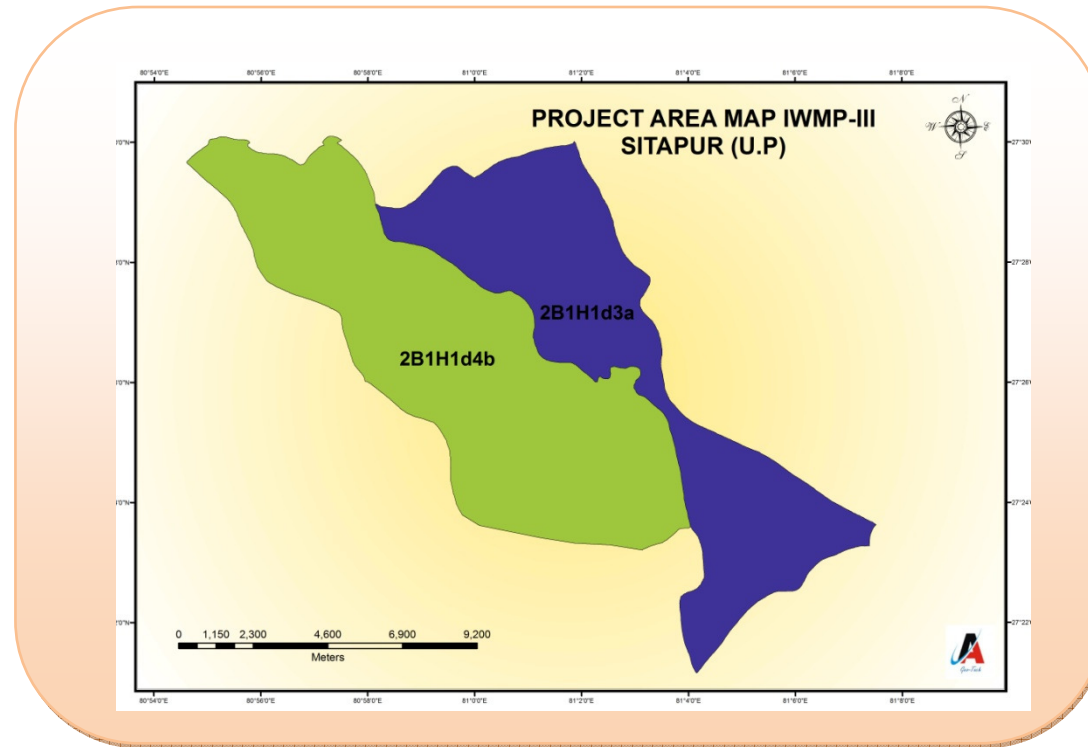


DETAILED PROJECT REPORT (D.P.R.)

(I.W.M.P. 3rd - SITAPUR)

INTEGRATED WATERSHED MANAGEMENT PROGRAMME BLOCK- KHAIRABAD, BISWAN AND KASMANDA
DISTRICT - SITAPUR (UTTAR PRADESH)



Submitted to: -
Department of Land Development &
Water Resources Lucknow (U.P.)



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Land Development & Water Resources Government of U. P. Lucknow

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EXECUTIVE SUMMARY

Brief about Project Area

The watershed management plan of Chauka or Sharda river having code No. **2B1H1d4b, 2B1H1d3a**, is located in the South-East of the district Sitapur and lies between latitudes 27°21' 8.81" N to 27° 30' 5.81" and 80°54'37.04 to E81°7'30.87 longitude while altitude ranges between 261 to 290 ft. above the mean sea level (MST) .The watershed identification has been done by the State Department under NWDPPRA schemes. The selection coding and their prioritization have also been done on the basis of the different technical and social parameters of watershed selection. There are 34 villages of Khairabad, Biswan, and Kasmanda which forms the part of the watershed with an area of 7400.00 hectare.

The watershed falls in the Mid Plain agroclimatic Zone. This is characterized by the largest zone of highly productive alluvial soils, high fertility with intensive irrigation and increased cropping intensity. The soils vary widely from sandy loam to clay loam. The average rainfall of the zone is 863 mm and the temperature ranges from 5.5°C to 45°C. Monthly relative humidity ranges from 33% to 86 % (annual mean 67%)

The main source of livelihood is the agriculture. The crops of the zone are rice, wheat, maize, urd, lentil, mustard, potato and sugarcane. The erratic nature of the rainfall, with maximum 80% during rainy season with a 65% of runoff creates problems for irrigation of wintercrops. Beside runoff, lack of proper cover on sloping land are main reasons for the low crop productivity and poor livelihood of the area. In the project suitable measures have been recommended to overcome these shortcomings.

After collecting the primary & secondary data, major watershed problems were identified and considering management possibilities the priority has been given to areas having critical conditions due to soil erosion and is close to main stream, storage and rehabilitation of existing reservoir etc. The management plan has been given in the foregoing paras taking the capital problem of the farmers.

Institutional arrangements:-

Because of the people of watershed area have different levels of literacy, knowledge attitudes, perception and capabilities an organization as per guideline like watershed committee has been formed through which community decisions are to be implements. This WC shall offer a forum to interact, disseminate the implications of integrated watershed management to people in general. It has also been envisaged that WC shall promote and support creation of other funcional SHG & Users groups. It has also been insured that wide representation covering all sections of the community as per GOI, New Guide line 2008, for Watershed Development Projects.

Institutional details are given below

S. No.	Name of watershed	Code No.	U.G. (No.)	SHG (No.)	WDT (No.)	PIA	WC (No.)
1	Choka or Sharda	2B1H1d4b,	18	13	1	1	13
2	Choka or Sharda	2B1H1d3a,	7	9	1	1	7

PROJECT AT A GLANCE

1. Name of Project - I.W.M.P. 3rd Sitapur
2. Name of Block - Khairabad, Biswan, Kasmanda,
3. Name of District - Sitapur
4. Name of State - UTTAR PRADESH
5. Name of watershed - CHAUKA OR SHARD

6. Name of Concern villages- Ulara, Piprivenisingh, Nyaria Bank, Naseerpur, Visenda, Manjhia, Daulatpur, Newrajpur, Ram Kund, Buila Kala, Rampur, Kootoobpur, Majhigawa Kala, Kodra, Kalupur, Parsadipur, Lakhawa Bojhi, kalyanpur, Chaharpur, Karondi, Rampur Khurd, Balpur, Pakaria, Sirsa khurd, Saraiya Mafi, Kamyabpur, Bhagwanpur, Visendi, Ruknapur, Karim Panaha, Asharfipur, Januwa, Bhagipur, Raja Karnai

7. Code of Micro Watershed - **2B1H1d4b, 2B1H1d3a**
8. Total area of Project. - 7400.00 ha.
9. Proposed area for treatment. - 5503.00 ha.
10. Cost per hectare - Rs. 12000.00
11. Project period - 2010-11 to 2014-15
12. Total Cost of Project - Rs. 660.36 Lacs
13. Proposed Mandays - 260000 Nos.

Chapter- 1

Project Background

1.1 Project Background

Table.1: Basic Project information

Name of Project	District	Block	No of Village	No of MWS	Geographical Area	Proposed Area	Treatable Area	Cost (Rs in Lacs)
IWMP 3 rd	Sitapur	Khairabad, Biswan, Kasmanda,	34	2	9760.00	7400.00 ha.	5503.00 ha.	660.36

1.2: Need and scope of watershed Development:

Soil water and vegetation are the most vital natural resources for the survival of man and animals. To obtain the maximum and optimum production off all these three resources, it has to be managed efficiently. For efficient management of these resources one has to look for suitable unit of management so that these three resources are handled and managed effectively, collectively and simultaneously on the basis of watersheds. Soils can be managed on the basis of soil series or type or any other convenient unit of land; vegetation can be managed on forest type- subtype or similar classification for trees and grasess etc; while water can be managed if a watershed is taken as unit. Since soil and vegetation can also be conveniently and efficiently managed in this unit, hence the watershed is considered the ideal unit for managing these three vital resources of soil, water and vegetation.

People and animals are part of watershed community. All depend on the watershed and they in turn influence what happens there- whether of good or bad. What happens in a small watershed also affects the larger watershed.

A watershed affects the people in every sphare of life. The sustained productivity of food, fuel, forage, fibre, fruit and water by the management of vital resources of water, soil vegetation and phenomena like floods and droughts are determined by the nature of watershed funtioning.

Watershed deterioration takes place due to the uncontrolled,unplanned,unscienstific land use and activities of men: like agriculture land where cultivation is done without adequate pdrecoutions on sloping land,stream banks, cultivation of erosion

permitting crops, while forest land by clear felling on steep slopes; drastic thinning of plantations along slopes, the grass land area with excessive grazing etc. Non-cooperation of the people and ignoring the people is the most important factor, without the people's cooperation, no watershed can remain managed. The consequences of watershed deterioration lead to low productivity of land with respect to food, fuel, fodder, forage, fibre and fruits. It will also lead and cause erosion and denudation within and outside of the watershed, quick frequent floods and droughts along with affect on health of people. With these entire if and buts it is obvious that community participation is essential for successful implementation of as well as for the maintenance of community assets created under the project.

In this watershed project having code No. 2B1H1d4b, 2B1H1d3a all envisaged shadows have been totally cared off by creating adequate people's participation by their involvement in all decision-making activities for the development of the watershed. To obtain these objectives the project report contains the process of awareness creation and organising the people by intensifying training and also technical services.

The watershed, having code No. 2B1H1d4b, 2B1H1d3a has an area of 7400.00 ha. It is located in the South East Part of District-Sitapur of U.P. It is proposed to be undertaken by Bhoomi Sanrakshan Adhikari, Department of Land Development & Water Resources Sitapur for Integrated Watershed Management Programme (IWMP) from the year 2010-11. The project is proposed to be completed by 2014-15. The Chauka or Sharda watershed is situated in Khairabad, Biswan, Kasmanda, of Sitapur district (U.P.). The watershed comprises of 33 villages - Ulara, Pipriveni Singh, Nyaria Bank, Naseerpur, Visenda, Manjhia, Daulatpur, Newrajpur, Ram Kund, Buila Kala, Rampur, Kootobpur, Majhigawa Kala, Kodra, Kalupur, Parsadipur, Lakhawa Bojhi, Kalyanpur, Chaharpur, Karondi, Rampur Khurd, Balpur, Pakaria, Sirsa khurd, Saraiya Mafi, Kamyabpur, Bhagwanpur, Visendi, Ruknapur, Karim Panaha, Asharfipur, Januwa, Bhagipur, Raja Karnai. The Area lies between N 27°21'8.81" to N27°30'5.81" and E80°54'37.04" to E81°7'30.87" Total Area of the watershed is 9760.00 ha (Proposed Area for treatment is 5503.00 ha.). Altitude Elevation ranges between 261 to 290 ft above MSL. About 80% of the land in the watershed is predominantly agriculture. The area in the watershed is sloping towards river- choka the soils of the watershed is mainly sandy, loam and clay loam.

Weightage for selections of watershed

Watershed Development Programme is prioritized on the basis of thirteen parameters (as per Do LR’s instructions) namely 1- poverty index, 2- percentage of Sc/ST, 3- actual wages, 4- percentage of small and marginal farmers, 5- ground water status, 6- moisture index, 7- area under rain fed agriculture, 8- drinking water situation in the area, 9- percentage of degraded land, 10- productivity potential of the land, 11- continuity of another watershed that has already developed / treated, 12- cluster approach for plain and 13- hilly terrain, Based on these thirteen parameters a composite ranking has been given below-

Table 2: Weightage of the project

Project Name	Project Type	Weightage													Total	
		poverty index	percentage of Sc/ST	actual wages	percentage of small and marginal farmers	ground water status	moisture index	area under rain fed agriculture	drinking water situation in the area	percentage of degraded land	productivity potential of the land	continuity of another watershed that has already developed / treated	cluster approach for plain	hilly terrain		
IWMP-3 rd	Eastern plain															70
		7.5	5	5	10	0	0	10	7.5	10	10	0	5	N.A.		

Table 2.1 Criteria and weightage for selection of watershed

S.No.	Criteria	Maximum Score	Ranges and Score			
i	Poverty index (% of poor to population)	10	Above 80% (10)	80-50% (7.5)	50-20% (5)	Below 20% (2.5)
ii	% of SC/ST Population	10	> 40 % (10)	20-40 % (5)	< 20 % (3)	-
iii	Actual wages	5	Actual wages significantly lower than minimum wages (5)	Actual wages significantly higher than minimum wages (0)	-	-
iv	% of small and marginal farmers	10	> 80 % (10)	50-80 % (5)	< 50 % (3)	-
v	Ground water status	5	Over exploitation (5)	Critical (3)	Sub critical (2)	Safe (0)
vi	Moisture index	15	-66.7 & below (15)	-33.3 to-66.6 (10)	0 to -33.3 (0)	-
vii	Area under rainfed agriculture	15	> 90 % (15)	80-90 % (10)	70-80 % (5)	< 70% (Reject)
viii	Drinking water	10	No source (10)	Problematic village (7.5)	Partially recovered (5)	Fully covered(0)
ix	Degraded land	15	High-above 20% (15)	Medium-10-20% (10)	Low less than 10% (5)	-
x	Productivity potential of the land	15	Land with low production & where productivity can be significantly enhanced with reasonable efforts (15)	Land with moderate production & where productivity can be enhanced with reasonable efforts (10)	Land with high production & where productivity can be marginally enhanced with reasonable efforts (5)	-
xi	Contiguity to another watershed that has already been developed/treated	10	Contagious to previously treated watershed & contiguity within the micro watershed in the project (10)	Contiguity within the micro watershed in the project but non contagious to previously treated watershed (5)	Neither contagious to previously treated watershed nor contiguity within the micro watershed in the project(0)	-

xii	Cluster approach in the watershed	15	Above 6 micro watershed in the cluster (15)	4 to 6 micro watershed in the cluster (15)	2 to 6 micro watershed in the cluster (15)	-
Xiii	Cluster approach in the hills	15	Above 5 micro watershed in the cluster (15)	3 to 5 micro watershed in the cluster (15)	2 to 3 micro watershed in the cluster (15)	

Objectives and Scope of Project

- a. Conservation, development and sustainable management of natural resources including their use
- b. Enhancement of agriculture production and productivity in a sustainable manner.
- c. Restoration of ecological balance in the degraded and fragile rain-fed ecosystem.
- d. Reduction in regional disparity between rain-fed and irrigated areas.
- e. Creation of sustainable employment opportunities for the rural community for livelihood security.

Table no.3 Watershed Information

S. No.	Name of the Project	Type of watershed	Micro watershed Name	Code	Area (ha)
1	I.W.M.P. 3 rd	Micro watershed	Chauka or Sharda	2B1H1d4b	4417.19
2	Sitapur	Micro watershed	Chauka or Sharda	2B1H1d3a	2805.36

Source: secondary data

Other developmental project/schemes running in the project area:

1.3 Status of previous watershed programmes & other development project/scheme in the watershed area

The Status of previous watershed programme was limited to Mahatma Gandhi National Employment Guarantee Scheme, Swarn Jayanti Gram Swarojgar Yojna (SGSY) and REGS etc. Under these schemes only earth works related to village link roads and cleaning of village drains were carried out. These schemes were for the employment of land less & BPL people. So for

no concrete work on watershed basis was carried out in IWMP 3rd Sitapur.

Details of employment schemes are given below-

Table 4: Developmental Programmes running in the project area

S. No.	Name of Programmes/Scheme	Sponsored Agencies	Objectives	Commencement (year)	Village Covered
1	MGNREGS	Rural Development Dept.	Employment	2009	58
2	IAY	Rural Development Dept.	Housing	2005	49
3	SGSY	Rural Development Dept.	Self employment	1999	27

Source: Primary data

Chapter-2

Project Implementing Agency

PROJECT IMPLEMENTING AGENCIES [PIA]

U.P. Government, Land Development Water Resources Department Section-1 Lucknow has nominated as PIA to Bhoomi Sanrakshhan Unit, Land Development Water Resources Department Sitapur for IWMP 3rd vide letter no-666(10)/54-1-10-1(9)2008 dated 25-01-2011

Table. 5: Project Implementing Agency (PIA)

S.No.	Particulars of PIA	
(i)	Date of selection of PIA	25-01-2011
(ii)	Type of organization	Govt. organization
(iii)	Name of organization #	DoLR
(iv)	Designation & Address	BSA, IWDP, Sitapur

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 Organisations | H | Any other (please specify). |

2.2 Project Implementation Strategy

Watershed management as a strategy has been adopted by Government of India especially in the rainfed region of semi arid tropics. These region are characterized by low and undependable rain, low soil fertility, poor infrastructure development, low literacy and high incidence of migration.



Village - Shirshakhurda ,



Village - Shirshakhurda

Table. 7: SWOT analysis of the Micro Watersheds

Strengths (S)		Weakness (W)	
1	Cooperative work culture in traditional activities.	1	Poor water management
2	Close ethnic ties	2	Resource poor farmers
3	Road at the top as well as outlet of the watershed	3	Migration of youth
4	Hard working	4	Low and erratic rainfall
5	Resource pool of crop genetics diversity	5	Fragile geology
6	Awareness of farmers about watershed management programme	6	Fragmented land holding
7	Well established CPR maintaining and sharing system	7	Heavy infestation of wild animals
8	Stall feeding of animals	8	Problem of fuel and fodder
9	Social outlook of the community towards land less		
Opportunities (O)		Threats (T)	
1	Wide range of annual and perennial crops	1	Prone to adverse climate like drought and flood
2	Scope of regular employment opportunities to check out migration	2	High market risk
3	Strengthening of existing irrigation system	3	Social conflicts owing to PRI and WSM polices and local politics
4	Conducive climate for rainfed crop diversification	4	Weak coordination among line departments

5	Good scope for Agro forestry and dry land horticulture	5	Leadership enemity in Panchayat elections
6	Potential for collective action and management of CPR	6	Influence of politics in W.C.

The common guideline generates a fresh and flexible framework for watershed development.

Table:6 Detail Staffing Pattern of PIA:

S.No.	Name	Designation	Qualification	Experience (Year)
1	Sri Anil Kumar Verma	Soil Conservation Officers	Diploma in Ag. Engg.	30
2	Sri Ran Naresh Verma	Junior Engineer	Diploma in Ag. Engg.	30
3	Sri Satya Prakash Sing	Junior Engineer	Diploma in Ag. Engg.	30
4	Sri Vijay Kumar Gupta	Accountant	M.Com.	30
5	Sri Raja Bax Sing	Accountant	B.Com, L.L.B.	30
6	Sri Harishchandra	Drought Man	Inter Mediate, I.T.I.	07
7	Sri Vijay Kumar Srivastava	Junior Clerk	Inter Mediate	30
8	Sri Viredra Pratap Sing	Junior Clerk	Graduation	30
9	Sri Subodh Kumar Sharma	Junior Clerk	B.Sc. Ag (Hons.)	07
10	Sri Vijay Pal Singh	Tracer	Inter Mediate	30
11	Sri Deena Nath Dubey	Tracer	Graduation	30
12	Sri Badri Singh	Assistant Soil Conservation Inspector	B.Sc. Ag (Hons.)	30
13	Sri Shailendra Kumar	Assistant Soil Conservation Inspector	B.Sc. Ag (Hons.)	02
14	Sri Mo. Tahir	Driver	literate	30
15	Sri Ram Bachan Ram	Work Incharge	Inter Mediate	30
16	Sri Shailesh Kumar Srivastava	Work Incharge	B.Com.	New
17	Sri Durga Prasad Verma	Work Incharge	High School	30
18	Sri Ravendra Pratap Singh	Work Incharge	High School	30
19	Sri Mastram Verma	IV Th	High School	30

20	Sri Jay Singh	IV th	Junior High School	30
21	Sri Amar Nath Tiwari	IV th	literate	30

4.2.1 Watershed Committee

Watershed committee has been constituted in all three nos of micro-watersheds partially by WDT and Gram Sabha in the village of micro watershed. These committees are yet to be registered under society Registration Act 1860. Capacity building trainings will be given to the watershed committee by WDT. The watershed committee has a pivotal role to play during and after the project implementation period. Detail of W.C. is given below

Table. 28: Details of Watershed Committees (WC)

SELECTION OF WATERSHED COMMITTEE SITAPUR, I.W.M.P.3rd -YEAR 2010-11

S.No.	Name of Project	. Name of W.C.	Name of Chairman	Name of Secretary	Name of Member
1	Ulra	Ulra	Sri Ram Ganesh Yadao	Sri Dinesh Kumar	1. Sri Daya Shankar 2.Ram Swaroop 3. Ram Sagar 4.Shatrohan 5. Amerika 6. Ram Chander 7. Ram Khalavan 8. Harakh Ram 9.Mukand Kumar 10. Moh. Salman 11. Moh. Usman
2	Pipribenisingh	Pipribenisingh	Sri Kusum Jahan	Moh. Umar	1.Sri Subrati 2. Anzad 3. Keshan 4. Mishrilal 5. Siyaram 6. Taufik 7. Anil kumar 8. Ashok Kumar 9. Munna 10. Kaleem
3	Visenda	Visenda	Sri Vinod Kumar	Sri Surender Kumar	1. Sri Harish 2. Niyaz Ahmad 3. Lalji 4. Yunus 5.Bjrang 6. Javed 7. Kadir 8. Rakesh 9. Rajender 10 Mishrilal
4	Ghaila	Ghaila	Sri Ramsnehi	Sri Sandeep Yadao	1.Sri Santosh Kumar 2. Sakir Ali 3. Rajesh 4. Haresh Yadao 5. Motilal 6. Girish 7. Saligram 8. Deenbandhu 9.Rajender 10. Smt Vimla Sri
5	Ramkund	Ramkund	Smt. Ram Dulari	Sri Dinesh	1. Sri Dulare 2.Raj Kumari 3. Chhedilal 4. Vishambher %. Melu 6. Mayaram. 7. Mahesh 8. Munnilal .9. Parmeshwar Deen 10.Alizan
6	Bhuilakala	Bhuilakala	Sri Dinesh Kumar Verma	Sri Devi Shankar	1.Sri Raj Kumar 2. Rakesh Kumar 3.Ram Prasad 4. Ramsevak 5. Raj Bahadur 6. Amit Kumar 7. Vijay Shankar 8. Ramakant 9. Vinod Kumar 10. Mool Chander 11. Haresh

7	Kootoobpur	Kootoobpur	Sri Moh Amin	Sri Anwar Ahamad	1. Sri Kalloo 2. Omprakash 3. Rafiq Ahmad 4. Chhote Lal 5. Nausad 6. Lallan 7. Umesh Kumar 8. Jakir 9. Tejpal
8	Majhgawankala	Majhgawankala	Sri Smt. Suman Devi	Sri Ramesh chander	1. Sri Guddu 2. Sumeri lal 3. Brij Bihari 4. Rakesh 5. Shiv Kumar 6. Ramashankar 7. Sunil Kumar 8. Sunderlal 9. Ashok 10. Sunil Kumar
9	Kalooপুর	Kalooপুর	Sri Lakshmi Devi	Sri Pankaj Verma	1. Sri Manjeet Kumar 2. Deen Dyal 3. Nirmal Kumar 4. Jalende Kumar 5. Dileep 6. Dheeraj 7. Dinesh 8. Jugal kishor 9. Prem Kumar 10. Sharma Devi
10.	Chaharpur	Chaharpur	Sri Kedarilal	Sri Vinod	1. Sri Shin baranlal 2. Satish Kumar 3. Subodh Kumar 4. Deshraj 5. Ramsevak 6. Rajesh Kumar 7. Shiv Kumar 8. Mahesh 9. Manoharlal 10. Prakash
11.	Karondi	Karondi	Sri Dinash Prakash Singh	Sri Anand Singh	1. Sri Ajaypal Singh 2. Bhagwati 3. Rajesh 4. Rohit Singh 5. Keshav 6. Puttilal 7. Vipin 8. Mahender singh 9. Munnial 10. Suresh
12.	Balpur	Balpur	Sri Ramkhelavan	Sri Ramkumar	1. Sri Pyarelal 2. Sunil 3. Sriram 4. Siyaram 5. Sohan 6. Ashok 7. Vijai pal 8. Rajesh 9. Jagdish 10. Smt. Seema
13	Sirsakhurd	Sirsakhurd	Sri Vachan	Sri Vishun Kumar	1. Sri Sunil Kumar 2. Jai Kumar 3. Anant ram 4. Mahesh 5. Ranjeet Kumar 6. Ramshankar 7. Akbar 8. Ram Sahay 9. Somari 10. Hariom 11. Mangoolal
14	Saraiya Mafi	Saraiya Mafi	Sri Smt Saraswati	Sri Vinod Kumar	1. Sri Vachan Prasad 2. Ram Prasad 3. Dastgeer Shah 4. Mahmood Khan 5. Fakrullah Khan 6. Chandgiram 7. Smt. Meena 8. Smt Ashia
15	Visendi	Visendi	Smt. Aish Ansari	Moh. Furkan	1. Smt Kushma 2. Sri Jahoor Ahmad 3. Gokaran 4. Manohar 5. Nashar 6. Ashraf Ali 7. Ishrat Ali 8. Sayeed Ahmad
16.	Janua	Janua	Sri Moinuddeen Ansari	Moh. Faruk	1. Smt. Sumitra 2. Smt. Poonam 3. Sri Chhiddu 4. Santosh Kumar 5. Jan Mohan 6. Moh. Ahamad 7. Sayeed Ahmad 8. Moh.deen 9. Prem prakash
17.	Bhagipur	Bhagipur	Smt. Chanderkali Verma	Sri Rajnish Kumar	1. Sri Guruprasad Verma 2. Kaushal Kumar 3. Shiv Kumar 4. Smt Ram Dulari 5. Ramkhelavan 6. Anil Kumar 7. Bal Kumar 8. Om Prakash 9. Manoj Kumar
18.	Raja Karnai	Raja Karnai	Sri Smt. Guddi Devi	Sri Abhishek Mishra	1. Sri Ramsingh 2. Moh. Vaseem 3. Mangli 4. Amir Ali 5. Smt Chhotkanni 6. Shiv Bhagwan 7. Ram Sevak 8. Ramlal 9. Kamlesh Gautam
19.	Ashrafpur	Ashrafpur	Moh. Mraz	Sri Sarvesh Kumar	1. Sri Rudranand Verma 2. Suresh 3. Irfan 4. Smt Manju Devi 5. Kamlesh 6. Sageer Ahamad 7. Ram bilas 8. Nanha 9. Rajender Kumar
20.	Kaareempanah	Kaareempanah	Moh. Vaseem	Smt. Amina Khatoon	1. Sri Jabir Ali 2. Moh. Salim 3. Rauf 4. Ramsaran 5. Saddiq 6. Manoj Yadao 7. Rajender Yadao 8. Ram Lakkan 9. Kazim 10. Rizwan 11. Geeta Devi

4.3.1 Watershed Committee Detail:

Watershed committee has been constituted in all three nos of micro-watersheds partially by WDT and Gram Sabha in the village of micro watershed. These committees are yet to be registered under society Registration Act 1860. Capacity building trainings will be given to the watershed committee by WDT. The watershed committee has a pivotal role to play during and after the project implementation period. Detail of W.C. is given below

4.3.2 Watershed Development Team

As per as common guide line of GOI- 2008 direction/ instruction given in para 5.3 point 40 P.I.A. has constituted watershed development team(W.D.T.)

Table.35: Details of Watershed Development Teams (WDTs) in the project area

S. No.	Name of the PIA	Name of the micro water shed	Names of WDT members	M/F	Age	Qualification/ Experience	Description of professional training	Role/ Function##	Date of appointment of WDT member
1	2		4	5	6	7	8	9	10
1	Bhomi Sanrakshan Adhikari Land development And water resources Department Sitapur(U.P.)	Choka or Sharda 2B1H1d4b	Sri Shalender Kumar	M	27	B. Sc. Ag	Agriculture	E	
			Sri Badri Singh	M	55	B. Sc.Ag.	Field Worker	H	
			Sri R.P.Singh	M	40	Hsc..Ag	Field Worker	J B	
			Smt Sushma Vajpayee	F	33	M.A Sociology	Social Moblizer	A	
			Sri R.N.Verma	M	53	Ag. Engineer		C D F	
2		Choka or Sharda 2B1H1d3a	Sri Shalesh Srivastav	M	35	B .A	Field Worker	E	
			Sri Durga Prasad	M	25	H. Sc.	Field Worker	H	
			Sri D.N.Dubey	M	40	Isc.	Field Worker	J B	
			Arpana Mishra	F	33	M.A Sociology	Social Moblizer	A	
			Sri S.P.Singh	M	43	Ag. Engineer		C D F	
Sri R.P.Singh	M	40	Hsc..Ag	Field Worker	J B				

M – Male, F- Female

In column 9, the work, assigned as below,.

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
F Engineering surveys, drawings and cost estimations
H Record of labour employed
J Post project operation, maintenance of assets

E Social audit
G Physical verification & measurement
I Livelihood opportunities for landless
K any other (please specify)

CHAPTER -3

BASIC INFORMATION OF THE PROJECT AREA

2.1 Location & Extent

The Micro watersheds **2B1H1d4b, 2B1H1d3a** of the project area, are located in Khairabad, Biswan, Kasmanda block of Sitapur District (U.P.) at a distance of 28 to 30 Km from District headquarters and 9 to 12 Km from block headquarter these watershed lies between N 27°21'8.81" to N27°30' 5.81" Latitude and E 80° 54' 36.44" to E81°7' 30.27" longitudes North to south extent 22km

and East to West 7km. Following 20 villages are part of watershed - Ulara, Piprivenisingh, Nyaria Bank, Naseerpur, Visenda, Manjhia, Daulatpur, Newrajpur, Ram Kund, Buila Kala, Rampur, Kootoobpur, Majhigawa Kala, Kodra, Kalupur, Parsadipur, Lakhawa Bojhi, Kalyanpur, Chaharpur, Karondi, Rampur Khurd, Balpur, Pakaria, Sirsa khurd, Saraiya Mafi, Kamyabpur, Bhagwanpur, Visendi, Ruknapur, Karim Panaha, Asharfipur, Januwa, Bhagipur, Raja Karnai Approach road to the watershed is all weather road from Sitapur to Sidhauri 40 Km and from Sidhauri. To watershed area 28 Km. The land mark of the water shed is the chinni mill of Biswa which forms the ridge of the watershed which drains to river Sumli. The gross area of the watershed approximately 55 Sq.Km

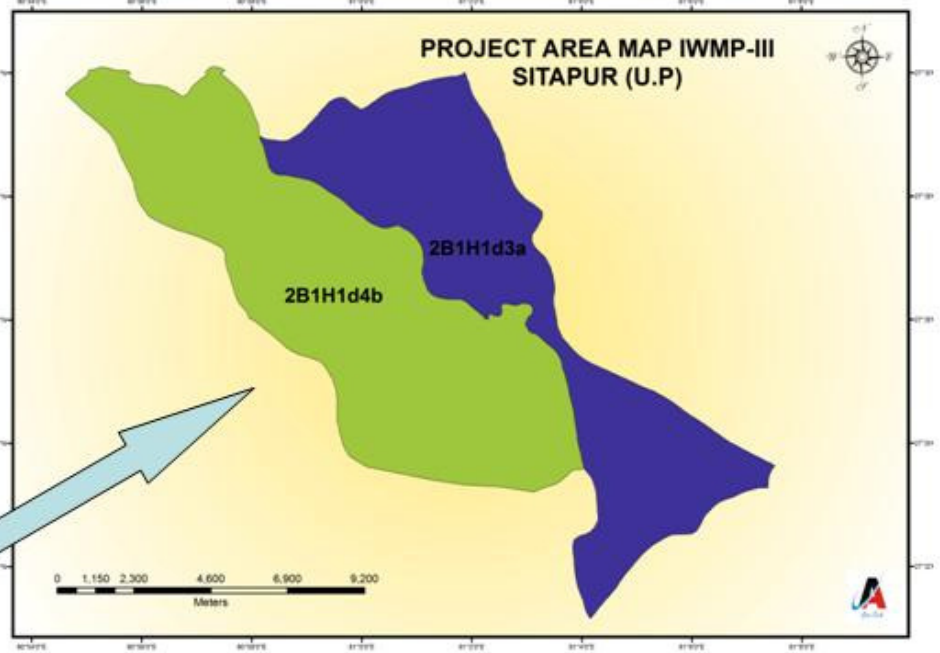
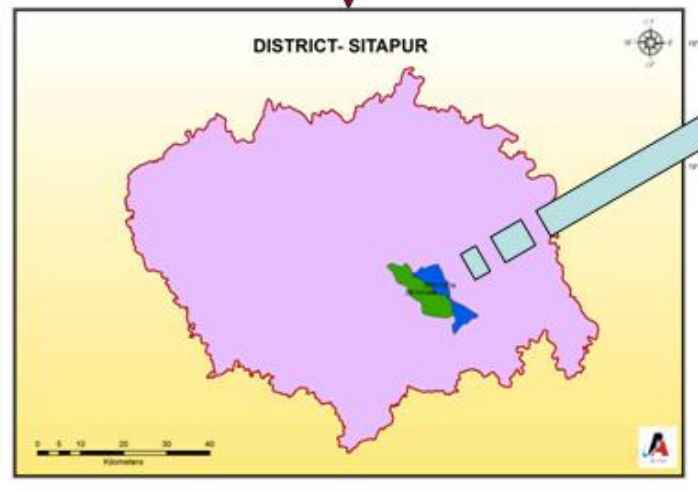
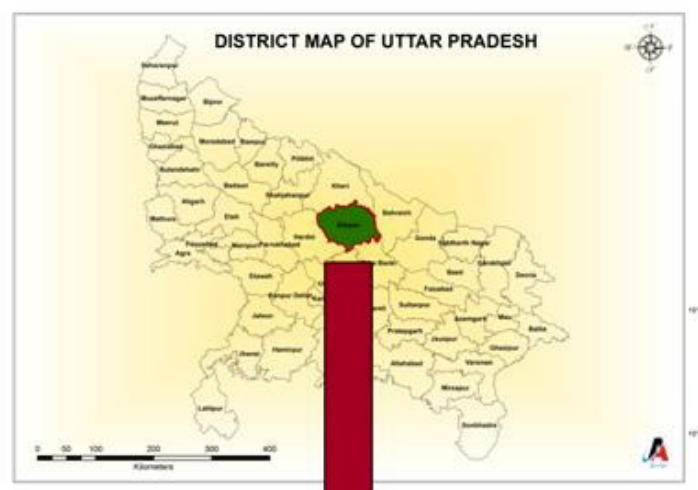
Micro watersheds 2B1H1d4b: 27° 23' 13.107E to 27° 30' 5.815E and 80° 54' 36.441"N to 81° 3' 34.274"N

North to south extent 18.58km and East to West 4.48km

Micro watersheds 2B1H1d3a: 27° 21' 8.823E to 27° 30' 0.48"E and 80° 58' 9.702N to 81° 7' 30.271N

North to south extent 15.60km and East to West 3.42km

LOCATION MAP



3.1 Geography and Geo-Hydrology

3.2: Land use Pattern

Land is non-renewable resource that supports all primary production system as well as provides essential social environment in terms of shelter roads and other facilities. It is scarce and in expansible resource which has to be managed judiciously to meet various competing demands. The IWMP 3rd watersheds has diversified land uses namely agriculture, waste land (open scrub), seasonal water bodies etc. The varied present land use and area under different categories in watershed is shown in Table 5.

Table 8. Area under major land uses, irrigated and rain fed area, etc

S.No.	Name of Project	No. of Micro Watershed	Geographical area(Ha)	Forest area(Ha)	Pasture land(Ha)	Wastelands		Land suitable for Agriculture (Ha)	Rain fed Area (Ha)	Proposed Area for treatment (Ha)
						Culturable waste(Ha)	Unculturable (Ha)			
1	2	2	4	5	6	7	8	9	10	11
1	IWMP 3 rd	2	13242	6.23	4.40	1210.00	56.00	8116.00	7400	5503.00

Source: Primary data

Various agricultural land uses in the present watershed are extended to diversified land capabilities starting from marginal to good class (1-11) lands. The watershed distinctly has three types of lands i.e. leveled, sloping and degraded and undulating. The agriculture is practiced on all these land having though **different land capabilities** the productivity considerably varies. The total area under agriculture use in the watershed is about 11917 ha out of which about 40% area is irrigated while 7074.00 ha is under rain-fed agriculture. The water, both for irrigation and drinking is most scarce natural resource in the watershed. The problem of tube wells for irrigation of agricultural crops frequently leads to the drinking water problem to the farmers of watershed forcing them to carry

drinking water from out side the watershed area. The field bunds are quite common in the watershed areas sthese bunds having no technical specification, frequently breach on heavy rains which leads to heavy runoff depriving in-situ moisture conservation in the rainfed area.

3.2 Topography

The watershed falls into gangetic plain, one of the two physiographic regions.Total area of the IWMP 3rd Sitapur is 9760 ha with problem area of 5503.00 ha. Elevation range and location of altogether three micro watershed shed are given below:-

Table. 9: Elevation range, longitude latitude, relief height difference etc*

District	Mandal	Micro watershed	Location of watershed			Elevation of watershed from MSL		
			Habitation	Longitude	Latitudes	Highest	Lowest	Relief height difference
Sitapur	Lucknow	Choka or Sharda 2B1H1d4b,	Ulara, Piprivenisingh, Nyaria Bank, Naseerpur, Visenda, Manjhia, Daulatpur, Newraipur, Ram Kund, Buila Kala, Rampur, Kootoobpur Majhigawa Kala, Kodra, Kalupur, Parsadipur, Lakhawa Bojhi, Kalyanpur Chaharpur, Karondi, Rampur Khurd, Balpur, Pakaria, Sirsa khurd,	80°54'36.25 ''E to 81° 3' 42.6''	27° 23' 11.435N to 27° 30' 6.149	132.20	110	2.50
Sitapur	Lucknow	Choka or Sharda 2B1H1d3a,	Saraiya Mafi, Kamyabpur, Bhagwanpur, Visendi, Ruknapur, Karim Panaha, Asharfipur, Januwa, Bhagipur, Raja Karnai	80°58' 8.878E to 81° 7'31.095''E	27° 21' 9.365'' to 27° 30' 0.373''N	128.00	108	2.00

Source: Remote sensing & GPS Data

3.3.1 Major stream

The watershed is having moderate slope and drained in Sumli tributary of Choka River. About 40 % of watershed area has slope more than 1% while lower portion of the watershed has moderate slope (less than 1 %). At the outlet of watershed small gullie are noticed, covered with sparse vegetation. In Total (1st order -4 numbers, 2nd order-5 numbers and 3rd order-1 numbers)

numbers of streams of different order are found in the watershed, with total stream length of 19200 m. Stream characteristics of watershed are presented in the table 7.

Table No.10: Stream characteristics of watershed (IWMP 3rd Sitapur)

Stream order	Stream number	Main stream length (M)
1 st order	6	2150.00
2 nd order	4	3160.00
3 rd order	36	12200.00
Total	46	17510.00

Reference: Irrigation Crop water Requirement by Modified Penman-Method &KGIR (Data of IMD Lucknow)

Sl. No	Crop	Crop period		ETo(mm)		Kc for crop period	ETc crop (mm)	Monthly Avg rainfall(mm)	Effective rainfall(Re) (mm)	Percolation loss(mm)	Ground water contribution	Special requirement(mm)				Net irrigation requirement(NIR)(mm)(ETc)+Spl.-(Re)-(GW)	Field application efficiency %	Field irrigation requirement FIR(mm)/FAE)	Gross irrigation requirement GIR(mm)(FIR)/Conveyance losses)(0.67)
				For full month	For crop period							Nurse ry	Field prepatation	Standing water	Total				
		month	days	5	6							7	8	9	10				
1	Paddy	July	31	137.3	137.3	1.10	151.0	278.9	150.0	200#	50	20	200	100	320	365.28	80	456.6	681.49 say 681
		Aug	31	132.40	132.40	1.10	149.7	375.7	149.7										
		Sept	30	124.20	124.20	1.10	146.6	199.2	127.5										
		Oct	31	108.50	108.50	0.95	103.3	223.1	18.12										
	Total		123	502.40	502.40		540.60	876.9	445.32										
2	Other kharif(i)	July	31	137.3	137.3	0.30	41.2	278.9	41.0		50	-	100	-	100	114.5	65	176.15	262.92 say 263
	Soyabee	Aug	31	132.40	132.40	0.70	92.7	375.7	92.0										
	n	Sept	30	124.20	124.20	1.00	124.2	199.2	124.0										

	(ii)Urd(ii) i)Til(iv) Fooder	Oct	31	108.50	108.50	0.75	81.4	223.1	18.0										
	Total		12 3	502.40	502.40		339.5	876.9	275.0										

S l . N o	Crop	Crop period		ETo(mm)		Kc for crop peio d	ETc crop (mm)	Month ly Avg rainfal l(mm)	Effecti ve rainfal l(Re) (mm)	Percol ation loss(m m)	Groun d water contri bution	Special requirement(mm)				Net irrigation requireme nt(NIR)(m m)(ETc) +Spl.)- (Re)-(GW)	\$Fiel d appli cation effien cy %	Field irrigation requirem ent FIR(mm) /FAE)	Gross irrigation requirement GIR(mm)(FIR)/ Conveyance losses)(0.67)
		month	days	For full month	For crop period							Nurse ry	Field prepatati on	Stand ing water	Tota l				
1	2	3	4	5	6	7	8	9	10		11	12	13	14	15	16	17	18	19
3	Wheat	Nov	15	69.00	34.50	0.3	10.35	5.20	5.00	-	50	-	150	-	150	308.75	65	475.00	708.96 say 709
		Dec	31	53.60	53.60	0.8	42.9	17.70	15.00										
		Jan	31	55.20	55.20	1.05	58	33.70	33.30										
		Feb	28	75.30	75.30	1.05	79	44.80	35.00										
		March	31	129.60	129.60	0.95	123.1	18.70	18.00										
		April	10	169.20	56.40	0.25	14.1	12.70	12.40										
	Total		146	551.90	404.60		327.45	132.80	118.70										
4		Nov	30	63.00	63.00	0.4	18.90	5.20	5.00	-	50	-	100	-	100	134.40	65	206.77	308.61 say 309
		Dec	31	49.00	49.00	0.70	34.3	17.70	15.00										
		Jan	31	51.46	51.46	1.05	54	33.70	31.70										
		Feb	28	74.20	74.20	0.5	70.5	44.80	41.60										
		March	10	130.20	-	-	-	-											
	Total		130	367.86	237.66	-	177.70	101.40	93.30										

Crop Details:

Sl. No	Crop	Crop period		ETo(mm)		Kc for crop period	ETc crop (mm)	Monthly Avg rainfall(mm)	Effective rainfall(Re) (mm)	Percolation loss(mm)	Ground water contribution	Special requirement(mm)				Net irrigation requirement(NIR)(mm)(ETc +Spl)-(Re)-(GW)	Field application efficiency %	Field irrigation requirement FIR(mm) /FAE)	Gross irrigation requirement GIR(mm)(FIR)/Conveyance losses)(0.67)
		month	days	For full month	For crop period							Nurse ry	Field prepatati on	Stand ing water	Tota l				
1	2	3	4	5	6	7	8	9	10		11	12	13	14	15	16	17	18	19
5	Sugarcane	Feb	15	75.32	40.40	0.50	20.20	44.80	19.20	-	50	-	150	-	150	743.23	70	1061.76	1584.71 say 1585
		March	31	129.58	129.58	0.70	90.70	18.20	17.70										
		April	30	174.84	174.84	1.00	174.84	12.70	12.40										
		May	31	206.46	206.46	1.00	206.46	29.60	28.20										
		June	30	182.7	182.7	1.00	182.70	98.60	83.00										
		July	31	137.33	137.33	1.00	137.33	278.90	137.33										
		Aug	31	132.37	132.37	1.00	132.37	375.70	132.37										
		Sep.	30	105	105	1.00	105.00	199.20	105.00										
		Oct.	31	108.5	108.5	0.75	81.37	23.10	22.20										
		Nov	30	69.00	69.00	0.75	51.75	5.20	5.20										
		Dec	31	53.61	53.63	0.75	40.22	17.70	17.20										
		Jan	31	55.18	55.18	0.50	27.59	33.70	27.50										
	Total		352	1429.9	1394.99		1250.53	1137.40	607.30										

3.5 Watershed Characteristics:

3.5.1 Shape and Size

The shape of the watershed (IWMP 3rd Sitapur) is rectangle type. The maximum length and width of IWMP 3rd Sitapur the watershed is 22682 m and 7374 m, North- south extent is 3 time than East-to West.

2.2: **Table 15: Shape and Size of watershed**

S.No.	Name of the Micro watershed	Code	Area(ha)	Shape	Approximate size in meter		Ratio Length: width
					Length	Width	
1	Choka or Sharda	2B1H1d4b,	8872.00	Rectangle	20682	7374	2:1
2	Choka or Sharda	2B1H1d3a,	4370.00	Rectangle	22682	7352	2:1

2.5.2 Length of main stream, drainage density, average slope, watershed relief etc.

Table no. 16: Length of main stream, drainage density, average slope, watershed relief etc.

S.No.	Project Name	Main stream	Drainage Density	Average Slope	Watershed Relief
1	IWMP 3 rd Sitapur	I- 3150 meter II- 4250 meter III- 1260 meter	0.75-1.00 meter/second	0-2.5%	2.5 meter

2.5.3 Drainage

Due to prevalence of mild to steep slopes and presence of a number of drainage lines in the watershed, the drainage system is adequate. The watershed forms part of Choka basin.

SOIL AND LAND USE

3.2.1 Soil morphology

The three micro watershed of IWMP 3rd is located south west corner of the Sitapur district. The entire watershed is topographically divided into three major landforms accordingly; the soils of watershed have been grouped in three major categories.

- 1 Plain land
- 2 Sloppy land
- 3 Eroded land

Soil profile a representative soil profile (Dominant soil- table 15)

3.2.2 Morphology of a typical soil profile of micro watershed (dominant soil)

Table. 17: Morphology of a typical soil profile of micro watershed (dominant soil)

Horizon	Depth (cm)	Morphology
A	0-150	Light yellow colour 28% with free NaCO ₃ , Sticky when moist, hard when dry, high elasticity, fissures and cracks, occasional occurrence of free calcium carbonate granules ph 8.3-8.7
B	150-600	Grayish -yellow in colour,. very fine mixed with free CaCO ₃ and granules, very hard when dry, compact & indurate hard pan, restricting development of root and downward water transmission
C	> 600	Sandy Clay

Climate:

The watershed falls under the semi-arid region of tropical climate. The average annual precipitation is 863 mm spreading over about 90 rainy days. Most of the rainfall (about 85 %) is received during July to September. The rainfall occurs with moderate to high intensity. The area receives scanty rainfall in the winter season. The temperature variation ranges from as high

as 42°C in the month of May- June to as low as 4°C in December- January. The details of climatic data collected from Pune for the year 1972 to 2003 is annexed at for monthwise MMAX, HMAX, MMIN-MIN, TMRF HVTRF, RD, MWS, MEVP &MSSH, For the rest period the climatic data has been collected and is annexed at- The average of three year is given below:

3.4.1 Climatic Condition

Table.18: Climatic Condition

S. No	Name of Project	Name of the block	No. of Micro Watershed	No. of revenue villag e	Information											
					Average Rainfall and rainy days (in mm)						Temperature (c)			Relative humidity (%)		
					2007		2008		2009		2007	2008	2009	2007	2008	2009
					Avg. in Mm	No. Of Days	Avg. in Mm	No. Of Days	Avg. in Mm	No. Of Days	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max	Min-Max
1	IWMP 3 rd Sitapur	Khairabad, Biswan, Kasmanda,	2	34	850	90	650	72	622	92	36.00	37.9	35	80	82	80

Table 8 A: Reference Evapo-Transpiration ETo for watershed area(Modified Penman-Method)

Country: India

Meterological Station: Lucknow

Year (Average for the year 2001-2009)

Altitude:173 M		Coordinates: Latitude 28.22N		Longitude 79 24'E			
Month	Max Temp c	Min Temp c	Humidity %	Wind Speed Km/day	Sunsine Hours	Solar Radiation MJ/M/day	ETo- penman mm/day
1	2	3	4	5	6	7	8
June	38.05	28.90	56.60	3.80	8.75		6.09
July	34.20	26.60	75.50	3.40	5.37		4.43
August	33.50	26.30	75.80	3.20	5.90		4.27
September	32.60	24.60	78.80	2.60	7.80		4.39
October	32.50	19.90	67.20	1.60	9.80		3.50
November	29.10	14.50	71.20	1.40	9.78		2.30
December	23.40	9.70	77.50	2.20	7.64		1.73
January	20.60	8.46	75.90	2.30	7.94		1.78
February	24.50	11.20	67.20	3.00	7.82		2.69
March	30.70	15.26	55.80	3.70	8.76		4.18
April	36.60	21.30	38.40	3.80	10.10		5.64
May	39.50	25.40	41.10	4.00	10.80		6.66

Mean Monthly Rainfall in the watershed area (Average for the year 2001-2009)

Month	ETo(mm/day)	Rainfall(mm/month)	Effective Rainfall(mm/month) (computer based)
1	2	3	4
June	6.09	98.60	83.0
July	4.43	278.90	152.90
August	4.27	375.70	162.60
September	4.39	199.20	135.70
October	3.5	23.10	22.20
November	2.3	5.20	5.20
December	1.73	17.70	17.20
January	1.78	33.70	31.90
February	2.69	44.80	41.60
March	4.18	18.20	17.70
April	5.64	12.70	12.40
May	6.66	29.60	28.20
Total	47.66	1137.40	710.60

Reference: Irrigation Crop water Requirement by Modified Penman-Method &KGIR (Data of IMD Lucknow)

Sl. No	Crop	Crop period		ETo(mm)		Kc for crop peiod	ETc crop (mm)	Mont hly Avg rainfall(m m)	Effectiv e rainfall(Re) (mm)	Percolat ion loss(mm)	Groun d water contri bution	Special requirement(mm)				Net irrigation requireme nt(NIR)(m m)(ETc) +Spl.)-(Re)-(GW)	\$Fiel d appli catio n efficien cy %	Field irrigation requirem ent FIR(mm) /FAE)	Gross irrigation requirement GIR(mm)(FIR)/ Conveyance losses)(0.67)
		mon th	days	For full month	For crop period							Nurse ry	Field prepatati on	Stand ing water	Tota l				
1	2	3	4	5	6	7	8	9	10		11	12	13	14	15	16	17	18	19
1	Paddy	July	31	137.3	137.3	1.10	151.0	278.9	150.0	200#	50	20	200	100	320	365.28	80	456.6	681.49 say 681
		Aug	31	132.40	132.40	1.10	149.7	375.7	149.7										
		Sept	30	124.20	124.20	1.10	146.6	199.2	127.5										
		Oct	31	108.50	108.50	0.95	103.3	223.1	18.12										
	Total		123	502.40	502.40		540.60	876.9	445.32										
2	Other kharif(i) Soyabee n (ii)Urd(ii) i)Til(iv) Fooder	July	31	137.3	137.3	0.30	41.2	278.9	41.0		50	-	100	-	100	114.5	65	176.15	262.92 say 263
		Aug	31	132.40	132.40	0.70	92.7	375.7	92.0										
		Sept	30	124.20	124.20	1.00	124.2	199.2	124.0										
		Oct	31	108.50	108.50	0.75	81.4	223.1	18.0										
	Total		123	502.40	502.40		339.5	876.9	275.0										

Sl. No	Crop	Crop period		ETo(mm)		Kc for crop	ETc crop (mm)	Month ly Avg rainfall	Effecti ve rainfall	Percolat ion loss(m)	Groun d water	Special requirement(mm)				Net irrigation requireme	\$Fiel d appli	Field irrigation requirem	Gross irrigation requirement
		For	For	Nurse ry	Field prepatati							Stand ing	Tota l						

No	month	days	full month	crop period	peiod		l(mm)	l(Re)(mm)	m)	contribution		on	water		nt(NIR)(m)(ETc)+Spl.-(Re)-(GW)	catio n effien cy %	ent FIR(mm)/FAE)	GIR(mm)(FIR)/Conveyance losses)(0.67)			
1	2	3	4	5	6	7	8	9	10		11	12	13	14	15	16	17	18	19		
3	Wheat	Nov	15	69.00	34.50	0.3	10.35	5.20	5.00	-	50	-	150	-	150	308.75	65	475.00	708.96 say 709		
		Dec	31	53.60	53.60	0.8	42.9	17.70	15.00												
		Jan	31	55.20	55.20	1.05	58	33.70	33.30												
		Feb	28	75.30	75.30	1.05	79	44.80	35.00												
		March	31	129.60	129.60	0.95	123.1	18.70	18.00												
		April	10	169.20	56.40	0.25	14.1	12.70	12.40												
	Total		146	551.90	404.60		327.45	132.80	118.70												
4		Nov	30	63.00	63.00	0.4	18.90	5.20	5.00	-	50	-	100	-	100	134.40	65	206.77	308.61 say 309		
		Dec	31	49.00	49.00	0.70	34.3	17.70	15.00												
		Jan	31	51.46	51.46	1.05	54	33.70	31.70												
		Feb	28	74.20	74.20	0.5	70.5	44.80	41.60												
		March	10	130.20	-	-	-	-													
		Total		130	367.86	237.66	-	177.70	101.40	93.30											

S l . N o	Crop	Crop period		ETo(mm)		Kc for crop peiod	ETc crop (mm)	Monthly Avg rainfall(mm)	Effecti ve rainfall(Re)(mm)	Perco lation loss(mm)	Groun d water contri bution	Special requirement(mm)				Net irrigation requireme nt(NIR)(m)(ETc)+Spl.-(Re)-(GW)	\$Fiel d appli catio n effien cy %	Field irrigation requirem ent FIR(mm)/FAE)	Gross irrigation requirement GIR(mm)(FIR)/Conveyance losses)(0.67)
		month	days	For full month	For crop period							Nurse ry	Field prepatati on	Stand ing water	Tota l				
5	Sugarc ane	Feb	15	75.32	40.40	0.50	20.20	44.80	19.20	-	50	-	150	-	150	743.23	70	1061.76	1584.71 say
		March	31	129.58	129.58	0.70	90.70	18.20	17.70										1585

	April	30	174.84	174.84	1.00	174.84	12.70	12.40										
	May	31	206.46	206.46	1.00	206.46	29.60	28.20										
	June	30	182.7	182.7	1.00	182.70	98.60	83.00										
	July	31	137.33	137.33	1.00	137.33	278.90	137.33										
	Aug	31	132.37	132.37	1.00	132.37	375.70	132.37										
	Sep.	30	105	105	1.00	105.00	199.20	105.00										
	Oct.	31	108.5	108.5	0.75	81.37	23.10	22.20										
	Nov	30	69.00	69.00	0.75	51.75	5.20	5.20										
	Dec	31	53.61	53.63	0.75	40.22	17.70	17.20										
	Jan	31	55.18	55.18	0.50	27.59	33.70	27.50										
	Total	352	1429.9	1394.9		1250.5	1137.40	607.30										
				9		3												

Physiography and Relief:

Sitapur entire district is plain area, there is no region of land which have more than ten percent slope. You can not find any zig-zag of land. So that project area is also similar to whole district physiography and relief.

3.3.2.1 Agriculture

Watershed deterioration takes place due to the uncontrolled, unplanned, unscientific land use and activities of men. These activities could be as follows:-

Agricultural Land : Cultivation on sloping land without adequate precautions, cultivation- along-nala or stream bank, cultivation of erosion permitting crops, over cropping areas without replenishing soil fertility. This leads to low productivity of land with respect to food, fuel, forage, fibre and fruit along with quick siltation of waterbodies.

Shifting Cultivation: Shifting cultivation destroys protective and productive vegetation in preference for a very brief period of

immediate crop production and results in soil loss and other consequential damages. This practice can cause widespread destruction in the watershed

Various agricultural land uses in the watershed are extended to diversified land capabilities starting from marginal to good class I and II lands. The watershed distinctly has three types of lands i.e. plain, sloping and eroded. The agriculture is practiced on all these soil types though the productivity considerably varies. The total area under agriculture in the watershed is about 13242.00 ha out of which 792 ha is irrigated while 5503.00 ha is under rain-fed agriculture. The water (both irrigated and drinking) is most scarce natural resource in the watershed. The problem of tube wells for irrigation of agricultural crops frequently leads to the drinking water problem to the farmers of watershed forcing them to carry drinking water from outside the watershed area. The agricultural field bunds are common in the watershed, however, they frequently breach on heavy rains adversely affecting the in situ moisture conservation.

The agriculture soils in the watershed have diversified texture i.e. sandy loam and clay loam throughout the watershed. The heavy soils are almost kept fallow during rainy season. The agricultural soils also have hard calcium pan at variable depths. The irrigation water is conveyed in earthen channels and surface irrigation methods following mainly border method or wild flooding method of irrigation by the farmers in the watershed. These factors substantially reduce the water use efficiency of limited available and valuable irrigation water in the watershed. The quality of irrigation water has been tested (secondary data) and has been found suitable. The details are given in Table 7(3)

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

Crop rotation

After considering land use and soil type the existing cropping pattern in the rainfed part of watershed is as follows

One year crop rotation

- (i) Fallow-mustard/wheat(ii) Paddy- wheat(iii)Paddy-mustard-potato(iv)Paddy-pea,(v)Paddy-gram

Two year crop rotation

- (i) Paddy-mustard- sugarcane-wheat,(ii)Paddy-sugarcane- wheat(iii) jowar/Sesame/black gram/gram-mustard/wheat/
Gram/lentil/winter vegetables

Crop rotation in Irrigated area

One year rotation

- (i)Paddy-wheat (ii) Paddy-mustard-potato (iii) Paddy- vegetables

Two year crop rotation:

- (i)Paddy-mustard-sugarcane-gram (ii) Paddy-sugarcane- wheat

3.3.2.2. Crop Production and Productivity

Table no. 19 Production and productivities of important crops in IWMP 3rd Sitapur

Sl. No.	Name of crop	2005			2006			2007			2008		
		A (Ha.)	P (Qtls)	Y (Qt /Ha)	A (Ha.)	P (Qtls)	Y (Qt /Ha)	A (Ha.)	P (Qtls)	Y (Qt. /Ha)	A (Ha.)	P (Qtls)	Y (Qt. /Ha)
1	Paddy	1762	51642	31.0	1642	54186	33.0	1759	58065	35.0	1680.0	60480	36.0
2.	Wheat	1625	43540	30.0	2158	49856	32.0	1550	46500	30.0	1593.0	52569	33.0
3.	Mustard	186	1121	9.5	214	1089	9.0	120	960	8.0	120.0	1080	9.0

4.	Lentil	31	190	9.5	15	144	8.0	14	75	7.5	5	44	8.5
5.	Pea	26	184	8.0	20	179	8.5	18	162	9.0	19	171	9.0
6.	Potato	31	2960	148.0	23	3565	155.0	32	3520	160	23	3406	152
7.	Sugarcane	3650	165400	380	3545	1917270	405	4137	2150598	454	4676	2113552	452
	Total	7311			7617			7630			8116		

Source: District statistic magazine

The agricultural productivity is primarily driven by the amount and distribution of rain water specifically during two cropping seasons i.e. Rabi and kharif. Productivity of kharif crops is also affected by the late onset or early withdrawal of monsoon as well as intermittent droughts of variable duration and intensity. The farmers also do not have suitable cropping systems to deal aberrant weather. Weeds impose considerable constraint in productivity of both kharif and Rabi crops under irrigated as well as rain-fed production system. Farmers undertake normally one manual weeding in paddy and other valuable crops however, practice is energy and time consuming. Use of weedicide is not predominant in the watershed, while insecticides are used mostly in paddy and sugarcane crop.

The mixed cropping is in practice in limited area with kharif crops like gram and musterd but it is not only irrational but also unscientific and beset with low productivity. Subsequent Rabi crops in general and mustard crop in particular are raised on residual soil moisture under rain-fed production system during post 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 plowing for enhanced in situ residual soil moisture conservation and higher production is also not followed in the watershed. The shallow ploughing tractor drawn tillage implements are available with the farmers in the watershed but deep ploughing implements yet needed to be introduced.

The soil fertility/health restoration practices like green manuring, crop rotations and intercropping specifically with legumes, use of FYM/compost, Vermicompost, bio fertilizers, soil and water conservation measures, use of brought up or in situ mulches are

widely lacking in the watershed. The soil and water conservation measures are limited to mechanical/earthen measures created by the state Govt. agencies. Conservation agronomical measures like seeding and plowing across the slope, weed mulching, agro-forestry, vegetative barriers etc also completely lack in the watershed.

3.3.2.3. Indigenous technological knowledge (ITK)

The agriculture is an old traditional practice of farmers in the watershed who have improved themselves with passage of the time according to their domestic need and technological reforms in the nearby areas. The villagers have their traditional village ponds, practice of field bunding which typically constitute agriculture related ITKs in the watershed. The mustard and potato being a cash crop of the watershed is being cultivated in self designed manner by the farmers. However, limited fertilizer application specifically the DAP came in to practice since about 20 years back.

3.4 Horticulture

The subtropical fruits and vegetables have very good potential in the watershed. The fruit trees has limited in number area like mango, guava, , lemon, lime, ber, aoula, bael as vegetables like cucurbits, radish, tomato, cauliflower cabbage, garlic, onion, brinjal, chilly, but they are found surviving well in the watershed villages. Organized orchards, commercial vegetable cultivation, horti-agri and other systems of agro-forestry etc are lacking but have good potential in the water shed. For the improvement of Horticultural programme GOUP are giving subsidies for raising nurseries like.

S.No	Programme	Subsidy
1	Establishment of ‘Aadarsh’Nursery(2-4Ha)	50% of investment cost or max upto 12.50 lakh 4 Ha credit linked Bank
2	Establishment of ‘Small’Nursery(1Ha)	50% of investment cost or max upto 3.125 lakh Ha credit linked Bank added

3	Cold storage units	40% of cost investment or max upto 120.00 lakh credit linked Bank added subsidy
4	Primary Processing unit	40% of investment cost or max upto 9.60 lakh credit linked Bank added subsidy
5	Low cost preservation unit (Establishment of new unit)	50% of investment cost or max upto 1.00 lakh linked Bank added subsidy
6	Low cost onion storage house	50% of investment cost or max upto 0.50 lakh linked Bank added subsidy
7	Functional infra-structure for collection sorting, grading & packing	40% of investment cost or max upto 6.00 lakh credit linked Bank added subsidy

3.5 Live Stock Population

Total livestock population of the IWMP 3rd watersheds is 5026 bufallow is preferred as milch animal compared to cow, but milk yield on average is 2-3 kg perday. Goats are also kept for milk as well as for meat purpose. The detail of live stock population is given in table below

Table. 20: Live stock population

S. N.	Name of Micro Watershed	Name of Villages	Buffaloes	Cows	Bullocks	Goat	Sheep	Total
1	Choka or Sharda 2B1H1d4b,	Ulara, Piprivenisingh, Nyaria Bank, Naseerpur, Visenda, Manjhia, Daulatpur, Newrajpur, Ram Kund, Buila Kala, Rampur, Kootoobpur Majhigawa Kala, Kodra, Kalupur, Parsadipur, Lakhawa Bojhi, Kalyanpur Chaharpur, Karondi, Rampur Khurd, Balpur, Pakaria, Sirsa khurd,	568	265	98	321	32	1284
2	Choka or Sharda 2B1H1d3a,	Saraiya Mafi, Kamyabpur, Bhagwanpur, Visendi, Ruknapur, Karim Panaha, Asharfipur, Januwa, Bhagipur, Raja Karnai	645	526	195	398	35	1799

Source: District statistic magazine and secondary data

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. It is planned that land to be covered under new plantation.

Table. 21: Forest/vegetative cover

S. No.	Name of Village	Existing area under tree cover (ha)	Area under tree cover proposed
1	34 villages in IWMP 3 rd	-	671.00 Ha

3.5 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.

Table. 84: Details of livestock in the project areas (for fluids please mention in litres, for solids please mention in kgs. and income in Rs.)

S. no.	Name of MW	Type of animal	Pre Projected			Expected Post Projected			
			No	Yield	Income	No	Yield	Income	
1	34 villages in IWMP 3 rd	Buffalow	2527	2.33lit/animal	20.00/day	11786	4.00lit/animal	30.00/day	
		Cow	1132	1.84lit/animal	16.00/day	7668	3.004lit/animal	25.00/day	
		Sheep	50	10kg/animal	2000.00/animal	7681	20kg/animal	4000.00/animal	
		Goats	930	8 kg/animal	1600.00/animal	405	16 kg/animal	3200.00/animal	
		Pigs	710	20 kg/animal	2000.00/animal	710	50 kg/animal	10000.00/animal	
		Poultry	-	0.75kg/bird	150.00/bird	-	0.75kg/bird	300.00/bird	
		Fish	-	10.73 q/ha	15000.00/ha	-	50.00 q/ha	75000.00/ha	

3.6 Fisheries

Commercial fish farming was not done by the farmers of in IWMP 3rd, but there is a big scope for fish farming in these areas.

3.7. Forest and other Vegetation

3.7.1. Forests

The watershed has only 4.5 ha. Forest area only some wild trees are found in scattered manner.

3.7.2. Horticulture/ Agro-forest

3.7.3. Agro-forestry

When trees are grown on agricultural lands along with agricultural crops is called agro-forestry. The agro-forestry practices are highly lacking in the watershed though it has good potential under existing dispositions and may play a vital role particularly with respect to minimization of cropping risk, build up soil fertility and productivity, soil conservation, partly meeting out the fire wood demand of rural community and moreover, optimizing the economical return from

System as a whole under typical semi arid climate in the watershed. The other agro-forestry systems like agri-silvi, silvi-pastoral, bund and boundary plantations also have good potential to cater the fire wood and fodder demands of the rural community in the watershed. The existing area under agro-forestry is almost negligible. *Prosopis cineraria* and *Zizyphus* spp. Are most suitable for plantation as block or sole plantation specifically on marginal and degraded lands in the watershed. The agro-forestry interventions comprising of ber, beal, aonla, guava, popular etc may be applied to benefit of the farmers under rain-fed to irrigated production systems on leveled to sloping and marginal agricultural land using proper planting techniques with termite control measures. These multipurpose trees may also help in supplementing fire wood and fodder demands of the rural community in the watershed and may be planted as hedge rows on rain-fed, marginal and degraded lands.

Drinking water

As a result of the watershed activities, it is expected that the quantity and quality of drinking water would improve.

Table. 22: Status of Drinking water

		Availability of drinking water (no. of months in a year)		Quality of drinking water		Comments
		Pre-project	Expected Post project	Pre-project	Expected Post-project	
1	34 villages in IWMP 3 rd	12 month	12 month	General water	Good water	-

Conclusions

The land capability classification of IWMP 3rd watershed provides reasonable good information with regard to capability of soil that could be used for agriculture, agri-horticulture, and silviculture and pasture development. The majority of land (ha) form is coming under class II, which give an insight of good agriculture production potential of this watershed. The productivity of these lands could be further enhanced by adoption of simple soil & water conservation measures like mild leveling, bunding, diversion drain and in-situ moisture conservation practices. The reasonable area (7400) is under class III indicating greater potential of this watershed for forestry and pasture development. The major physical limitations in case of agriculture soils are the sub soil hardness, low water infiltrability and slope. A small portion (4.5ha.) of watershed is under seasonally waterlogged. The soils under waterlogged area could be used for some other beneficial farming activities during the kharif season also.

3.2. Socio- Economic Profile:

3.2.1 Demographic Status

Table. 23: Demographic pattern detail

S. No	Name of Micro Watershed	Name of Villages	Total No. of House Hold	Population			Population of SC/ST		
				Male	Female	Total	Male	Female	Total
1	Choka or Sharda 2B1H1d4b,	Ulara, Piprivenisingh, Nyaria Bank, Naseerpur, Visenda, Manjhia, Daulatpur, Newrajpur, Ram Kund, Buila Kala, Rampur, Kootoobpur Majhigawa Kala, Kodra, Kalupur, Parsadipur, Lakhawa Bojhi, Kalyanpur Chaharpur, Karondi, Rampur Khurd, Balpur, Pakaria, Sirsa khurd,	2598	9352	6236	15588	2341	1560	3901
2	Choka or Sharda 2B1H1d3a,	Saraiya Mafi, Kamyabpur, Bhagwanpur, Visendi, Ruknapur, Karim Panaha, Asharfipur, Januwa, Bhagipur, Raja Karnai	1248	4492	2995	7488	1347	898	2246
			3846	13844	9231	3846	3688	2458	6147

Source: District statistic magazine

The Data indicates the ratio of male to female as 1.12:1 in general and is in SC/ST community.

3.2.2. Literacy rate

Table no. 24: Literacy rate detail

S. No	Name of Micro Watershed	Name of Villages	Total population	% of Literacy		
				Male	Female	Total
1	Choka or Sharda 2B1H1d4b,	Ulara, Piprivenisingh, Nyaria Bank, Naseerpur, Visenda, Manjhia, Daulatpur, Newrajpur, Ram Kund, Buila Kala, Rampur, Kootoobpur Majhigawa Kala, Kodra, Kalupur, Parsadipur, Lakhawa Bojhi, Kalyanpur Chaharpur, Karondi, Rampur Khurd, Balpur, Pakaria, Sirsa khurd,	15588	58	36	47
2	Choka or Sharda 2B1H1d3a,	Saraiya Mafi, Kamyabpur, Bhagwanpur, Visendi, Ruknapur, Karim Panaha, Asharfipur, Januwa, Bhagipur, Raja Karnai	7488	61	35	48
Total			25766	59.3	3846	46.6

The data reflects that for 100% literacy rate a long way has to be assessed.

3.2.3. Migration pattern

Table. 25: Migration detail: The following migration pattern has been noticed from primary data collected on structured questionnaires

S. No	Name of Micro Watershed	No of Village	Total population	Migration			Migration by Month			Main reason for migration	Income per capeta
				Total	Male	Female	<3Month	3-6 Month	>6 month		
1	Choka or Sharda 2B1H1d4b	24	15588	70	60	10	58	9	3	Employment Livelyhood	Rs 4500/ month
2	Choka or Sharda 2B1H1d3a	10	7488	248	170	28	195	40	13	Employment Livelyhood	Rs 4800/ month

9.2. Migration

Low rainfall results in very little fodder availability in the locality.. 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.

Table. 26: Details of seasonal migration from Project area

S.No	No. of villages	No. of persons migration	No. of days per year of migration	Major reason(s) for migration	For reduced migration identify major activities of IWMP responsible		
					(a) Structures	(b) Livelihoods	
1	34 villages in IWMP 3 rd)	364	268	Unemployment & high Wages rate in City	Structure	Livelihood	225

Marketing linkage

The direct livelihood activities need good forward and backward support. Without such support system the activities may fail to deliver the desired results. These linkages would involve credit, machinery, input supply, marketing, etc.

Table no. 68: Backward and Forward Linkage

S. No.	Project	Type of Marketing Facility	Pre-project (no.)	During the project (no.)	Post-project (no.)
1	34 villages in IWMP 3 rd	Backward linkages			
		Seed certification	1	1	1
		Seed supply system	30	32	48
		Fertilizer supply system	12	18	20
		Pesticide supply system	6	6	10
		Credit institutions	Bank-5	Bank-7	Bank-10
		Water supply	-	-	-
		Extension services	3	3	12
		Nurseries	1	1	12
		Tools/machinery suppliers	-	-	2
		Price Support system	-	-	4
		Labour	-	-	-
		Any other (please specify)	-	-	-
		Forward linkages			
		Harvesting/threshing machinery	4	8	12
		Storage (including cold storage)	1	1	4
		Road network			
		Transport facilities	-	-	-
		Markets / Mandis	8	9	12
		Agro and other Industries	1	5	6
		Milk and other collection centres	-	2	6
		Labour	-	-	-
		Hatchery (Portable)	-	5	8
Vermi-compost unit	-	2	5		
Animal Mineral Mixture	-	-	50 gm/day/animal		

3 BASELINE SURVEY

3.1. Socio Economic Status of District Sitapur (source Planning Atlas.U.P.)

Table. 27: Economic Region- Central Region.

S.No.	Particulars	District Sitapur	State U.P.
1	Density of Population/Sq. Km.	630	690
2	% of Urban Population to total population	11.94	20.78
3	% of S.C. & S.T. Population to total population	31.90	21.20
4	Literacy percentage(Total)	48.32	56.27
5	Literacy percentage(Female)	34.59	42.22
6	% of total workers to total population	31.09	32.48
7	% of culturable land to total reporting area	87.40	80.00
8	% of net area sown to total reporting area	76.10	69.20
9	% of culturable land to reporting area	1.20	2.30
10	% of area under forest to total reporting area	1.00	7.00
11	% of area under commercial crops to sown area	30.54	20.19
12	Composite index of development of land use	82.11	83.99
13	%of Gross irrigated area to Gross area sown	75.50	72.86
14	No. of pumpset on per thousand Ha. Of Gross sown area	198.85	129.48
15	% of area irrigated by tubewells to net irrigated area	84.88	70.24
16	Distribution of fertilizers per Ha. Of Gross area sown(kg)	132.39	129.48
17	Intensity of cropping	146.90	151.79
18	Per capita Production of food grain(kg)	228.57	253.68
19	Average yield of food grain (Q/Ha.)	19.64	21.91
20	Gross value of agricultural produce at current price	5683	4783
21	No. of Milk Productive Cooperative Societies per lakh of milch cattle	66	72
22	Per capita Milk Production (kg)	68.64	181.17
23	Gross value of industrial Produce per capita(Rs.)	1592	4544
24	Per capita State domestic Product from industrial sector at current price(Rs.)	697.70	1161.69
25	% of electrified villages to total inhabited villages	50.40	60.50
26	Per capita consumption of electricity (KW/)	40.0	156.5
27	% of boys enrolled in primary scools	51.64	52.29
28	% of girls enrolled in primary scools	48.36	47.71

29	% of boys enrolled in upper schools	53.50	54.69
30	% of girls enrolled in upper schools	46.50	45.31
31	No. of ITIs per lakh population	0.80	0.10
32	No. of poly techniques per lakh population	0.03	0.04
33	No. of Allopathic Hospital/Dispensaries/Lakh of population(including P.H.C's)	2.55	2.98
34	% of children having no immunization	43.90	35.80
35	Malnutrition status of children	87.30	82.60
36	Infant mortality rate	94.92	74.00
37	Composite index of Health	39.20	44.80
38	Human Development Index	0.361	0.447
39	Composite index of development (Based on 36 important indicators)	87.07	-

Socio Economic Base line Survey:

The subject of socio economic survey confronts a vast array of socio conditions and economic activities in the watershed. Base line survey shall help to identify the impact of the project over time.

Socio economic survey is essential parts of watershed survey and planning undertaking. In this watershed questionnaires were prepared in logical order. Questionnaires included double checking system so that inconsistency may be detected in the responses and uncertainty can be resolved immediately.

To assess the socio economic conditions indicators were enumerated like land holding pattern, literacy rate, gender rate, status of health services and infrastructural facilities. Data about these indicators have been collected in field surveys of the 34 villages of the watershed on structure questionnaires from about 423 beneficiaries. The data so obtained has been analyzed for various indicators, correlated from statistical diary of Planning and statistics department GOUP.

3.14 Infrastructure social features

Table no.28: Details of infrastructure in the project area

S.No.	Parameters	Status			
(I)	No. of Villages connected to the main road by an all-weather road	16			
(ii)	No. of villages provided with electricity	14			
(iii)	No. of households without access to safe drinking water	1870			
(iv)	No. of educational institutions: Primary (p)/Secondary(S)/ Higher secondary(HS)/ vocational Institution	(P)	(S)	(HS)	(VI)

	(VI)	14	6	5	-
(v)	No. of villages with access to primary Health Center	7			
(vi)	No. of villages with access to Veterinary Dispensary	9			
(vii)	No. of villages with access to Post office	7			
(viii)	No. of villages with access to Banks	5			
(ix)	No. of villages with access to Markets/mandis	8			
(x)	No. of villages with access to Agro-industries	-			
(xi)	Total quantity of surplus milk	2880 liter			
(xii)	No. of milk collection centers (e.g. Union(U)/Society(S)/ Private agency (PA)/ others (O))	(U) No	(S) No	(PA) 28	(O)
(xiii)	No. of villages with access to anganwadi Center	12			
(xiv)	Any other facilities with no. of villages (please specify)	-			

The IWMP 3rd watersheds have moderate communication facilities and all 34 villages which are approachable through motorable road. Literacy rate in the watershed is very low. Only 15 villages are electrified and have TV & telephonic connection. Nearest big market Biswan is about 8 km from the watershed. Religious and ritual features are almost common as in other part of the U.P. Small land holding (average less than 2.3 ha) with large family size (average 5.52 person) and more than 45% of the labour force of the total population living below poverty line indicate poor socio economic status of the watershed community. However, strong community spirit among the villager's show positive indication for the success of any programmed to be implemented in participatory mode. Traditionally the entire village community participates in the individual works. They are to be mobilized for community participation.

3.15 Venn diagram

In the Venn diagram , farmers perceptions was recorded for importance and role of different development institution is related to infrastructure development in the villages, importance has been depicted with size of circle and role with distance from the village circle. The Venn diagram of the IWMP 3rd watershed villages are being attach here with.

3.1.6. Historical timeline

An historical timeline is the chronological record of important events in the history of the village which is useful in understanding its background in the context of three micro watersheds of Sitapur district. Historical timeline depicting important events in respect of different villages of the IWMP 3rd watershed was prepared through PRA. Historical timeline for important villages are given in table.

Village- Ulra		Village-Ram Kund	
Year	Activities	Year	Activities
1715	Established	1770	Established
1965	Construction Bandhi (water harvesting structure)	1965	Construction Bandai (water harvesting structure)
1968	Opening up Primary School	1985	Opening up Primary School
1976	Introduction of Tractor	1980	Introduction of Tractor
1978	Establishment of Gobar gas plant	1978	Establishment of Gobar gas plant
1979	Kacha road	1982	Kacha road
1985	Introduction of thresher	1987	Introduction of thresher
1986	First Tube well	1988	First Tube well
1990	First motorcycle	1992	First motorcycle
1993	TV and DVD player	1996	TV and DVD player
2002	Electricity in the village	2002	Electricity in the village
2003	Bituminous road	2003	Bituminous road
2005	Temple renovation	2007	Temple renovation
2009-10	Planning for watershed project	2009-10	Planning for watershed project
Village- Bhuilakala		Village-Kootobpur	
Year	Activities	Year	Activities
1790	Established	1728	Established
1964	Construction Bandhi (water harvesting structure)	1965	Construction Bandhi (water harvesting structure)
1985	Opening up Primary School	1986	Opening up Primary School
1980	Introduction of Tractor	1985	Introduction of Tractor
1978	Establishment of Gobar gas plant	1980	Establishment of Gobar gas plant
1982	Kacha road	1982	Kacha road

1987	Introduction of thresher	1988	Introduction of thresher
1988	First Tube well	1987	First Tube well
1992	First motorcycle	1993	First motorcycle
1996	TV and DVD player	1998	TV and DVD player
2002	Electricity in the village	2002	Electricity in the village
2003	Bituminous road	2004	Bituminous road
2007	Temple renovation	2009-10	Planning for watershed project
2009-10	Planning for watershed project		

Village- Majhgawankala		Village-Kalupur	
Year	Activities	Year	Activities
1890	Established	1762	Established
1967	Construction Bandhi (water harvesting structure)	1967	Construction Bandhi (water harvesting structure)
1984	Opening up Primary School	1985	Opening up Primary School
1985	Introduction of Tractor	1980	Introduction of Tractor
1980	Establishment of Gobar gas plant	1978	Establishment of Gobar gas plant
1982	Kacha road	1982	Kacha road
1988	Introduction of thresher	1987	Introduction of thresher
1987	First Tube well	1988	First Tube well
1993	First motorcycle	1992	First motorcycle
1998	TV and DVD player	1990	TV and DVD player
2002	Electricity in the village	2002	Electricity in the village
2004	Bituminous road	2003	Bituminous road
2009-10	Planning for watershed project	2007	Temple renovation
		2009-10	Planning for watershed project

Village-Visendi		Village- Kareempanah	
Year	Activities	Year	Activities
1890	Established	1860	Established
1965	Construction Bandhi (water harvesting structure)	1968	Construction Bandhi (water harvesting structure)
1980	Opening up Primary School	1982	Opening up Primary School
1984	Introduction of Tractor	1981	Introduction of Tractor

1986	Establishment of Gobar gas plant	1985	Establishment of Gobar gas plant
1982	Kacha road	1983	Kacha road
1987	Introduction of thresher	1985	Introduction of thresher
1988	First Tube well	1984	First Tube well
1993	First motorcycle	1992	First motorcycle
1998	TV and DVD player	1995	TV and DVD player
2002	Electricity in the village	2002	Electricity in the village
2004	Bituminous road	2004	Bituminous road
2009-10	Planning for watershed project	2009-10	Planning for watershed project

Source: Secondary data

3.3 Livelihood Pattern:

Per capita income

Per capita income based on primary & secondary data from different sources are given below:

Table 29: Per capita income in IWMP 3rd Sitapur

S. no.	Name of Project	Agriculture (Rs)	A. Husbandry (Rs)	Casual labour (Rs)	Others (Rs)	Total (Rs)
1	IWMP 3 rd Sitapur	4496.50	1123.50	2500.00	1470.00	9590.00

Source : District statistic magazine and primary data

LIVELIHOOD ACTIVITIES

Income generating activities through self help groups for landless farmers like goat farming, poultry farming bee keeping, livestock development activities, vocational training given with the involvement of KVK, Sitapur and NGOs. Financial out lays for this component is 10 % i.e., Rs 29.80 lacs, details are given below in table.

Table 30: (A) Details of activities of livelihoods created for landless people- including micro enterprises

Sl .no.	Name of Villages	Name of the Activities	No. of beneficiaries					Pre project income (Rs)	Expected change in income from project intervention	Funds required for the activity (Rs.)	Sources of funding(Rs.)					Expected month & year of completion (mm/yyyy)
			SF	MF	LF	Land less	Total				Project Fund	Beneficiary	Financial institution	NGO	Others	
1	34 villages in IWMP 3 rd	Fruit preservation	10	2		108	120	12000.00	600000.00	800000	800000	-	-	-	-	March, 2015
		Rural craft	22	5	-	168	195	20000.00	650000.00	1300000	1300000	-	-	-	-	March, 2015
		Goatery	31	14	-	60	105	12000.00	490000.00	700000	700000	-	-	-	-	March, 2015
		Piggery	-	-	-	180	180	60000.00	1200000.00	1200000	1200000	-	-	-	-	March, 2015

Table. 31: (B) Details of other activities of livelihoods created for farmers

Sl .no.	Name of Villages	Name of the Activities	No. of beneficiaries					Pre project income (Rs)	Expected change in income from project intervention	Funds required for the activity (Rs.)	Sources of funding(Rs.)					Expected month & year of completion (mm/yyyy)
			SF				Total				Project Fund	Beneficiary	Financial institution	NGO	Others	
1	34 villages in IWMP 3 rd	Crop(0.5 Ha.) demonstration	100	100	10	-	210	900000.00	1200000.00	1800000	1800000	-	-	-	-	March, 2015
		Medicinal plant	15	30	15	-	60	-	3000000.00	600000	600000	-	-	-	-	March, 2015
		Horticulture	10	50	25	-	85	50000.00	8500000.00	850000	850000	-	-	-	-	March, 2015
		Nursery raising	4	2	3	-	9	-	900000.00	450000	450000	-	-	-	-	March, 2015

Livelihood pattern (Occupational Distribution)

Table:32

S. N.	Name of Micro Watershed	Total Workforce	Agriculture	A. Husbandry	Casual Labour	Service	Handcraft	Daily wage labour
1	Choka or Sharda 2B1H1d4b,	64	2055	727	664	22	6	490
2	Choka or Sharda 2B1H1d3a,	5488	2644	1065	476	49	9	1245

The villagers earn their livelihood from animal husbandry and agriculture and during lean seasons they migrate for daily wage

labourers in salt pans of Kanpur and as agriculture labour in other parts of the state. Another major occupation of the people is gum collection and Charcoal making using the wood of *prosopis* which they collect from the community land or forest.

TABLE NO. 27: PER CAPITA INCOME

Sl. No.	Project Name	Agriculture (in Rs.)	Animal husbandry (in Rs.)	Casual labour (in Rs.)	Others (in Rs.)	Total (in Rs.)
01	IWMP-III	5875.00	1520.00	3452.00	1425.00	12272.00

DEPENDENCE ON COMMON PROPERTY RESOURCE

The vast majority of the denizens of this region depend on Common property resources. Most of them continue to live a virtually hand-to-mouth existence. Their pathetic poverty seems, in fact, to have further worsened in recent years, as their traditional pasture lands have been rapidly depleting due to over-grazing and persistent drought-like conditions in the region. But now, almost every family in this area supplements its meagre income by felling the tree and burning its woods.

TABLE NO.28: DEPENDENCE ON FOREST/CPR

Sl. No.	Project/Village	Forest Wood marketing		Fodder		Total income (Rs)
		% sells	Income (Rs)	% sells	Income	
01	IWMP-5	0	Self Consumption	0.00	Self Consumption	0.00

3.4. COMPARATIVE DATA OF THE CROP PRODUCTIVITY OF THE AREA: PROJECT AREA VS.

DISTRICT VS. STATE VS. COUNTRY VS. WORLD:

“The term productivity in general means the total output per unit of factor input. For example land productivity means output per hectare of land. Productivity is an average and is calculated by dividing the total output of a particular crop by the total cultivated area under that crop.”

Data are made available by the Baseline survey (for IWMP-III), Handbook of Agriculture, ICAR publication 2001(For Censex data), and Final district plan (DAP) of Dept. of Agriculture . The results indicate that IWMP-3 village has very low productivity compared to world, India, U.P & Sitapur.

The productivity is low not only because that the land is unproductive or the farmer’s lack the skills to manage their crop but also due lack to of source of irrigation, salty water and scarcity of rain.

The IWMP-III village comes under semi arid zone. So farmers grow crop according to the rainfall. If they get good rainfall they generally grow high value crops like wheat, Rice, mustard, Arhar, Alsi ,Barli Bengal gram etc. In case of low rainfall they go for sorghum, castor, and pearl millet. So we can say that monsoon decides cropping patterns of IWMP-III village.

Chapter- IV

WATERSHED ACTIVITIES

Watershed management as a strategy has been adopted by Government of India especially in the rain-fed regions of semi-arid

tropics. These regions are characterized by low and undependable rain, low soil fertility, poor infrastructure development, low literacy and high incidence of migration. Several studies have identified that there is a dire need of a systematic and scientific approach to deal with watershed development. The common guidelines generate a fresh and flexible framework for the next generation watershed development.

4.1. SCIENTIFIC PLANNING:

I) CLUSTER APPROACH

This envisages a broader vision of Geo-hydrological unit which involves treating a cluster of micro-watershed. The Sitapur (IWMP-III) project is located in Khairabad, Biswan, Kasmanda, Block is a cluster of 2 micro-watersheds with **2B1H1d4b**, **2B1H1d3a** being their respective codes.

II) BASE LINE SURVEY

To access the impact of any watershed development programme a detailed baseline survey has to be conducted. This acts a benchmark for any intervention during and 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 *Censex Data*. Household census survey includes a detailed questionnaire which was been filled by visiting each and every household in the village. This gave in the details of the demographic profile of the village, the literacy percentage, SC/ST population, number of BPL household, cattle population, net consumption rate in the village, average milk production of the cattle and various schemes running and their benefits. Bio-physical survey was undertaken to identify various natural resources available in the village. It included the soil typology, well in the area, crop taken in the field, Cropping pattern, fertilizer used and various sources of irrigation in the field.

III) PARTICIPATORY RURAL APPRAISAL (PRA)

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

These tools put the villagers in ease than the complicated questionnaires. Various tools like Matrix ranking, Venn Diagram were used to identify various local vegetations (apt for afforestation) , Fodders crops , various institution and their significance in the life of the farmers

IV) USE OF GIS AND REMOTE SENSING FOR PLANNING

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

a) PRIORITIZATION

Geographical Information System(GIS) has been used for prioritization process. Various layer maps were created like Geo-morphological, Soil, 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 helped in prioritization of various watershed areas.

b) PLANNING

A 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 1 meter at a scale of 1:8000 was used for identifying various locations for soil and water conservation structures.

HYDROLOGICAL MODELLING

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

4.1: Details of Scientific Planning and Inputs in IWMP projects

Table No. 33

Scientific criteria/ inputs used	Whether scientific criteria was used
1	2
(A) Planning	
Cluster approach	Yes
Whether technical back-stopping for the project has been arranged? If yes, mention 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	Yes
Ridge to Valley treatment	Yes
Online IT connectivity between	Yes
(1) Project and DRDA cell/ZP	Yes
(2) DRDA and SLNA	Yes
(3) SLNA and DoLR	Yes
Availability of GIS layers	Yes
1. Cadastral map	Yes
2. Village boundaries	Yes
3. Drainage	Yes
4. Soil (Soil nutrient status)	Yes
5. Land use	Yes

6. Ground water status	Yes
------------------------	-----

1	2
7. Watershed boundaries	Yes
8. 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	
1. Bio-pesticides	No
2. Organic manures	Yes
3. Vermicom post	Yes
4. Bio-fertilizer	Yes
5. Water saving devices	Yes
6. Mechanized tools/ implements	Yes
7. Bio-fencing	Yes
8. Nutrient budgeting	No
9. Automatic water level recorders & sediment samplers	No

4.2 INSTITUTION BUILDING

4.2.1 Participatory Rural Appraisal (PRA)

The past experience of watershed has given tremendous input to focus on creating accountability of the stakeholders towards the programme. This has created an emphasis to include the all stakeholders' communities and their local indigenous technological knowledge while planning for any activity. Participatory approach provides a new path for planning, implementing, monitoring and post withdrawal activities with a complete accountability of the stakeholders. Various PRA techniques like resource mapping, social mapping, matrix ranking and season calendar were used to understand the physical and social orientation of the village in general and watershed specific. These tools put the villagers in ease than the complicated questionnaires. Various tool like matrix ranking, Venn diagramme were used to identify various local vegetation (apt for afforestation), fodder crops, various institution and their significance in the life of the farmers.

4.3 Social Mobilization and Community Organization

The following table reveals the status of formation of W.D.T., W.C, and UG &S.H.G.

Table 34: Physical outlays oh PIA, U.G., S.H.G., W.D.T. and W.C.

S. No.	Name of watershed	Code No.	U.G. (No.)	SHG (No.)	WDT (No.)	PIA	WC (No.)
1	Choka or Sharda	2B1H1d4b,	8	4	1	1	2
2	Choka or Sharda	2B1H1d3a,	22	11	1	1	8

4.3.1 Watershed Committee Detail:

Watershed committee has been constituted in all three nos of micro-watersheds partially by WDT and Gram Sabha in the village of micro watershed. These committees are yet to be registered under society Registration Act 1860. Capacity building trainings will be given to the watershed committee by WDT. The watershed committee has a pivotal role to play during and after the project implementation period. Detail of W.C. is given below

4.3.2 Watershed Development Team

As per as common guide line of GOI- 2008 direction/ instruction given in para 5.3 point 40 P.I.A. has constituted watershed development team(W.D.T.)

Table.35: Details of Watershed Development Teams (WDTs) in the project area

S. No.	Name of the PIA	Name of the micro water shed	Names of WDT members	M/F	Age	Qualification/ Experience	Description of professional training	Role/ Function##	Date of appointment of WDT member
1	2		4	5	6	7	8	9	10
1	Bhomi Sanrakshan Adhikari Land development And water resources Department Sitapur(U.P.)	Choka or Sharda 2B1H1d4b	Sri Shalender Kumar	M	27	B. Sc. Ag	Agriculture	E	
			Sri Badri Singh	M	55	B. Sc.Ag.	Field Worker	H	
			Sri R.P.Singh	M	40	Hsc..Ag	Field Worker	J B	
			Smt Sushma Vajpayee	F	33	M.A Sociology	Social Moblizer	A	
			Sri R.N.Verma	M	53	Ag. Engineer		C D F	
2		Choka or Sharda 2B1H1d3a	Sri Shalesh Srivastav	M	35	B .A	Field Worker	E	
			Sri Durga Prasad	M	25	H. Sc.	Field Worker	H	
			Sri D.N.Dubey	M	40	Isc.	Field Worker	J B	
			Arpana Mishra	F	33	M.A Sociology	Social Moblizer	A	
			Sri S.P.Singh	M	43	Ag. Engineer		C D F	
			Sri R.P.Singh	M	40	Hsc..Ag	Field Worker	J B	

M – Male, F- Female

In column 9, the work, assigned as below,.

- | | | | |
|---|--|---|---------------------------------------|
| A | Participatory Net Planning (PNP) and Participatory Rural Approach (PRA), Traning and Capacity Building | C | Maintenance of Accounts |
| B | Planning | E | Social audit |
| D | Signing of cheques and making payments | G | Physical verification & measurement |
| F | Engineering surveys, drawings and cost estimations | I | Livelihood opportunities for landless |
| H | Record of labour employed | K | any other (please specify) |
| J | Post project operation, maintenance of assets | | |

4.3.3 Self Help Group

The constitution of Self Help Groups have been constituted by W.C. in all micro watershed for generating income & improved their social status with the help and financial support through scheme and by technical support of P.I.A., detail of 30 SHG_s are given below

Table 36 SHG detail: SELECTION OF WATERSHED FOR IWMP 3rd - SITAPUR

S.No	Name of Praject	Name of S.H.G	Name of chairman	Name of Cashier	Proposed Working of S.H.G	Name of Members
1	Ulra	Ajad S.H.G	Sri Nandkishor s/o Mevalal	Sri Makulal s/o Jainath	Buffalo Keeping	Sri Pramod Kumar, Jagatpal, DEshraj, Bachraj, Jai Karan, Vinod Kumar, Lalit Kumar, Sunil Kumar, Smt. Rukmani, Smt. Nandrani, Smt. Dayarani
2	Pipribenis ingh	Khushhali S.H.G	Sri Prem Prakash s/o Chandrika Prasad	Sri Satish Kumar s/o Shivraj	Buffalo Keeping	Sri Khalil Ahmad, Shamshudeen, Srinathsingh, Shatrughanlal, Balakram, Dinesh, Govind, Moinuddeen, Ramoutar, Smt. Sheela Devi
3	Visenda	Ganesh S.H.G	Sri Baburam s/o Ishwardeen	Sri Sanjay s/o Baburam	Buffalo Keeping	Sri Omprakash, Kamlesh, Harish, Harnam, Raju, Barati, Kaushal, Hakim, Kishori, Sanjai,
4	Neorajpur	Deoria S.H.G	Sri Ramkhilavan s/o Puttilal	Sri Sahajram s/o Khushiram	Masala Packing	Sri Basant, Pooran, Chheram, Ramu, Mhajan, Bale, Durbal, Aditya Narain, Smt. Kiran Devi, Smt. Sarojani
5	Ramkund	Vikash S.H.G	Sri Moh.Ahmad s/o Ali Husain	Sri Mohboob Ahmad s/o Bhaggu	Dairy	Sri Sabir Khan, Sher Mohammad, Yakoob, Iddu, Labbar, Muttu Khan, Kaim, Musheer Khan, Saddiq, Kutubuddin.
6	Bhuilakala	Hind S.H.G	Sri Deshraj s/o Buddhan	Sri Pyarelal s/o Ram Manohar	Fisheries	Sri Jaskaran, Baliram, Ramdulare, Ramchander, Jagdeesh, Omkar, Arvind, Holiram, Raju, Smt. Gauri.
7	Kootoopur	Prem S.H.G	Sri Kuldeep yadao s/o Premchader	Sri Jagatpal s/o Puttu	Dairy	Sri Banwari, Vinod, Jabir, Moh. Ahmad, Yasmeen, Agnoo,Rajjan, Lakshman, Shakeel, Saleem.
8	Majhgawan kala	Krishi S.H.G	Sri Jai Narain s/o Baburam	Sri Rajender Kumar s/o Ramdulare	Buffalo Keeping	Sri Suresh, Bhagwandeem, Ram Kumar, Thakurdeen, Navi Ahmad, Ramlotan, Ramsaran, Manohar, Rafiq, Baburam
9	Kalooopur	Bajrangbali S.H.G	Sri Siyaram s/o Ishwardeen	Sri Avadhram s/o Balli	Buffalo Keeping	Sri Amit Kumar, Chetram, Ramprasad, Vishwanath, Shashikant, Shyamkumar, Ramdas, Chhotelal, Rajaram.
10	Chaharpur	Kisan S.H.G	Sri Ramlal s/o Kirhi	Sri Radheylal s/o Sarjoo Prasad	Buffalo Keeping	Sri Islam, Sushil, Vikash, Ikrar, Ramsajeevan, Rajeev, Kurwan, Gaurishankar, Ishwardeen
11	Karondi	Pratap S.H.G	Sri Pratap Singh s/o Paragsingh	Sri Jai Singh s/o Khajan Singh	Poultry	Sri Jwala Prasad, Pramlal, Noor Moh. Ayoob Khan, Afsar Khan, Motilal s/o Bhagwandeem, Motilal s/o Ramasre, Rafiq, Hanif Khan
12	Balpur	Sandeep S.H.G	Sri Sandeep Kumar S/OIndrer Kumar	Sri Sant kumar s/o Ram Sagar	Dairy	Sri Swarn Kumar, Mahadeo, Ram Sagar, Sudhir, Sanjay, Satya Prakash, Dhaniram, Sunil, Ram Dyal
13	Sirsakhurd	Nav Jyati S.H.G	Sri Veerpal Gautam S/O Manoharlal	Sri Atmaram s/o Moolchander	Candle	Sri Lallan, Ramniwas, Malkhan, Ram Vijay, Rakesh, Chandan, Vinod, Ramesh,
14	Saraiya Mafi	Kranti S.H.G	Sri Santosh kumar S/O Ram Sagar	Sri Umesh Kumar S/O Devi Shanker	Buffalo Keeping	Sri Neeraj, Anop Kumar, Sushil, Mukesh, Pandey, Babu, Manoharlal, Parshuram, Visheshwar, Sabban
15	Visendi	Dr. B.R.	Sri Roop Chandre S/O	Sri Vinod S/O Sukhai	Goat Keeping	Sri Gucharan Kanhai, Lallooram, Vanshgopal, Ramkhilavan,

		Ambedkar S.H.G	Chhotelal			Ramjeevan, Balram Jhaggulal,Subedar Manohar
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4.3.4 User Group

The following user's group are identified and constituted in all micro watersheds in presence of Watershed Development Team for implementation of watershed work proper use and management of all engineering and vegetative measure to be created in watershed. Detail of user's group are given below

Table 37: Details of Users Group

S.No.	Names of Watershed	Total no. UGs				No. of Members				No. of SC/ST in each category			No. of BPL in each category			
		With only Men	With only Women	With Both	Total	Categories	M	F	Total	M	F	Total	M	F	Total	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Choka or Sharda 2B1H1e1c	65	3	7	75	(i) Landless	4	5	9	1	1	2	5	2	7	
						(ii) SF	10	3	13	3	1	4	3	1	4	
						(iii) MF	3	-	3	1	-	1	3	-	3	
						(iv) LF	1	-	1	-	-	-	-	-	-	
	Total	6	1	1	8		18	8	26	5	2	7	11	3	14	
2	Choka or Sharda 2B1H1d4b	30	2	3	35	(i) Landless	5	2	2	2	1	3	5	2	7	
						(ii) SF	12	3	15	4	1	5	3	1	4	
						(iii) MF	7	-	7	2	-	2	3	-	3	
						(iv) LF	3	-	4	-	-	-	-	-	-	
	Total	95	5	10	110		16	6	22	4	2	6	11	3	14	

(M- Male, F- Female)

4.4 Entry Point Activities

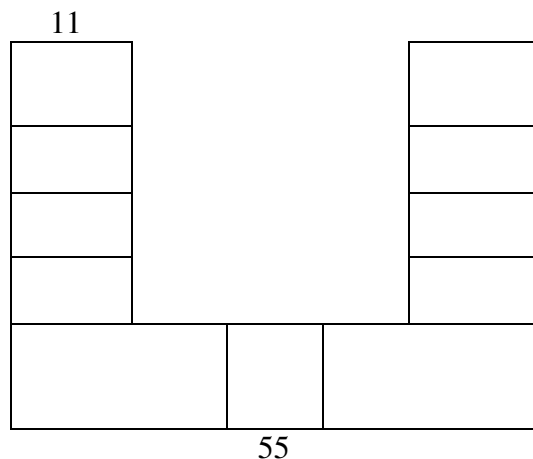
Integrated Watershed Development Programme IWMP 3rd of the district Sitapur is aimed at the socio economic up liftments of the dweller of watershed area and to create trust about the programme to be implemented so that they can coordinate in participatory mode for the success of the watershed programme. As per the new common guidelines total financial outlay for the entry point activities is 4 % of the total project cost. To increase the per capita availability of drinking water older wells of the village will be renovated as well as pucca jagat(plate forms) will be constructed. To increase the irrigation water availability older bundhies which are already existed but not functioning will be reconstructed/ renovated. Repairing and maintenance of water bodies have also been proposed on priority basis. School lies in the watershed areas will be equipped with drinking water facility and extracurricular activities will be promoted among the children in the watershed area by supplying sport goods to the school. To approach watershed village construction and repairing of damaged VRB has also been proposed and construction of women latrines and bathrooms besides hand pump or wells. Total estimated cost for these activities is Rs 19.92 Lacs.The details are given in table 36

Table. 38: Entry point activities (EPA)

(All financial figures in lacs Rs.)

S.no.	Names of the Villages	Amount earmarked for EPA	Entry point Activities planned	Estimated cost	Expected outcome	Name of agency which selected the EPA#	Expected month & year of completion (mm/yyyy)
1	2	3	4	5	6	7	8
1	Choka or Sharda 2B1H1d3a	26.4144	Chabutra (Pucca plate form)	2.40	-	WC, PIA, WDT	March, 2011
	Choka or Sharda 2B1H1d4b		Well Repairing	1.365	-	WC, PIA, WDT	March, 2011
			Village Drain	1.0451	-	WC, PIA, WDT	March, 2011
			Culvert	1.560	-	WC, PIA, WDT	March, 2011
			Repairing of community Road	4.3303			

Detail Estimate of Drainage Channel



Sl.no.	Particulars	No.	Length	Width	Depth/Height	Quantity
1.	Earth work (Cu m)					
	In cutting	1	100.00	0.60	0.45	27.00
	In side filling & disposal	1	100.00	0.60	0.45	27.00
						54.00
2.	Brick Work 1:4(Cu m)					
	In bed	1	100.00	0.55	0.11	6.05
	In side walls	2	100.00	0.11	0.32	7.04
						13.09
3.	Plaster Work 1:4(Sq.m)					
	In bed	1	100.00	0.33	-	33.00
	In side walls	2	100.00	0.32	-	64.00
	Top of walls	2	100.00	0.11	-	22.00
						119.00

Requirement of Material & labours

S.No.	Item	Quantity	Rate	Material			labours	
				Brick 1 st class 23x11x7	Coarse Sand	Cement	Masons	Labours
1	Earth Work	54.00	Cu.mt.	-	-	-	-	18
2.	Brick Work 1:4	13.09	„	6545	3.60	26.18	13.09	26.18
3.	Plaster Work 1:4	119.00	Sq. mt.	-	1.78	13.09	14.87	22.31
4.	Curing for 7 days	-	-	-	-	-	-	7
	Total	-	-	6545	5.38	39.27	27.96	73.49

Cost of Material & Labour

Sl.no.	Item	Quantity	Rate	Unit	Amount
	Material Cost				
1	Brick 1 st class 11x23x7	6545	4000/=	1000 Bricks	26180.00
2	Coarse Sand (Banda)	5.38	1400/=	Cu.mt.	7532.00
3	Portland Cement	39.27	250/=	Bag	9817.50
	Sub Total				43529.50
	Labor cost				
1	Mason	27.96	180/=	Each	5032.80
2.	Labor	73.49	100/=	Each	7349.00
	Sub Total				12381.80
	Cartage 2% of Material cost & Water				870.00
	Total cost				56781.30

Say Rs. 56781.00

Cost of 100.00 mts Channel Rs. 56781.00

Cost of one meter Channel Rs. 567.81

Detail Estimate of culvert

Plan Detail of Foundation

Sl.no.	Item	Nos.	Length	Width	Depth /Height	Quantity
1.	Excavation in Foundation of(Cu m)					
	Walls	2	2.50	0.80	1.05	4.20
	for laying of H. pipe	1	4.04	1.00	0.60	2.42
	Side filling &disposal	-	-	-	-	6.62
						13.24
2.	C.C Work 1:4:8(Cu m)					
	In Foundation of walls	2	2.50	0.80	0.15	0.60
3.	Brick Work 1:4(Cu m)					
	In foundation of walls					
	1 st step	2	2.50	0.72	0.24	0.864
	2 nd step	2	2.50	0.60	0.24	0.720
	3 rd step	2	2.50	0.48	0.60	1.440
	In super walls	2	2.50	0.35	0.40	0.700
						3.724
	B.W deduction for pipe	2	$3.14 \times (.175)^2 \times 0.47$			0.09
	Total Brick Work(Cu m)				$(3.724-.09) =$	3.634
	Pointing work 1:2(Sq.m)					
	Out side of walls	2	2.50	1.00	-	5.00
	In side of walls	2	2.50	0.32	-	1.60
	Top of walls	2	3.50	0.35	-	2.45
						9.05

Requirement of Material & labours

Sl.no.	Item	Quantity	Unit	Material					labours	
				Brick 1 st class 23x11x7	Coarse Sand	Cement	Hume pipe + collar	Brick Ballast	Masons	Labours
1	Earth Work	13.24	Cu.mt.	-	-	-		-	-	4.31
2.	C.C.Work 1:4:8	0.60	„	-	0.27	1.13		0.56	0.12	2.76
3.	Brick Work 1:4	3.364	„	1682	0.92	6.72	2+1	-	3.36	6.72
4.	Pointing Work 1:4	9.05	Sq. mt.	-	0.32	0.01		-	1.50	1.50
5.	Curing for 7 days	-	-	-	-	-		-	-	7
	Total	-	-	1682	1.51	9.37		0.56	4.98	22.29

Cost of Material & Labour

Sl.no.	Item	Quantity	Rate	Unit	Amount
	Material Cost				
1	Brick 1 st class 11x23x7	1682	4000/=	1000 Bricks	6728.00
2	Coarse Sand (Banda)	1.51	1400/=	Cu.mt.	2114.00
3	Portland Cement	9.37	250/=	Bag	2342.50
4.	Brick Ballast	0.56	900/=	Cu.mts.	504.00
5.	Hume pipe 300mm x 2.50 mts.	2+1	1414/=	Nos.	2828.00
	Sub Total				15516.50
	Labour cost				
1	Mason	4.98	180/=	Each	896.40
2.	Labour	22.29	100/=	Each	2229.00
3.	Hume pipe fixing	2+1	275/=		550.00

			each pipe		
	Sub Total				3675.40
	Cartage 2% of Material cost & Water				290.00
	Total cost				19481.90

Say Rs. 19500.00

Detail Estimate of Village Well Repair

$$R_1 = 1.10 + 0.46/2 = 0.78$$

$$R_2 = 0.78 + 1.40 = 2.18$$

Earth Work $\pi (r_1^2 - r_2^2) \times h$

$$3.14 (0.60^2 - 4.75^2) \times 0.80$$

$$3.14 \times 4.15 \times 0.80 = 10.42$$

C.C. Work :-

Top of Well Jagat $\pi(r_1^2 - r_2^2) \times h$
 $3.14 \times 4.15 \times 0.10$
 1.303

Brick Work:-

On top floor $\pi (r_1^2 - r_2^2) \times h$
 $3.14 \times 4.15 \times 0.11$

in outer wall $2\pi r \times \text{width} \times \text{height}$
 $2 \times 3.14 \times 2.18 \times 0.23 \times 0.80$
 $= 2.519$

inner wall $2\pi r \times \text{width} \times \text{height}$
 $2 \times 3.14 \times 0.55 \times 0.23 \times 1.10$
 $= 0.873$

Plaster Work:-

In side of inner wall - $2\pi r \times \text{lenght}$	$2 \times 3.14 \times 0.55 \times 5.00$
	= 17.27
out side of outer wall - $2\pi r h$	$2 \times 3.14 \times 2.41 \times 0.80$
	= 12.10
top floor	$\pi(r_1^2 - r_2^2)$
	$3.14 \times 0.78 \times 0.78 - 2.41 \times 2.41$
	= 16.32

Stair of well

Earth Work	$1.00 \times 1.20 \times 0.20$		
	= 0.24		
Brick Work			
1 st Step	$1.00 \times 1.20 \times 0.26$	=	0.312
2 nd Step	$1.00 \times 0.90 \times 0.15$	=	0.135
3 rd Step	$1.00 \times 0.60 \times 0.15$	=	0.090
4 th Step	$1.00 \times 0.30 \times 0.15$	=	0.045
	Total	-	0.582
Plaster Work			
Side of stairs	$2 \times 1.20 + 0.30 / 2 \times 0.60$	=	0.90
Top of stairs	$4 \times 1.00 \times 0.30$	=	1.20
Front of stairs	$4 \times 1.00 \times 0.15$	=	0.60
	Total	-	2.70

Requirement of Material & labours

S.No.	Item	Quantity	Unit	Material				labours	
				Brick 1 st class 23x11x7	Coarse Sand	Cement	Brick Ballast Masons		Labours
1	Earth Work	10.66	Cu.mt.	-	-	-	-		3.47
2.	C.C.Work 1:4:8	1.303	„	-	0.60	4.43	1.21	0.26	5.99
3.	Brick Work 1:4	5.407	„	2703	1.48	9.73	-	5.40	10.80
4.	Plaster Work 1:4	48.39	Sq. mt.	-	0.72	5.32	-	6.04	9.07
5.	Curing for 7 days	-	-	-	-	-	-		7
	Total	-	-	2703	2.80	19.48	1.21	11.70	36.34

Cost of Material & Labour

Sl.no.	Item	Quantity	Rate	Unit	Amount
	Material Cost				
1	Brick 1 st class 11x23x7	2703	4000/=	1000 Bricks	10812.00
2	Coarse Sand (Banda)	2.80	1400/=	Cu.mt.	3920.00
3	Portland Cement	19.48	250/=	Bag	4870.00
4.	Brick Ballast	0.56	900/=	Cu.mts.	504.00
5.	Hume pipe 300mm x 2.50 mts.	2+1	1414/=	Nos.	2828.00
	Sub Total				15516.50
	Labor cost				
1	Mason	4.98	180/=	Each	896.40
2.	Labour	22.29	100/=	Each	2229.00
3.	Hume pipe fixing	2+1	275/=	each pipe	550.00
	Sub Total				3675.40
	Cartage 2% of Material cost & Water				290.00
	Total cost				19481.90

Say Rs. 19500.00

Objective of Capacity Building:

1. Increased participation of communities and water users in integrated water resource development and management.
2. Enabling local communities to identify their own problem seek their own solutions and formulate and implement their own project including their monitoring and evaluation.
3. Increased involvement of women at all levels.
4. Rehabilitations of existing water struction through participatory process for improved performance, operation and management.
5. Good quality construction of structures on sound designing.
6. Additional water resource generation through water conservation measures.
7. Control water contamination, pollution and solinity and overall management of water quality.
8. Control water logging, water table recession and water wastage.

4.4.2.1 Institution

Table. 39: List of approved Training Institutes for capacity Building in the project area

S.No.	Name of the Training Institute	Full Address with contact no., website & e-mail	Name & Designation of the Head of Institute	Type of Institute	Area (s) of specialization	Accreditation details
1	Krishi Vigyan Kendra	Sitapur (UP)	Programme Co-ordinator	Research Extension &	Agriculture, Horticulture, A. Husbandry, Fisheries,	GOI
2	Water & Land Management Institure (WALMI)	Uttretia,Lucknow	Director	Training & capacity building	Civil Engineering Mechanical Engineering Agriculture & Social Science	GOI

4.4.2.2 Capacity Building

Capacity building and training are the most important components of watershed management programme both for the field level project staff/ officers and functionaries of people institutions i.e. watershed community. Apart from enhancing technical skill of the project staff, this would also provide opportunities to community members to develop their capacity as the future custodians of the programmes after project’s withdrawal. IWMP 3rd Sitapur financial outlay for capacity buildings is 5% (Rs. 14.90) of the total project cost.

Table 40 : Capacity Building activities in the project

Sl.no.	Project Sstake	No. of Stake	Total no.	No. of persons	No. of persons to be trained	Sources of funding
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	holder	holder	of persons	trained so far	DoLR	BSA Unit	for training,BSA Unit or DoLR or other BSA Unit or other
1	District Data Center						
2	PIA.	1	1	1		1	1
3	WDTs	1	8	3		8	5
4	W.Cs.	15	150	-		150	-
5	GPs	-	-	-		-	-
6	SHG	15	180	-		180	-
7	UG	36	396	-		396	-
8	Community	-	-	-		-	-

Table 41: Detail of activities undertaken

Strategy	Proposed activity	No. of Units	Unit cost	Total Cost
	Stakeholders - Scientists Interaction,	11	0.10	1.10
	Training (2 days)	40	0.05	2.00
	Vocational/employment Generation Training (5-10 days)	40	0.10	4.00
	In-service Training. (3 days)	10	0.10	1.00
	Exposure visit within State	5	0.20	1.00
	Exposure visit out of State	4	0.50	2.00
	Field days	10	0.20	2.00
	Workshop	3	0.60	1.80
	Total			14.90

4.5 WORK PHASE

4.5.1 Soil and moisture conservation

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

- 1 Increase the time of concentration.
- 2 Break a long slope into short ones.
- 3 Protection of drainage channel against damage.
- 4 Prevent excessive soil and water losses.

1. Ridge Area Treatment Plans:

It is very important to treat the ridge as this is where the major water resources originate. For the ridge area treatment of IWMP 3rd watershed following structure are been Proposed after interaction between the watershed committee, Range Forest Officer (RFO) and other field staff of forest.

A. Contour Bunding & Graded Bund (Marginal and Peripheral Bund):

Contour bunds are recommended on gentler slopes and in areas where annual rainfall does not exceed 75-100 cm. Contour bunds are also used for water spreading on gentle cultivated slopes.

Contour bunding is also effective in erosion control and moisture conservation in dry areas having less than 2 % slope to reduce the length of slope. Contour bund has been proposed to be constructed against the slope in 3140 ha of lands with total estimated cost of Rs. lacs

C. Renovation of Existing Bunds for Insitu Soil Moisture Conservation:

Renovation of Existing Bunds for Insitu Soil Moisture **Conservation** will be done at middle reaches of watershed have in lesser slope. However, gully plug structure has been proposed to be formed on upper reaches / IST order stream. Total proposed area for the structures jointly is 290.00 ha with total financial outlay of Rs. 13.05 lacs. This generally includes water conservation or surface water storage structures. This being highly labour intensive, it is proposed to be constructed from funds of National Rural Employment Guarantee Scheme (NREGS)

2. Water Harvesting bundhies:

Water harvesting bundhies are primarily aimed at collecting and storing any form of water which enter through rainfall, runoff or subsurface flow for multiple purpose. There will be 75 water harvesting bundhies with farm ponds structure on 415.00 ha of land will be constructed on lower reaches of the watershed. Estimated financial outlay is Rs. 66.03 lacs.

3. Agroforestry & Dry Land Horticulture:

Agroforestry is defined as a sustainable land management system which increases sthe yield of land, combines the production of crops (including trees) and forest plants or animals or both simultaneously or sequentially on the same unit of land and applies management practices that are compatible with cultural practices of the local population.

Agroforestry has emerged as an appropriate technology for the areas where fragile ecosystem and subsistence farmers predominate. It is an ideal option in such areas where land is scarce and labour is in plenty but less productive coupled with limited capital and high interest rates. A low-input land-use system is the basic approach in such practice, besides sustainability of productivities, economic viability and, above all, risks minimization.

The unit of management of land under these conditions can be watershed, or part ofl the watershed, provided the emphasis is on trees/grasses that will protect the land as well as produce fedder, fuel, forage etc.

About 10.51 ha waste land falls in the class-VII category in the watershed. These lands will be planted with Subabool (Prosop is cineraria) and Zizyophus Spp in which urd, moong, til etc shall be cultivated as intercrop, subabool

will be used as fuel as well as fodder

Table. 43: Technical detail of Farm Ponds and Injection Well

S. No	Particulars	Value	Ponds	Injection Well
1	Top area	M ²	500.00 (25X20)	1.00
2	Bottom area	M ²	300.00 (20X15)	1.00
3	Depth	M	2.50	1.00
4	Side Slope	-	2:1	-

Table 45: Activities executed by User Groups in the Project @

S.No.	Name of Project	Major activities				No. of UGs involved	Estimated Cost (Rs.)	Amount of WDF to be collected(Rs.)
		Structure/activity proposed			Treatment			
		Type	No.#					
1	IWMP 3 rd	Structure work		Engineering	March, 2015	30	249.00 laks	12.45 lakh

Table 49: Technical detail of engineering works in project area

S. No.	Project	No of Villages	Type of bund	Type of soil	Particulars (meter)				
					Top	Base	Height	Slope	Cross section
1	IWMP 3 rd	34	Field Bund	Normal	0.30	1.65	0.45	1.5:1	0.438
				Clay	0.45	1.65	0.60	1.0:1	0.63
				Loam	0.45	2.25	0.60	1.5:1	0.81
				Sandy	0.45	2.85	0.60	2.0:1	0.99
			Plain land	0.60	3.60	1.00	1.5:1	2.10	
				Undulating land	1.00	4.00	1.00	1.5:1	2.50
			Gully Plug	At 3% or above 3 % slope gully plug will be made between two drainage line with emergency temporary spill way					

4.2.2 PROPOSED LAND USE

Watershed management plan for IWMP 3rd Sitapur watershed has been prepared with specific objectives of food sufficiency and income and employment generation with environmental security. In plan preparation due importance has been given to topographic, land suitability, irrigation potentially, prevailing farming systems, micro farming situation, farming, farmers preferences and priorities along with economic and environment securities. Crop and tree selection and area distribution are done as per farmers priorities revealed through PRA exercise.

Technological options were blended with the ITK based on the latest available research/ experiment findings for this region. Due attention has been given to the resource of the farmers and adjustments were made in capital intensive/high resource demanding technological outputs while making them adoptable to the resource poor farmers. Emphasis has also been given on maximum use of farm yard manure. The proposed land use plan of the watershed is shown in table.

4.2.3 WATER RESOURCE DEVELOPMENT AND SOIL CONSERVATION MEASURES

Status of Present Water Resources Utilization

The micro watersheds are having seasonal water bodies on private as well as on community land. During good rainfall year these water bodies having full of water during kharif season. Before sowing of rabi season crops water from these water bodies is either used for supplementary irrigation for kharif crops or irrigating fields for rabi sowing. After releasing water from bodies, submergence area also put under cultivation for rabi crops.

Proposed plan for Irrigation Development of existing water resources

For efficient utilization of available water resources in the IWMP 3rd watersheds, present system of irrigation and wastage of water need to be made more efficient from water management point of view by minimizing conveyance losses in the existing water courses. The up gradation of the existing system of irrigation will result in:

- a. Minimization of conveyance losses
- b. Increase in frequency of irrigation
- c. Adoption of high yielding varieties of crops, and
- d. Assured cultivation of cash Crops
- e. Drinking water problem will also solved
- f. Local eco system will also improved.

4. Crop Diversification and intensification of production /Farming system:

Diversification means to grow such crops which are more profitable of crops which do not fetch more money. This also includes adopting such cropping system which brings more area under crops or sustainable basis without affecting soil health. The benefits of crop diversification are:

- (i) Increase in total production.
- (ii) More income from vegetable flower.
- (iii) Use of available land resource as per L.C.C.
- (iv) Increase in employment.
- (v) Sustainable agricultural development.
- (vi) Environmental imbalances are controlled.
- (vii) Less water intensive crops in place of more water intensive crops.

Crop diversifications are of two types

- (I) Horizontal diversification: To include more crops in present cropping system.
- (II) Vertical diversification: It indicates the industrialization of crops such as preservation and canning etc.

Techniques of diversification:

- a. Waste Land development: To bring more land under agriculture.
- b. Precision farming: To use inputs as per soil health.
- c. Water management To use water judiciously, use of suitable method of irrigation
- d. Ground water management: To use ground water with surface water.
- e. Watershed development: Refers to the conservation, regeneration and judicious uses of all resources(land, water, plants& animal and human being).
- f. Cropping intensity: Bring land under cultivation in Summer, Rainy season and Winter season with an aim to increase intensity without deteriorating soil health be use fo bio manure/bio agents, 1P.M. and 1 P.N.M.
- g. Protective Agriculture: Agriculture in controlled atmosphere which uses

As per Land capability classification an area of 7461 ha. Is suitable for agriculture purpose. Presently the area under different crops in the watershed during kharif and Rabi is as under.

Kharif crops:

	Area (ha)
(i)Paddy	2180
(ii)Arhar	30
(iii)Jowar/Bajra	40
(iv)Maize	08
(v)50%of Sugarcane	3338
(vi) Other Kharif	
oil seeds(Til)	<u>20</u>
	<u>5616</u>

Rabi crops:

	Area (Ha)
(i) Wheat	2093
(ii) Mustard	120
(iii)Lentil	5
(iv) Pea	19
(v) Potato	23
(vi)50% of Sugarcane	3338
(vii)Rabi vegetable	<u>10</u>
	<u>5608</u>

Total of Rabi +Kharif =5608+5616 =11224

Cropping intensity 144.62%

The present cropping intensity indicates that there is about 55.5 % gap enen to attain 200% intensity. It is therefore proposed to opt following cropping pattern in the wathershed area.

Kahrif crops:

	Area (ha)
(i)Paddy	3130
(ii) Maize	40
(iii) Arhar	20
(iv)Urd	12
(v) Til	3265
(vi) 50%of Sugarcane	63

(vii) Kharif vegetable 350

(viii) Other Kharif

Fodder 400

(ix) Horticulture

Flowers 100

7400

2- Intermediate crops:

(i) Potato (Early) 100

(ii) Toria (80 days) 100

3 Rabi Crops:

(i) Wheate 3000

(ii) Barley 50

(iii) Potato 100

(iv) Gram 75

(v) Pea 75

(vi) Lentil 50

(vii) Mustard 100

(viii) Rabi fodder 75

(ix) Flowers 25

(x) Rabi vegetables 16

(xi) Sugarcane (50%) 3883

7400

Suitable varieties for the watershed area are (Krashi Gyan Manjusha- 6th edition)

A: Paddy:-

1. Unirrigated condition: Early maturity (100-120 days)

(a) Direct sewing: Govind Narendra-118. Narendra-97.

(b) Trans planting: Ashiwini

2. Irrigated condition: Early maturity (100-120 days)

(a) Transplanting: Ratna, Govind, Manhar, Narendra-80,IR-50,Saket-4.

: Medium maturity (120-140 days)

Sarju 52, Sambha mansori, Sita, Swarna Pant dhan 4, Pant Dhan 10.

: Late maturity(>140 days)

Type 23, Sambha Mansoori, Swarna.

Scented rice:

Pusa Basmati-, Ballabh Basmati-22. Malviya Sugandh 105 & 4-3, Narendra Lalmati

: Solin-Alkaline soil:

Narendra Usar dhan-1,2 & C.S.R 10

Hybrid rice: Pant Sanker dhan1, 3, Narendra Sanker dhan-2, Pro Agro 6201, 6444, Narendra usar sanker dhan

3, Indira sona

Expected yield: Q/ha

Early maturity: 40-45 Q/ha

Medium maturity: 50-60 Q/ha

Late maturity 45-50 Q/ha

Scented rice 35-45 Q/ha

Usar dhan 50-60 Q/ha

Hybrid varieties 75-80 Q/ha

B Wheat: Suitable varieties for the watershed are

Earlysewing: (2nd fortnight of October to 1st fortnight Nov.)

Unirrigated condition: K-9351, H.D 2888, Malviya 533

Sowing time (First week Nov to 25 Nov.)

PVW-343, UP 2338, K9107, K 9006, PUW 443, (Upto 25 Dec.)

Malviya 234, HD 2643, K 9162, UP 2338

Usar area: KRL 1-4, Raj 3077, Lok-1, KRL 19, KRL 210, KRL 213, Prasad.

Expected yield: Early sowing,

(Unirrigated condition): 35-45 Q/ha

Early and timely sowing,

(Irrigated condition): 55-60 Q/ha

Late sowing 40-45 Q/ha

Usar Soils 40-45 Q/ha

Barley:

With shell: (Irrigated & unirrigated condition condition):

Jyoti, Azad, Haritima, Priti, Jagriti, Manjula, Narendra 1, 2, 3

Without shell

Geetanjali, Narendra 5

For Malt

Pragati, Ritambhara,

Expected yield: : Unirrigated & Late sowing

30-35 Q/ha

Irrigated & timely sowing

40-42 Q/ha

C-Sugarcane:Early Maturity

OS 8436, 88230, 92255, 96268, COSE 00235M01235(Rapti) COSe -95422,

Medium & Late Maturity:

OS 767, 8432, 88216, 97264, 96275, 97261, UP 0097, UP 39, Pant 84222, COSe 95422(Rasbhari)

Waterlodge condition:

P 9530, COSe 96436(Jalpari)

Usar Soil

COS 767, 92,263

Expected Yield: 700 -900 Q/ha

D. Arhar

Early varieties (130-170 days)

Paras, T21, Pusa 992, UPS-120

Late varieties (225-270 days)

Bahar, Amar, Narendra-1.Azad.PDA-11, Malviya, Narendra 2,

Expected Yield: 18-20 Q/ha Early varieties

30-32 Q/ha Late varieties

E. Urd: Type 9, Azad-1, Narendra Urd-1, PDU-1, Shekhar 1, 3, Azad-3, Pant-31

Expected yield- 10-15 Q/ha.

- F.Gram** **Desi varieties** timely sowing
Gujrat chana-4, Awrodhi, Pusa 256, Radhey, Adhar
Late Sowing
Pusa 372, Udai, Pant-G-186
Kabuli
Chamatkar, Subhra, Ujjawal,
Expected yield- 25-30 Q/ha.
- G.Pea** Rachna,shikha,Malviya-15.Pant 5, Sapna,Pusa Prabhat,
Expected yield- 25-30 Q/ha.
- H.Lentil** Narendra-1,Pant 5,4,Pusa Vaibhav,Shekhar 2,3
Expected yield- 18-22 Q/ha.
- I.Til** Type 4,12,18 shekhar,Pragati,Tarun.
Expected yield- 6-8 Q/ha.
- J. Toria** (90-95 days) Type 9,Bhawani, PT 303
Expected yield- 12-15 Q/ha.
- K.Raie** Irrigated (125-135 days) Narendra Raie, Varuna, Kranti,Rahini,
Unirrigated- Vaibhav,Yaruna T 59
Alkaline-Solaine soils- Narendra Raie,CS 52,54,
Late Sowing- Ashirwad Vardan
Expected yield- 18-20Q/ha.
- L.Potato:** Vegetables(70-80 days)
Kufri Chandramukhi, Kufri Bahar, Kufri Badshah, Kufri Lalima,

Expected yield- 200-250 Q/ha.

: For Preservation

Kufri Chipsona-1(Hybrid MP/90-83)

Kufri Chipsona-2(Hybrid MP/91-G)

Expected yield- 350-400 Q/ha.

M. Vegetable:

(i)Tomato(Rainy &Winter): Kashi Amrit,Kashi Anupam,Pusa, Kashi

Expected yield- 350-400 Q/ha.

(ii)Tomato(Round the Year):

Long varieties : 1BBL 9,Pant Samrat,

Green coloured: Samrat, Jient, Banaras, juent.

Expected yield- 350-400 Q/ha.

Hybrid long: Pusa hybrid-5

Hybrid Round: Kashi Sandesh, Pusa Hybrid-6

Expected yield600-700 Q/ha.

(iii)Camliflower: Mid June-July (Early)

Pusa Dipali,Early Kuwari, Early Patna,Pant gobhi 2,3,Pusa Kartiki,Pusa Synthetic.

Expected yield300-400 Q/ha.

Mid August(Mid)

Pant Subhra, Kalyan, Hessai 114. Narendra 1,Pusa Hybrid-2

Expected yield200-300 Q/ha.

Late(Ochober)

Snowball 16, Pusa snowball 1,2, Vishnabharti,

(iv) Cabbage: Early (Mid September, Mid October)

Pride of India, Golden Anchor, Early Head, Meenashi

Late (Mid October-Mid Nov.)

Mukta, Pusa Drumhead, Red cabbage, Pusa Hill Topper.

Expected yield (Early-Mid) 300-350 Q/ha.

(Late)) 350-450 Q/ha.

(v) Table Pea Early Varieties (October-Nov.)

Ageta 6, Archile, Pant Sabji Matar 3, Azad Pea 3,

Expected yield 50-60 Q/ha.

Late Varieties (October-Nov.)

Azad Pea 1, Jawahar Matar-1

Expected yield 100-125 Q/ha.

(vi) Onion Kharif (June-July) Agrifound Dark red, Baswant 780, N-53

Expected yield 200-250 Q/ha.

Rabi (October-Nov.) Agrifound, Light red, Kalyanpur red, Pusa red, Nasik red.

Expected yield 300-350 Q/ha.

(vii) Garlic Agrifound white, Yamuna white, Yamuna safed G-50, G 282

Expected yield 150-200 Q/ha.

(viii) Capsicum: (Zaid & Kharif)

Pant c-1, Chanchal, Pusa Jwala, K5452 (Dry),

Average Yield : 70 -90 Q/ha.

N.Flowers

(i) Rose: Hybrid: Crimson glory, Mister Lincon, John F. Kenedy, Jawahar, President Radhakrisnan, First Love, Ganga, Tata.

(ii) Merrygold: African,Maxion, French,

Hybrid: Naget, Treta, Pura organge, Pusa basanti.

Average Yield : 125 -150 Q/ha.

(iii)Guldaudi: Reflaxed, Irrigular, Korean, Decorative,Stelet.

Average Yield : 50 Q/ha.

(iv) Gladiolus: Snow queen, Linconday, Pusa suhagin,

Average Yield : 1 Lakh sto 1.25 Lakh spikes /ha

(v) Rajnigandha: Single flowered, semi double flowered, double flowered

Average Yield :Ist year 150- 200 Q/ha.

: 50 Q/ha.2nd year 200-250 Q/ha.

O.Maize:

Kharif:

Hybrid: Ganga 11, Daccan 107,Prakash, Pusa Hybrid-5. Malviya Hybrid

Average Yield : 40 -50 Q/ha.

Sankul: Prabhat, Sweta,Pusa composite Naveen,Azad, Uttam,Pragati,Gaurav, Kanchan, Surya, Vivek-27.

Average Yield : 40 -45 Q/ha.

Maize: Rabi

Hybrid: Ganga-11.Duccan 103,105, Shaktiman-1.KH 5981, 5991

Average Yield : 70 -80 Q/ha.

Sankul: Dhawal,Sharadmari, Shakti 1

Average Yield : 45 -50 Q/ha.
Popcorn: Amber Popcorn, Pearly Popcorn
Average Yield : 30-35 Q/ha.
Sweetcorn: Madhuri, Priva
Average Yield Prepared Cobs
Fodder Maize: African Toll, J 1006.

P. Fodder Crops:

(i) Jowar for Fodder: During Zaid 1-15 February

During Kharif: 15-30 June

Multiple Cutting: PCH 106,855 F, FSH92079, MP Chari, Pusa Chari-23, Pro Agro Chari

Average Production: 900 -1000 Q/ha.green fodder.

Single Cutting: PC-6,PC-9,UP Chari-3,

Average Production: 250 -450 Q/ha.green fodder.

(ii) Barseem: Sowing 1-15 October, 20,24 % Protien.

Varieties: Meskavi, Vardan, Pusa Jient, JB-2,BL-10,BL-22

Average Production: 800 -1100 Q/ha.green fodder in 5-6 cutting.

(iii) Oat: 15 October-15 November, Drymalter 30-35%

Varieties: UPO 94, UPO-212, Flaming Gold, OL-9,FO 114,OS-6,OS-7,

Average Yield : 500-550 Q/ha.in two cuttings.

(iv) Lucern: Perennial Fodder crop: 15-20% Protien,1.5% Calcium,0.2% Phosphorus,+++Vitamine A,B,D

Used for Silage or Hay.

Varieties: Type-1, Type-9, Anand-2, LLC-3, Sirsa-8, Sirsa-9, JS-244, Co-1, Chetak, IGFRI-S-244, IGFRI-54
Average Yield: 700-800 Q/ha. in 4-5 cuttings.

Package of Practices:

Package of practices beside varieties as enumerated in foregoing paragraphs are:

- (I) Use of required suitable quantity of certified/hybrid seeds and treatment plant with bio and chemical agents.
- (II) Use of Integrated nutrient management (IPNM) which requires as far as possible use of organic manure to commensurate about 50% nutrient need by organic means and rest by chemical fertilizers.
- (III) Use of IPM techniques to control pest and diseases in use of organic pesticides herbicides till pest and diseases are below economic level and thereafter use of chemical insecticides in low concentration along with mechanical control measures.
- (IV) Judicious use of available irrigation water: use of suitable methods and latest technologies i.e. sprinkler and drip where possible. This is to be done at critical stages of plant growth.
- (V) Management and marketing of harvests, The package of practices are given below in short. For further details the staff of concerned department are available in the watershed area viz. agriculture horticulture, fisheries and forest 2- WDT expenses assistance which can be taken and benefits from their schemes are to be driven in the watershed area.

Table No. 40

Sl. No	Crop	Sowing time	Seed rate	Seed Treatment (Bio Chemical)	Fertilizer	IPM	No. of cms. Planting distance
1	Paddy	10-20June	Fine 30 Kg	For 25 Kg seed 4gm streptocycline or 40gm Plantomycine 125 gm Trichoduma	130 Kg Urea 375 Kg SSP 100 Kg MOP at the time of Transplanting	Use of IPM practies	2-3 plant,20X10 Hybrid 1-2 plant
					Ist Topdressing 65 Kg urea 2nd Top dressing 65Kg urea		
2	Maize	25May-15June	Hybrid 18-20 Kg composite 20-25 Kg	3.00gm Thyrum or 1.00 gm Psesedomonas floresause	At the time of sowing -37 Kg urea 130 Kg DAP,100 KgMOP	Use of IPM practies	60X20-25
					Ist Topdressing 87 Kg urea 2nd Top dressing 87Kg urea		

3	Wheat	Nov.-Dec	100-125Kg	Thyrum 2.5gm+ Carbandagym 2.5gm/Kg	At the time of sowing -85 Kg urea 130 Kg DAP,67 KgMOP	Use of IPM practies	20-23Timly 15-18 Late
					Ist Topdressing 65 Kg urea 2nd Top dressing 65Kg urea		
4	Barley	15 October-7November	80-100Kg	Thyrum 2.5gm+ Carbandagym 2.5gm/Kg	At the time of sowing -42 Kg urea 65 Kg DAP,34Kg MOP	Use of IPM practies	18-20
					Topdressing 65 Kg urea		
5	Arhar	10-15June & September	12-15Kg	Tricoderma 3gm and 1gm Betavam per Kg seed		Use of IPM practies	60-75X 15-20 depth 4-5 cms
6	Black gram (Urd)	15June-25 July	12-15Kg	Rhizobium culture treatment	32-44Kg. urea 250Kg SSP at time of sowing	Use of IPM practies	30-45 X10 cms depth 4-5 cms.
7	Gram	20 October to 10 Nov.	80-100Kg	Tricoderma 4gm + 1gm Vetavax &Rhizobium culture treatment	At time of sowing 200 Kg. DAP &200Kg Gypsum	Use of IPM practies	40-45 X10 cms.

8	Lentil	15 October-15Nov.	40-60Kg	Tricoderma 4gm + 1gm Vetavax & Rhizobium culture treatment	44Kg Urea, 375 Kg SSP, 34Kg MOP + 25 Kg Zinc sulphate	Use of IPM practices	20-25X3
9	Pea	15-31 October for grains	100-125Kg	Rhizobium culture		Use of IPM practices	30-35X10 20X25X8
		15 October-15 Nov. for vegetable	Early 100-125Kg Mid 80-100Kg				
10	Repseed & Mustard	Toria 15-30 September	4Kg	2.5gm Thyrum	Toria 100 Kg urea 250Kg SSP 34Kg MOP 100 Kg urea Top dressing	Use of IPM practices	30X10X15
		Raie Sarson 1-20 October	5Kg		Raie Sarson 130 Kg urea 250Kg SSP 67Kg MOP 100 Kg urea Top dressing		

11	Sugar cane	Feb-March Spring cane 60q/ha. (35000-40000) Sets with eyes	60q/ha (35000-40000) set with eyes	Ariton 6% 250 gm Aglas 3% 500gm in 100 Lt	At the time of sowing 80-100 Kg urea 130 KgDAP 84 KgMOP	Use of IPM practies	90Cms Depth 10 cm
		Winter cane October- 60q/ha (35000-40000) Sets with eyes		Soaking in sthe solutuion for 5 minutes	Ist Top dressing 130-160 Kg Urea 90 days after sowing		
Fodder Crop							
12	Jowar	Zaid1-15 Feb Kharif 15-30June	<u>Multi cut</u> 25-30Kg	Thyrum 3gm or Trichoderma 5gm/Kg seed	At sowing130 Kg urea 312 Kg SSP	Use of IPM practies	
		Top dressing 1st 65 Kg urea 2nd 65Kg urea					

			Single cut	Thyrum 3gm or Trichoderma 5gm/Kg seed	At sowing 130 Kg urea 250 Kg SSP Top dressing 65 Kg urea After 30 days		
13	Berseem	1-15 October	25-30Kg+ 1-2 Kg Sarso seed	Rhizobium culture	At sowing 44-65 Kg urea 375- 500 Kg SSP	-	Broad casting
14	Oat	15 October- 15Nov.	110-115 Broadcasti ng 75-80 in line late sowing 120-125 Kg	-	At sowing 130Kg urea 250 Kg SSP 1st Top dressing At 22-25 days 22 Kg urea 2nd Top dressing 22 Kg urea	-	Line to line 20 cms
15	Lucorn	1-15 October	Unline- 15Kg Broadcasti ng 20- 25Kg	Rhizobium culture	At sowing 44-45 Kg urea 375- 500 Kg SSP	-	Line to Line 25 cms.

Package of Practices of Important Crops:

6. Crop demonstrations:

Half hectare crop demonstrations are to be carried out in 210 numbers on the field of the farmers. These demonstrations shall upon the eyes of the farmers whose productivity is much less than the district average. These crop demonstrations shall also plan a leading role to attract other farmers to opt the same methodology and inputs to get more productivity from sown crops.

The costs of different components on crop demonstration are given in table below:

Table:41 Cost of different component on demonstration of crop.

Source: Department of Agriculture, U.P.

Sl. No.	Crop	Lebour	Animal	Machine	Seed	Irrigation	Fertilizer	Seed treatment & IPM	Total Cost of cultivation	Cost of Co produce	Per Ha/R s	Cost of Yield	Total return (Rs.)
1	Rice Normal	11900	130	2550	1310	2350	2041	2250	22531	1692	35	35000	36692
2	Grade A	11900	130	2430	1650	2500	2037	2250	22897	2376	30	45000	47376
3	Basmati	11900	130	2770	2115	3000	1900	2250	22995	1890	25	50000	51890
4	Maize	5300	130	1950	332	650	907	1051	10320	1296	18	18000	19296
5	Urad(Black Gram)	3000	260	1482	558	500	121	1091	7012	343	8	14000	14343
6	Arhar (Red Gram)	9655	65	2008	649	719	444	1500	15040	2483	18	24000	26483
7	Sugarcane	21000	260	5250	4000	5000	5000	3000	43510	0	800	100000	103000
8	Wheat	5600	145	4961	2000	3984	3495	2000	18201	3724	45	45000	48724

9	Barley	4500	290	4418	1437	1695	2712	1000	16052	3446	40	40000	43446
10	Gram	3000	290	2871	1962	712	1401	1000	12236	517	15	30000	30517
11	Lentil	3000	290	2399	1391	371	1800	1000	12111	629	12	24000	24629
12	Rice/Mustard	5100	435	3290	239	1617	1401	1000	9852	914	10	20000	20914
13	Pea	3000	145	3267	1620	1279	1850	1000	13531	670	20	30000	30670
									226288				

Crop production

Mulching and crop residue management

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

Green manuring

Intensive cropping with inadequate application of organic manures i.e. FYM, compost etc, has over exploited the existing agricultural production system in the watershed. In order to improve the fertility as well as physico- chemical properties of soils green manuring *in-situ* and *ex-situ* with suitable crops like dhaincha, sun-hemp and legumes are proposed to be demonstrated in the watershed areas of IWMP 3rd watersheds.

Vermi composting

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

Crop rotation and intercropping

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

Bio-fertilizers

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

Tillage operations

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

Introduction of improved seeds of high yielding varieties (HYV)

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

Balanced fertilizer use

Inadequate and imbalanced fertilizer use in the Paddy, Arhar, Urd, sugarcane during kharif season and in wheat, mustard, gram and lentil in rabi season are one of the major constraints in agricultural production system of the watershed. Therefore,balance use of fertilizer use in different crops will be demonstrated in the watershed for the benefits of the farming community.

Control of insect pest and diseases

The management strategies to control these insect pests and diseases will also be demonstrated in the watershed for benefit of the growers.

Management of the crop

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

Dry land Horticulture

In the land which are suitable for horticultural development,. Species like Bael, guava and Ber will be planted at suitable spacing in the watershed.

Agri-Horticulture

Anola and sahjan would be a suitable horticultural crop to the locality. Therefore, land in the farmers field shall be selected and brought under Agri-horti system..

Plantation:

Fuel wood plantation: Land falling in the class-IV category in the watershed. will be planted with species like *Prosopis juliflora* *Acacia nilatica*, *Prosopis cineraria* and *Holoptelia integrifolia*.

Table. 42: Technical Details of Afforestation and Agro forestry Activities in 1ha

Particulars	Value	Unit
Crop Name	<i>Prosopis juliflora</i> <i>Acacia nilatica</i> , <i>Prosopis cineraria</i>	
Plant To Plant Spacing	8.00	M

Row to Row Spacing	8.00	M
Pit Length	1.00	M
Pit Width	1.00	M
Pit Depth	1.00	M
No. of Plants	156	Nos.
Plantation Area	1.00	ha.
No. of Plants per ha	1,56	Nos.
Gap Filling	20	%

Table. 43: Cost Estimation for afforestation and Agro forestry activity in 1ha

S. No.	Description	No.	Length (m.)	Width (m.)	Depth (m.)	Unit	Quantity	Rate	Amount
1	Digging of pits for plants	156	1	1	1	Cum	156.00	10	1560.00
2	Plants samplings for plantation in Govt. pasture area, sampling not less than 30 cm. height	156				Nos.	156.00	10	1560.00
3	Transportation of plants from nursery to camp site up to 15Km	156				Nos.	156.00	2	312.00
4	Loading and unloading of plants	156				Nos.	156.00	2	312.00
5	Rehandling of plants from camp site to actual planting site upto 200m.	156				Nos.	156.00	2	312.00
6	Cost of fertiliser & insecticides incl. application	156				Nos.	156.00	10	1560.00
7	Weeding and Hoeing two times (Twice in year)	156				Nos.	156.00	2.46	384.00
Total									6000.00

Table. 44: Technical Details of Horticultural Activities in 1ha

Particulars	Value	Unit
Crop Name	<i>Aonla, bael Ber, Guava etc</i>	
Plant To Plant Spacing	8.00	M
Row to Row Spacing	8.00	M
Pit Length	1.00	M
Pit Width	1.00	M
Pit Depth	1.00	M
No. of Plants	156	Nos.
Plantation Area	1.00	ha.
No. of Plants per ha	1,56	Nos.
Gap Filling	20	%

Table. 45 : Cost Estimation for Horticultural Activities in 1ha

S. No	Description	No.	Length (m.)	Width (m.)	Depth (m.)	Unit	Quantity	Rate	Amount
1	Digging of pits for plants	156	1	1	1	Cum	1,56.00	10	1560.00
2	Plants samplings for plantation in Govt. pasture area, sampling not less than 30 cm. height	156				Nos.	1,56.00	10	1560.00
3	Transportation of plants from nursery to camp site up to 15Km	156				Nos.	1,56.00	2	312.00
4	Loading and unloading of plants	156				Nos.	1,56.00	2	312.00
5	Rehandling of plants from camp site to actual planting site upto 200m.	156				Nos.	1,56.00	2	312.00
6	Cost of fertiliser & insecticides incl. application	156				Nos.	1,56.00	10	1560.00
7	Weeding and Hoeing two times (Twice in year)	156				Nos.	1,56.00	2.46	384.00
Total									6000.00

PRODUCTION SYSTEM AND MICRO ENTERPRIZES

PROPOSED EXTENSION STRATEGIES

The following feasible extension strategies have been proposed based on the analysis of data collected through PRA & related issues/problems in IWMP 2nd Sitapur district.

Strategies:

- A. Improvement of productivity and income of farmers in the existing enterprises and farming system.
- B. Diversification and intensification of existing farming system.
- C. Sustainability in productivity/income.
- D. Integrated nutrient management.
- E. Integrated pest management.
- F. Seed multiplication and replacement.
- G. Horticulture planting material
- H. Success story.
- I. Natural resources management.
- J. Issue for Policy consideration
- K. Farm mechanization.
- L. Marketing & Media strategies.
- M. Human Resource Development.
- N. Farmers Organization.
- O. Public Private Partnership.

- A. Improvement of Productivity and income for farmers in the existing enterprises and farming system

Table 46: Agriculture Production

Crop	Critical Gap	Strategic issue	Strategies
1	2	3	4
1. Wheat	Yield stagnation	Use of recommended certified seed and in recommended quantity, Weed management, Popularizing Seed production programme, Popularizing Organic farming	Demonstration, Exposure visits, Training
	Use of Non untreated seeds	Encouraging sowing with treated seeds	Demonstration, Exposure visits, Training
	Un judicious use of Irrigation water	Irrigation water management	Demonstration, Exposure visits, Training
2. Paddy	Imbalance use of Fertilizer	To promote IPNM	Demonstration, Soil testing, Exposure visits, - Training
	Un Availability of Quality Seed	In crease seed replacement ratio Promote seed production Programme	Demonstration, Exposure visits, Training
	1. Improper nursery raising	-Raised seed beds	Demonstration, Exposure visits, Training

	2. Inadequate Pest and disease management	Popularization of Integrated pest and disease management(IPM)	- Demonstration - Exposure visits - Training
	3. Weed management	Populazation of mechanical chemical methodology	Demonstration, Exposure visits, Training
1	4. Injudicious use of water	Irrigated management	Demonstration, Exposure visits, Training
3. Maize	1. Non adoption of seed treatment	Application of seed treatment	Demonstration, Exposure visits, Training
	2. Excess application of fertilizes	Use of recommended dose of fertilizer	Demonstration, Exposure visits, Training
	3. Use of Micro nutrients	Use of recommended quantity of micro nutrients	Demonstration, Exposure visits, Training
	4. Non adoption of hand pollination practices	Following hand pollination	Demonstration, Exposure visits, Training
4. Mustard	1. Higher plant population	Popularization of plant population technique	Demonstration, Exposure visits, Training
	2. Low production	-Suitable agronomical practices will be popularized	Demonstration, Exposure visits, Training
	3. Imbalance use of fertilizer	-Use of balanced fertilizer promote, use of sulphur	Demonstration, Exposure visits, Training
	4. Pest & disease management	-Adoption of proper pest and disease management practice	Demonstration, Exposure visits, Training
	5. Post harvest technology	Popularization of improved storage method	Demonstration, Exposure visits, Training
5. Lentil	1. Yield stagnation	Timely sown, line sown, seed rate as per recommendation	Demonstration, Exposure visits, Training
	2. Imbalance use of fertilizers	Popularization of phosphetic fertilizer	Demonstration, Exposure visits, Training
		3. Low quantity of F.Y.M.	Use of recommended practice of F.Y.M. Demonstration, Exposure visits, Training
6. Sugarcane	1. Late sowing	Timely sowing	Demonstration, Exposure visits, Training
	2. Non application of fertilizers	Application of fertilizer in required doze and seed treatment before sowing	Demonstration, Exposure visits, Training
	3. Excess application of fertilizers	Use of recommended dose of fertilizer, Popularization of recommended dose of F.Y.M./Green Manure	Demonstration, Exposure visits, Training
	4. Use of Micro Nutrients	Use of recommended quantity of micro nutrients	Demonstration, Exposure visits, Training

	5. Inadequate pest and disease management	Adoption of IPM	Demonstration, Exposure visits, Training
	6. Injudicious use of water	Irrigation management	Demonstration, Exposure visits, Training

Table no. 47: Horticultural Production:-

(1)Potato	I. Un Identified varieties	Popularization of Identified Recommended varieties	Demonstration, Exposure visits, Training
	2. No seed treatment	Adoption of recommended seed treatment	Demonstration, Exposure visits, Training
	3. Non use of Micro nutrients	-Application of recommended Micro nutrients	Demonstration, Exposure visits, Training
	4. Non Adoption of pest and disease management	Use of IPM techniques	Demonstration, Exposure visits, Training
(2)Tomato	1. No seed treatment	Adoption of recommended seed treatment	Demonstration, Exposure visits, Training
	2. Imbalance use of fertilizers	Application of recommended dose of fertilizers(1PNM)	Demonstration, Exposure visits, Training
	3. Low quantity use of F.Y.M.	Adoption of recommended dose of F.Y.M.	Demonstration, Exposure visits, Training
	4. Inadequate plant protection measure	Popularization of recommended plant protection techniques	Demonstration, Exposure visits, Training
(3)Banana	1. Low quantity use of F.Y.M.	Use of Recommended dose of F.Y.M	Demonstration, Exposure visits, Training
	2. No seed treatment	Popularization of bio agents, <i>Tricoderma</i> and <i>Pseudomonas</i> For seed treatments	Demonstration, Exposure visits, Training
	3. Inadequate plant protection technique	Popularization of plant protection technique	Demonstration, Exposure visits, Training

AGRO-FORESTRY



4.6. CAPACITY BUILDING PLAN

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

It is realized 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 project activities.

Scope of capacity building at IWMP 3rd

- 1 Alternative Land Use Plan
- 2 Scientific technique of Soil and Moisture conservation
- 3 Improved and Scientific agriculture practices
- 4 Fodder development and Management
- 5 A forestation
- 6 Meteorological Information
- 7 Dairy Development and Management
- 8 Rural Craft
- 9 Income Generation Activities
- 10 Stitching
- 11 Food and fruit ,Processing preservation and carring
- 12 Post Harvest management practices
- 13 Fish Production
- 14

Capacity building and training are the most important components of watershed management programme both for the field level project staff/ officers and functionaries of people institutions i.e. watershed community. Apart from enhancing technical skill of the project staff, this would also provide opportunities to community members to develop their capacity as the future custodians of the programmes after project's withdrawal. IWMP 3rd Sitapur financial outlay for capacity buildings is 5% (Rs. 24.90) of the total project cost, out of which Rs 2.00 will be spent on initiation of village level institution.

Table 48: Capacity Building activities in the project

INSTITUTIONAL ARRANGEMENT & CAPACITY BUILDING IN THE PROJECT

Sl.no.	Project Stake holders	No of Stake holders	Total no. of persons	No. of persons to be trained so far	No. of person 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	District Data Center							
2	PIA.	1	1	1	1		1	Bakshi Ka Talab, WALMI Lucknow.
3	WDTs	1	8	3	8		5	WALMI Lucknow.
4	W.Cs.	15	150	-	150		-	
5	GPs	-	-	-	-		-	
6	SHG	15	180	-	180		-	
7	UG	36	396	-	396		-	
8	Community	-	-	-	-		-	
9	Any others	-	-	-	-		-	

Table 49: Detail of activities undertaken

Strategy	Proposed activity	No. of Units	Unit cost	Total Cost (Lakh Rs.)
	Stakeholders - Scientists Interaction,	15	0.10	1.50
	Training (2 days) for Stake holders	100	0.05	5.00
	Vocational/employment Generation Training (5-10 days)	20	0.10	2.00
	In-service Training. (3 days)	10	0.10	1.00
	Exposure visit within State	5	0.50	2.50
	Exposure visit out of State	4	2.00	8.00
	Field days	10	0.20	2.00
	Workshop	5	0.58	2.90
	Total			24.90

Chapter- 5

BUDGETING

Table: 50**Budget component:**

S. No.	Budget Component	Total (Lakhs Rs)
A	1. Administrative 10	66.036
	2. Monitoring	6.6036
	3. Evaluation	6.6036
B	Preparation of DPR	6.6036
	E.P.A	26.4144
	Preparatory Phass & C.B	33.018
C.	WATERSHED WORKS	330.18
(i)	Livelihood Programm	66.036
(ii)	Production System and microenterprises	85.8468
D.	CONSOLIDATION PHASE	33.018
	GRAND TOTAL	660.36

Table. 51: Funding for the IWMP 3rd Project * (All financial figures in lakh Rs.)

S.No	Name of Project	IWMP fund		Funds from other sources in addition to IWMP funds										Total	
		Central share	State share	Convergence funds		PPP		Community		Institutional finance		Others (pl. specify)			
				Name of Scheme	Amount	Name of Private sector	Financial contribution	Name	Financial contribution	Name	Financial contribution	Name	Financial contribution		
1	IWMP 3 rd d	594.00	66.036	*	100.00	-	-	-	-	-	-	-	-	-	660.36

*For detail please see table no. 69 it is additional budget and not included in fund budget (Rs. 12000.00). This budget will be use in watershed area according requirement and need during work phase by PIA.

5.2 YEAR WISE PHASING OF WORK (Physical and Financial)

Phasing of various works/ activities during different year of the project for treatable area 4147out of proposed area 5358.presented in Table.

Table. 52:
PHASING OF WORK (FINANCIAL & PHYSICAL)

1. Financial Outlays.

S.No.	Component	Unit	Quantity	Unit Cost (Lakhs)	1 st Year (Lakhs)	2 nd Year (Lakhs)	3 rd Year (Lakhs)	4 th Year (Lakhs)	5 th Year (Lakhs)	Total (Lakh)
A.	MANAGEMENT COSTS									
	Administrative cost- TD & DA, POL/ Hiring of vehicles/ Office and payment of electricity and phone bill, etc. computer, stationary and office consumable and contingency				9.96	13.2072	17.49954	17.49954	17.82972	66.036
	Expert for monitoring and evaluation.	Nos	NA	NA	-	3.3018	2.47635	2.47635	4.9527	13.2072
	Sub Total				-	16.509	19.97589	19.97589	22.78242	79.2432
B.	PREPARATORY PHASES									
	(1.) Entry point Activities									
	a. Chabutara	Nos	14	0.400	5.60	-	-	-	-	5.60
	b- Well repairing	Nos	28	0.195	5.46	-	-	-	-	0.5678
	c. Village Drain	Km t.	0.100	5.678	0.5678	-	-	-	-	0.5678
	h. Culverts.	Nos	6	0.195	1.17	-	-	-	-	1.17

	k. Repairing of Community Road	Km ts	14.221	0.957 5	13.6166	-	-	-	-	13.6166
	Sub Total				26.4142	-	-	-	-	26.4142
	(2.) Institutional and Capacity Building	-	-	-	6.6036	13.2072	4.9527	4.9527	3.3018	33.018
	(3.) Detail Project Report				6.6036	-	-	-	-	6.6036
	Sub Total				13.2072	13.2072	4.9527	4.9527	3.3018	39.6216
C.	WATERSHED WORKS									
	(1.) Watershed Development Works									
	a. Construction of Bunds (Field Bund, Contour Bund, Submergence Bund, Marginal Bund and Peripheral Bund)	ha	4750.00	0.042	-	29.925	51.87	52.00	65.705	199.50
	b. Renovation of the Existing Bund for insitu soil Moisture Conservation	ha	175.00	0.045	-	1.18	2.04	2.20	2.455	7.875
	Rainfed Horticulture without Fencing	ha	386.66	0.150	-	8.70	15.08	15.10	19.12	58.00
	Total of Rainfed Horticulture	ha	5311.66	-	-	39.805	68.99	69.30	87.28	265.375
	e. New and Renovation of Existing Water Harvesting Structure/ Gully Plug/ Chek Dam	ha	372.00	0.120	-	6.697	12.6074	12.41252	12.91614	44.633
	f. Afforestation and Development of Silvi-pastoral System	ha	54.00	0.068		0.55	0.95	1.00	1.172	3.672
	g. Drainage Line Treatment (Pucca Structure / Gully Plug and Chek Dam)	nos	10	1.65	-	2.475	4.29	4.455	5.28	16.50
	Sub Total				-	49.527	86.8374	87.16752	106.64814	330.18
	(2.) Livelihood Programme (Community Based)									
	Income Generating Activities through S.H.G.'s for Landless and Marginal Farmers									
	a. Establishment of Nadev-Compost Units	nos	130	0.104	-	1.35	5.40	4.05	2.72	13.52
	b. Dairy Work	nos	50	0.500	-	2.50	10.00	7.50	5.00	25.00
	c. Goat-keeping	nos	30	1.142	-	0.75	3.00	2.25	1.50	7.50

	d. General Merchant Shop	nos	40	0.20	-	0.80	3.20	2.40	1.60	8.00
	e. Livestock Development Activities				-	1.2036	4.8144	3.6108	2.3872	12.016
	Sub Total					6.6036	26.4144	19.8108	13.2072	66.036
	(3.) Production System and Micro-Enterprises									
	a. Crop Production, Diversification of Agriculture	ha	24.90	0.5975	-	1.20	3.39	3.39	3.39	9.56
	b. Introduction of Agro-forestry / Horticulture	ha	22.83	2.260	-	3.96	7.595	7.595	7.595	30.38
	c. Demonstration of Green Manuring	ha	3026.90	0.0062		1.4436	4.955	4.955	4.955	24.80
	Sub Total					6.6036	26.4144	33.018	19.8108	8584.68
D.	CONSOLIDATION PHASE	-	-	-	-	-	-	-	33.018	33.018
	GRAND TOTAL					39.6216	92.4504	164.59473	164.92491	198.76836

Chapter- 6

EXPECTED OUTCOME

6.1 Expected/Estimated Outcomes (IWMP 3rd)-Sitapur Table no.53

S. No.	Name of the District	Item	Unit of measurement	Pre-project Status	Expected Post-project Status	Remarks	
1		Status of water table	Meters	7.5 to 8.00	5-6		
2		Ground water structures repaired/ rejuvenated/constructed	No.	-	70		
3		Quality of drinking water	Quality	General	Safe and Good		
4		Availability of drinking water	Days	365	365		
5		Increase in irrigation potential	%	3	6		
6		Change in cropping/ land use pattern	Cropping pattern	Single/ double	Double/ multiple		
7		Area under agricultural crop Total	Ha	8116	8116		
8		i	Area under single crop	Ha	1976	-	
9		ii	Area under double crop	Ha	6038	8116	
10		iii	Area under multiple crop	Ha	98.00	305.00	
11		Net increase in crop production per Ha	Ha	16.25	28.25		
12		Increase in area under vegetation	Ha	2.20	5.00		
13		Increase in area under horticulture	Ha	-	20.00		
14		Increase in area under fuel & fodder	Ha	66	80		
15		Increase in milk production	Av.lit/day/ cattle	1.75	3.10		
16		No. of SHGs	No.	-	86		
17		Increase in no. of livelihoods activities	No.	5	15		
18		Increase in income(per capita)	Rs.	8850.00	14000.00		
19		Migration	%	9.00	5.00		
20		Credit linkage with banks	No.	8	32		
21		Resource use agreements	%	Agreed	100% as		

					required	
22		WDF collection & management	%	5-10	100% collection during project period	
		Summary of lessons learnt				

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. However, rain fall being very limited and erratic, agriculture suffers, i.e. at best they can take only a single crop, which keeps them partially engaged for about 4 months. Lack of fodder makes animal husbandry very difficult and non remunerative. 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 physical works of watershed 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 enterprise development.

Table:54

Employment in Project area

S.No	No. of villages	Wage employment										Self employment				
		No. of man days					No. of beneficiaries					No. of beneficiaries				
		SC	ST	Others	Women	Total	SC	ST	Others	Women	Total	SC	ST	Others	Women	Total
1	34 villages in IWMP 3 rd	0.40	-	0.88	0.08	1.36	786	-	1206	87	2079	56	-	78	21	155

Migration

Table. 55: Migration detail: The following migration pattern has been noticed from primary data collected on structured questionnaires

S. No	Name of Micro Watershed	No of Village	Total population	Migration			Migration by Month			Main reason for migration	Income per capeta
				Total	Male	Female	<3Month	3-6 Month	>6 month		
1	Choka or Sharda 2B1H1d4b	24	15588	70	60	10	58	9	3	Employment Livelyhood	Rs 4500/ month
2	Choka or Sharda 2B1H1d3a	10	7488	248	170	28	195	40	13	Employment Livelyhood	Rs 4800/ month

6.2.2. Water Resource

The available water resources in the watershed are enumerated below:

Table. 56: Information about water resources

S.No	Name of Mircro Watershed	Canal		Wells/Borewells		Tubewells		Ponds		Govt. handpump		Pvt. handpumps		Others	
		D	N	D	N	D	N	D	N	D	N	D	N	D	N
1	Choka or Sharda 2B1H1d4b,	-	-	365	4	250	3	310	5	365	12	284	26	-	-
2	Choka or Sharda 2B1H1d3a,	-	-	365	7	250	5	310	7	365	18	284	42	-	-

D= Availability of water in days

N= Number

Source : District statistic magazine and secondary data

Horticulture

The subtropical fruits and vegetables have very good potential in the watershed. The fruit trees has limited in number area like mango, guava, , lemon, lime, ber, aoula, bael as vegetables like cucurbits, radish, tomato, cauliflower cabbage, garlic, onion, brinjal, chilly, but they are found surviving well in the watershed villages. Organized orchards, commercial vegetable cultivation, horti-agri and other systems of agro-forestry etc are lacking but have good potential in the water shed. For the improvement of Horticultural programme GOUP are giving subsidies for raising nurseries like

S.No.	Programme	Subsidy
1	Establishment of 'Aadarsh'Nursery(2-4Ha)	50% of investment cost or max upto 12.50 lakh 4 Ha credit linked Bank
2	Establishment of 'Small'Nursery(1Ha)	50% of investment cost or max upto 3.125 lakh Ha credit linked Bank added
3	Cold storage units	40% of cost investment or max upto 120.00 lakh credit linked Bank added subsidy
4	Primary Processing unit	40% of investment cost or max upto 9.60 lakh credit linked Bank added subsidy
5	Low cost preservation unit (Establishment of new unit)	50% of investment cost or max upto 1.00 lakh linked Bank added subsidy
6	Low cost onion storage house	50% of investment cost or max upto 0.50 lakh linked Bank added subsidy
7	Functional infra-structure for collection sorting, grading & packing	40% of investment cost or max upto 6.00 lakh credit linked Bank added subsidy

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. It is planned that land to be covered under new plantation.

Table. 57: Forest/vegetative cover

S. No.	Name of Village	Existing area under tree cover (ha)	Area under tree cover proposed
1	34 villages in IWMP 3 rd	-	671.00 Ha

Live Stock

Total livestock population of the IWMP 3rd watersheds is 5026 buffalo is preferred as milch animal compared to cow, but milk yield on average is 2-3 kg perday. Goats are also kept for milk as well as for meat purpose. The detail of live stock population is given in table below

Table. 58: Live stock population

S. N.	Name of Micro Watershed	Name of Villages	Buffaloes	Cows	Bullocks	Goat	Sheep	Total
1	Choka or Sharda 2B1H1d4b,	Ulara, Piprivenisingh, Nyaria Bank, Naseerpur, Visenda, Manjhia, Daulatpur, Newrajpur, Ram Kund, Buila Kala, Rampur, Kootoobpur Majhigawa Kala, Kodra, Kalupur, Parsadipur, Lakhawa Bojhi, Kalyanpur Chaharpur, Karondi, Rampur Khurd, Balpur, Pakaria, Sirsa khurd,	568	265	98	321	32	1284
2	Choka or Sharda 2B1H1d3a,	Saraiya Mafi, Kamyabpur, Bhagwanpur, Visendi, Ruknapur, Karim Panaha, Asharfipur, Januwa, Bhagipur, Raja Karnai	645	526	195	398	35	1799

Source: District statistic magazine and secondary data

LOGICAL FRAMEWORK ANALYSIS

Components	Activities	Outputs	Effect	Impact
Village Institution Formation	§ Formation of Watershed Committee, User Group	§ One Watershed Committee each village	§ Project can be implemented and managed in a democratic and participatory way ensuring equity.	§ Unity and prosperity in the village management.
		§ Number of User group depending on the coverage of particular intervention		§ People's Participation and positive perception towards the programme
Strengthening Village Institutions	§ Organise training and awareness programme for Village institutions	§ awareness camps to be organised.	§ Quality of management of common resources improved.	
	§ Capacity building workshops and exposure visits User Group and Watershed Committee	§ trainings and exposure visits UGs and WCs to be held	§ Quality of distribution of benefits between people improved.	
	§ Facilitating and monitoring the functioning of UGs and WCs	§ Capacity building workshops to be organised	§ Increased awareness amongst women about village resources.	
	§ Strengthen linkages between UGs and WCs and Panchayat Institutions.	§ 1 Federations of UGs and WC to be formed.	§ Women participation enhanced in decision-making of GVCs.	
	§ Gender sensitisation of UGs and WCs to increase inclusiveness of samuh decision-making.		§ Involvement of youth and children in village development increased.	
	§ Sensitise village communities to involve children and youth in development.			

Fund Management	§ Improve management and utilisation of UGs and WCs.	§ UGs and WCs operating bank account and managing resources on their own	§ Purpose, frequency and volume of use of the fund enhanced.	
	§ Prepare communities to explore other sources of income for UGs and WCs.		§ Volume of funds generated for UGs and WCs from other sources of income increased.	
Ecological Restoration	§ Protection, treatment and regeneration of common and private lands	§ Common and private lands to be brought under new plantations and agro-horti-forestry like Neem, Adusa, prosopis, Banyan and Peepul	§ Fodder availability from common and private lands increased.	§ Better Ecological order in the area
	§ Protection, treatment and regeneration of forest lands	§ Forest lands to be brought under new plantations and protection	§ Accessibility to common and forest lands increased with removal of encroachments and resolution of conflicts.	§ Increase in the proportion of households having more security of fodder
	§ Plantation of fruits and forest species	§ Trainings, exposure visits and meetings to be organised for communities, village volunteers and staff		§ Reduction in drudgery of fodder and fuel collection, especially women
	§ Impart trainings, conduct meetings and organise exposure visits for communities, village volunteers and staff to effectively plan, execute and monitor activities	§ Income generation intervention promoted		
	§ Identification and promotion of non-timber forest produce based income generation activities			

Rainfed Area Development	§ Treatment of land through improved soil and moisture conservation practices on watershed basis	§ Land to be brought under improved soil moisture conservation practices	§ Improved productivity of treated land	§ Increase in proportion of households having more security of food
	§ Promotion of good agricultural practices- horticulture, improved crop and vegetable	§ Good agricultural practices to be promoted	§ Increased availability of water in wells	

		§ Organic farming to be promoted	§ Increase in annual agriculture production	§ Increase in contribution of agricultural income to the household income
		§ Fodder banks to be established	§ Farmers adopt organic farming practices	
	§ Promotion of organic farming practices	§ Agriculture based livelihood income generation activities to be promoted	§ Fodder security of farmers enhanced.	
	§ Formation of Fodder banks to increase fodder security and promote dairy development among communities	§ Water harvesting structures to be constructed	§ Increase availability of water for 9 to 12 months	
	§ Identification and promotion of agri-produce based income generation activities like grading, processing and packaging.	§ Drip Irrigation facilities to be distributed among farmers	§ Increased availability of water for livestock	
	§ Promotion of better Irrigation practices like drip irrigation	§ Approx 15000 person days of employment to be generated	§ Availability of irrigation water established	
	§ Impart trainings, conduct meetings and organise exposure visits of communities, village volunteers and staff to effectively plan, execute and monitor activities	§ Trainings, exposure visits and meetings to be organized for communities, village volunteers and staff	§ Farmers take two crops in a year	
			agricultural productivity of land	
			§ Availability of drinking water enhanced	

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

CHAPTER-7

**QUALITY AND SUSTAINABILITY
ISSUE**

PLANS FOR MONITORING AND EVALUATION

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.

Yet another component of the Web-based GIS system is the Mobile based Monitoring & Evaluation System, which will help the ground staff alias WDTs (Watershed Development Team) to transmit information from the ground level to the central server. Also, any higher-up official in charge of the project can obtain information regarding the project area on the project area on their mobile phone by means of an SMS. The system works in the following manner. The WDT equipped with a GPS instrument marks the latitude-longitude information of various treatment areas during the DPR. The probable sites are then transferred onto the central server. During the works phase, any progress in the treatment areas is reported to the server by means of an SMS by the WDT. Similarly, any nodal officer or higher-up official can view the progress in a project by means of summarized reports generated over frequent periods of time.

PLANS AND PROJECT MANAGEMENT

The project management of a watershed programme is very important. It mainly depends upon the community organization 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 organization. They will act as a major kingpin during post implementation for scaling up the successful experience during project.

WATERSHED DEVELOPMENT FUND

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

USER CHARGES

Various user groups will be formed in village. These user groups will collect user charges according to the designated rules formulated 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 record.

Chapter- VIII

Mapping

