsanpur	85	584	304	280	10	5	5
10315600	Jhuri Sonbarsa	8	44	26	18	44	26	18
10316200	Jolhapur	43	383	192	191	8	3	5
10328000	Kachhuwa Bojh	50	413	209	204	97	49	48
10316000	Kandhiya	104	971	473	498	258	128	130
10317100	Kandui	99	886	432	454	0	0	0
10317600	Kantapur	70	611	307	304	0	0	0
10316700	Kapal Deeh	56	412	203	209	330	171	159
10311200	Kolahd	328	2707	1473	1234	478	245	233
10311700	Kom	157	1219	631	588	302	165	137

10316100	Lachhapur	107	788	411	377	157	78	79
10310100	Lakhanpur Urf Abhayanpur	139	1235	665	570	38	19	19
10317000	Latiya	261	1991	1013	978	423	203	220
10314300	Loh Chanda	19	103	50	53	103	50	53
10312100	Madho Rampur	162	1285	674	611	557	289	268
10316400	Madho Singhpur	28	232	122	110	112	63	49
10309500	Mahbubpur	217	1519	754	765	442	224	218
10314100	Maihardo Patti	296	2357	1184	1173	722	370	352
10313900	Majhilapur	11	96	50	46	49	23	26
10315700	Manapur	114	1192	609	583	0	0	0
10311500	Manikpur	141	1247	662	585	276	150	126
10313200	Narharpur	22	250	127	123	0	0	0
10313400	Narpatpur	119	939	453	486	464	229	235
10318000	Nidiur	207	1643	854	789	901	474	427
10313800	Pachpatiya	186	1484	764	720	323	166	157
10317400	Palheya	156	1375	723	652	60	26	34
10312600	Parsipur	73	697	359	338	272	142	130
10311300	Parsotam Patti	23	183	105	78	0	0	0
10310400	Parsotampur Raveli	104	807	417	390	262	131	131
10314900	Parsottampur Z.Bargaon	2	5	2	3	3	1	2
10312700	Prem Rajpur	50	326	175	151	100	54	46
10315800	Raghupur	77	509	262	247	0	0	0

10314000	Rajputan Z.Ravali	61	415	215	200	300	149	151
10310700	Ramdeo Patti	108	754	369	385	243	120	123
10310800	Raveli	116	976	497	479	98	49	49
10311400	Samalkot	89	701	361	340	497	257	240
10316500	Sankarpur	186	1548	771	777	215	113	102
10308900	Sewapur Or Senabarpura	120	966	496	470	245	134	111
10310500	Sivdaspur	26	178	88	90	156	79	77
10317200	Surhan	442	3074	1545	1529	583	293	290
10318200	Suwajag	57	447	219	228	40	20	20
10328200	Tikaitpur	137	1072	544	528	278	139	139
10312800	Udhopur	16	79	44	35	79	44	35
	Total	**10427**	**83202**	**43104**	**40098**	**17861**	**9265**	**8596**

Table- 3.1 (ii) : VILLAGE WISE AREA IN THE WATERSHED, IWMP-II, St. RAVIDAS NAGAR

WS_CODE	VILLAGE NAME	AREA (ha)	WS_CODE	VILLAGE NAME	AREA (ha)
2B3A1f3a	Kochari	0.001	2B3A1f3b	Loh Chanda	55.604
	Sewapur Or Senabarpura	5.348		Chaudharipur	7.977
	Arajidibui	15.371		Chaudharipur	45.736
	Ramdeo Patti	18.052		Jallapur	1.896
	Araji Amani	28.037		Anangpur	81.060
	Majhilapur	29.219		Jamunipur Badfaros	118.780
	Pachpatiya	66.084		Ahamadpur Phulwariya	49.382
	Sivdaspur	96.639		Bhulaipur	106.402
	Rajputan Z.Ravali	16.185		Chaurinipur Patti	0.079
	Raveli	16.063		Chaurinipur Patti	28.694
	Raveli	31.709		Chauridanu Patti	37.014
	Mahbubpur	31.923		Chauridanu Patti	59.899
	Maihardo Patti	71.807		Parsotam Patti	0.425
	Chandapur	130.367		Parsotam Patti	21.385
	Parsotampur Raveli	115.970		Hari Chandanpur	24.742
	Parsotampur Raveli	39.108		Hari Chandanpur	38.000
	Dudawa Kukruthi	92.257		Bhakuda	169.641
	Loh Chanda	90.252		**TOTAL AREA**	**846.716**
	TOTAL AREA	**894.393**			

WS_CODE	VILLAGE NAME	AREA (ha)	WS_CODE	VILLAGE NAME	AREA (ha)
2B3A3a1a	Samalkot	7.459	2B3A3a1c	Chak Bhuidhar	10.549
	Samalkot	42.947		Chak Bhuidhar	28.779
	Lakhanpur Urf Abhayanpur	34.893		Badamanpur	45.553
	Bag Amani	3.578		Manapur	170.105
	Kolahd	53.425		Bankat Z.Madho Rampur	10.380
	Kolahd	2.026		Deeh Koiran	28.398
	Manikpur	6.675		Deeh Koiran	14.457
	Manikpur	46.209		Lachhapur	3.011
	Asogapur	15.147		Lachhapur	12.953
	Parsottampur Z.Bargaon	5.462		Jhuri Sonbarsa	53.135

	Jadupur Z.Bahri	73.327		Chauri Khas	6.933
	Bhikharipur	54.318		Chauri Khas	27.842
	Chak Basawan	4.834		Mahrajpur	0.000
	Amawa Khurd	21.111		Kom	71.036
	Ahopur	18.196		Raghupur	86.239
	Chak Muglani	2.291		Kandhiya	24.455
	Dattipurz.Bahari	38.627		Kandhiya	25.684
	Dattipurz.Bahari	7.881		Udhopur	46.921
	Amawa Kala	0.220		Udhopur	20.303
	Amawa Kala	38.204		Dhanapur	200.073
	Bardha	105.676		Dhanapur	2.244
	Bardha	104.221		Gopalpur	72.485
	Bahari	62.047		Parsipur	24.945
	Jamua	46.539		**TOTAL AREA**	**986.480**
	TOTAL AREA	**795.313**			

WS_CODE	VILLAGE NAME	AREA (ha)	WS_CODE	VILLAGE NAME	AREA (ha)
2B3A3a1d	Madho Rampur	39.577	2B3A3a1e	Chandi Gahana	128.413
	Jolhapur	13.581		Sankarpur	11.680
	Jolhapur	0.080		Sankarpur	37.789
	Jolhapur	31.853		Sankarpur	90.751
	Jagdishpur Sujan	3.901		Tikaitpur	171.844
	Jagdishpur Sujan	18.532		Madho Singhpur	66.188
	Jagdishpur Sujan	62.583		Suwajag	6.894
	Jagdishpur Sujan	19.972		Gobindpur	58.319
	Bhadarmanpur	80.144		Horila	53.659
	Bhadarmanpur	36.104		Horila	0.050
	Palheya	89.656		Horila	1.188
	Kantapur	59.009		Dubha	103.592
	Rasulaha	0.000		Hadha	54.651
	Kachhuwa Bojh	49.643		Darunha	49.708
	Kachhuwa Bojh	102.082		Darunha	40.749
	Prem Rajpur	5.274		Latiya	190.008
	Prem Rajpur	35.506		Surhan	78.722

	Chak Sanath	13.937		Jawsanpur	1.141
	Gondamir Imamali	19.950		Bagahi	38.171
	Gondamir Imamali	5.689		Kandui	24.768
	Domanpur Chiwathiya	41.159		Kandui	21.915
	Domanpur Chiwathiya	42.880		Chainsinghpur	23.754
	Baraila	11.300		**TOTAL AREA**	**1253.951**
	Baraila	50.566			
	Basantpur	22.611			
	Narharpur	18.757			
	Narharpur	88.209			
	Nidiur	233.519			
	Narpatpur	3.211			
	Narpatpur	78.576			
	Gouda Chamarhatta	10.046			
	Gouda Chamarhatta	0.404			
	Kapal Deeh	98.041			
	Kapal Deeh	19.953			
	Hadhi Bari	87.703			
	Chandaipur Or Chanaipur	18.367			
	Chak Nanhu	20.777			
	Chak Nanhu	0.131			
	TOTAL AREA	**1533.282**			

Table - 3.2 : Migration Status

No. of Villages	Total Population		Migration Days	Reason for migration	Expected reduction in no of persons migrating
96	**Male**	**Female**	**110 days**	Due to Unemployment in village and high wages in city	150
	43104	**40098**			

Table 3.3 : The land under different categories within watershed

S. N.	Watershed Code	Name of villages falling in the watershed	Built-Up Land	Agriculture	Waste land all types	Water Bodies	Plantation	Total
1	2B3A3a1a	Samalkot,Lakhanpur Urf Abhayanpur, Bag Amani, Kolahd, Manikpur, Asogapur, Jadupur Z.Bahri, Bhikharipur,Chak Basawan,Amawa Khurd, Ahopur, Chak Muglani, Dattipurz.Bahari, Dattipurz.Bahari, Amawa Kala, Bardha, Bahari, Jamua	47.05	623.04	35.26	6.33	53.91	765.59
2	2B3A3a1c	Chak Bhuidhar,Badamanpur,Manapur, Bankat Z.Madho Rampur, Deeh Koiran, Lachhapur, Jhuri Sonbarsa,Chauri Khas, Parsipur, Mahrajpur, Kom, Raghupur, Kandhiya,, Udhopur, Dhanapur, Gopalpur	73.38	764.19	142.39	9.99	27.98	1017.93
3	2B3A3a1d	Madho Rampur, Jolhapur, Jagdishpur Sujan, Bhadarmanpur, Palheya, Kantapur, Rasulaha, Kachhuwa Bojh, Prem Rajpur, Chak Sanath,Gondamir Imamali, Chiwathiya, Domanpur, Baraila, Basantpur, Narharpur, Nidiur, Narpatpur, Gouda Chamarhatta, Kapal Deeh, Hadhi Bari, Chandaipur Or Chanaipur, Chak Nanhu	125.16	1491.62	115.55	33.93	46.65	1812.91
4	2B3A3a1e	Madho Singhpur, Suwajag, Gobindpur, Horila, Dubha, Hadha, Darunha, Darunha,Latiya, Surhan ,Chandi Gahana, Sankarpur, Tikaitpur,	44.62	717.36	26.55	2.74	22.72	813.99

		Jawsanpur, Bagahi, Kandui, Chainsinghpur						
5	2B3A1f3a	Kochari, Sewapur Or Senabarpura, Arajidibui, Ramdeo Patti, Araji Amani, Majhilapu, Pachpatiya, Sivdaspur, Rajputan Z.Ravali, Raveli, Mahbubpur, Maihardo Patti, Chandapur, Parsotampur Raveli, Dudawa Kukruthi, Loh Chanda	55.74	847.94	55.60	4.92	30.77	994.97
6	2B3A1f3b	Loh Chanda, Chaudharipur, Jallapur, Anangpur, Jamunipur Badfaros, Ahamadpur Phulwariya, Bhulaipur, Chaurinipur Patti,Chaurinipur Patti, Parsotam Patti, Hari Chandanpur, Bhakuda, Hari Chandanpur	18.27	781.06	95.37	5.54	4.37	904.61
		Total	364.22	5225.21	470.72	63.45	186.40	6310.00

Table – 3.4 : Area production & productivity of Kharif/Rabi/Summer season crops

Sr. No.	Name of Village	Name of Crop - 1		Expected project satatus	
		Area	Productivity (Kg/ ha.)	Area	Productivity (Kg/ ha.)
1	Kharif Paddy	1180	1259	1652	1637
2	Rabi Wheat	1776	1949	1466	2534
3	Zaid/Other Season	-	-	-	-

Table- 3.6 : Details of land holding pattern in the project area

Sr. No.	Project Area	No. of households	No. of BPL households	Type of Farmer	Land holding (ha.)		
1.	IWMP-II	10427	2032		Irrigated	Unirrigated	Total
				(i) Large	322	650	972
				(ii) Small	3022	2010	5032
				(iii) Marginal	2099	1922	4021
				(iv) Landless	220	182	402
				Sub-Total	5663	4764	10427

Table 4.1 (a) : Details of Project Implementing Agency (s)

1	2	
S. No.	Particulars of PIA	
(i)	Date of selection of PIA	23.06.2010
(ii)	Type of organization#	Government of Uttar Pradesh
(iii)	Name of organization	Department of Land and water resources
(iv)	Designation & Address	Satish Chandra Srivastava Bhoomi Sanrakshan Adikhari, DPAP- I, Uttar Mohal, Near Chandi Hotel, Rabatsganj, Sonabhadra
(v)	Telephone	Ph. : 0544-225389
(VI)	Fax	
(VII)	E-Mail	

Only the letter assigned to each type, as given below, needs to be typed.

A Line Dept. B Autonomous organization

C Govt. Institute D Research Bodies

E Zila Parishad F Intermediate Panchayat

G Voluntary Organizations H Any other (please specify).

4.2 Details of Watershed Development Teams (WDTs) in the project area.

1	2	3	4	5	6	7	8	9
Sr. No.	Name of the PIA	Names of WDT members	M/F#	Age	Qualification / Experience	Description of professional training	Role/ Function##	Year of appointment of WDT member
1.	Sri Satish Chandra Srivastava	Jagdish Prasad	M	48	Intermediate, Engg. Diploma	Agriculture	Water Management	2009-10
		Mohan Lal Gupta	M		Intermediate, Engg. Diploma.	Horticulature	Aforestation	2009-10
		Harish Prasad Srivastava	M		B.Sc (Ag)	Soil Conservation	Soil Conservation	2009-10
		Sunder Lal Bajpayee	M		B.Sc (Ag)	Watershed Management	Community Management	2009-10
		Raj Kumar Shukla	M		Intermediate		Extension	2009-10
		Smt.Sangita Devi	F		M.A.		Social Mobilization	2009-10

M – Male, F - Female ## In column 8, only the letter, assigned as below, needs to be typed, except for `J', where the type may be specifically mentioned. A. Participatory Net Planning (PNP) and Participatory Rural Approach (PRA), Training and Capacity Building B. Planning C. Maintenance of Accounts D. Signing of cheques and making payments E. Social audit F. Engineering surveys, drawings and cost estimations G. Physical verification & measurement H. Record of labour employed I. Livelihood opportunities for landless J. Post project operation, maintenance of assets K. Any other (please specify)

Table – 4.3 (i) : Details of Watershed Committees (WC)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
S. No	**Names of WCs**	**Date of Registration as a Society (dd/mm/yyyy)**	**Name of the Watershed member**	**Designation**	**M /F**	**SC**	**ST**	**SF**	**MF**	**LF**	**Land -Less**	**UG**	**SHG**	**G P**	**Any Othe r**	**Educational Qualification**	**Function (s) assigned #**
1	2B3A3a1a	Under Process	Sri Algu	President	M			√						√		Intermediate	A & D
			Sri Kallu	Secretary	M			√				√				*B.A*	C & H
			Sri Avadh Karan	Member	M			√				√				Intermediate	E
			Sri Amarnath	Member	M	√			√					√		*Primary*	E & F
			Sri Kalika Prasad	Member	M			√				√				High School	E
			Sri Giridhari	Member	M				√			√				High School	E
			Sri Abhimanyu	Member	M				√			√				High School	E
			Sri Kamla Shankar	Member	M				√					√		*Intermediate*	I & F
			Sri Kashinath	Member	M				√			√				*Intermediate*	B & E
			Smt. Geeta Devi	Member	F	√			√			√				High School	E

In column 17, only the letter assigned, as below, needs to be typed, except for `J', where the type may be specifically mentioned. A. PNP and PRA B. Planning C. Maintenance of Accounts D. Signing of cheques and making payments E. Supervision of construction activities F. Cost Estimation G. Verification & Measurement H. Record of labour employed I. Social Audit J. Any other (please specify).

Table – 4.3 (ii) : Details of Watershed Committees (WC)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
S. No	**Names of WCs**	**Date of Registration as a Society (dd/mm/yyyy)**	**Name of the Watershed member**	**Designation**	**M /F**	**SC**	**ST**	**SF**	**MF**	**LF**	**Land -Less**	**UG**	**SHG**	**G P**	**Any Othe r**	**Educational Qualification**	**Function (s) assigned #**
1	2B3A3a1d	Under Process	Sri Jagdish Prasad	President	M			√						√		Intermediate	A & D
			Sri Vidyadhar	Secretary	M			√				√				*B.Sc.*	C & H
			Sri Amarnath	Member	M			√				√				Intermediate	E
			Sri Chouthi	Member	M	√			√					√		High School	E & F
			Sri Mahfuz Alam	Member	M			√				√				High School	E
			Sri Bechan	Member	M				√			√				J.High School	E
			Sri Bhikhai	Member	M				√			√				B.A.	E
			Sri Hari Prasad	Member	M				√					√		*Intermediate*	I & F
			Sri Dinesh Kumar	Member	M				√			√				*Intermediate*	B & E
			Sri Pancham	Member	M	√			√			√				High School	E
			Smt. Jamuni Devi		F												

Table – 4.3 (iii) : Details of Watershed Committees (WC)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
S. No	**Names of WCs**	**Date of Registration as a Society (dd/mm/yyyy)**	**Name of the Watershed member**	**Designation**	**M /F**	**SC**	**ST**	**SF**	**MF**	**LF**	**Land -Less**	**UG**	**SHG**	**G P**	**Any Othe r**	**Educational Qualification**	**Function (s) assigned #**
1	2B3A3a1c	Under Process	Sri Keshav	President	M			√						√		B.A.	A & D
			Sri Achiyuta	Secretary	M			√				√				*Intermediate*	C & H
			Sri Vishundeo	Member	M			√				√				Intermediate	E
			Sri Khaderu	Member	M	√			√					√		High School	E & F
			Sri Tulsi	Member	M			√				√				High School	E
			Sri Nanhe	Member	M				√			√				J.High School	E
			Sri Fular	Member	M				√			√				B.A.	E
			Sri Guru Charan	Member	M				√					√		*Intermediate*	I & F
			Sri Vidya Devi	Member	F				√			√				High School *e*	B & E
			Sri Dinanath	Member	M	√			√			√				High School	E

Table – 4.3 (iv) : Details of Watershed Committees (WC)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
S. No	**Names of WCs**	**Date of Registration as a Society (dd/mm/yyyy)**	**Name of the Watershed member**	**Designation**	**M /F**	**SC**	**ST**	**SF**	**MF**	**LF**	**Land -Less**	**UG**	**SHG**	**G P**	**Any Othe r**	**Educational Qualification**	**Function (s) assigned #**
1	2B3A1f3b	Under Process	Sri Mata Prasad	President	M			√						√		High School	A & D
			Sri Ram Rajya	Secretary	M			√				√				*Intermediate*	C & H
			Sri Tara Shankar	Member	M			√				√				Intermediate	E
			Sri Dhiraj	Member	M	√			√					√		*Primary*	E & F
			Sri Girijashankar	Member	M			√				√				High School	E
			Sri Chandradev	Member	M				√			√				High School	E
			Sri Pratap	Member	M				√			√				High School	E
			Sri Ram Ujagar	Member	M				√					√		High School	I & F
			Sri Ram Adhar	Member	M				√			√				*Intermediate*	B & E
			Smt. Saraswati	Member	F	√			√			√				High School	E
			Smt. Asha Devi	Member	F												

Table – 4.3 (v) : Details of Watershed Committees (WC)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
S. No	**Names of WCs**	**Date of Registration as a Society (dd/mm/yyyy)**	**Name of the Watershed member**	**Designation**	**M /F**	**SC**	**ST**	**SF**	**MF**	**LF**	**Land -Less**	**UG**	**SHG**	**G P**	**Any Othe r**	**Educational Qualification**	**Function (s) assigned #**
1	2B3A3a1e	Under Process	Sri Dasrath	President	M			√						√		High School	A & D
			Sri Vijay	Secretary	M			√				√				*B.A.*	C & H
			Sri Baliram	Member	M			√				√				Intermediate	E
			Sri Rajendra	Member	M	√			√					√		*Primary*	E & F
			Sri Ram Payare	Member	M			√				√				High School	E
			Sri Shitla Prasad	Member	M				√			√				J.High School	E
			Sri Siyaram	Member	M				√			√				B.A.	E
			Sri Srinath	Member	M				√					√		High School	I & F
			Sri Ram Sagar	Member	M				√			√				High School	B & E
			Sri Lalu	Member	M	√			√			√				High School	E
			Smt. Santara Devi	Member	F											High School	

Table – 4.3 (vi) : Details of Watershed Committees (WC)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
S. No	**Names of WCs**	**Date of Registration as a Society (dd/mm/yyyy)**	**Name of the Watershed member**	**Designation**	**M /F**	**SC**	**ST**	**SF**	**MF**	**LF**	**Land -Less**	**UG**	**SHG**	**G P**	**Any Othe r**	**Educational Qualification**	**Function (s) assigned #**
1	2B3A1f3a	Under Process	Sri Bahadur	President	M			√						√		Intermediate	A & D
			Sri Manna Lal	Secretary	M			√				√				*Intermediate*	C & H
			Sri Adya Prasad	Member	M			√				√				Intermediate	E
			Sri Foujdar	Member	M	√			√					√		*Primary*	E & F
			Sri Vishwanath	Member	M			√				√				High School	E
			Sri Krishna Nand	Member	M				√			√				J.High School	E
			Sri Girija Shankar	Member	M				√			√				B.A.	E
			Sri Guruhu	Member	M				√					√		*Intermediate*	I & F
			Sri Gokran	Member	M				√			√				*Intermediate*	B & E
			Smt. Mira Devi	Member	F	√			√			√				High School	E

Table-4.4 : Details of Self Help Groups (SHGs) in the project area

S. No.	Name of Project (M.W.S.)	Code No. (M.W.S.)	Name of S.H.G.	Occupation of S.H.G.	Name of Chairman & No. Members
1.	Bardha	2B3A3a1a	Ambe mahila S.H.G	Goat Farming	Sri Amresh Chand S/o Achhaibar & 12 member
2.	Badamanpur	2B3A3a1c	Maa Santoshi mahila S.H.G	Carpet pheri	Sri Uma Shankar S/o Sri Bhagwan Das & 12 member
3.	Kachuwa Bojh	2B3A3a1d	Durga Mahila S.H.G.	General Merchant	Sri Avadh Narayan S/o Sri Dev Sharan & 10 other member
4.	Latiya	2B3A3a1e	Parwati Mahila S.H.G.	Carpet weaving	Sri Arjun S/o Jai Managal & 12 other member
5.	Chandapur	2B3A1f3a	Maa Lakshmi mahila S.H.G.	Goat Farming	Smt. Geeta Devi W/o Jothan & 11 Other members
6.	Bhakuda	2B3A1f3b	Baba shahab S.H.G.	Goat Farming	Sri Amarnath S/o Sri Shiva Nand & 10 other members

Table – 4.5 : Details of Users Groups in Project Area

S. No.	Name of Project (M.W.S.)	Cod No. (M.W.S.)	No of U.G.	No. of Cultivators
1.	Bardha	2B3A3a1a	18	217
2.	Badamanpur	2B3A3a1c	12	173
3.	Kachuwa Bojh	2B3A3a1d	19	150
4.	Latiya	2B3A3a1e	22	214
5.	Chandapur	2B3A1f3a	24	225
6.	Bhakuda	2B3A1f3b	20	178

Table- 6.1 : Capacity Building Institution

S. No.	Name of the Training Institute	Full Address with contact no., website & e-mail	Type of Institute#	Area(s) of speciali-zation$	Accreditation details	Trainings		
						Reference Year	No. of Trainings Assigned	No. of Trainees to be Trained
1	Deen Dayal Gram Vikas Sansthan	Bakshi Ka Talab, Lucknow	Research Institutes	Agriculture/ Horticulture/ Animal Husbandry	Govt. of U. P.	2012-2014	3	40
2	Acharya Narendra Dev Agril. University	Faizabad	University	Agriculture/ Horticulture/ Animal Husbandry	Govt. of U. P.	2012-2014	3	70
3	Land Devlopment & Water Resource Devlopment Training Institute	Beli Kala Lucknow	Training Institute	Watershed Devlopment	Govt. Of U.P.	2010-2014	4	60

Table – 6.2 : Institutional Arrangement & Capacity Building in the Projects

S. No.	Project Stake holders	No. of Stake holders	Total no. of persons	No. of persons trained so far	No. of Persons to be trained	Sources of funding for training, BSA Unit or DOLR or others		Name & Address of Training institute
						DOLR	BSA unit or others	
1	Distinct Data centre	1	3	-	3	DOLR	BSA unit	UPLDWR Training Centre, Belikala, Lucknow
2	PIA	1	12	2	12	DOLR	BSA unit	Acharya Narendra Dev, Training Centre, Faizabad
3	WDTs	1	8	-	8	DOLR	BSA unit	Belikala Faizabad Walmi Lucknow
4	W.Cs	13	130	-	130	DOLR	BSA unit	District Level
5	GPs	13	13	-	13	DOLR	BSA unit	District Level
6	SHG	50	500	-	500	DOLR	BSA unit	District Level
7	JG	56	550	-	550	DOLR	BSA unit	District Level
8	Community	-	5	-	5	DOLR	BSA unit	District Level
9	Any others	-	-	-	-	DOLR	BSA unit	District Level

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 spectroscopy for high speed soil nutrient analysis	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 - 7.3 : Details of the Goat rearing Financial Component

S.No.	Component	Amount
1.	Cost of 10 goats of improved breed (not less than 6 months of age) @ Rs. 3000.00 each	30000.00
2.	Cost of 1 buck of improved breed @ Rs. 5000.00	5000.00
3.	Cost of insurance @ 11.63 / unit	4070.00
4.	Feed cost for 3 months @ 250 gm/ day for goats @ Rs. 11.84/ 250 gm	2930.40
5.	Provision of deworming, mineral and vitamin supplement, treatment, vaccination @ Rs.160/ animal	1760.00
6.	The expense including monitoring expenses, register and records @ Rs. 170.00/ unit	170.00
	Total	**Rs. 43,930.40**
		Say Rs. 43,950.00

Table- 7.13 : Component wise & Year wise Phasing of Physical & Financial Outlay,I.W.M.P-II

Financial (Lacs Rs.) Physical (ha.)

S. No.	Component	% of Budget	Ist Year (2010-11)		IInd Year (2011-12)		IIIrd Year (2012-13)		IV Year (2013-14)		V Year (2014-15)		Total	
			F	P	F	P	F	P	F	P	F	P	F	P
1. A.	**Administration Cost** TA & DA, POL/Hiring of vehicles/ office and payment of electricity and Phone bill etc. computer, stationary and office consumable and contingency.	10%		-	10.27	-	10.27	-	15.40	-	15.40	-	51.336	-
B.	Monitoring	1%	-	-	1.03	-	1.03	-	1.54	-	1.54	-	5.134	-
C	Evaluation	1%	-	-	1.54	-	1.54	-	1.54	-	0.51	-	5.134	-
	Sub Total	12%												
2. A.	**Preparatory Phases** Entry Point Activities, like well repairing, Kisan vikash munch renovation of chabootra, school boundary, old well , brick lining channel etc.	4%	20.53	-	-	-	-	-	-	-	-	-	20.534	-
B.	Capacity Building	5%	5.13	-	10.27	-	10.27	-	-	-	-	-	25.668	-
C.	Preparation of DPR	1%	5.13	-	-	-	-	-	-	-	-	-	5.134	-
	Sub Total	10%												

3.<u>Watershed works</u> **A Soil & moisture conservation** **Construction of Bunds. (graded bund, contour bund, field Bund, Marzinal bund & Peripheral Bundh)** **B.Water Resources Development** **New and Renovation of exitising Water Harvesting Structure/ Gully plug/Chak Dam/Ponds etc.** **Drainage line treatment(Pucca structure/ Check Dam)** **C.Agroforestry** **Rainfed horticulture with fencing** **Rainfed horticulture without fencing** **Aforestation & development of Silvi_pastoral system**	**50%**	-	-	38.50	-	77.00	-	77.00	-	64.17		256.680	-
Sub Total	**50%**	-	-	38.50	-	77.00	-	77.00	-	64.17		256.680	-
4. **<u>Livelihood Activities</u>** **Income generating Activities through SHGs for landless and Marginal formers (Diary, Goat farming, Bee keeping, Fruit processing ,General merchant shop & live stock development Activities)**	**10%**	-	-	5.13	-	20.53	-	15.40	-	10.27	-	51.336	-
Sub Total	**10%**	-	-	5.13	-	20.53	-	15.40	-	10.27	-	51.336	-
5. **<u>Production System & Micro enterprises</u>** **Farming system approach, animal husbandry, horticulture, vegetables growing, Crop, Silvi Pasture etc**	**13%**	-	-	5.13	-	15.40	-	25.67	-	20.53	-	66.737	-
Sub Total	**13%**	-	-	5.13	-	15.40	-	25.67	-	20.53	-	66.737	-

6.	**Consolidation Phase**	**5%**	-	-	-	-	-	-	-	-	25.668	-	25.668	-
Sub total		**5%**	-	-	-	-	-	-	-	-	25.668	-	25.668	-
Grand Total		**100%**	**30.79**		**71.87**		**136.04**		**136.55**		**138.088**	**-**	**513.36**	-

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	96	1.5250	0	1.220	0.305	3.050	1653	0	993	54	2700	271	0	119	50	440

Table- 10.2 : DETAILS OF MIGRATION (I.W.M.P.-II) ST. RAVIDAS NAGAR

Name of the Project	No. of persons migrating	No. of days per year of migration	Main reason for migration	Expected reduction in no. of persons migrating
I.W.M.P.-II	260	110	Unemployment & Poverty	150

Table-10.3 (i) : 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	96	09 months	12 months	Normal	Pure & Soft water

Table- 10.3 (ii) : 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	96	Open wells	16 – 17 Mtr	14 - 15	-

Table-10.4 : 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	Kharif - Rice	1180.00	1259.00	1652.00	1637.00
2	Rabi - Wheat	1776.00	1949.00	1486.00	2534.00
3	Zaid/Other season	-	-	-	-

Table - 10.9(a) : COST BENEFIT RATIO OF THE PROJECT AREA IWMP-II, SANT RAVIDAS NAGAR

S. No.	Name of Cereal	Area in hectare	Production /Hect. in Quintal	InvestCost/hect.	Rate/Quintal.	Net profit/hect.	Total Net profit.
1	Paddy	1180	12.59	4000	1000	8590	10136200
2	Arhar	250	5	2300	4500	20200	5050000
3	Maize	50	8	3300	800	3100	155000
4	Wheat	1776	19.49	4200	1000	15290	27155040
5	Mustard	120	8	2600	2000	13400	1608000
	Total	**3376**					**44104240**
Status After Work:							
S. No.	**Name of Cereal**	**Area in hectare**	**Production /Hect. in Quintal**	**Invest Cost/hect.**	**Rate/Quintal.**	**Net profit/hect.**	**Total Net profit.**
1	Paddy	1652	16.37	4000	1000	12370	20435240
2	Arhar	250	6	2300	4500	24700	6175000
3	Maize	50	10	3600	800	4400	220000
4	Wheat	1486	25.34	4200	1000	21140	31414040
5	Mustard	120	12	2600	2000	21400	2568000
	Total	**3558**					60812280

Bhoomi Sanrakshan after the treatment of Land	**60812280**
Bhoomi Sanrakshan before the treatment of Land	**44104240**
Net Profit	**16708040**
Ratio of cost and profit	1.3788307

The above ratio clearly indicated that the conservation of land is extremely profitable.

Table - 10.9(b) : SUMMARY OF EXPECTED /ESTIMATED OUTCOMES OF IWMP-II(2010-2011)

S.No.	Name of the Distict	Item	Unit of Measurement	Pre-project Status	Expected Post-project Status
1	2	3	4	5	6
1.	St. Ravidas Nagar	Status of water table	Meter	16.00-17.00	14.00-15.00
2.		Grand water sturcture repaird/ rejuvenated	-	-	-
3.		Quality of drinking water	-	-	-
4.		Availability of drining water	Meter	09 months	12 Months
5.		Increase in irrigation potential			
		Change in cropping/land use pattern	-	Paddy, Single	Double Crooping
6.		Area under agriculture crop	Hector	5225	5400
		i- Area under single crop	Hector	1180	1652
		ii- Area under double crop	Hector	1914	2400
		iii- Area under multiple crop	Hector	-	50
		iv-Cropping Intensity	Ha	-	-
7.		Increase in area under vegetation	Hector	175	250
8.		Increase in area under horticulture	Hector	165	300
9.		Increase in area under fuel & fodder	Hector	3.50	9.0
10.		Increase in milk production	%	3	4
11.		No. of SHGs	No.	-	35
12.		Increase in no. of livelihoods	No.	-	54
13.		Migration	No.	260	150
14.		SHG Federation formed	No.	-	-
15.		Credit Linkage with banks	-	-	-

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- Dranage map

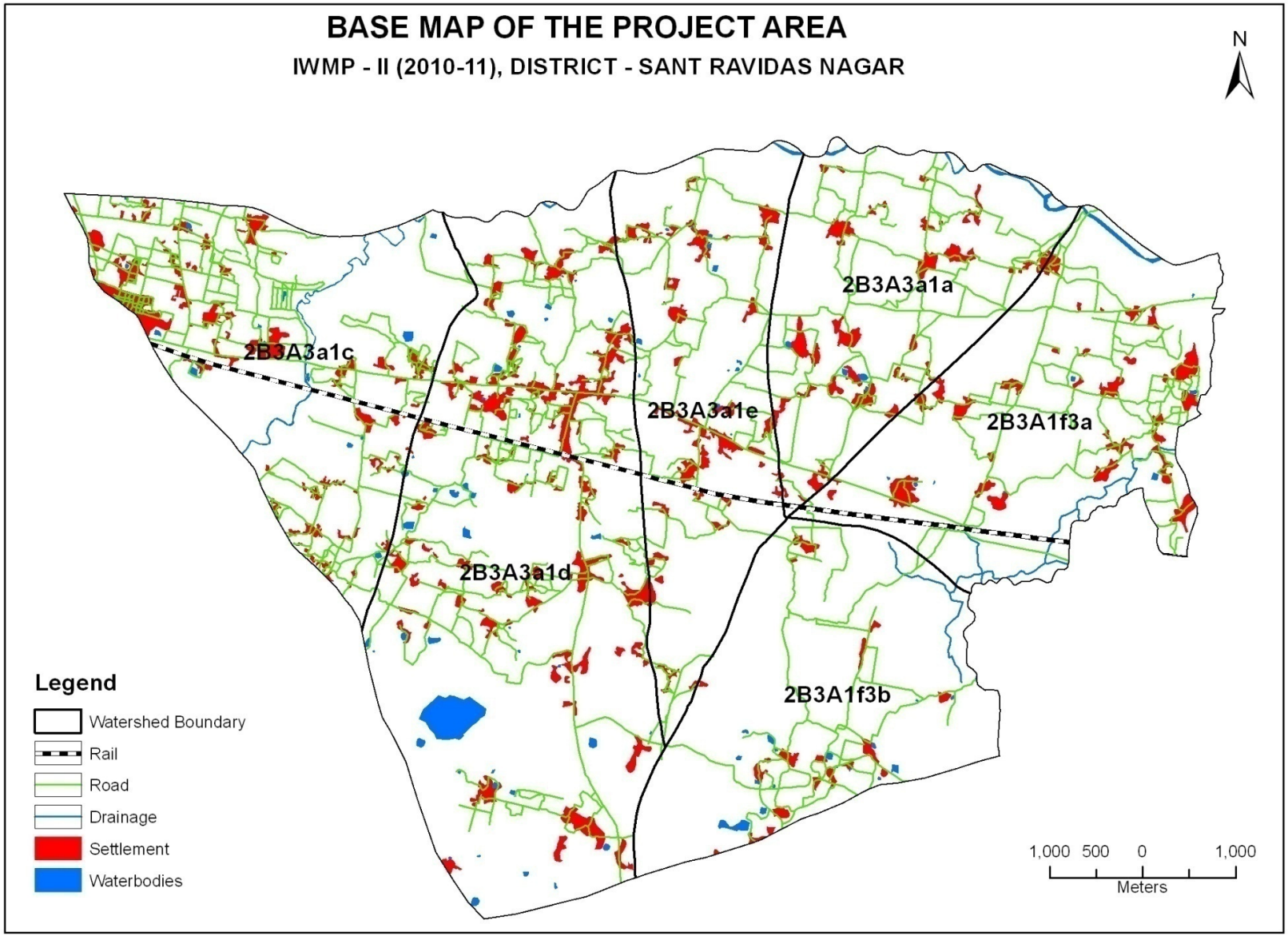
4- Land use/ Land cover map

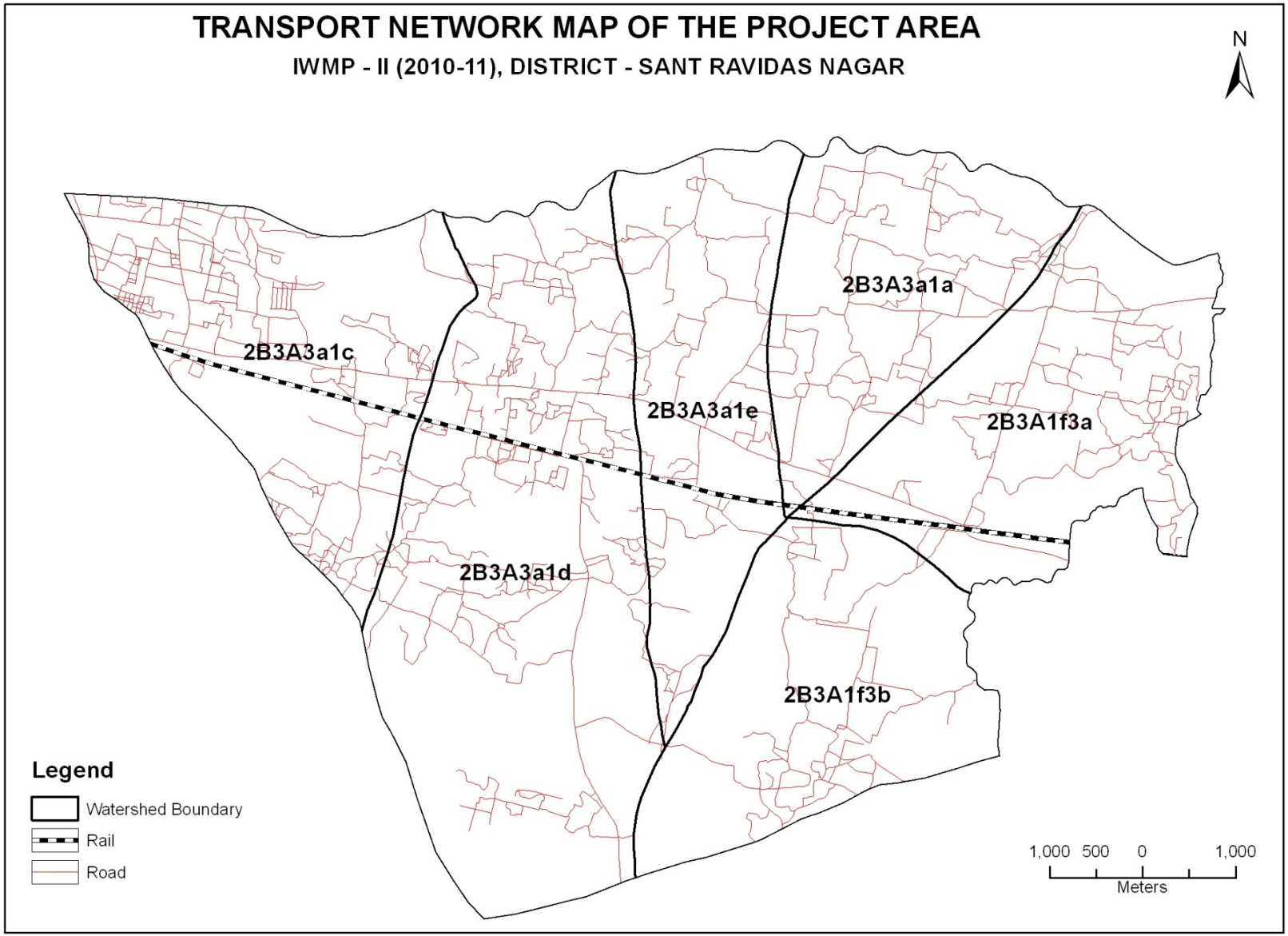
5- Countor map

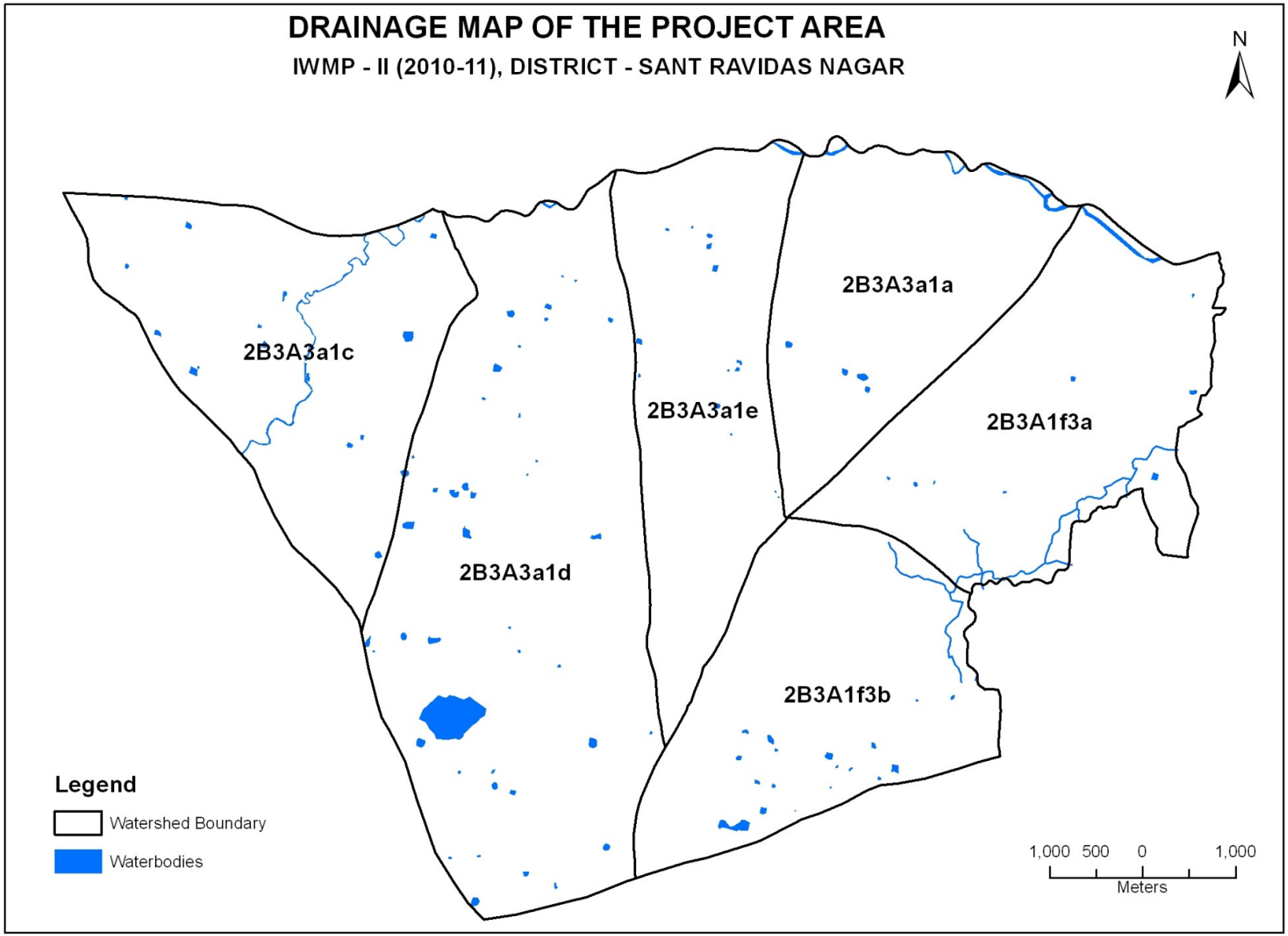
6- Slope map.

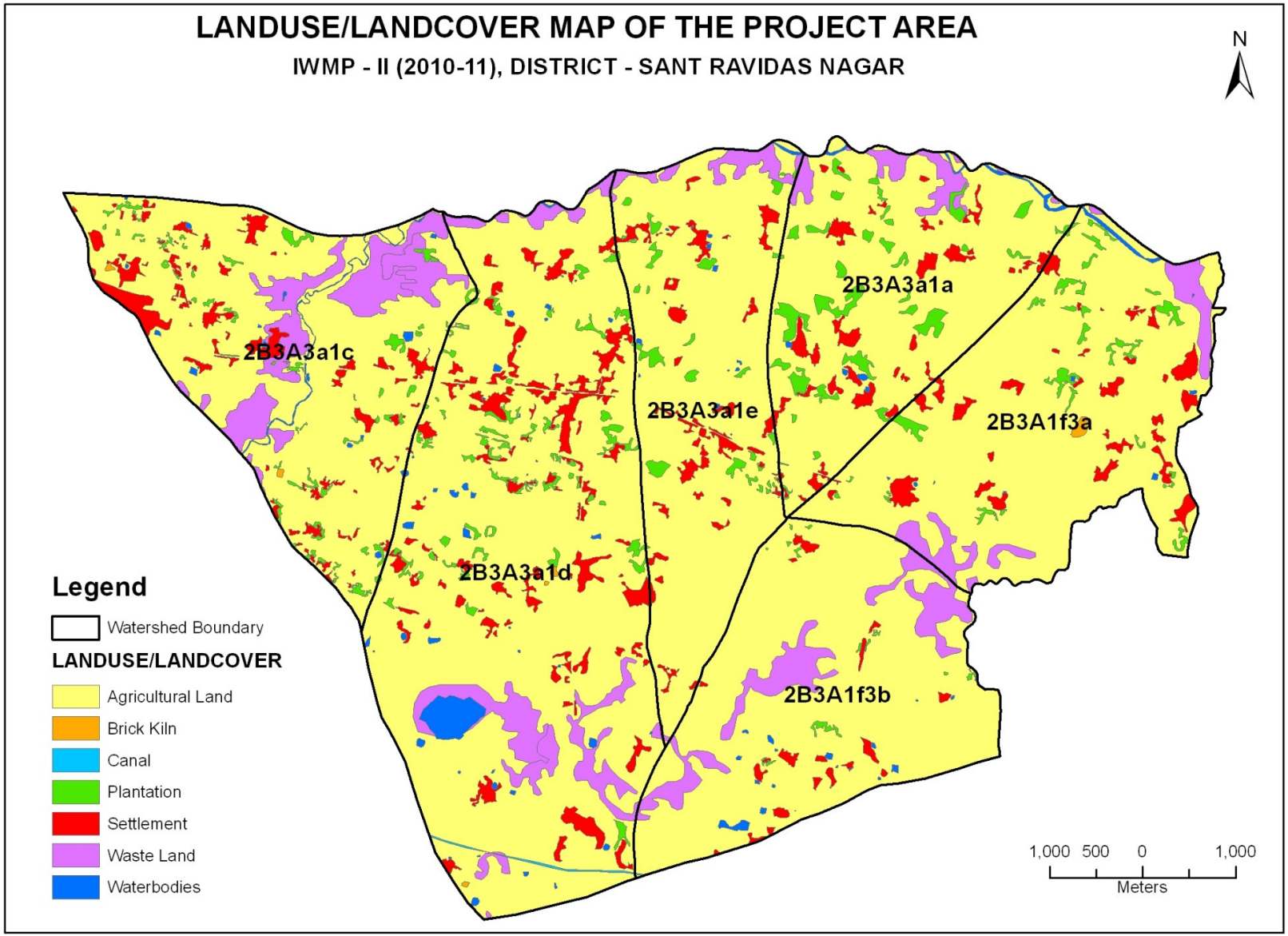
7- Village Map.

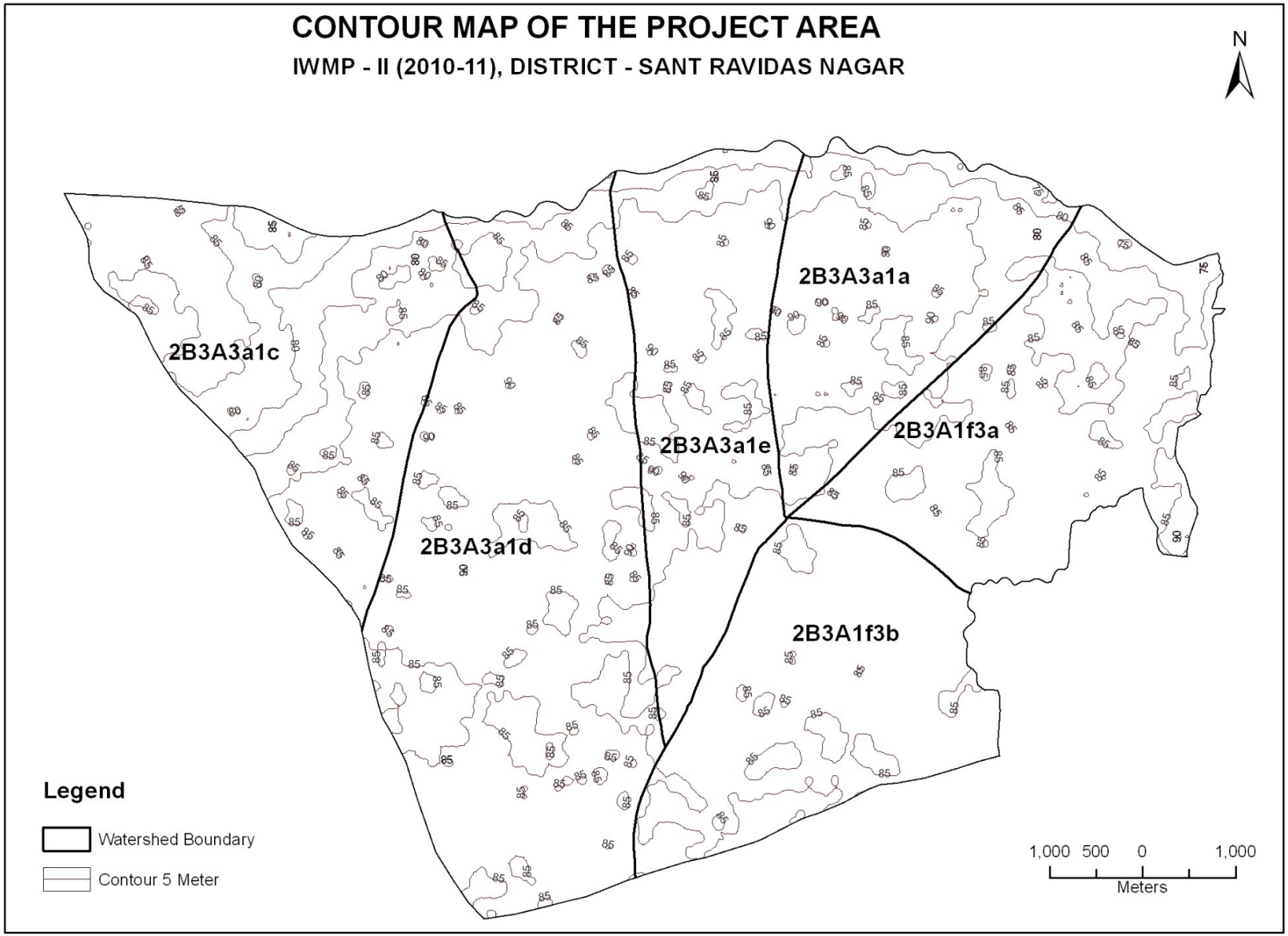
These maps were interpreted from the high resolution satellite dada freely available on internet.

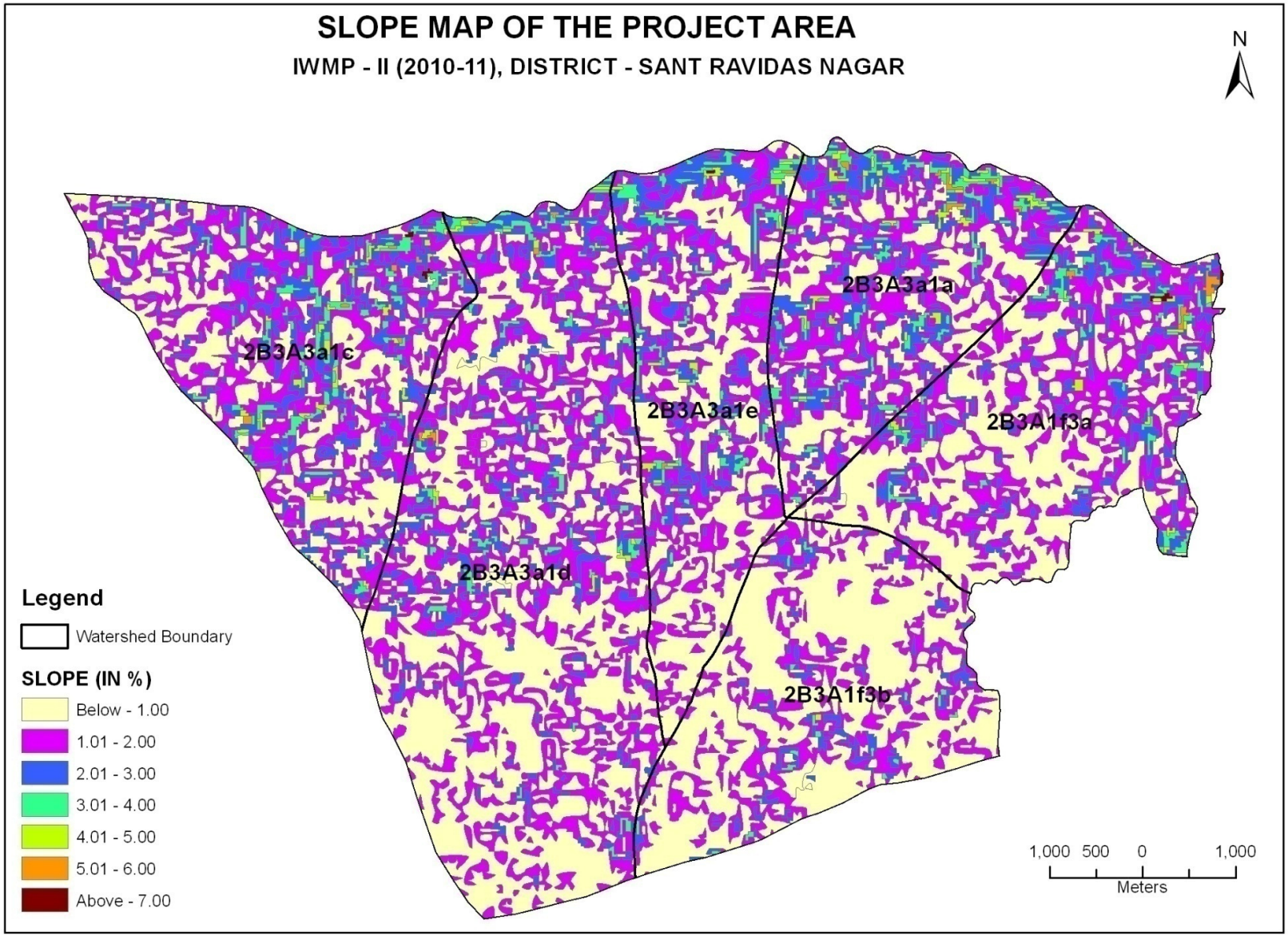

BASE MAP OF THE PROJECT AREA
IWMP - II (2010-11), DISTRICT - SANT RAVIDAS NAGAR
N
2B3A3a1a
2B3A3a1c
2B3A3a1e
2B3A1f3a
2B3A3a1d
2B3A1f3b
Legend
Watershed Boundary
Rail
Road
Drainage
Settlement
Waterbodies
1,000 500 0 1,000
Meters

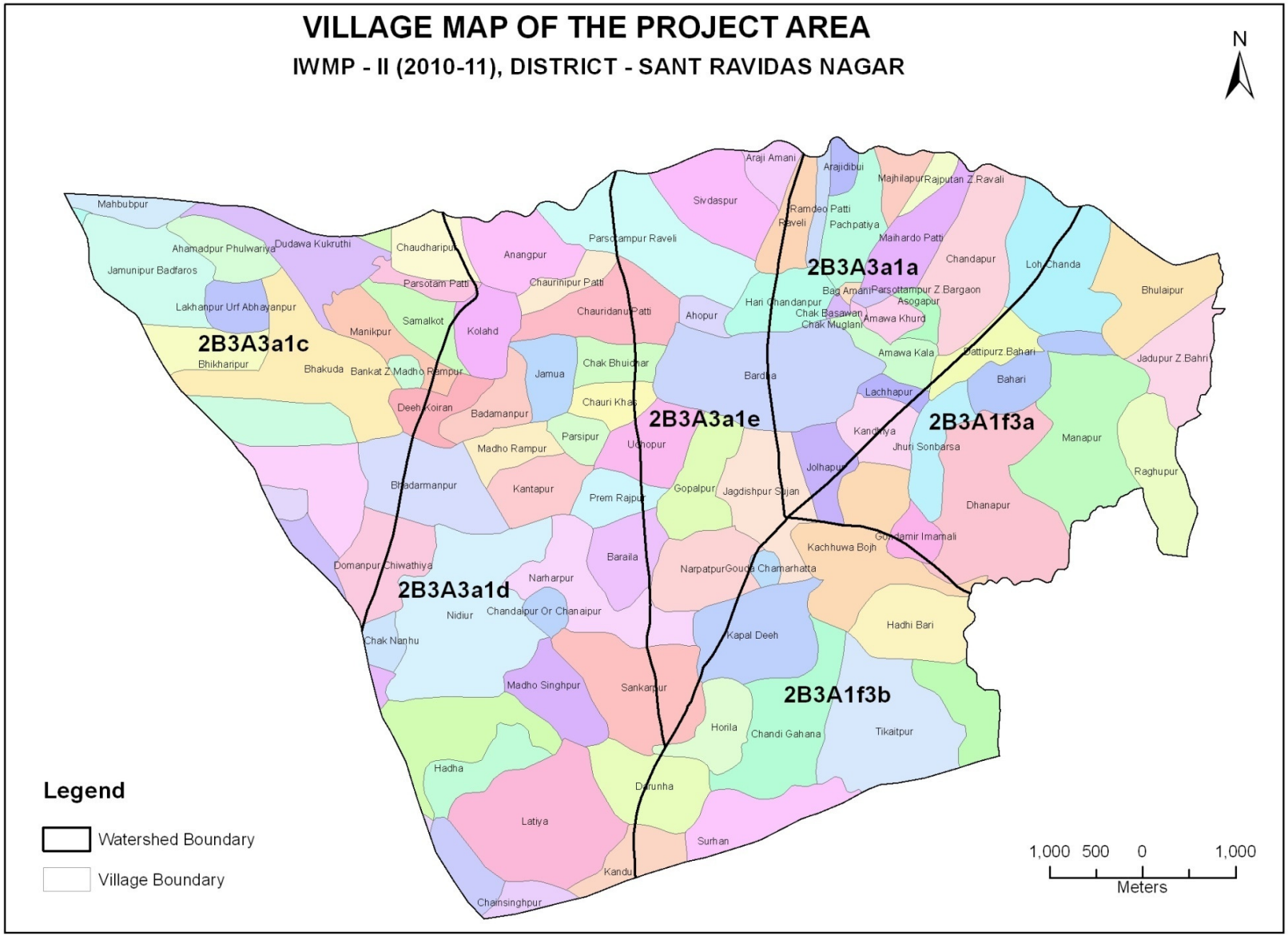

TRANSPORT NETWORK MAP OF THE PROJECT AREA
IWMP - II (2010-11), DISTRICT - SANT RAVIDAS NAGAR
N
2B3A3a1a
2B3A3a1c
2B3A3a1e
2B3A1f3a
2B3A3a1d
2B3A1f3b
Legend
Watershed Boundary
Rail
Road
1,000 500 0 1,000
Meters


DRAINAGE MAP OF THE PROJECT AREA
IWMP - II (2010-11), DISTRICT - SANT RAVIDAS NAGAR
N
2B3A3a1c
2B3A3a1d
2B3A3a1e
2B3A3a1a
2B3A1f3a
2B3A1f3b
Legend
Watershed Boundary
Waterbodies
1,000 500 0 1,000
Meters


LANDUSE/LANDCOVER MAP OF THE PROJECT AREA
IWMP - II (2010-11), DISTRICT - SANT RAVIDAS NAGAR
N
2B3A3a1c
2B3A3a1d
2B3A3a1e
2B3A3a1a
2B3A1f3a
2B3A1f3b
Legend
Watershed Boundary
LANDUSE/LANDCOVER
Agricultural Land
Brick Kiln
Canal
Plantation
Settlement
Waste Land
Waterbodies
1,000 500 0 1,000
Meters


CONTOUR MAP OF THE PROJECT AREA
IWMP - II (2010-11), DISTRICT - SANT RAVIDAS NAGAR
N
2B3A3a1c
2B3A3a1d
2B3A3a1e
2B3A3a1a
2B3A1f3a
2B3A1f3b
Legend
Watershed Boundary
Contour 5 Meter
1,000 500 0 1,000
Meters


SLOPE MAP OF THE PROJECT AREA
IWMP - II (2010-11), DISTRICT - SANT RAVIDAS NAGAR
N
2B3A3a1a
2B3A3a1c
2B3A3a1e
2B3A1f3a
2B3A3a1d
2B3A1f3b
Legend
Watershed Boundary
SLOPE (IN %)
Below - 1.00
1.01 - 2.00
2.01 - 3.00
3.01 - 4.00
4.01 - 5.00
5.01 - 6.00
Above - 7.00
1,000 500 0 1,000
Meters


VILLAGE MAP OF THE PROJECT AREA
IWMP - II (2010-11), DISTRICT - SANT RAVIDAS NAGAR
N
2B3A3a1a
2B3A3a1c
2B3A3a1e
2B3A1f3a
2B3A3a1d
2B3A1f3b
Mahbubpur
Ahamadpur Phulwariya
Dudawa Kukruthi
Jamunipur Badfaros
Lakhanpur Urf Abhayanpur
Bhikharipur
Bhakuda
Bankat Z Madho Rampur
Manikpur
Samalkot
Kolahd
Chaudharipur
Parsotam Patti
Anangpur
Parsampur Raveli
Chaurinipur Patti
Chauridanur Patti
Araji Amani
Arajidibui
Majhilapur
Rajputan Z Ravali
Sivdaspur
Ramdeo Patti
Raveli
Pachpatiya
Maihardo Patti
Chandapur
Loh Chanda
Bhulaipur
Hari Chandanpur
Bag Amani
Parsottampur Z Bargaon
Asogapur
Chak Basawan
Chak Muglani
Amawa Khurd
Ahopur
Amawa Kala
Pattipurz Bahari
Jadupur Z Bahri
Bahari
Lachhapur
Kandhya
Jhuri Sonbarsa
Manapur
Raghupur
Dhanapur
Jolhapur
Jagdishpur Sujan
Gopalpur
Uchopur
Bardha
Chak Bhuichar
Jamua
Chauri Khas
Badamanpur
Deeh Koiran
Parsipur
Madho Rampur
Bhadarmanpur
Kantapur
Prem Rajpur
Gondamir Imamali
Kachhuwa Bojh
Narpatpur
Gouda Chamarhatta
Baraila
Domanpur Chiwathiya
Narharpur
Nidiur
Chandalpur Or Chanaipur
Chak Nanhu
Kapal Deeh
Hadhi Bari
Madho Singhpur
Sankarpur
Horila
Chandi Gahana
Tikaitpur
Hadha
Latiya
Dorunha
Surhan
Kandu
Chainsinghpur
Legend
Watershed Boundary
Village Boundary
1,000 500 0 1,000
Meters

CHAPTER -14
ABBRIVIATIONS/REFERENCES

LIST OF ABBRIVIATIONS/REFERENCES

DOLR	Department of Land Resources
IWMP	Integrated Waterhsed 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
- santravidasnagar.nic.in

Preparation of DPR

Detail Project Report of Integrated Watershed Management Programme IWMP-II 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, St. Ravidas Nagar, 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	Ex. Project Scientist
3	Sr. R.K. Singh	Computer Operator
4	Sri Satish Chandra Srivastava	Bhoomi Sanrakshan Adhikari
5	" Jagdish Prasad	Junior Engineer
6	" Santosh Kumar Srivastava	Accountant
7	" Rajeev Lochan	Accountant
8	" Lalta Prasad	Draftsman
9	"Suresh Kumar	Tracer
10	" Kamal Bajpayee	Senior clerk
11	" Shamsher Singh	Junior clerk
12	" Mohan Lal Gupta	A.S.C.I.
13	" Harish Prasad Srivastava	A.S.C.I.
14	" Sunder Lal Bajpayee	Seech Paryavechhak
15	"Raj Kumar Shukla	Seenchpal
16	"Shiv Murat	Seenchpal
17	"Ram Kedar	Seenchpal
18	"Rama pati Shukla	Seenchpal
19	"Ram Swaroop Yadav	Seenchpal
20	"Iftekhar Hussain Rizvi	Seechpal
21	"Ganga ram	Munshi

DPR PLAN ABSTRACT

The collection of all the relevant data of watershed area and the possible option and solution are described with the help of feedback of focused discussion and detailed perspective plan for the watershed area with year wise and activity wise summarized for the DPR plan abstract for 5 years (2010-11 to 2014-15).

The summary of the above document is verified by the following persons:

Physically & Financially Approved:

Project Director
District Rural Development Authority
District – St. Ravidas Nagar