

Government of Rajasthan

Deptt. Watershed Development & Soil Conservation

District Watershed Development Unit, Nagaur

Detailed Project Report



IWMP (2009-10) - (Morra)

Block :- Riyan Badi

District :- Nagaur

Project Area :- 5000 ha.

Project Cost :- Rs. 750.00 Lacs

Convergence Cost :- 75 Lacs.

Total Cost :- Rs. 825 Lacs

G.L Meena
Assistant Engineer
Panchayat Samiti, Riyan Badi

S.R. Banjara
Executive Engineer (L.R.)
cum
Project Manager, DWDU, Nagaur

Project at a Glance

Sr. No.	Particulars	IWMP - MORRA
1	Name of the State	Rajasthan
2	Name of the project	IWMP Morra
3	Name of the District	Nagour
4	Names of the Blocks	Riyan Badi
5	Names of Gram Panchayats	(i) Morra (ii) Dhadhlas (iii) Arniyala (iv) Gawaradi
6	NO. of Villages covered	11
8	Name, Address & Phone No. of the PIA(s)	G.L. Meena Assistant Engineer Panchayat Samiti, Riyan Badi Mob- 9414308641
9	Date of approval of Watershed Development Plan by the DPC	
10	Area of the Project (ha.)	5155
11	Area proposed to be treated (ha.)	5000
12	Financial Year of sanction	2009-10
13	Project duration from ----- to ...	2009-
14	Project Cost (Rs. in Lakhs)	750
15	Date of Sanction by State authority	

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Chapter 1

1. Introduction: - IWMP - morra Project is located in Panchayat Samati Riyan badi tehsil- Merta city Nagaur District of Rajasthan State. The Project is a cluster forms which is consist four gram panchayat including elevens villages, The nearest town merta city of this project is about 10 KM.. Watershed aera is connected to Tehsil merta city and district head quarter by Road. Each village of the watershed is connected by road. The Geographical area of this project 5155 ha. This is 5000 ha. Proposed to be treated under integrated Watershed management programme (IWMP) Starting year 2009-10.

This cluster form Watershed lies between latitude of 26.25° to 27.40° North and longtude 73.10° to 75.15° East the Watershed area is above Height at 339 meter Mean sea level The Watershed includes eleven village which name of

1. Morra
2. morri ghoda
3. Pharaspura



4. Basni sumer
5. Karakawal
6. Dhadhlah uda
7. Dhadhlah chak
8. Dhadhalas Jalap
9. Dotolai
10. Raliyawata
11. Dholeraw Khurd.

The Project included Muslims, sc communities and other backward Classes are the primary inhabitants of the village. The livelihood of these peoples is primarily based on rain fed, agriculture, animal husbandry wage labour goat & sheep rearing.

Table No. 1 basic project information:-

S.No	Name of the state	Name of the district	Name of the PanchaySamiti	Name of the Tehsil	Name of watershed	G.P.	village	Pin code	Geographical area
1	Rajasthan	Nagar	Riyabadi	Merta City	IWMP Morra	Morra	Morra	1838500	1827
2						Morra	Morighoda	1837200	190
3						Morra	Pharaspura	1837300	548
4						Morra	Basnisumer	1837400	190
5						Morra	Karkawal	1837100	272
6						Dhadhlashuda	Dhadhlashuda	1838600	299
7						Dhadhlashuda	Dhadhlashchak	1838800	67
8						Dhadhlashuda	Dhadhlashjalap	1838700	188
9						Dhadhlashuda	Dotolai	1838400	748
10						Gawaradi	DholerawKhurd	1839000	216
11						Arniyala	Raliyawata	1838900	610

1.1 Watershed location

The project has semi arid zone characterized by monsoon of three months about July to Sep. the mean rainfall of this tract is about 361 mm. The Watershed area has flat topography while the soil of the area is black cotton & underground water is very deep & also saline This project area is single crop area most of the area depend upon rain, the major crop raised in Watershed are:

1. Kharif :- Bajra, green gram, Cowpea, Jawar, til
2. Rabi :- Tara Mira / Mustard, Gram

The project area water flows southeast to north directions and carries excess rain water from in rainy season along very sediments.

1.2 The net geographical area of Morra Watershed is about 5155 ha out of which 90% is Agriculture land but total agriculture land is completely rained. Mainly kharif crop is taken about 5% of the total land is classified under the permanent pasture land and rest is Government land or Aabadi land.

Table -Land use pattern of the Project:-

Name of Watershed	Village	Geo. Area	Forest Area	Community Land	Pastures	Uncultivated Waste land	Net Sown Area	Net Area sown more than once
Morra	Morra	1827	0	105	123	0	1744	0
	morri ghoda	190	0	0	6	0	170	0
	pharaspura	548	0	5	26	0	512	0
	Basni sumer	190	0	0	14	0	160	0
	Karkawal	272	0	20	35	0	240	0
	Khadhlash uda	299	0	16	12	0	702	0
	Dhadhlash chak	67	0	0	0	0	250	0
	Dhadhlash jalap	188	0	19	3	0	175	0
	Dotolai	748	0	62	48	0	52	0
	Dholeraw khurd	216	0	61	52	0	198	0
	Raliyawata	610	0	25	20	0	570	0

The (IWMP- Morra) Watershed is false under western part of Rajasthan is situated at semi arid zone. The soil is mainly black cotton & depth of soil is moderate to deep about 25cm to 75cm. The predominant texture of soil is sandy loam and silt & clay. The soil fertility very poor with low nitrogen phosphorus & Potash. The soil falls in arid sol moderate ranging from 3-5% slope.

1.3 Rain water storage: - Traditionally rainwater harvesting has been practiced in arid & Semi arid area & has providing drinking water, Domestic water for livestock, water for small irrigation and a way to replenish ground water level. Rainwater harvesting is the collection & storage of Rain from is

generally stored in rainwater harvesting structure or directed into Mechanism which Recharge ground water. The rain water harvesting system has three components

1. Catchments
2. Conveyance
3. Storage

The storage of water surface lined pond, anicuts & large lakes storage option are many depending on the content of rainwater harvesting design. In many case of soil profile may also permit artificial Recharge of rainwater of open wells & Bore wells. Water harvesting structures have the potential to increase the productivity of arable lands by enhancing crop yield and by reducing the risk of crop failure in arid & semi arid region. Where water shortages are common because of scanty rainfall & its uneven distribution, In semi arid Regions of Rajasthan existing practice of rainwater harvesting is through anicut, tanks & earthen embankments because of higher cost and higher technical skill involved in the construction of these structure.

1.4 Soil erosion- The soil erosion is as detachment & transportation of soil particle from one place to another place through the action of water & wind. Water in motion or by beating action of raindrops. Soil erosion is broadly classified in to two types:-

1. Geologic erosion
2. Accelerated erosion.

The removal of Soil surface takes places much faster rate then it can be built up by the natural soil farming process. Accelerate erosion is two types:-

1. Water erosion
2. Wind erosion.

The water erosion as movement of soil by running waters over the land surfaces. The rate of water Erosion depends upon land slope, soil types, density of vegetation & intensity of Rainfall.

This may be classified as three types:-

1. Sheets erosion.
2. Rill erosion.
3. Gully erosion.

1.5 Socio economic status: - The financial position of the people is generally poor. The density of the population 157 per sq.kms. In the area is thinner as compared with other district of Rajasthan. There is no Important Industry in this project area. this Watershed project has a total of 1739 household with a population of 8320 (as per base line survey) out of which are male 4228 and 4090 Female. The sex ratios 936. There are 92 BPL families. The total literacy rate is 57.28% either 60% male and 20 % Female literacy. The major castes in the Villages sc. communities Jat & Muslims. Majority of Population is involved in agriculture & Animal husbandry. This Watershed project is 34 Families are land less & Migration rate is very high. People migrate during summer & winter season to different part of India like Bhuj Surat, (Gujarat) Mumbai (Maharashtra) or others as daily Wages, agriculture labour and construction works. Lack of Fodder availability and grazing land for smaller ruminant force these people to migrate to other places.

Table No. Demographic Information of the Project:-

S.n o.	Village	Total Population			Population SC			Population OBC			ST		
		M	F	Total	M	F	Total	M	F	Total	M	F	Total
1.	Morra	1152	1107	2259	333	331	664	441	431	878	0	0	0
2.	morri ghoda	196	189	385	143	141	284	50	45	95	0	0	0
3.	pharaspura	377	358	735	157	140	297	220	217	437	0	0	0
4.	Basni sumer	339	317	656	0	0	0	332	312	645	0	0	0
5.	Karkawal	507	509	1016	0	0	0	482	487	969	0	0	0
6.	Dhadh lash uda	250	240	490	46	45	91	235	233	468	0	0	0
7.	Dhadh lash chak	38	34	72	0	0	0	0	0	0	0	0	0
8.	Dhadh lash jalap	258	235	493	0	0	0	163	159	322	0	0	0
9.	Dotolai	353	333	688	99	87	186	190	176	366	0	0	0
10.	Dholeraw khurd	432	428	860	52	49	101	380	369	749	0	0	0
11.	Raliyawata	326	340	666	74	69	143	252	247	499	0	0	0

1.6 :- Problem & scope of improvement goods/ objective

1.6.1:- Problem

1. Low fertility and problem of nutrient losses due to erosion in rainy season.
2. Poor socio - economic condition of the farmer.
3. Watershed project area these people are low literary rate.

	prajapat						
3.	Mr. Jogiram	29	M	WDT(Agri.)	M.sc Ag.(Soil science)	5 years	Agricultural Development
4.	Mr.Ompraksh Fadoda	27	M	WDT(vat nary)		2 years	
5.	Mrs. Sanju Rawat	22	F	WDT(social)			Community Mobilization
6.	Mr.Balwant singh	30	M	President(WC)			
7.	Mr.Shivaji ram	50	M	Secretary(WC)			
8.	Mr.Shushial charang	55	M	president(WC)			
9.	Mr.modaram	40	M	Secretary(WC)			
10.	Mr.Narpat singh	55	M	president(WC)			
11.	Mr.Ram Niwas	40	M	Secretary(WC)			
12.	Mr.Kana ram	55	M	president(WC)			
13.	Mr.Ram ratan	30	M	Secretary(WC)			

Chapter 2

Basic features :- Socio- Economic & Infrastructure

(A) Land use & Land Capability classification

(i)_Present Land Use:-

The livelihood of the village is dependent on rain fed farming of subsistence. But, rainfed agriculture fails to meet the peoples' requirement because the rainfall pattern is often erratic and unreliable, compounded by recurring drought.

Table No.:- Land Use Details of Watershed

Area	Cultivated land	Forest land	Pasture land	Non-arable land
5155	4500	0	280	375

(ii) Land Capability classification:-

Land capability classification refers to a systematic arrangement of different kind of land according to those properties that determine the ability of the land to reproduce on a virtually permanent basis.

There are two broad groups, namely:

- Land suitable for cultivation, which includes class I to class IV lands, and
- Land not suitable for cultivation but very well suited for forestry, grassland and wildlife. This includes class V to class VIII lands.

Table (A) Soil depth classes:

Symbol	Name	Depth range (cm)
d1	Very shallow	0 – 7.5
d2	Shallow	7.5 – 22.5
d3	Moderately deep	22.5 – 45
d4	Deep	45 - 90
d5	Very deep	> 90

Table (B) Slope classes:

Symbol	Slope Class	Slope %	Reading of Abney Level
A	Nearly level	0 – 1	0 – 35'
B	Gently sloping	1 – 3	35' - 1 ⁰ 44'
C	Moderate sloping	3 – 5	1 ⁰ 44' – 2 ⁰ 52'
D	Strongly sloping	5 – 10	2 ⁰ 52' – 5 ⁰ 43'
E	Moderate steep	10 – 15	5 ⁰ 43' – 8 ⁰ 32'
F	Steep	15 – 25	8 ⁰ 32' – 14 ⁰ 03'
G	Very steep	25 – 33	14 ⁰ 03' – 18 ⁰ 16'
H	Very very steep	> 33	18 ⁰ 16' – 26 ⁰ 34'

Table(C) Soil erosion phases:

Symbol	Erosion phase	Characteristics
e1	Not apparent or slight (sheet)	0 –25% top soil or original plough layer within a horizon removed
e2	Moderate (sheet and rill)	25- 75% top soil removed
e3	Severe (Sheet rill and small gully)	75 –100% top soil and up to 25% sub soil removed
e4	Very severe (shallow gullies)	Gullied land
e5	Very very severe (Shallow gullies)	Very severely gullied land or sand dunes

Table (D) Soil Texture:

Type	Particle size	Remark
Sand	0.05 – 2 mm	Particle visible
Silt	0.002 – 0.05 mm	Particles hardly visible
Clay	< 0.002 mm	Particles not visible
Clayey soils	> 50% clay particles	
Silty soils	> 50% silt particles	
Sandy soils	> 50% sand particles	

Details of soil Texture:

Soil type	Code	% Sand	% Silt	% Clay
Sand	S	80-100	0-20	0-20
Sandy Loam	SL	50-80	0-50	0-20
Loam	L	30-50	30-50	0-20
Silty Loam	SiL	0-50	50-100	0-20
Sandy Clay Loam	SCL	50-80	0-30	20-30
Clay Loam	CL	20-50	20-50	20-30
Silty Clay Loam	SiCL	0-30	50-80	20-30
Sandy Clay	SC	50-70	0-20	30-50
Clay	C	0-50	0-50	30-100
Silty Clay	SiC	0-20	50-70	30-50

Table (F) Land capability rating table:

Sr. No.	Description	Class I	Class II	Class III	Class IV	Class V	Class VI	Class VII	Class VIII
1	Degree of limitation for use	Few	Moderate	Severe	Very severe	Few	Moderate	Severe	Very severe
2	Soil depth	Very deep	Deep	Moderate	Shallow	Very deep	Very shallow	Very shallow	Rock very
3	Slope	<1	1-3	3-5	5-15	<1	15-25	>25	Precipitous
4	Effect of erosion	e1	e1	e2	e3	e1	e4	e5	Precipitous

(B) Agri& horticulture status & fuel availability:-

Agriculture most of the area depends upon rain, cropping intensity is less than 150% of cropped area, In the most area single crop. The farmer left the fields fallow for few years to regain the fertility of the soil & then they bring the field under cultivation

crop raised in Watershed are :-

1. Kharif mung (green gram) cowpea, maize, Bajara, Jwar etc.
2. Rabi -Taramira, Grams

Horticulture:- There are no orchard is this Watershed but some horticulture plants such as mango, ber etc.

Fuel availability:- With the Environment bare and degraded the women has to go long distances to obtain good firewood, falling which she has to take resources to thorny bushes, brambles and other poor quality fuel material, the search for fuel is Her constant preoccupation much of her time and energy is utilized to keep the home fire burning, this Watershed the fire wood use as babul & brushes, but the no

forest land in its Watershed so the present status of full availability is very low.

(C) Live stock status: - The present live stock status of this Watershed is very poor, because there are raise only single corp. The village ha 1870 cow, 310 Buffaloes , 1985 Sheep & goat, poultry 423, mostly people depends upon goat & sheep, rearing for their livelihood cow, Buffaloes of a local bread, Lack of rain & surface water has Reduced the fodder and pasture availability for their animals. This lead to heavy Migration to other project o f state. Milk production is so low that there is no dairy Cooperative in the village.

Table No.

<u>Cattle and Animal Population</u>			
S.No.	Description of animals	Population in No.	Yield (Milk in lt.)
1	Cows	1870	
	Indigenous	1694	3388
	Hybrid	176	1232
2	Buffaloes	310	1550
3	Goat & Sheep	1985	992.5
4	Camel	43	0
5	Poultry	423	0
6	Piggery	70	0
	Total	6571	7162.5
	Availability of fodder(quintals)	15700	
	Deficiency of fodder(quintals)	3500	

(D) On farm & off farm :-

Other income generating activities this Watershed area the largely people is based on agriculture farming, People on farm is only seasonally work done. But other income generated people has gone the other part of India such is Surat, Maharashtra etc. as lobour work in present time no livelihood intervention for land less peoples.

(E) Demography :- IWMP Morra project cover 4 G.P. in eleven village it has total 1713 House hold with net population 10000 (as base line survey)

The sex ratio is 936 .there are about 400 BPL families. The average family size of five member. The literacy rate is about 62% with male literacy 80% & 44 %

Female literacy. The major caste in the village sc communities Muslims & other Backsword classes, Most of the population is involved in agriculture & Animal Husbandry, Around 50 Families are land less while 400 families community under BPL.

(F) Infrastructure facilities:- IWMP Morra Watershed as well connected with Tehsil merta city. All villages have electricity connected. Nearly 90% of house hold in the village has their personal electric meter. The project infrastructure facilities are as given below.

Table No.

Details of infrastructure in the project areas					
Parameters		Status			
(i)	No. of villages connected to the main road by an all-weather road	11			
(ii)	No. of villages provided with electricity	11			
(iii)	No. of households without access to drinking water	1250			
(iv)	No. of educational institutions :	(P)	(S)	(HS)	(VI)
	Primary(P)/ Secondary(S)/ Higher Secondary(HS)/ vocational institution(VI)	7	1	0	0
(v)	No. of villages with access to Primary Health Centre	2			
(vi)	No. of villages with access to Veterinary Dispensary	0			
(vii)	No. of villages with access to Post Office	2			
(viii)	No. of villages with access to Banks	0			
(ix)	No. of villages with access to Markets/ mandis	0			
(x)	No. of villages with access to Agro-industries	0			
(xi)	Total quantity of surplus milk	350			
(xii)	No. of milk collection centers	(U)	(S)	(PA)	(O)
	(e.g. Union(U)/ Society(S)/ Private agency(PA)/ others (O))			1	
(xiii)	No. of villages with access to Anganwadi Centre	8			
(xiv)	Any other facilities with no. of villages (please specify)				
(xv)	Nearest KVK	nagaur			
(xvi)	cooperative society	2			
(xvii)	NGOs	Nil			
(xviii)	Credit institutions	Nil			
	(i) Bank	Nil			
	(ii) Cooperative Society	Nil			
(xix)	Agro Service Centre's	0			

(G) Nrega status :- IWMP Morra project nuder villagers in 1713 h/n each has male

already their job card & the total 1713 (Nrega mis) NREGA :- 32 traditional W.H.S. has been renovated, and to 45 KM gravel road work has been done. In Nrega miner irrigation activity not done here, In last two year 80-90% families complete their 100 days in NREGA.

(H) Development indicators :-Watershed development indicator are mainly two types such as:-

1. Physical & Economic development:-

- (i) Availability of income opportunities.
- (ii) Food security.
- (iii) Fodder availability.
- (iv) Fuel availability.
- (v) Saving & credit
- (vi) Water availability for house hold & farming.

2. Social development indicators:-

- (i) Stoppage of migration.
- (ii) Improvement in women's status.
- (iii) Educational status for women & children.
- (iv) Health & hygiene.

3. Land holding details: - This project area the land holding pattern is different, in Project area the land holding details given below. Table No:-

Land holding Pattern in project area								
Type of Farmer	Land holding (ha) irrigation source wise			Land holding (ha) Social group wise				
	Irrigated (source)	Rainfed	Total	General	SC	ST	OBC	
(i) Large farmer	0	2500	2500	200	75	20	0	105
(ii) Small farmer	0	1500	1500	800	300	200	0	300
(iii) Marginal farmer	0	750	750	700	250	200	0	250
(iv) Landless person	0	0	0	50	10	30	0	10
(V) No. of BPL households	0	250	250	400	80	200	0	120

Table No:- Ownership wise of Land Use in Watershed

Land Use	Total area in Ha.			
	Govt.	Pvt.	Community	Total
Agriculture Land	0	4460	313	4773
Forest Land	0	0	0	0
Waste Land	0	0	0	0
Pastures	0	0	339	339
Others	25	18	0	43
Total	25	4478	652	5155

(J) Other development schemes in the project:-

(i) MGNREGA:- Renovation has been taken up under NREGA.

(ii) Total sanitation campaign (TSC) :- BPL family individual toilet are constructed in this scheme.

(iii) IAY (iv) SGSY (v) POP:

(ii) Technical Features:-

The Planning of watershed area treatment are used various types of maps prescribed as below

(a) & (b) Basic information regarding maps:- (attach maps)

- Direction: - North direction is always marked by arrow on the corner of the maps so that it is easy to orient the map in the field.
- Scale: - Proportion of distance marked on the map and actual distance on the field is called the scale of the map. Example1: 100, 1: 500, it means that the distance on the field is 100 to 500 times as marked on the map.
- Index: - The information or symbol used on the maps is shown in the index table.
- Contour line: - It is the line joining the points of equal elevation.

(b) Important maps used in the planning of watershed:-

- PRA maps: - These are the maps prepared on the basic information available from the village community. These maps are mainly shows the problems of the village and the solution for the associated problems.
- Cadastral maps: - It is a very important map shows the survey number wise land record. By this map, it is easy to know the location of land of villagers. Normally the scale of the map is 4:1000. This map is used for the demarcation and planning of watershed interventions.
- Toposheet:- It is prepared on the basis of latitude and longitude of earth. All the land of our country is marked on the toposheet. Each and every part of the land has specific toposheet number. It is available in three scales 2:150000, 1:50000, 2:15000, the contour interval of these toposheet are 100m, 20m and 10m respectively. Information like, contour line, elevation of

hilltop, drainage line, roads, villages and hamlets, power line, forestland, revenue land etc is available on toposheet. By contour line we can visualize the area in three-dimensional view example: hillock, pond, gentle slope, steeper slope, valley can be visualized by the contour lines.

- Demarcation of watershed boundary is only possible on toposheet because it the only maps having contour lines and drainage lines.
- The demarcation boundary should be always marked on the colour photography of the toposheet. It is easy to identify the colour and drainage line on the toposheet.
- Identification of drainage line on toposheet : when the lines join and does not cross and take the [Y] shape it means the line are drainage lines.
- Identification of contour line on toposheet: Contour lines do not cross to each other. Elevation of the lines is always shown on the lines and have equal contour interval.
- If any two lines are crossed on the maps means one line is contour and other one may be drainage or road or power line or forest demarcation line etc. (attach maps)

(c) Hydro-Geological maps / Ground water status and prospect maps:-

In India groundwater occurs mainly in three types of hydro geological formations.

- Unconsolidated alluvial formations:- covering over 30 per cent of the land area, primarily the Indo-Gangetic plain, comprise sand, gravels and pebbles which can store large quantities of groundwater.
- Semi-consolidated formations:- covering about 5 per cent of the land area, consist of sandstone formations of Mesozoic and Tertiary age. These have highly variable yields of groundwater.
- Consolidated formations:- comprising 65 per cent of the land with relatively poor groundwater potential. 'Hard rock' is a generic term applied to consolidated formations with aquifers of low primary intergranular porosity.

(d) Slope details:-The watershed area is very important role of gradient, gradient means the interval of two contours dividing by the total horizontal distance. This watershed is flat topography and generally slope 3 to 5%. The slope is high to reduce the infiltration capacity of land and reduce the productivity.

Slope of Watershed		
S.No.	Slope percentage	Area in hectares
1	0 to 3%	5000
2	3 to 8%	
3	8 to 25%	
4	> 25%	

WATER BUDGETING

NAME OF CLUSTER

Morra

GEOGRAPHICAL AREA OF WATER SHED

5155 Hac

S.N.	TYPE OF CATCHMENT	AREA IN (Hac)	YIELD FACTOR	EXCEPTED YIELD IN CUMEC
1	GOOD CATCHMENT	250	750	187500.00
2	AVERAGE CATCHMENT	300	563	168900.00
3	BAD CATCHMENT	4605	375	1726875.00
TOTAL YIELD IN CUMEC (A)				2083275.00

PRESENT UTILIZATION OF YIELD IN WATERSHED

S.N.	NAME OF STRUCTURE	CAPACITY IN CUMEC.
1	Morra (nadi-1,2,3,4)	24000
3	Pharaspura((nadi-1,2,3)	18000
4	Basni sumer(nadi-1,)	13000
5	Karkawal(nadi-1,2,)	8000
6	Dhadhlash uda(nadi-1,2,3)	30000
9	Dotolai(nadi-1,2,)	8000
10	Dholeraw Khurd(nadi-1,2,)	12000
11	Raliyawata(nadi-1,2	9000
TOTAL UTILIZATION IN CUMEC (B)		122000
BALANCE YIELD (A-B)		1961275.00
60% OF BALANCE YIELD THAT GOES AS SURFACE RUNOFF WEASTFULLY		1176765.00

**PROPOSED VARIOUS ACTIVITIES AND W.H.S TO PREVENT WATER TO FLOW OUT
WATERSHED AREA**

S.N.	ACTIVITIES/ STRUCTURE	CAPACITY / UTILISATION
1	C.V.B(12.35 CUM)	12757.55
3	PASTURE	46205.50
4	TANKA(32257)	11289.95
5	ECD(240.70)	962.80
	LSCD(5)	1000.00
6	HOUSE TAKA(22500)	900.00
7		
TOTAL UTILIZED IN CUMEC (B)		73115.8

NET OUT FLOW STILL

1103649.20

e) (i) Available surface runoff based on average rainfall:- rainfall of an area provide the basic information required for management of land and water resources. The important parameters are.

- Amount of rainfall:- The depth of which rain water would stand on a horizontal surface under conditions of no infiltration, no runoff and no evaporation is known as the amount of rainfall. It expressed in mm or cm.
- Duration:- The period during which the rainfall occurs is known as the duration of rainfall. It has the units of time, viz seconds, minutes, and hours.
- Intensity:- Rainfall intensity plays a great role in watershed planning. It is defined as the rate at which rainfall takes place that is the amount of rainfall occurring per unit time. It is expressed in units of mm/hr or cm/hr.
- Rainfall Frequency:- Frequency or the return period or recurrence interval denotes the period in years during in years during which a storm of given duration and intensity can be expected to recur. It is better way to express this is by use of "percent chance" e.g. 50 year frequency has a 2% chance.

A point where the intensity of rainfall becomes greater than the infiltration capacity of the soil. As this point surface runoff is said to have started and this water no longer remains available for use within the area.

The estimation of runoff from catchments is the first step in designing any watershed structure.

$$\text{Runoff} = \text{Rainfall} - [\text{Infiltration} + \text{Interception} + \text{Surface storage} + \text{Surface detention}]$$

(ii) Surface

(f) Soil map and soil details:- When dry soil is crushed in the hand, it can be seen that it is composed of all kind of particles of different size. Most of these particles originate from degradation of rocks, they are called mineral particles. Some originates from the residue of plants and animals these are called organic matters.

(i) Soil profile: - If a pit, at least 1 met. deep, is dug in the soil, various layers, different in color and composition, can be seen. These layers are called horizon. This succession of the horizons is called the profile of the soil.

(ii) Texture:-The mineral constituents of a soil can be sorted out according to the size of the particles above 2 mm. in diameter are strictly speaking not regarded as part of soil. These are classified as stones and gravel.

Generally, 10 types of soils are distinguished according to the proportion of sand, silt and clay. Such crucial soil properties as the movement and retention of water, circulation of soil air, adsorption of nutrients and microbial activity are affected and this leads to specific choice of tillage practices, irrigation methods, crops etc.

Soil texture is mainly concerned with the size and shapes of the mineral particles of the soil. The particles are sand, silt and clay and they have the following diameters.

Particle	Size	Remark
Sand	0.05-2mm	Particles visible
Silt	0.002-0.05mm	Particles hardly visible
Clay	< 0.002mm	Particles not visible
Clayey soil	> = 50% Clay particles	
Silty soil	> = 50% Silt particles	
Sandy soil	> = 50% Sand particles	
Loams are soils with mixed particles of sand, silt and clay		

Soil erosion depends greatly on the infiltration rate of a soil. The infiltration rate again depends on the soil texture. In sandy soil infiltration rate is higher than other soil.

(iii) Infiltration:-When rain or irrigation water is supplied to a field, it deeps into the soil. This process is called infiltration.

A range of values for infiltration rates is given below.

Low infiltration rate	< 15mm/ hour
Medium infiltration rate	15 to 50 mm/ hour
High infiltration rate	> 50mm / hour

An infiltration rate of 15mm/hour means that a water layer of 15mm on the surface of the soil will take one hour to infiltrate. Factors influencing the infiltration rate are mainly soil texture, soil structure, and Soil moisture content.

(iv) Soil moisture content:- It indicates the amount of water present in the soil. It is determined by:
Soil moisture in % = [(total weight of water/total weight of soil) x 100]

(vi) Saturation:-During the rain shower or irrigation application, the soil pores will fill with water the soil is said to be saturated. There is no air voids in the soil.

(vii) Ground water table: - Part of the water applied to the soil surface drains below the root zone and feeds deeper soil layers, which are permanently saturated; the top of the saturated layers is called the ground water table or some time just water table. The depth of water table varies greatly from place to place, mainly due to change in topography of the area.

(viii) Capillary rise:-If a piece of tissue is dipped in water, the water is sucked upward by the tissue. The same process happens to the ground water table and the soil above it. The ground water can be sucked upward by the soil through very small pores that are called capillaries. This process is called capillary rise.

(g) Climate details: - Climate and weather are equally important in agriculture. water shortage at critical times due to drought condition can destroy the crops and reduce the yield considerably. When there is a drought, farmers will get reduced returns or get nothing for their work due to total crop failure. Drought area means both agriculture product and water are usually in short supply and causes severe hardship for those individuals and communities. Hence better understanding of the variable climate and how the seasonal climate forecast may be used to make timely decision in agriculture operations especially in rainfed farming is essential. Hot summer and general dryness characterize the climate of the project area, except in monsoon season. The year could be divided into summer season; Monsoon season, Post monsoon season and winter season, the period of these season are March to mid June, mid June to September, October to November and December to February respectively. The region has physical constraints like low and erratic rainfall, high temperature, high wind velocity, low fertility, poor soil structure, salinity of soil and ground water are the deterrents to assured production.

(i) Rainfall:-The rainfall trend in the region is irregular and the rainfall pattern varies from year to year. The rainy season starts with the onset of the monsoon mid-June and continues up to mid-September. The distribution of rainfall shows drastic variations in rainfall from year to year and within the rainy seasons. Reliability of rainfall is apparently highest in the months of July and August and lowest in

September and October. From November to May no significant precipitation occurs. Generally, the rainfall pattern is erratic. Following patterns have been common in the recent years:

- Timely on set followed by long dry spells,
- Timely on set and early withdrawal,
- Late on set and early withdrawal.

Break up of rain in different season during the year

- Summers – 0-2 days
- Monsoon – Approximately 35 days
- Winter – Approximately 4 days

Average annual rainfall is 361 mm.

1	Average Annual Rainfall(mm.)		361
	Year	Average Annual Rainfall(mm)	
1	2000-2001	300	
2	2001-2002	363	
3	2002-2003	144	
4	2003-2004	469	
5	2004-2005	295	
6	2005-2006	387	
7	2006-2007	266	
8	2007-2008	319	
9	2008-2009	469	
10	2009-2010	188	
2	Avg Monthly rainfall (last ten years)		
	Month	Rainfall(mm)	
i)	June	25	
ii)	July	140	
iii)	August	160	
iv)	September	35	

(ii) Humidity:-During Monsoon Season, the humidity of the region varies from 70 to 90 %. During Monsoon, High humidity can be easily witnessed in the region. Humidity during the summer is as low as to 20 %.

(iii) Topography:- The natural condition of the land is flat with gentle slope. But at some places the slope is moderately slope 3 to 5%.

(iv) Temperature:- The soil organisms are most active at 24-35° c. O.M. of Indian soil is low because of the high rate of decomposition under tropical and subtropical climate .except in

few localized area in the hilly and high altitude regions. The O.M. in most of the cultivated soils rarely exceeds 1%. O.M. content in Indian soil is generally 0.5%.

Table No.:-

4	Temperatue (Degree C)				
	Season			Max	Min
	i) Summer Season			46	30
	ii) Winter Season			25	10
	iii) Rainy Season			36	21

- (i) Erosion details:-Erosion may be defined as the detachment of transportation of soil particle from one place to another place by water ,& wind, The forms of soil erosion by water are sheet of Riel erosion (4-10 ton/ha/year in Red soil, 17-43 ton/ha/year in black soil and 4-14 ton/ha/year in alluvial soil, gully erosion (about 33 ton/ha/year in ravine regions) hilly side erosion (more than 80 ton/ha/year) . sheet erosion is the most serious problem in INDIA, an Recent analysis of annual soil erosion rate in India it was Estimated that about 5334 M ton (16-35 ton/ha) of soil is detached annually duel to agriculture and associated activities alone.

Type of Erosion: -

1. Rain drop erosion: - Raindrop or splash erosion result from soil splash caused by the Impact of falling Raindrops It has been proved that Raindrop is of major importance as a contribution to erosion. The falling Raindrops detached soil particle. Raindrop may splash wet soil of much as 60 cm. high and 150 cm from the spot where raindrop fall.

2. Sheet erosion:- It is a more or less even removal of a thin layer of soil it is often unnoticed by the farmer because it occurs gradually and there is no appreciable change yield decreases slowly to a minimum.

3. Rill erosion :- sheet flow occurs only when the surface is smooth and of a uniform slope this is rowel in cultivated field consequently rainwater concentrate in depression and than begins to flow taking the path of least resistance, mating riles which are small enough to be easily removed by normal tillage operation.

4. Gully Erosion: - Gully erosion is removal of soil by running water with the formation of channels that cannot be removed completely ty normal cultivation. Gully erosion is advance stage of rill erosion and last stage of water erosion. Cattle paths. Cart tracks. Dead furrows or other small

depression down. The slope are potential source of gullying as it favour to increase the concentration of surface runoff.

Erosion status in project Area					
	Cause	Type of erosion	Area affected (ha)	Run off(mm/ year)	Average soil loss (Tonnes/ ha/ year)
Water erosion					
	a	Sheet	3500	270	70
	b	Rill	1440		
	c	Gully	60		
	Sub-Total		5000		
	Wind erosion		2300	NA	15
	Total for project				

iii) Problem demand & scope for comprehensive area development.

Problem:-

- (i) Soil & water conservation problem.
- (ii) soil erosion.
- (iii) Fuel & fodder availability problem.
- (iv) Drinking water & irrigation water problem.
- (v) Poor socio economic condition.
- (vi) Low soil fertility problem.
- (vii) Migration problem.
- (viii) Unemployment.
- (ix) Low rate of literacy.
- (x) NO micro enterprises availability.
- (xi) Low and erratic rainfall, frequent droughts leading to land degradations.
- (xii) fodder scarcity leading to low livestock productivity.
- (xiii) Reduction in size of holding.
- (xiv) Village commons shrinking due to encroachment.
- (xv) limited credit input and market facilities.

Demand :-

- (i) People need to good tech of agriculture farming.
- (ii) Drip & sprinkler system required because the loss of water is very low.
- (iii) Food requirement.
- (iv) Fuel & Fodder band requirement.
- (v) New tech. of employment generation. So that migration rate reduced.
- (vi) Horticulture development.
- (vii) Animal husbandry development.
- (viii) Livelihood intervention for landless.

Scope :- To identify and address issues and gain the in sights . Knowledge and experience needed to solve problem and implement change:-

- (i) Alternative land use plan.
- (ii) Scientific tech. of soil & moisture conservation.
- (iii) Improved scientific agriculture practices.
- (iv) Fodder development & management.
- (v) Afforestation.
- (vi) Meteorological information.
- (vii) Dairy development & management.
- (viii) Rural craft.
- (ix) Income generation activities:-
 - (A) Food processing.
 - (B) Post harvest management practices.

Chapter: - 3

- (A) preparatory phase activities capacity building training and EPA
- Regeneration, Soil and Water Conservation- Treatment of the project area with suitable soil and water conservation measures using ridge to valley approach aimed at reducing soil loss and optimal utilization of water.
 - Strengthening Institutions- Effort will be made towards strengthening of local institutions and bringing in place governance mechanism to ensure proper representation, democratic decision making and appropriate benefit sharing along with proper resource management mechanism.
 - Capacity Building – Attempts will be directed towards making relevant knowledge and idea accessible to communities. They will also be encouraged and assisted in finding creative solutions through networking, training and exposures and assistance from other agencies.
 - Spaces for the disadvantaged section- Attempt will be made to devise strategies to respect and accommodate the existing social cultural and political specificities and also create spaces for disenfranchised section of the community like women, landless etc.
 - Collective search for appropriate solutions- An effort will be made to help the community in generating alternatives and strengthening local initiatives and mechanism for development of secondary source of income such as dairying, poultry, horticulture, nursery, compost production etc.
 - Documentation of learning and experience- All social and ecological processes and trials will be systematically documented which will lead to the development of learning and future directions of the project.

Capacity Building Elements:-

The project will be a community led initiative, which include the full participation of all stakeholders, but in particular the target tribal community, throughout the project cycle. Maximum emphasis will be on creating sustainable livelihood opportunities through utilization of the natural resources of the region in a productive and ecologically sustainable manner.

- Formation of village level watershed committee and hamlet level working groups.
- Facilitate regular 'Gram Sabah's' for community-based discussion and planning.
- Strengthen institutional arrangements and encourage appropriate regulatory mechanism on free grazing and felling of the trees.
- Implementation of soil and water conservation activities viz., contour trenches, farm bunding, gully plugging, plantation etc., Arrange educational trips to various successful watershed projects to increase their understanding of watershed and types of activities undertaken, impact

of watershed project on village economy, process of planning and institutional arrangements and roles and responsibilities involved in watershed implementation.

- Training programs, exposures, audio-video aid, cultural activities etc. will be organised to capacitate the community as per their need and requirements.
- To organized women group to improve their socio-economic condition

Considering the above mentioned problem, an integrated effort needs to be pumped in where appropriate bio physical measures coupled with Eco restoration efforts would be executed. In addition to this, human resources available in the village have to groom, so that they can manage and maintain the assets created at village level.

Training and Capacity building of the villagers and watershed development committee members along with the women self group would be one major thrust area in the upcoming watershed activities.

EPA:- Entry point activity is an important work for project implementation Agency (PIA) , which will help them to establish rapport with village people and get in to the village. So entry point activity should be selected very carefully which will give benefit to all village people. Success of any project depends on involvement of local community. Villagers are the important stake holders who will be directly benefited from the project. Entry point activity is done during first phase of the project. It is done solve immediate problem of the village and create good impression & feeling so the villager support the watershed project & it can be run successfully.

(B)Natural resource management:-

conservation and restoration are applications of ecological principles by humans. Judgment of success is from the human perspective. The scale of application is variable within the "human scale" of activity – yet manifested and viewed from global down to small acreages and households, even to the microscopic. Regulations and laws may be assets, or impediments, depending on their adaptability to local and temporal conditions and subject to skillful implementation over time. Economics may produce strong forces that support or undermine success. The perspective of individuals or groups of individuals often conflict with the needed changes and management activities. Although conservation and restoration are science based activities, we know far less than we need to have a routine procedure to follow. Therefore, our management actions must address the processes of conservation and restoration on an appropriate scale and then be maintained for an extended time with appropriate mid-course corrections for our ecological objectives to be approached.

The single greatest difficulty for achieving desired results becomes that of unrecognized human ignorance acted upon with overconfidence. In practice, successful management of natural resources, conservation and restoration must coordinate complex time-dependent ecosystem processes with

human dynamics. We need a clear understanding of our self and how we either facilitate or hinder the progress toward healthy ecosystem functions. Successful management implies continuous learning.

INRM can be defined as the responsible and broad-based management of the land, water, forest and biological resources base--including genes--needed to sustain agricultural productivity and avert degradation of potential productivity.

Traditional Knowledge and Management of Natural Resources

Soil, water and vegetation are three basic natural resources. The survival of God's creation depends upon them and nature has provided them as assets to human beings. The management of natural resources to meet people's requirements has been practised since the pre-Vedic era. Farmers were ranked high in the social system and village management was in their hands. In order to manage land, water and vegetation, technical knowledge suitable to the specific conditions of a region was required. They gained this knowledge and developed skill through experience and learning by doing.

Over-exploitation of natural resources by growing population resulted in various severe problems. Destruction of vegetation has resulted in land degradation, denudation, soil erosion, landslides, floods, drought and unbalanced ecosystems. A balanced ecosystem is an urgent need.

The present investigation was the outcome of experience gained in the villages. It is achieved grand success through watershed management and lab to land activities. In contact with the farmers, traditional wisdom was documented. A wealth of traditional knowledge could be harnessed through their cooperation. Their experiences are required to be shared and discussed to promote modern technology for development.

Methodology

. Farmers were interviewed to obtain information on traditional knowledge. Individual contacts were made and questions were asked about traditional systems in the villages. Representation of women among the farmers was also ensured. By means of informal interviews and interaction with old and young farmers and farm women, responses were recorded for critical analysis. It was also observed how traditional knowledge is transmitted from one generation to another. In order to educate young farmers, elders communicate innovation through proverbs, short stories and examples.

Information was collected with respect to the social and historical perspective of the project area , depletion of natural resources, methods of conservation, concept of watershed management, prediction and beliefs, and cultural education.

Broadly, farmers have indicated three ways to protect resources by means of traditional technology. They are mechanical, agricultural and vegetative.

MECHANICAL MEASURES

The main occupation of the farmers is agriculture. In these it is possible to manage to rainwater. Construction depends upon space and grades of land. The farmers, with their expertise, are able to prepare fields for crop production. Farmers make the slopes of the terraces inwards to check soil erosion and enhance in situ moisture conservation. Soils are gravelly and have a high rate of percolation. Due to rainwater retention enough moisture becomes available to the crops.

On mild slopes farmers construct shoulder bunds to protect their lands from soil erosion and grow vegetation over the bunds, particularly grasses for binding the soil.

TRADITIONAL KNOWLEDGE FOR NATURAL RESOURCE MANAGEMENT

In order to achieve the objective of development in villages, people's participation is essential. It is required to involve them actively in project activities by respecting their traditional knowledge and experimental ethics. Traditional knowledge has a sound base as it has been tested and practised over the years. It is appropriate technology in particular climatic conditions and in the living conditions of people.

Projects to develop ecology should start with traditional knowledge as they are proven technology for natural resources management. In a real sense, every culture of a social system, traditionally, is the result of people's action to survive and their attempts to optimise the use of available resources, i.e., soil, water and vegetation.

The science of natural resource management is based on the ecologically sound traditional wisdom of farmers and its contribution in augmenting productivity. Traditional values which are sustainable in nature need to be compared with values of modern systems. It is obvious that traditional practices of agriculture may disappear unless their values are promoted.

The wisdom of farmers with respect to watershed development, agricultural management, and conservation of soil, water for sustained production are documented in the present investigation. Soil, water and vegetation are three basic natural resources. The survival of God's creation depends upon them and nature has provided them as assets to human beings. The management of natural resources to meet people's requirements has been practised since the pre-Vedic era. Farmers were ranked high in the social system and village management was in their hands. In order to manage land, water and vegetation, technical knowledge suitable to the specific conditions of a region was required. They gained this knowledge and developed skill through experience and learning by doing.

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drought and unbalanced ecosystems. A balanced ecosystem is an urgent need.

Management of Natural Resources

Broadly, farmers have indicated three ways to protect resources by means of traditional technology. They are mechanical, agricultural and vegetative.

WATERSHED DEVELOPMENT CONCEPT AND VILLAGE BOUNDARIES

Farmers pointed out that watershed management had been introduced for the integrated management of a particular area that includes agriculture, natural resources, forest management, village development and above all the ecosystem. Virtually, a watershed was defined as a unit of development in which there is a highest point and a lowest point with common outlet. The Government of India has given special attention to watershed development to manage natural resources and schemes like NWDPRA, a watershed project with foreign collaboration, are being implemented.

During the ancient period, village boundaries were decided upon on a watershed basis by the expert farmers in the villages. Such boundaries were socially acceptable to all the members of the system. Such age-old village boundaries are fixed at the common point of the drainage system in between two villages. It is still in vogue and people do not go beyond the limits of their hydrological boundaries.

IRRIGATION

Farmers used to carry water to their fields through small irrigation channels known as gulas. These go from the source of water along the slopes to the fields. In order to avoid seepage losses farmers use pipes. By means of gravitational force they transport irrigation water from its source. In hills it is difficult to construct gulas for all the terraces, and pipes are convenient in transporting water to every field. In order to make judicious use of water, they use a sprinkler system through gravitational force and economical utilization of water.

WATER HARVESTING

The region of Morra comes in the Low rainfall area and in the lack of proper management system most of the rainwater goes waste as runoff. Farmers of the hill region have their traditional technology for making small dug-out ponds to harvest rainwater. They construct such ponds at several places

and use the water for survival or for supplemental irrigation. Improvement over the traditional practices is that at the bottom LDPE sheets are placed to check seepage losses. Lined tanks are cost-intensive and beyond the reach of the farmers.

MANAGEMENT OF DRINKING WATER

Streams are the source of water in the Himalaya. Farmers pay regard to these water resources. They use the water for drinking and make efforts to keep streams clean and unpolluted. They maintain vegetation on the banks to have a clean flow without sediment for human consumption. They do not permit their cattle at the places from which they collect drinking water. They have their own traditional system for the management of drinking water. They do not allow anyone to throw garbage in its current to avoid pollution and infection.

WOMEN'S KNOWLEDGE IN MANAGEMENT OF RESOURCES

For centuries, nature's various products and women's knowledge of their properties have provided the basis for making water safe for drinking in every home and village of India. The seeds of the nirmali tree are used to clear muddy water by rubbing them on the insides of vessels. The drumstick tree also produces seeds which are used for water purification.

Moringa seeds inhibit the growth of bacteria and fungi. Tulasi is a water purifier with antibacterial and insecticidal properties. Copper or brass pots are what Indian women use to carry and store water; and unlike plastic, they do not breed bacteria. The technologies women have used for water purification are based on locally available natural products and locally and commonly available knowledge

Women are the architects of the rural economy. They are devoted to agriculture, animal husbandry, dairying, child-rearing, cooking, fodder and fuel management, etc. They work harder from morning to evening than their male counterparts for the welfare of the family. Girl children share the work of their mothers and get training in home management.

AGRICULTURE

Farmers' traditional knowledge of agriculture includes tested technologies in the field.

1. They use a special type of traditional plough. Other types of 'improved' ploughs do not work in the hills as the soil is gravelly and not deep.
2. Under rainfed conditions farmers in hill regions plough their land several times before the

onset of rain to conserve water and increase water retention capacity.

3. Farmers plough their land straight instead of in circles and open parallel furrows for rainwater harvesting and retaining moisture. However, there is a recommendation to plough the land across the slope to check erosion.
4. Farmers of hill regions prefer mixed cropping for minimising risks under rainfed conditions and creating ground cover for checking runoff and soil loss. They grow legumes with maize and ginger or turmeric with maize.
5. Farmers do not practice weeding and interculturing in the maize crop because of soil conditions and the requirement of fodder in the rainy season.
6. Farmers store seeds by selection for different plots with special identification and use them in those particular plots.

MANURE AND MANURING

In view of the soil's condition and texture the farmers of the region use farmyard manure in the fields before sowing. Use of chemical fertilizers has increased but people retain their belief in traditional methods.

Farmers do not dig compost pits for the collection of cow dung, residues and garbage. Instead of pits they accumulate the matter in heaps in the open for decomposition. The reason behind it is that decomposition is slow due to low temperature and little sunshine. In pits compost would not get ready in time. In the open rapid decomposition takes place. This practice is traditional but has a scientific basis.

VEGETATIVE MEASURES FOR NATURAL RESOURCES MANAGEMENT

Farmers grow trees of economic value and suited to their requirements. In order to conserve soil and water they grow grasses for ground cover such as For the development of horticulture. Farmers are well aware of the potential of their lands, but due to poor economic conditions and infrastructure it is not possible for them to go ahead with alternative and more profitable land use.

Farmers are hard-working that even in adverse topographic conditions they are devoted to agriculture for grain production. Farmers do not like to work as labourers or beg in villages for their livelihood; instead, they prefer to go to cities to earn. Many hill farmers migrate for jobs to the cities or join army service. The women and children look after the village property, while the men send them money to run their homes.

Agriculture and Natural Resource Development

The project replaced traditional and low-yield seed varieties with high-yielding hybrid varieties.. Although the activities undertaken increased the resource productivity of the area, transformed the ecosystem and improved people's living conditions, this project component was undermined by the lack of marketing opportunities for agro-forestry products and weak technical back-up for irrigation activities. In addition, the various inputs (such as seeds and agricultural implements) provided free of charge or at a highly subsidized cost during implementation were no longer available to the project had ended and no mechanism was instituted to ensure their timely and regular supply.

Human Resource Development

This component was crucial for providing the required motivational foundation for the project's successful implementation, impact and sustainability. Activities included developing model villages, In addition, women's committees and self-help groups, and non-formal education centers.

Community-based sustainable natural resources management and Development

the biological diversity and variability of the ecosystems are used and conserved by traditional communities through various informal institutions and using traditional ecological knowledge systems. These communities have diverse food habits, culture variations complemented by community knowledge and informal rural social institutions, which determine the access and conservation of natural resources. To explore, document, validate, conserve and commercialize these knowledge systems and simultaneously reward and assure the intellectual property rights of tribal communities who have been using such knowledge for their sustainable survival, is the prime need of the hour. Looking at the importance of biological diversity and the role of community members of project, a seminar Will organize ,where the role of community knowledge and informal rural social institutions in sustainable management of biodiversity ,mobilization of the community for sustainable use and conservation of natural resources, equitable benefit share arising from indigenous natural resources, validation and value addition, and IPR and conservation of indigenous biodiversity of Project were covered. and traditional knowledge holders, who are the real custodians of sustaining the natural resources. The survival strategies of these communities were of subsistence in mode, without greed of destroying biodiversity and other resources. However, now the acculturation, commercialization and modern technology-led developmental processes have weakened the dynamics of sustainable conservation of biodiversity and other natural resources. The work on community mobilization through

indigenous institutions is the need of the hour to change the attitude of the people and involve them in conserving biodiversity of the region. Programmes like biodiversity contest and quiz among villagers and school children, indigenous plant-based traditional food competition among rural women along with integrated approach of exploring biocultural knowledge systems may be started on a wider scale, to make people realize the value and potential of such natural resources. He also emphasized that collecting information on biocultural resources using local language could help in wider applicability and diffusion of the message. In this way, the knowledge of traditional communities relating to bioresources may be protected from permanent loss. the role and value of traditional institutions of the community in conserving natural resources of Project , and mentioned that most of literature reported from Project the destruction of natural resources is not primarily due to the shifting cultivation, but due to modern constructions and developmental works. cultivators manage more than 5 indigenous crops and other biodiversity.

(i) Conservation measure for arable lands :-

Conservation measure for agriculture land is grouped under two head viz:-

(a) crop management according to the capability of land and moisture.

(b) Agronomic and engineering measure.

Factors influencing measures are (i) soil (ii) land slope (iii) rainfall characteristics of the area Most of the farm land would be treated with the following measures

- Farm bund-
- Earthen Gully plugs
- Stone Gully plugs
- Grass seeding on the earthwork done during the implementation.
- Farm forestry and horticulture species.
- Contour bund
- Waste weirs
- Ramp cum waste weirs
- Diversion channel

(ii) Conservation measure for non-arable lands :- it is necessary to treat these areas with appropriate soil and water conservation measure supplemented with proper tree planting techniques. To have an accelerated regeneration of afforesting programme including Silvi-pasture and pasture development on these project land. The following are the suitable soil and water conservation measure that can be adopted for non arable lands for insitu conservation.

- Contour trenching

- V- ditches
- Gradonies
- Box cum pit
- Staggered trenches.
- Ditch cum bund fencing
- Vegetative fencing or live fencing.

(iii) drainage line treatment:- the formation of drainage line usually starts in hilly and non-arable areas where velocity and amount of runoff is high . amount of runoff flows through drainage lines at high velocities .

The crucial factor each drainage lines should be divided into following three reaches

1. Upper reaches
2. Middle reaches
3. Lower reaches.

The cross section of the structure for these reaches is decided on the basis of slope area and volume of runoff.

Types of treatment measures /structure:-

1. Vegetative barriers.
2. brushwood check dams
3. earthen check dams
4. poly bags check dams
5. loose stone check dams
6. gabion structure
7. masonry or permanent structure .

Water Harvesting structure : - water harvesting had been practiced from the primordial days in various ways. It is based on the following three basic criteria:-

1. 1.source of water available.
2. required storage duration
3. intended use of harvested water

the water harvesting technique are classified in the following four different groups:

1. 1.surface runoff harvesting
2. roof water harvesting
3. 3.runoff inducement
4. flood water harvesting

In the semi arid region or western Rajasthan practice of harvesting water from roof tops for drinking purpose is centuries old. The structures commonly used for harvesting rain water in arid or semi arid regions are :

1. Nadi
2. khadin
3. tanka

IPM: - Using the best possible combination of various methods of pest control to restrict the pest population to non-injurious level.

Type of IPM:-

1. **Cultural Practices:** - (i) Sumer cultivation (ii) Weed Control (iii) Seed treatment (iv) Mixed Cropping (v) Eradication Crop residue (vi) Time lying sowing .
2. **Biological methods.**
3. **Chemical methods.**

INM: - integrated nutrient management is generally used to refer to an inorganic ion obtained from the soil and required for plant growth the process of absorption translocation and assimilation of nutrient by the plant is absorption as mineral nutrition.

Integrated nutrient management involves preparing a complete balance sheet of plant nutrient added to an agriculture plant production system.

integrated nutrient management is maintain by following factors:-

1. **Green manuring** :- in the long term experiment on use of in situ green manures for guar,dencha based cropping system. The fast growing sole green manure like dencha and sun hemp obviously gave higher amounts of biomass.

2. **Crop residue management:-** Evaluate the long term effects of different crop residue management treatments on yield and soil quality Guar, Green Gram followed by Guar, Green Gram cultivation systems. Positive effect of crop residue management treatments with or without the green manure on grain yield and soil characteristics beginning with the third crop season.

3. **Fertilizer use efficiency as influenced by different sources:-** Fertilizer are the organic or inorganic materials of natural or synthetic origin which are added to the soil to supply certain elements essential to the growth of plants. The term 'Fertilizer' is now commonly restricted to commercial products.

4. **Use of Bio Fertilizers / microbial Inoculants:-** 'Microbial inoculants' is the more appropriate name of Biofertilizer. It is defined as preparation containing live or latent cells of efficient strains of N-fixing Phosphorus Tetra Oxide solubilising or cellulolytic micro-organisms used for application of seed, soil or composting areas with the objectives of increasing the number of such micro-organisms and

accelerate certain microbial process to augment the extent of the availability of nutrients in a form which can be assimilated by plants.

5. cropping system: - In the integrated nutrient management in cropping systems, the residual effects of applied materials are to be taken into account so that the last crop in the sequence can be applied sufficiently less quantities of inorganic fertilizers to supply, N, P₂O₅ and K₂O to bring down the cost of cultivation besides improving the soil physical conditions for sustainable crop production.

Vermicompost and its utilization:-

Vermicompost is nothing but the excreta of earthworms, which is rich in humus and nutrients. We can rear earthworms artificially in a brick tank or near the stem / trunk of trees (specially horticultural trees). By feeding these earthworms with biomass and watching properly the food (bio-mass) of earthworms, we can produce the required quantities of vermi compost.

Advantages of vermicompost:-

1. Vermicompost is rich in all essential plant nutrients.
2. Provides excellent effect on overall plant growth, encourages the growth of new shoots / leaves and improves the quality and shelf life of the produce.
3. Vermicompost is free flowing, easy to apply, handle and store and does not have bad odour.
4. It improves soil structure, texture, aeration, and water holding capacity and prevents soil erosion.
5. Vermicompost is rich in beneficial micro flora such as a fixers, P- solubilizers, cellulose decomposing micro-flora etc in addition to improve soil environment.
6. Vermicompost contains earthworm cocoons and increases the population and activity of earthworm in the soil.
7. It neutralizes the soil protection.
8. It prevents nutrient losses and increases the use efficiency of chemical fertilizers.
9. Vermicompost is free from pathogens, toxic elements, weed seeds etc.
10. Vermicompost minimizes the incidence of pest and diseases.
11. It enhances the decomposition of organic matter in soil.
12. It contains valuable vitamins, enzymes and hormones like auxins, gibberellins etc.

Nutrient content of vermicompost:-

Nitrogen- 1.5 – 2.5 % Calcium- 0.5 – 1.0 %

Phosphorus- 0.9 – 1.7 % Magnesium- 0.2 – 0.3 %

Potash- 1.5 – 2.4 % Sulphur- 0.4 - 0.5 %

And other micronutrients with vitamins, enzymes and hormones.

Materials for preparation of Vermicompost:

Any types of biodegradable wastes-

1. Crop residues
2. Weed biomass
3. Vegetable waste of urban and rural wastes.
4. Leaf litter
5. Hotel refuse
6. Waste from agro-industries
7. Biodegradable portion of urban and rural wastes.

Methods of preparation:-

1. The vermicompost can be prepared in concrete tank. The size of the tank should be 10 ft. length or more depending upon the availability of land and raw materials, breadth 3- 5ft and height 3 ft. Suitable plastic tube / basin structure may also be needed. The floor of the tank should be connected with stones and pieces of bricks.
2. The available bio-wastes are to be collected and are to be heaped under sun about 7-10 days and be chopped if necessary.
3. Sprinkling of cow dung slurry to the heap may be done.
4. A thin layer of half decomposed cow dung (1-2 inches) is to be placed at the bottom.
5. Place the chopped weed biomass and partially decomposed cow dung layer wise (10-20 cm) in the tank / pot up to the depth of 2 ½ ft. The bio waste and cow dung ratio should be 60: 40 on dry wt. Basis.
6. Release about 2-3 kg earthworms per ton of biomass or 100 nos. earthworms per one sq. ft. area.
7. Place wire net / bamboo net over the tank to protect earthworm from birds.
8. Sprinkling of water should be done to maintain 70-80 % moisture content.
9. Provision of a shed over the compost is essential to prevent entry of rainwater and direct sunshine.
10. Sprinkling of water should be stopped when 90 % bio-wastes are decomposed. Maturity could be judged visually by observing the formation of granular structure of the compost at the surface of the tank.
11. Harvest the vermicompost by scrapping layer wise from the top of the tank and heap under shed. This will help in separation of earthworms from the compost. Sieving may also be done to separate the earthworms and cocoons.



Step I



Step II



Step III



Step IV

Vermi wash- a plant growth regulator:-

Vermi wash is a liquid plant growth regulator, which contains high amount of enzymes, vitamins and hormones like auxins, gibberellins etc along with macro and micro nutrients used as foliar spray.

Methods of preparation:-

1. Take one big bucket and one mug.
2. Set up one stop cork on the lower most part of the bucket.
3. Put a layer of broken bricks, pieces of stones having thickness of 10-15 cm in the bucket.
4. Over this layer put another layer of sand having thickness of 10-15 cm.
5. Then put a layer of partially decomposed cow dung having 30-45 cm thickness over it.
6. Then put another layer of soil having 2-3 thicknesses.
7. Now open the stopcock of the bucket and when the materials taken in the bucket.
8. Then put 100-200 nos. of earthworms in the bucket.
9. After that, a layer of paddy straw having 6 cm thickness is given.
10. Now open the stopcock of the bucket and spray water regularly for a period of 7-8 days.

11. After 10 days the liquid vermin wash will be produced in the bucket.
12. Hang one pot with a bottom hole over the bucket in such a way so that water falls drop by drop.
13. Every day 4-5 liters of water is to be poured in the hanging pot.
14. Keep another pot under stop cork to collect the vermin wash. Every day 3-4 liters over min wash can be collected.

Application

1. Mix 1 liter of vermin wash with 7-10 litres of water and spray the solution in the leaf (upper and lower side) in the evening at the growing the crop.
2. Mix 1 liter of vermin wash with 1 litre of cow urine and then add 10 liters of water to the vermin urine solution and mixed thoroughly and keep it over night before spraying 50-60 liter of such solution and to be sprayed in one bigha of land to control various crop diseases.

Bio-fertilizers and their utilization:-

Bio fertilizers are microbial inoculants consisting of living cells of micro-organism like bacteria, algae and fungi alone or combination which may help in increasing crop productivity by way of helping in the biological nitrogen fixation, solubilization of insoluble phosphorus fertilizer materials, stimulating growth or in decomposition of plant residues.

Advantages of using Bio-fertilizer:-

- Can replace 20 to 50 % of chemical fertilizer 'N' and 15 – 25 % of phosphatic fertilizers.
- Bio-fertilizers being cheap, provide highly cost effective supplement of chemical fertilizers.
- Increase farm productivity, generally 10-40 % in grain yield and 15 – 30 % in vegetable growth.
- Activates soil biologically thereby increasing natural fertility of soil, which causes sustainable agriculture.
- Help in stimulating plant growth in general and roots in particular as they serve various growth promoting hormones like auxin, gibberellins etc and vitamins. They help in better nutrient uptake and increase tolerance towards drought and moisture stress.
- Secrete some fungi static and antibiotic like substances, which reduce the incidence of various soil borne diseases. It has got antagonistic behavior against pathogens.
- They help to profile rate and survival of other beneficial microorganisms in soil.
- Help in decomposing plant residues in soil, thereby improving C/N ratio, improving soil texture and structure. Also help in increasing water-holding capacity.
- In composting processes improve the quality and nutrient value of the compost.

- Being environment friendly and cost effective do not cause any harmful effect on soil and environment. On the contrary they help in degradation of other harmful chemicals such as weedicides and pesticides. Thereby they help in increasing the biodegradation capacity of the soil.

Types of Bio-fertilizers

For Nitrogen

a) Rhizobium bio-fertilizer to be used only in legume crops. Rhizobium is different for different legume crops.

b) Azotobacter / Azospirillum bio-fertilizer for all non-legume crops. Azotobacter is for upland crop and Azospirillum is for low land crop.

For Phosphorus

Phosphatika for all the crops and to be used along with *Rhizobium* / *Azotobacter* or *Azospirillum* bio-fertilizer.

Method of application

There are three methods of application:-

1. As seed treatment for direct seeded crop.
2. As seedling root dip Treatment for transplanted crops.
3. As soil treatment vegetable crop where seed treatment and seedling.

Organic farming:- Composting is a natural biological process in which various microorganisms, including bacteria and fungi, break down organic matter into simpler substances. The effectiveness of the composting process is dependent upon the environmental conditions present within the composting system i.e. oxygen, temperature, moisture, material disturbance, organic matter and most importantly the activity of microbial populations. Organic farming has assumed importance, the almost total dependence on fertilizer, pesticides, herbicides and growth regulators for enhancing crop productivity gradually culminated in a situation where in a need to reconsider the alternative for chemical agriculture gradually developed. That increased dependence on agro chemicals including fertilizer has led to several ill effects on the environment.



Benefit of organic farming:-

- Conservation of natural resources
- Prevention of damage environment
- Productions of clean foods
- Reduction of entry of toxicant in the food chain
- Prospect of export of organically produced foods
- Self sustaining production system dependent largely on on-farm resources

Sprinklers and Drip irrigation:-

Sprinklers:-Water is applied as a spray or as rain over the crop Rate of water delivery is more than 1000 lit/hr. It operates at pressure of more than 2.5 bars and throw water as a spray up to the distance of more than 10 meter.

Merits:-

1. Saving of water from 25 to 50% for different crops.
2. Saving of 10-16% land.
3. No risk of runoff erosion, inundation.
4. Uniform application of water.
5. Suitable for sandy soils, shallow soils.

Drip / Trickle Irrigation:-

Discovered in Israel, discharge rate of water per dripper is generally 1-4 lit/ hr. and the water diffuses by capillary action in the soil. It consists of main pipeline, sub mains, laterals and emitters. The discharge of most emitters ranges between less than 1 lit/ha to 15-20 lit/ha. The no. of emitters per unit area depends on plant spacing, soil characteristics, root development and discharge of emitters. The lateral is looped around the basin of the plants so as to get more no. of emitters for each plant. The irrigation interval is 1-4 days. It saves 50-70% water and even more.

Merits:-

1. Well suited to areas of acute water shortage.

2. No land leveling is necessary.
3. Herbicides and fertilizers are applied to the crop by solubilising into the irrigation water
4. Energy requirement is less.
5. Less disease and weed infestation.

Agriculture Implements:-

- a. Plough
- b. Cultivator
- c. Disc Plough :- 2 Tine, 3 Tine
- d. Disc Harrow :- 12 Tine, 14 Tine, 16 Tine
- e. Seed drill
- f. Seedcum Fertilizer Drill
- g. Thresher Rotavator
- h. Plant Protection Equipment: – Sprayer, Hand Rotary, Tractor Mounted Sprayer.

Diversification in Agriculture, Horticulture and Flori Culture medicinal plants, area to be covered Hi tech Agriculture.

Agriculture: - is an art and science both in which we study all the human activities related to use of soil.

1. Agronomy: - Agronomy is that branch of agricultural sciences which deals with the management of field to provide favorable environment to the crop for higher productivity in terms of quantity and quality both.
 - Cropping System and Pattern
 - Seed Technology
 - Weed Management
 - Erosion and soil Conservation
 - Water Management
 - Dry land Agriculture
 - Soil Organic Matter
 - Manures, Fertilizers and Bio fertilizers
 - Soil fertility and Productivity
 - Mineral Nutrition
 - Saline, Alkali and Acid Soils Reclamation.
2. Agriculture Extension Education :-
3. Agriculture Economics:-
4. Farm Management :-

Production measures for non arable lands:-

Silvi pasture works on Govt. waste / Pasture land:-

The poorer rural livestock-keepers in Rajasthan tend to be small or marginal farmers (or landless people) who do not have sufficient land to grow forage crops, preferring to give priority to food crops and cash crops. For them, common lands, such as village grazing lands and state-owned forest lands, are often the most important source of forage for their goats and other livestock. Use of common lands in Rajasthan has been primarily open access during the last few decades, and a large proportion of them have become degraded.

Agro-ecological and Socio-economic Context:-

Livelihoods and livestock

Most households in the region are agro-pastoralist. Crop production tends to be their major activity, but animal husbandry (primarily cows, buffaloes, goats and native chickens) is also important for most: seasonal labour migration is another important activity for most poor

Households. Animals, particularly small stock, are kept partly as a drought-proofing

Mechanism: in the event of crop failure they can be sold to provide income to purchase food.

The importance of livestock in the economy of Rajasthan cannot be underestimated. The state, which has 12% of the total livestock of the country, has the highest cattle, goat and camel populations. The livestock sector contributes 19% of the state's gross domestic product against an all India average of 7 -8%.

Many rural livestock-keepers tend to be small or marginal farmers (or landless people) who do not have sufficient land to grow fodder crops, preferring to give priority to food crops and cash crops. For them, common lands are usually a vital source of forage. The principal product that local people obtain from both forests and village grazing areas is fodder for livestock, and fuelwood is also an important product from forests. Fodder may be either grass (consumed primarily by large ruminants) or tree fodder (consumed mainly by goats).

Common lands

Two principal types of common pool silvi-pasture land are village pastures and forests. Under The Rajasthan Tenancy Act (1955), pasture land (*Charagah*) is defined as “land used for the Grazing of the cattle of a village or villages or recorded in the settlement record as such...” Numerous development agencies in Rajasthan have sought to reverse the degradation of common lands by fencing off areas of *Charagah* or other commons, planting fodder trees and improved fodder grasses and legumes, and applying soil and water conservation measures. The Forest Department has taken a similar approach on forest (and sometimes *Charagah*) lands, under the auspices of its joint forest management (JFM) programme. These protected areas can be termed protected silvi-pasture areas (PSPAs). *Charagah* land is under the jurisdiction of the *panchayat*, the lowest tier of local government. Thus, enclosure and development of *charagah* by a particular village requires the granting of a Lease for this purpose by the *panchayat*. These leases are usually for three or five years, but in some cases they have had 10-year duration. Leases can be renewed at the discretion of the Panchayat.

Benefits from Silvi pasture development:-

Types of benefits :-

Direct biomass benefits: - The most direct and visible effect of protection and development work is increased biomass production. During the first few years the main biomass product (which may be collected or grazed) is grass, with dry wood (for use as fuel) being a secondary one. The standing stock of woody biomass also increases, although this is not harvested for many years. After 10-20 years various NTFPs may be harvested, such as fruits, gums and lopping of tree fodder.

Indirect agroecological benefits: - **Wildlife** As silvipasture areas regenerate they tend to attract certain species of mammals and/or species that were previously absent or only present occasionally or in small numbers. Information about species of mammals, reptiles, and birds seen at some of the sites studied is given in Table C1. It should be borne in mind, however, that certain species of mammals and birds may be more of a cost than a benefit as far as local farmers are concerned, as they may damage crops (monkeys, peacocks) or compete with domestic livestock for fodder (bluebull), or prey on domestic animals.

Off-site benefits:- Soil and water conservation structures, and the regeneration of the silvipasture resource, may have two beneficial effects outside of the site (as well as on-site):

(a) They slow down the runoff of rainwater and increase filtration rates, recharging Groundwater in the area; and

(b) they may minimize soil erosion from the PSPA, and deposition of soil and stones onto neighboring fields.

Social benefits :-Often there are major social benefits associated with establishing effective community management of silvi-pasture resources. People become aware of their rights and of procedures; and they become more confident in interacting with outside agencies. Where the *Samuh* is established specifically to manage pastureland it may gradually take on other responsibilities:. The development of a village-level committee for pasture or watershed development and Management, if done skill fully, can sometimes strengthen a village's capacity to confront negative challenges from nearby villages or the panchayat

Silvipasture management systems:-

The objectives of NR management will strongly influence the way in which the common land and vegetation are managed. Different stakeholders may have different, and sometimes conflicting, management objectives, unfortunately, when development agencies promote silvi-pasture development on common Lands they have often failed to explore the needs and objectives of the community or its subgroups In a thorough manner.

Fuel and fodder production on private non arable lands:-

The main feature of the multi storied production off different species of economic plants with suitable plant geometry. Agro-forestry is 6-F programme because it provides i.e. **Food** for man, **Fodder** for livestock's, **Fiber** for clothing, **Fuel** for village and urban homes, **Furniture** timber and **Funds** for the poor forest villagers and is govt. development programmes.

Production system & Micro Enterprise Agriculture based (on farm) & Non- Agriculture (off farm):-

Farming System :- It represent an appropriate combination of farm enterprises viz. cropping system, livestock, poultry, fisheries, forestry and the means available to the farmer to raise them for increasing profitability. The term 'farming system' and 'mixed farming' are used interchangeably but have some subtle differences.

Mixed Farming:- Defined as a system of farming on a particular farm which includes crop production, raising livestock, poultry, fisheries, bee keeping .

Seed bank: - A seed bank is a facility used to store seeds of various crops and wild plants, in an effort to maintain biodiversity. Seed banks can be found scattered all over the world, established by governments and organizations concerned about crop diversity. The Global Crop Diversity Trust proposed in 2007 that an Arctic seed bank be established, to preserve seeds of vital crops in safe bunker conditions in the event of catastrophic events. because they are concerned about damage to global seed banks due to political and environmental developments.

In a seed bank, samples of all the variations on a crop are kept in cool conditions so that they do not sprout or become damaged. Periodically, the seeds are used to grow plants, which are used to produce fresh seeds for the seed bank to ensure that the seeds will be viable if they ever need to be used. In addition, cultures of plants which do not readily grow from seed are kept in case they are needed. This is especially important with “orphan crops” such as cassava and taro, which make up a huge part of people's diets in some part of the world. Damage to these crops could have a very serious impact which can be averted by a seed bank

Post Harvest Technology :-

India is the world's 2nd largest producer of food next to China, and has the potential of being the largest with the potential of being the largest with the food and agricultural sector. There is an opportunity for large investments in food and food processing technologies, skills and infrastructure, especially in areas of canning, dairy packaging, frozen food / refrigeration and thermo processing. Fruits and vegetables, milk and milk products, meat and poultry, packaged / convenience foods, alcoholic beverages and soft drinks and grains are important sub - sectors of the food processing industry. Health food and supplements are other rapidly rising segments of this industry.

India is the 2nd largest vegetable and 3rd largest fruit producer in the world. India is poised to register the highest increase in rice production in the world over the next 10 years. India ranks second only to Japan in inland fish production.

India's food processing sector covers fruit and vegetables, meat and poultry, milk and milk products, alcoholic beverages, fisheries, plantation, grain processing After harvest, foods (e.g. fruits, vegetables, milk, meat, fish,) are liable to accelerated physiological, chemical, and microbial processes that invariably lead to deterioration and loss of wholesomeness. It is then necessary to institute some measure of processing such as reduction in moisture content, denaturizing of endogenous enzymes and microorganisms, or packaging in order to curtail perish ability. In the absence of such processing, massive post harvest losses can ensue. It is the responsibility of the food scientist or technologist to understand the underlying processes contributing to food deterioration and spoilage and, to device appropriate measures and methods of preservation in order to ensure availability, acceptability, and safety of foods.

Value addition to food products has assumed vital importance in our project area due to diversity in socio-economic conditions, It is not merely to satisfy producers and processors by way of higher monetary return but also with better taste and nutrition. Value is added by changing their form, colour

and other such methods to increase the shelf life of perishables. there is need to discuss and sort out various related issues amongst people of various categories to increase level of value addition and improve the quality of value added food products for domestic market as well as export.

Post Harvest Technology- Importance and Role:-

Post harvest loss reduction technology encompasses the usage of optimum harvest factors, reduction of losses in handling, packaging, transportation and storage with modern infrastructure machinery, processing into a wide variety of products, home scale preservation with low cost technology. Use of thermal processing, low temperature, drying, chemical and biological reactions coupled with other preservation techniques are applied to enhance the storability. Containers and packaging materials confer portability as well as extend the shelf-life. Adoption of these techniques could make available a large quantity of food by avoiding losses and provide better quality food and nutrition, more raw materials for processing, thus ensuring better returns to the farmers.

Importance of Post-harvest technology lies in the fact that it has the capability to meet food requirement of growing population by eliminating losses making more nutritive food items from raw commodities by proper processing and fortification.

Post-harvest technology has potential to create rural industries. India, where 80 percent people live in the villages and 70 percent of them depend on agriculture has experienced that the process of industrialization has shifted the food, feed and fiber industries to urban areas. This process has resulted in capital drain from rural to urban areas, decreased employment opportunities in the rural areas balance trade in favors of urban sector and mismatched growth in economy and standard of living between rural and urban people. It is possible to evolve appropriate technologies which can establish agricultural based rural industries. The farmer whose role has been reduced to producer can be transformed into producer cum processor and thus getting more dividends for hard labour, input, kind of risk taken and generating resource for socio-economic advancement keeping pace with the modern times.

Status of food processing Industry

Important sectors in agro processing industries are: fruit and vegetable processing, grain processing, fish processing, milk processing, meat and poultry processing, packaged/ convenience foods, alcoholic beverages and soft drinks etc.

Agricultural processing may be defined as an activity, which is performed to maintain or improve the quality or to change the form or characteristics of the agricultural product. Processing operations are undertaken to add value to agricultural materials after their production. The main purpose of agricultural processing is to minimize the qualitative and quantitative deterioration of the material after harvest.

Primary processing: Purification of raw materials by removing foreign matter, immature grain and then making the raw material eligible for processing by grading in different lots or conversion of raw material into the form suitable for secondary processing.

Secondary processing: Processing of primary processed raw material into product which is suitable for food uses or consumption after cooking, roasting, frying etc.

Tertiary processing: Conversion of secondary processed material into ready to eat form.

Food items are marketed in different forms as raw, primary processed, secondary processed and tertiary processed. The farmers in general prefer to sell their agricultural produce immediately after harvest leaving a part for own consumption and seed purposes. It has estimated that the farmers retain 44 per cent of the total wheat. The food processing sector in India has gained importance due to consumers preferences for ready to cook (RTC) and ready to eat (RTE) foods, besides increased demand for snack foods and beverages. As much as 42 per cent of the food industry is in the organized sector and 33 per cent in the small scale, tiny and cottage sectors.

Sector wise food processing

Fruits and vegetable processing

India is the world's second largest producer of fruits and vegetables. It has potential to grow all types of temperate, sub - tropical and tropical fruits and vegetables because of varied agro - climatic diversity. People generally prefer fresh fruits and vegetables in India due to abundance of seasonal fruits throughout the year available at low price. The production of pickles and chutneys has traditionally been rural level cottage industrial activity. The uses of fruits in the form of concentrated juice, dry powder, jam and jelly have also increased. The percentage production of processed fruits and vegetables are fruit juice and fruit pulp - 27, jams and jellies - 10, pickles -12, ready to serve beverages -13, synthetic syrups - 8, squashes - 4, tomato products - 4, canned vegetables- 4 and others -18.

Food grain sector

Grains could emerge as a major export earner for India in coming years. This project area grains include jowar, bajra, maize, gram, mustard and pulses.

Pulse milling:-Pulses are the major sources for protein for the vegetarians in India. In a total world production of 60 million tonnes of pulses,. The pulses are made into dhal by dehusking and dehulling.

Oil extraction:- The Technology Mission on oilseeds has helped in increasing the oilseeds production to 24.5 million tones. Oil extraction has been a cottage level activity in the country through Kolhus and Oil Ghanis. The introduction of high capacity mechanical expellers and solvent extraction technology has brought in modernization. Small capacity oil expellers have been developed which could be installed in project areas for promoting agri - business and that might provide more employment.

Processing can always fetch an additional income to the growers and help in stabilizing the prices with economic returns. The best overall indicator of the economic contribution of food processing to the food system is the value addition. It represents the firm's contribution to an industry's value addition and the value addition is the indicator of the industry's contribution to GDP

Processing units are a boon for the welfare of the orchardists as they can save their crop from wastage and at the same time their produce becomes more valuable, price fetching commodity with suitable post harvest treatment packaging and by processing into various products.

Storage of grain and seeds :-

Grain storage:-

30% of fruit and vegetables are wasted due to the unavailability of proper processing and preserving. Here are some practical ideas from different sources.

Is the seed dry enough?

Grains to be stored must be completely dry. Farmers can check this by biting on the grains. A very sharp cracking sound between the teeth is a sign that the seed is dry enough to be stored. Make sure watertight containers are used for storage.

One way of ensuring grains keep dry is simply to hang maize cobs in the roof above the cooking fire.

Turning sacks

Some pests of bean crops such as weevil larvae need to wedge themselves into positions from which they can bore holes with their mouths into stored grains. The extremely simple measure of turning

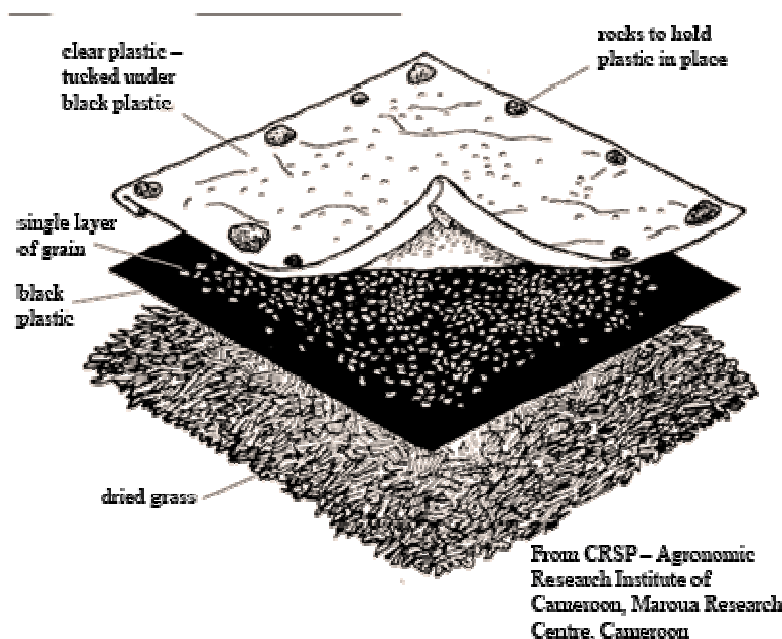
sacks upside down every morning and evening for several weeks can reduce pest damage significantly. As the sack is turned, so the larva loses its position and has to begin again. After several days without success most weevils either starve or are crushed.

Solar driers:-

High temperatures will kill weevils – and their eggs, larvae and pupae. CRSP have designed a simple solar heater in which the temperature of grain will be so high that all pests will be destroyed.

Place a sheet of black plastic on top of an insulating mattress of dried grass. Cowpeas, beans or grains are placed on this in a single layer. Then a layer of clear plastic is placed over the grains. The clear plastic and black plastic are folded together and tucked underneath using small stones to hold them in place.

Treat the beans and grains as soon as possible after threshing. Use the heater when the weather is clear and sunny. Treat seeds for at least 2 hours around midday. Then store the grains. The solar heater is ready to treat more grains the next day.



Protective plants

Many local plants can be used to protect harvested crops from insect pests. Ask elders what plants have been traditionally used. A great many plants may help to protect stored grains from insect attack. For example, neem leaves (*Azadirachta indica*) and leaves from the cassia vine (*Cassia nigricans*) can be dried completely and either used whole or powdered and mixed with cereal and bean seeds. Neem leaf powder can be mixed with water and clay to make a sticky plaster. Spread this over the inside walls of pots, baskets and granaries used to store grain.

Another useful species is the wild water melon or bitter apple, *Citrullus colocynthis*, which is closely related to water melon. This is found in many countries in Africa, the Middle East and Asia.



Wild water melon:-

The strong chemical, colocynth, is found in the fruit pulp of the fully grown but unripe fruits. Dried pulp could be mixed with water and clay and used as plaster. Dried and powdered fruit pulp could also be mixed into stored grain. In Egypt, crushed dried fruit are mixed with ashes, lime and dried chillies and stored with wheat and rice. In Egypt they also dry the gourds, make small holes and place them with clothes to protect them from insect damage.

Local names include handal (Egypt), tumba or gartoomba (India), gareb, unun (Somalia), ekir (Kenya) and tagalate (Niger).

Freshly harvested ginger roots can be dried and powdered and mixed with beans and grains. Cashew nuts also have protective value. Drill three holes into each nut to release the liquid and mix well with grains.

Storage of cowpeas in ash:-

In areas of the project, cowpeas are traditionally stored in ash. Now, those cowpea weevils cannot reproduce if cowpeas and ash are mixed together in equal amounts. They recommend the use of a large clay water jar. All kinds of wood ash are effective. They should be sifted to remove large lumps of charcoal. One cup of wood ash and one cup of cowpeas are added to a bowl and mixed well before continuing to add equal amounts of ash and cowpeas.

Once the bowl is full, they are poured in to the clay jar and pressed down very firmly to remove air. When the jar is filled, a 3cm layer of ash should be used to cover the top. This needs to be replaced each time cowpeas are removed. Make sure you wash the cowpeas before you cook them!

Using vegetable oils:-

a long established Indian tradition. Coating dry beans with vegetable oil is very effective in controlling bruchid beetles. The oil seems to interfere with the breathing of the insects. All kinds of vegetable oils are effective, but unrefined cooking oils such as palm oil are not only cheaper but also take longer to become rancid. Use only edible vegetable oils. Beans treated in this way will still germinate well if used as seed.

In Mali, both cereal and legumes are treated with oil or melted butter. A second treatment after 12 days gets rid of any eggs which have survived the first treatment. Shea butter is very popular.



Bajra (millet) and jowar - are referred to as small millet and big millet. They are both widely used in Maharashtra, Gujarat, Madhya Pradesh, Rajasthan of India, mainly for making roti. Bajra protein is relatively richer in lysine, methionine and tryptophan than other grains. Bajra contains 5 - 6 % fat which is of some significance in low fat diets as 400 - 500 gms of bajra would provide 20 - 30 gms of fat and 10 - 15 gms of linolenic acid. Bajra is a reasonably good source of thiamin (Vitamin B1). It is also a better source of iron than other grains. Jowar is deficient in lysine and has an excess of leucine.

Chickpeas (Bengal Gram)



The chickpea is an edible legume (English "pulse") of the family Fabaceae, subfamily Faboideae. The garbanzo is often used as a source of protein by vegetarians and vegans since it has one of the highest protein levels of all plants.

There are two main kinds of chickpeas

1. white chick peas
2. green chick peas

The plant grows to between 20 and 50 cm high and has small feathery leaves on either side of the stem. One seedpod contains two or three peas. The flowers are white or sometimes reddish-blue. Chickpeas need a subtropical or tropical climate with more than 400 mm of annual rain. They can be grown in a temperate climate but yields will be much lower.

Mature chickpeas can be cooked and eaten cold in salads, cooked in stews, ground into a flour called gram flour (also known as besan and used primarily in Indian cuisine), ground and shaped in balls and fried as falafel, fermented to make an alcoholic drink similar to sake, stirred into a batter and

baked to make farinata, cooked and ground into a paste called hummus or roasted, spiced and eaten as a snack (such as leblebi).

Green Gram (Mung Bean)



Mung bean, also known as mung, moong, mash bean, munggo or monggo, green gram, golden gram, and green soy, is the seed of *Vigna radiata* which is native to India. The split bean is known as moong dal, which is green with the husk, and yellow when dehusked. The beans are small, ovoid in shape, and green in color. The English word "mung" derives from the Hindi moong.

Mung beans are generally eaten either whole (with or without skins) or as bean sprouts, or used to make the dessert "green bean soup". The starch of mung beans is also separated from the ground beans to make jellies and noodles.

Groundnut



Groundnut famous by its Indian name Mong phali. The groundnut belongs to the pea and bean family and is a legume but is considered as nut because of its high nutrition value.

The groundnut is the native of South America, where it has been cultivated for several countries. In 16th century the Portuguese took it from Brazil to other countries and it spread in India also.

Groundnut is the only nut that grows beneath the earth. They become mature in about two months, when the leaves of the plant turn yellow.

The groundnut is particularly valued for its protein contents, which is of high biological value. Groundnut contains more protein than meat, two and half more than eggs and more than any other vegetable food. The proteins in groundnut are well balanced.

Maize



In India, yellow maize is emerging as third most important crop after rice and wheat. Maize has its significance as a source of a large number of industrial products besides its uses as human food and animal feed. Diversified uses of maize for maize corn, starch industry, corn oil production, baby corns, popcorns, etc., and potential for exports has added to the demand of maize all over world.

In India the maize potential State are Andhra Pradesh, Bihar, Gujarat, Karnataka, Madhya Pradesh, Orissa, Punjab, Rajasthan and Tamil Nadu.

Value addition:- Agricultural production is a prerequisite to rural poverty alleviation. However, in itself, agricultural growth is not sufficient to eradicate poverty, nor can it create adequate opportunities for enhanced rural employment, income generation, and economic access to food.

Agro-processing maintains a high potential for boosting economies based on agriculture to help ensure sustainable growth and increasing rural incomes in the region. And while the new global economy ushers in a rapid expansion of the worldwide distribution of agricultural products, our concern now is not only to produce food in sufficient quantity, but also to enhance the competitiveness of the Asian agricultural industry in the world market by developing value-added foods based on higher quality standards and improved processing techniques.

Value-Added Food Processing

Traditional foods are a treasure box of resources in terms of material and knowledge. The way they are produced, the local substrates used in the countries where they are developed, and the presence of diverse microorganisms in these foods are good and novel resources for the development of technology for the food industry. These microbes and fermented products have various functionalities in maintaining human health, thus, have great potential in the development of physiologically functional foods. Oligosaccharides with mineral enhancing capability, prebiotic activity, anti-constipation, peptides with anti-hypertensive, improvements of lipid metabolisms, anti-obesity, and cholesterol-lowering activity are found in various Asian traditional foods. Increased agricultural food production must be based on technological improvement to promote: a) sustainable, efficient and economic use of land and other resources; b) crop variety improvement; c) value-added approaches in food processing to develop various functionalities in response to changing market and consumer preferences; and d) development of quality standard for processed food for global competitiveness. To ensure sustainable economic and agricultural development in Asia, food production must be viewed in terms of rural poverty alleviation. Agro-processing must be able to create adequate opportunities for enhanced rural employment, income generation, and economic access to food. Strategic alliance or integration between small-scale food producers and the manufacturing industry must be enhanced, possibly through farmers' organizations.

Self help group:- Self Help Groups are motivated, small homogenous groups organized together through credit and thrift activities. Self help group initiative especially for women help uplift their livelihood. Generally self help groups include landless and poor women.

Before formation of the SHGs, during PRA activities, Focused Group Discussions (FGDs) were held with the women, which came up with the following observations:

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

Sr.no.	Name of SHG	Members	Activity involved	Monthly income	Fund available	Assistance	Source of assistance	Training received
1.	Chaman (N)	10	Small saving	50	Nil	IWMP	IWMP	Nil
2.	Jannat (N)	11	Small saving	50	Nil	IWMP	IWMP	Nil
3.	Ya hafiz shahab (N)	12	Small saving	50	Nil	IWMP	IWMP	Nil
4.	Meerabai (N)	10	Small saving	50	Nil	IWMP	IWMP	Nil
5.	Veerteja (N)	10	Small saving	50	Nil	IWMP	IWMP	Nil
6.	Ganesh	10	Small saving	50	Nil	ICDS	ICDS	Nil
7.	Aayana	10	Small saving	50	Nil	ICDS	ICDS	Nil
8.	Hafiz	10	Small saving	50	Nil	ICDS	ICDS	Nil
9.	Khushaboo	10	Small saving	50	Nil	ICDS	ICDS	Nil
10.	Madeena	10	Small saving	50	Nil	ICDS	ICDS	Nil
11.	Mahadev	10	Small saving	50	Nil	ICDS	ICDS	Nil
12.	Ramdev	10	Small saving	50	Nil	ICDS	ICDS	Nil
13.	Sarwati	10	Small saving	50	Nil	ICDS	ICDS	Nil
14.	Parvati	12	Small saving	50	Nil	ICDS	ICDS	Nil

Livestock based activity or off farm activity

1. Milk collection booth

2. dairy:- A **dairy** is a building used for the harvesting of animal milk—mostly from cows or goats, but also from buffalo, sheep, horses or camels—for human consumption. A dairy is typically located on a dedicated dairy farm or section of a multi-purpose farm that is concerned with the harvesting of milk. especially those with small numbers of animals being milked, as well as harvesting the milk from an animal, the dairy may also process the milk into butter, cheese.

Today, milk is separated by large machines in bulk into cream and skim milk. The cream is processed to produce various consumer products, depending on its thickness, its suitability for culinary uses and consumer demand, which differs from place to place and country to country.

Cheese is another product made from milk. Whole milk is reacted to form curds that can be compressed, processed and stored to form cheese. In countries where milk is legally allowed to be processed without pasteurisation a wide range of cheeses can be made using the bacteria naturally in the milk. In most other countries, the range of cheeses is smaller and the use of artificial cheese curing is greater. Whey is also the byproduct of this process.

3.poultry:- Poultry is a very important subsidiary activity in rural areas particularly for the landless and weaker sections of the rural community. With a view to develop poultry farming in cooperative sector

The assistance cover's the following poultry activities:

- i. Establishment of cluster of poultry units with rearing capacity ranging from 5000 and more for each unit with low input technology birds as well as hybrid variety birds with provision for selling pullets to member farmers for backyard poultry farming;
- ii. Assistance to societies for incubators, hatcheries and accessories for providing Day Old Chicks to societies engaged in poultry activities;
- iii. Assistance for marketing of poultry products by involving producer members;
- iv. Poultry dressing units with a minimum capacity of 300 birds per day;
- v. Arranging training for members of cooperative societies in collaboration with Govt. of India/State Poultry Training Centers;
- vi. Sanction of additional funds to existing Integrated Cooperative Poultry Projects already assisted by NCDC towards expansion of existing capacity and margin money. Only such societies, which are doing well and have positive net worth will be eligible for sanction of assistance. In addition assistance will also be provided to such societies whose projects are partially completed but functioning and have positive net worth towards their completion and margin money.

Since its inception has been promoting and financing dairy cooperatives. Its provides assistance to primary, district and state level dairy cooperatives for establishment/ expansion/ renovation of milk collection centers, chilling plants, purchase of milk collection equipment, transport vehicles, establishment of feed mixing/manufacturing units and integrated dairy development projects linking production, procurement, processing and marketing of milk, working capital, margin money/share capital assistance is provided for increasing the business turnover. will also finance for purchase, rearing and breeding of mulch animals as per existing pattern of assistance for cooperatives engaged in dairy activities.

These activities under Livestock sector have been confined to financing only for setting up of slaughter houses. now finance livestock animals for breeding, rearing, meat, fleece, skin, wool and other by-products for cooperatives engaged in livestock activities for project peoples.

Chapter iv

Technical design and estimate for proposed activities :-

Watershed development works are to be done during second phase of watershed project. A multi-tier Cluster approach should be approached towards implementation of watershed development projects. A net budget of 50 percent is allotted for this work.

Area Treatment Plans for arable and non arable land :- IWMP morra project is a cluster approaches watershed with flat topography and low rain fall area. Under this project the area treatment by following activities proposed mainly:-

1. Farm bund
2. Earthen gully plug
3. Stone gully plug
4. Grass seeding on the earthwork done during the implementation.
5. Tanka
6. Nadi
7. Khadin
8. Ditch cum bund fencing.
9. V- ditches

For Arable Land Proposed Activity:-

S. No.	Activity	No's	Unit Cost (Lac.)	Total Cost (Lac.)	Remakes
1	Khadin	10	6.00	60	
2	Earthen bunds	43	.83	35.88	
3	Med bandi	2500 (ha.)	0.07	60	
4	Dry land horticulture Plant	16	@ .71 lac per .5 ha.	11.36	
5	Agro forestry Plantation(ha.)	1150	@ 550 /- per ha.	6.33	
6	WHS (Tanka)	310	0.62	192.20	
7	Crop Demonstration	2520	@ 1000 /- per Farmers	25.20	
8	Farm Pond	8	1.9	15.20	

For Non Arable Land Proposed Activity:-

S. No.	Activity	No's	Unit Cost (Lac.)	Total Cost (Lac.)	Remakes
3	Silvi Pasture Development 20 ha.	5	0.25	12.50	

For Agriculture / Horticulture Proposed Activity (Self Employment Activity):-

S. No.	Activity	No's	Unit Cost (Lac.)	Total Cost (Lac.)	Remakes
1	Vermiculture Plants Construction	25	0.27	6.75	
2	Animal Husbandry Camp	25	0.13	3.25	
3	Self Help Group (Tools)			100	
4	Fodder Demonstration	900	.05	4.5	
5	Composite Pit			10	
6	Others			42.50	

Silvi-pasture Development:- Such land management systems in which forests are managed for the production of wood as well as for rearing of domesticated animals.

Micro Enterprise

Convergence & Other Innovations

The project would also look into the aspects introducing various programs and activities benefiting communities in the watershed area. These would be targeted at those sections who have been bereft of basic facilities, may be because of economic conditions, breaking down of families, fragmentation of land holdings, scarcity of monetary resources at their disposal and vicious circle of debt. Providing them certain equipments, developing their expertise in occupations of their interest and also exploring options of market opportunities, could augment the economic and resource

condition of such deprived groups. Machines such a Chaff cutters distributed among certain identified individual or groups could offer dual benefits in terms of providing better fodder for livestock and simultaneously generate monetary income. Paddle Pumps would be introduced with support from Government Department or Scheme/s. Linkages would be established with Department for widespread usage of water conservation measures through extending reach out of irrigation devices like Sprinklers and Rain Guns. The possibility of deepening existing Group Wells would be explored so as to provide support to water security in the Watershed area. With the same objective it would

also be explored the possibilities of constructing Well Recharge Structures through routing of funds from NREGS or TASP or any other scheme/s.

It has been observed that there have been ample efforts put in by the government and other agencies in creating assets for supporting the requirements of the community in the region. Citation of such can be Bio-Gas for cooking and Hand Pumps for drinking water purpose. Observations also reveal that many of these assets, if not most, got damaged or are unusable because of no expertise of repair. Therefore, a group would be identified who would be trained in the skills of repair of such assets, which would also be a support to the livelihood of the group.

The project activities while targeting land and water resource development also aims to generate awareness on conservation and social issues. There would be programs conducted to engender development of education among the children being deprived of education during the implementation phase. We expect to negotiate with Family Welfare department to direct health awareness and treatment camps from time to time to safeguard people from basic health problems especially among children and women.

During the project phase, we aim to highlight the important occasions through rallies, forums, gatherings to deliberate on conservation issues. Important days such as world environment day would be observed to revisit our efforts on conservation and hold small functions, rallies, public meetings to raise consciousness among the masses.

Effort would be made for the creation of the agricultural assets like pump sets, pipelines, and tarpaulin at subsidized rate from District Agriculture Department

In order to ensure adequate & just distribution of household requirements like kerosene and pulses & cereals, efforts would be made towards strengthening information systems of material availability of the PDS Outlets through extending the outreach of telecommunication & mobile-communication technology.

Convergence & Deprived Sections

The watershed program would ensure services for the disadvantaged sections. These groups have been witnessed to be left alone at their mercy cared by the families. The government though attempts to cover these sections through their various schemes, however, reaching out to such groups is a point to contemplate. Though schemes in itself maybe aptly formulated but practical outreach is seldom visible. Schemes could be redefined through the watershed program where spaces for such disadvantaged sections would be provided through monetary aided activities bringing them upfront

and self-dependent. Efforts would also be made collaborating with government schemes with the Village Watershed Committee playing interactive role. As an illustration, tricycles could be distributed to the handicapped to enable their mobility. A significant development could be providing regular employment opportunities in watershed activities, especially in areas where community practice employment rotation. Those identified with additional skills could furthered be mentored through collaborative programs.

Basically the activities planned would focus on farm and non-farm sector based livelihood initiatives:

1. The eligible senior citizens would helped out in getting monetary support through a number of pension schemes like National Old Age Pension Scheme, proper health care through the various government schemes of social welfare department
2. So as to support the economic needs of the widows, Widow Pension Schemes would also be leveraged for the eligible beneficiaries.
3. Extend reach out of various government schemes for controlling epidemic diseases like National Tuberculosis Control Programme, National Malaria Control Programme etc.
4. Assisting the disabled in getting disabled certificate, free ST pass, tool kits, etc. and other support for livelihood and skill enhancement from Social Security Schemes and Social Welfare Schemes.
5. Effort would be made for providing support to patients of HIV, Cancer, T.B., etc through a number of Social Security Schemes and Special Societies run by the Government like Cancer Society, etc.
6. Enhance the reach out of a number of Insurance schemes like Farmer Accidental Insurance Scheme, JanaShree Bima Yojana, Shiksha Sahayog Yojana, (wherein one time assistance of Rs.1 lakh to family in case of death of earning member is provided) etc.
7. Crop insurance, Livestock Insurance would also be introduced and promoted in the watershed.

ACTIVITYWISE/WATERSHEDWISE ACTION PLAN

Watershed		MORRA		Distt. :		Name of Village(s)		Scheme :		iwmp		AREA		5000		AREA		75000000		750				
P.S.	Riyabadi						nagaur																	
S.No.	Name of Activity	Unit	unit cost	Total Target		unit cost	I YR		unit cost	IIYR		unit cost	III YR		unit cost	IV YR		unit cost	V YR		unit cost	Vi YR		
				Phy.	Fin.		Phy.	Fin.		Phy.	Fin.		Phy.	Fin.		Phy.	Fin.		Phy.	Fin.		Phy.	Fin.	
1	2	3		4	5		6	7		8	9		10	11		12	13		14	15		14	15	
1	PIA ACTIVITIES :																							
	Adm. Cost				75			7.5			15			15			15			15			7.5	
	MONITRING				7.5			0.75			1.5			1.5			1.5			1.5			0.75	
	EVALUTION				7.5						2.25						2.625						2.625	
1	EPA				30			30.00																
	Sub Total				120.00			38.25	0.00	0.00	18.75	0.00	0.00	16.50	0.00	0.00	19.13	0.00	0.00	16.50		0.00	10.88	
	Training Component :& community develop ment							11.25			11.25			3.75			7.5							
i	WDT	2500	4	No.	10000	5	0.5	10000	1	0.1	10000	1	0.1	10000	1	0.1	10000	1	0.1	10000	0	10000	1	0.1
ii	Watershed Functionaries	2500		No.	5000	5	0.25	5000	1	0.05	5000	1	0.05	5000	1	0.05	5000	1	0.05	5000	0	5000	1	0.05
iii	Watershed Community training in cluster area	9600		No.	10000	120	12	10000	24	2.4	10000	24	2.4	10000	24	2.4	10000	24	2.4	10000	0	10000	24	2.4
iv	Exposure Visits			No.	120000	8	9.6	120000	1	1.20	120000	3	3.6	120000	3	3.6	120000	1	1.2	120000	0	120000		0
I	Slogan Writing		wall painting	sqf	30	15000	4.5	30	3000	0.9	30	3000	0.9	30	3000	0.9	30	3000	0.9	30	0	30	3000	0.9
ii	Handbills Pamphlets			No.	0.3	40000	0.12	0.3	10000	0.03	0.3	10000	0.03	0.3	0	0.3	10000	0.03	0.3	0	0.3	10000	0.03	
iii	Banners/Boards			No.	2000	22	0.44	2000	6	0.12	2000	6	0.12	2000	3	0.06	2000	4	0.08	2000	0	2000	3	0.06
iv	Rallies/Pad Yatras			No.	2000	10	0.2	2000	2	0.04	2000	4	0.08	2000	1	0.02	2000	2	0.04	2000	0	2000	1	0.02
v	Puppet Show/Culture Programme			No.	1500	5	0.075	1500	1	0.015	1500	1	0.015	1500	1	0.015	1500	1	0.015	1500	0	1500	1	0.015
vi	Debate Essay Competitions			No.	200	5	0.01	200	1	0.002	200	1	0.002	200	1	0.002	200	1	0.002	200	0	200	1	0.002
vii	Awareness Camp/Mela			No.	20000	12	2.4	20000	1	0.2	20000	1	0.2	20000	1	0.2	20000	8	1.6	20000	0	20000	1	0.2
viii	Self Help Group formed			No.	10000	32	3.2	10000	10	1.00	10000	10	1	10000	1	0.1	10000	10	1	10000	0	10000	1	0.1
viii	Self Help Group Training activities			No.	10000	17	1.7	10000	3	0.30	10000	4	0.4	10000	4	0.4	10000	4	0.4	10000	0	10000	2	0.2
ix	Purchasing instrument for land less farmer			No.	50000	5	2.5	50000	1	0.50	50000	1	0.5	50000	1	0.5	50000	1	0.5	50000	0	50000	1	0.5
x	Users Group formed			No.	0	0															0	50000	1	0.5

A+B+C	Sub Total					37.50			6.86			9.40			8.35			8.32			0.00		4.58	
	DPR								7.50														20.94	
	consolidation					22.50																		
	TOTAL PIA ACTIVITY					180.00			52.61			28.15			24.85			27.44			16.50		36.39	
II	committee activity																							
2	Arable Land :																							
A	Conservation Measures :																							
I	Contour Vegetative Bund /medhbandhi	ha	7000	2500	175.00	7000			0.00	7000.00	700	49.00	7000.00	700	49.00	7000.00	600	42.00	7000	400	28.00	7000.0	100	7.00
I	Khadin with weist weir	No.	6.00	4.00	24.00	6			0.00	6.00	2.00	12.00	6.00	1.00	6.00	6.00	1.00	6.00	6.00	0.00	0.00	6	0.00	0.00
	Khadin with weist weir	No.	5.00	4.00	20.00	5			0.00	5.00	2.00	10.00	5.00	1.00	5.00	5.00	1.00	5.00	5.00	0.00	0.00	5	0.00	0.00
	Khadin with weist weir	No.	4.00	8.00	32.00	4			0.00	4.00	5.00	20.00	4.00	1.00	4.00	4.00	1.00	4.00	4.00	1.00	4.00	4	0.00	0.00
	W.WEIR with earthen bund (2 ha.)	No.	83445	42.00	35.05	83445			0.00	83445.00	15.00	12.52	83445.00	15.00	12.52	83445	10.00	8.34	83445	2.00	1.67	83445	0.00	0.00
	W.WEIR with earthen bund (5 ha.)	No.	122182	9	11.00	122182			0.0000	122182	2	2.44	122182	2	2.4436	122182	3	3.67	122182	2	2.4436	122182	0	0.0000
	W.WEIR with earthen bund (10 ha.)	No.	220777	3	6.62	220777			0.0000	220777	1	2.21	220777	1	2.2078	220777	1	2.21	220777	0	0.00	220777	0	0.0000
		No.																						
	Farm pond /khet talai	No.	190000	8	15.20	190000			0.0000	190000	2	3.8000	190000	2	3.8000	190000	2	3.8000	190000	2	3.80	190000	0	0.0000
	TANKA	No.	62000	335	207.70	62000			0.00	62000	125	77.50	62000	50	31.00	62000	60	37.20	62000	50	31.00	62000	50	31.00
	TOTAL ARABLE CONSERVATION					526.57			0.00			189.47			115.97			112.22			70.91		38.00	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	14	15							
B	Production Measures :							0.086		0.043		0.043											
1	Crop Demonstration																						
I	Rabi	No.	1000	400	4.0	1000		0.0	1000	100	1.00	1000	100	1.0	1000	100	1.0	1000	100	1.0	1000	0	0.0
ii	Kharif	No.	1000	400	4.0	1000		0.0	1000	100	1.00	1000	100	1.0	1000	100	1.0	1000	100	1.0	1000	0	0.0
iii	Jayad	No.																					
	Sub Total				8.000			0.000			2.000			2.000			2.000			2.000			0.000
2	Agro Forestry (Plants22 PER HAC)	ha	550	1150	6.33	550		0.00	550	150	0.83	550	400	2.20	550	300	1.65	550	250	1.38	550	50	0.28
3	Dry Land Horticulture(139PLANT / .5 Ha.)	ha	71000	16	11.36	71000		0.0	71000	4	2.840	71000	4	2.840	71000	4	2.840	71000	4	2.840			0.0
4	Organic Farming(vemi composet)	No.	27000	25	6.75	27000		0.0	27000	10	2.700	27000	8	2.160	27000	5	1.350	27000	2	0.540			0.0
	SHGs Activities																						
1	Home Stead Kitchen Garden	No.	1000	410	4.10	1000		0.00	1000	100	1.00	1000	100	1.00	1000	100	1.00	1000	100	1.00	1000	10	0.10
2	Household Prod. System	No.	2500	298	7.45	2500		0.00	2500	73	1.83	2500	75	1.88	2500	75	1.88	2500	75	1.88	2500	0	0.00
	TOTAL ARABLE PRODUCTION				35.99			0.00			9.19			10.08			8.72			7.63			0.38
2	Non Arable Land :																						

A	Conservation Measures :																							
1	DCB Fencing	Km.				0.00																		
2	V-ditches	ha				0.00																		
3	PRT	Km.																						
	Sub Total					0.00			0.00			0.00			0.00			0.00			0.00		0.00	
B	Production Measures :																							
1	Overseeding of Grasses	ha.	2000	210	4.20	2000		0.00	2000	50	1.00	2000	50	1.00	2000	50	1.00	2000	50	1.00	2000	10	0.20	
2	Planing of Shrubs	No.																						
3	Silvi- Pasture developement(20 ha.)	Ha.	13.33	4	53.32	1333000		0	1333000	2	26.66	1333000	2	26.66	1333000	0	0.00	1333000	0	0.00	1333000	0	0.00	
	TOTAL NONARABLE PRODUCTION				57.52			0.00			27.66			27.66			1.00			1.00			0.20	
3	Drainage Line Treatment :																							
	Iscd	No.																						
1	Earthen Structures	No.			0.000																			
2	WHS/Mesonery structure	No.			0.000																			
		No.			0.000																			
		No.																						
3	Others nalla bunding	rm																						
	TOTAL DLT				0.00			0.00			0.00			0.00			0.00			0.00			0.00	
4	Nurseries																							
	Total No. of plants tobe raised	No.			0.00			0.00			0.00			0.00			0.00			0.00			0.00	
5	Live Stock & Fodder Development:																							
1	Bread Improvement																							
i	Distribution of Bulls/Rams/Bucks/goat/sheep	No.	20000	12	2.40	20000		0.000	20000	6	1.200	20000	6	1.200	20000		0.000	20000		0.00	20000.00		0.000	
ii	Castration	No.																						
iii	Natural Services/A.I.	No.	19000	5	0.95	19000		0.000	19000	1	0.190	19000	1	0.190	19000	1	0.190	19000	1	0.19	19000	1	0.190	
2	SHGs Training	No.																						
3	Gopals Trained	No.																						
4	Fodder Demonstration	No.	500	420	2.10	500		0.000	500	120	0.600	500	100	0.500	500	100	0.500	500	100	0.50	500	0	0.000	
5	Animal fertility camps	No.	22900	10	2.29	22900			22900	2	0.458	22900	2	0.458	22900	2	0.458	22900	2	0.46	22900	2	0.458	
5	Animal Husband Camps	No.	13000	25	3.25	13000		0.000	13000	5	0.650	13000	5	0.650	13000	5	0.650	13000	5	0.65	13000	5	0.650	
	TOTAL LS & FD				10.99			0.000			3.098			2.998			1.798			1.80			1.298	
					112.50																			
	GRAND TOTAL				825.00			52.61			259.56			183.55			153.17			99.84			76.27	

%

6.3766

31.46

22.2484

18.57

12.1

9.2443

CHANGES ARE LIKELY TO BE MADE AROUND THE PROJECT DUE TO CHANGE OF MATERIAL COST AND LABOUR COST HENCE NO OF TANKAS AND AREBALE CVH AND PASTURE DEVELOPMENT WORK QTY MAY DIFFER TO END OF PROJECT

COMMUNITY TRAINING IN CLUSTER AREA

ONE DAY TRAINING

1	NO OF PARTICIPENTS	60	
2	TRAINING MATERIAL	25	1500
3	FILE FOLDER	25	1500
4	TENTAGE CHARGES	15*15	1500
5	D. A.	60	3600
6	JEEP CHARGES FOR ONE DAY SUBJECT SPECIALIST CHARGES	485+120/10*50	1085
7		3*300	900
TOTAL			10085
			SAY 10100

EXPOSURE TOUR

EXPOSURE TOUR WITHIN STATE
project Morra

SN	DEPARTURE			ARIVAL			TRVAL BY	DIS	PURPOSE
	PLACE	DATE	TIME	PLACE	DATE	TIME			
1	0	1-Aug-11	7:30 AM	मोर्रा-नागौर	1-Aug-11	9:30 AM	BUS	90	W/S VISIT
	मोर्रा-नागौर	1-Aug-11	12:30 PM	नोखडा-बिकानेर	1-Aug-11	4:30 PM	BUS	215	W/S VISIT
	नोखडा-बिकानेर	2-Aug-11	9:30 AM	माडवा-जैसलमेर	2-Aug-11	1:30 PM	BUS	180	W/S VISIT
	माडवा-जैसलमेर	2-Aug-11	5:30 PM	रामदेवरा-जैसलमेर	2-Aug-11	7:30 PM	BUS	100	W/S VISIT
	रामदेवरा-जैसलमेर	3-Aug-11	8:30 AM	जोधपुर-काजरी	3-Aug-11	2:30 PM	BUS	250	W/S VISIT
	जोधपुर-काजरी	3-Aug-11	8:30 AM	पालडी-सिरोही	3-Aug-11	1:30 PM	BUS	210	W/S VISIT
	पालडी-सिरोही	3-Aug-11	4:30 PM	मा0आबु	3-Aug-11	9:30 PM	BUS	110	W/S VISIT
	मा0आबु	4-Aug-11	8:30 AM	उदयपुर-c.t.a.e	4-Aug-11	12:30 PM	BUS	190	W/S VISIT
	उदयपुर-c.t.a.e	5-Aug-11	7:40 AM	भदेसर-चित्तौड	5-Aug-11	10:40 AM	BUS	150	W/S VISIT
	भदेसर-चित्तौड	5-Aug-11	7:30 AM	अजमेर	5-Aug-11	12:30 PM	BUS	230	W/S VISIT
	अजमेर	5-Aug-11	3:30 PM	पुष्कर-अजमेर	5-Aug-11	4:30 PM	BUS	50	W/S VISIT
	पुष्कर-अजमेर	6-Aug-11	9:30 AM	मोर्रा	6-Aug-11	11:30 AM	BUS	80	W/S VISIT
								1855	

RENT		1391.25
DA 150 PER DAYwith loding and bording		840
STATIONERY		100
TOTAL		2331.25
NO OF FARMER	50	116562.50
PHOTO AND VIDEO		2000
		2000
JEEP HIRE PER DAY		
GRAND TOTAL		120562.50
say		120000

S.No	Gram Panchayat	Name Of Village	Contour Vegetative Bund /medhbandhi (Proposed Khasara No.)	Khadin with weist weir (Proposed Khasara No.)	W.WEIR with earthen bund (2 ha.) (Proposed Khasara No.)	W.WEIR with earthen bund (5 ha.) (Proposed Khasara No.)	W.WEIR with earthen bund (10 ha.) (Proposed Khasara No.)	Farm pond /khet talai (Proposed Khasara No.)	Pasture Development (Proposed Khasara No.)	Agro - Forestry Plant (Ha.)
1	Morra	Morra	8-162, 373-415, (Chak, 10-85	(i) 603,596,575,574,562,532, (ii) 900,899,916,919,938,940	72,375,532,571,944,754,80 131,183,223,197,102	67 chak, 169		733-738- 739	240	50
2	Morra	Morri Ghoda	22-41		2,10,16	40				50
3	Morra	Pharaspura	44-100	30,28,38,39	4,115,149	50				50
4	Morra	Basni sumer	. 10-78	22,35,36,37,53,54 ,55,65,73,72	1,78,92	19		115,116, 118,113		50
5	Morra	Karakawal	134-155	121,122,112,113	49,50,57,168	37		64,65,66,67	140,160	50
6	Dhadhlah uda	Dhadhlah uda	51-80	36,40,43,114, 113,118,126	841,860,844, 952,458,370		. 10 - 13	156,157, 158,151		50
7	Dhadhlah uda	Dhadhlah chak	16-72				112-113-114-115			50
8	Dhadhlah uda	Dhadhalas Jalap	14-80	83,85,87,88,90				1,2,3,4		50
9	Dhadhlah uda	Dotolai	226-250, 1-30,	265, 266, 276 277, 278	156, 178, 221,145	226		175,182,185	263	50
10	Arniyala	Raliyawata	51-76, 413-43, 91- 160	44,43,27,33,13	451,413,176,241,5	236	104-105-106	170,71,72	117	50
11	Gawaradi	Dholeraw Khurd.	2-21,26-115	43-62-65-55	62,115	174,166		139-140- 141	1	50

Name Of Project:- IWMP Morra Panchyat Samit :- Riyan Badi Dist:- (Nagour)

Proposed Tanka list with khasara no.

S.No	Gram Panchayat Morra					Dhadhlah uda				Arniyala	Gawaradi
	Morra	Morri Ghoda	Pharaspura	Basni Sumer	Karakawal	Dhadhlah uda	Dhadhlah chak	Dhadhalas Jalap	Dotolai	Raliyawata	Dholeraw Khurd.
	1	2	3	4	5	6	7	8	9	10	11
1	12	9	4	5	16	1	1	15	68	1	1
2	16	10	37	18	39	32	4	25	95	13	5
3	26	14	52	19	42	47	8	45	104	26	8
4	39	22	72	32	59	51	10		112	39	13
5	67	23	92	60	68	67	17		120	49	21
6	73	37	98	72	81	73	17		122	60	30
7	83	45	104	78	83	103	33		125	72	32
8	102		109	89	85	116	33		129	76	63
9	127		111	107	113	122	40		145	80	73
10	139		132	111	125	130	42		150	84	85
11	226		139		139	166	57		158	94	95
12	240		145		142	179	60		160	101	111
13	295		149		150	182	76		161	105	140
14	298		59		159	185	80		164	111	146
15	318				160	186	82		165	137	147
16	370				166		83		167	159	166
17	373				172		86		168	185	
18	401						88		178	210	
19	426						97		184	229	

20	444						101		194	238	
21	458						106		203	243	
22	463								213	265	
23	505								224	276	
24	518								228	339	
25	531								235	342	
26	540								245	397	
27	545								252	421	
28	568								265	444	
29	616								269	446	
30	684								270	479	
31	688								279	495	
32	695										
33	747										
34	756										

Name Of Project:- IWMP Morra Panchyat Samit :- Riyan Badi Dist:- (Nagour)

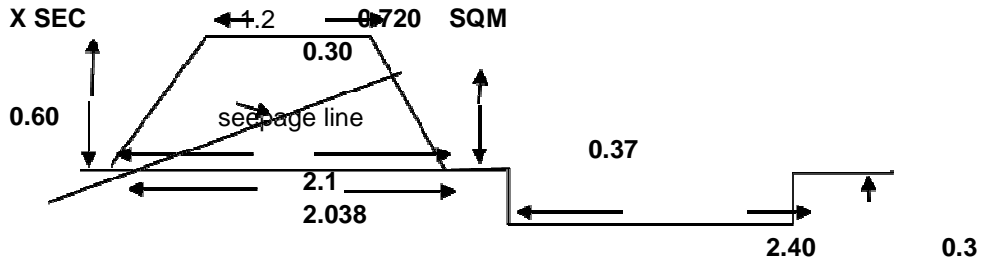
Proposed List Of Vermi Compost Unit

S.No	Gram Panchayat	Name Of Village	Proposed Name Of Beneficiaries	Unit Cost.	Remark					
1	Morra									
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										

CROSS SECTION OF BUND

T.W.	0.3000	0.3		
B.W.	$HT \cdot U/S + HT \cdot D/S + T.W.$	2.10	TAKE AS	2.10
HT	0.6000	0.6		

CHECK FOR SEEPAGE LINE 2.04 M DISTANCE SEEPAGE LINE STRIKE G.L



DETAIL OF W.W

S.N.	ITEAMS	L	W	H	VOLUME
1	DRY STONE PITCHING OR KHARANJA HAMMER DRESSED INCLUDING STONE RATE				
	TOP	3.5	1.11	0.23	0.895
	U/S	4.1	0.56	0.23	0.524
	D/S	4.1	0.56	0.23	0.524
	CREST	0.23	1.11	0.23	0.059
		0.23	1.11	0.23	0.059
					2.060
2	TRANSPORTATION OF STONE FROM 10KM				2.266
3	LOADING CHARGES OF STONE				2.266
4	UNLOADING CHARGES OF STONE				2.266
5	REHANDLING OF STONE				2.266

COST ABSTRACT WW

S.N.	ITEAMS	QTY	RATE	AMOUNT
1	DRY STONE PITCHING OR KHARANJA HAMMER DRESS ED INCLUDING STONE RATE			
	TOP	0.895		
	U/S	0.524		
	D/S	0.524		
	CREST	0.059		
		0.059		
		2.060	709.00	1460.61
2	TRANSPORTATION OF STONE FROM 10KM	2.266		0.00
3	LOADING CHARGES OF STONE	2.266		0.00
4	UNLOADING CHARGES OF STONE	2.266		0.00
5	REHANDLING OF STONE	2.266		0.00
			TOTAL	1460.61
			say	1500.00
			cost for I year	1500.00
			cost for ii year	1700.0
			cost for iii year	1900.0
			cost for iv year	2100.0

COST ABSTRACT

AREBALE PRODUCTION ~~PLANTATION

K.H. NO

AREA

1.0

HAC

S.N.	PARTICULAR	QTY	UNIT	RATE	AMT
1	EXCAVATION IN DRY OR MOIST SOIL INCLUDING DRESSING & DISPOSAL OF EXCAVATED SOIL WITHEN INITIAL LEAD UPTO 30M & LIFT 1.5 M IN FOR PITS H.S. 30 plant per hac O.M. C.M.	30.00	CUM	5.00	150.00
2	TREATMENT OF PITS WITH PESTICIDE & INSECTI CIDE	30.00	NO	0.30	9.00
3	TRANS PORTATION OF PLANT FROM NURSARY TO SITE PLANTING INCLUDING LOADING & UNLOADING FROM 40 KM	33.00	NO	0.59	19.47
4	PLANTING OF PLANTS INCLU DING RAMMING ETC. COMPL ETE	30.00	NO	2.20	66.00
8	WATERING OF PLANTS BY HEAD LOADS UPTO 2KM	120.00	NO	1.64	197.22
10	MATRIAL (A) PLANTS (D) Cholori pyriphos	30.00 0.15	NO LIT	10.00 250.00	300.00 37.50
TOTAL					779.19
eskalation lab					272.7
					1050.0
cost for I year					1050.0
cost for ii year					1160.0
cost for iii year					1280.0
cost for iv year					1410.0

COST ABSTRACT
E.C.D.

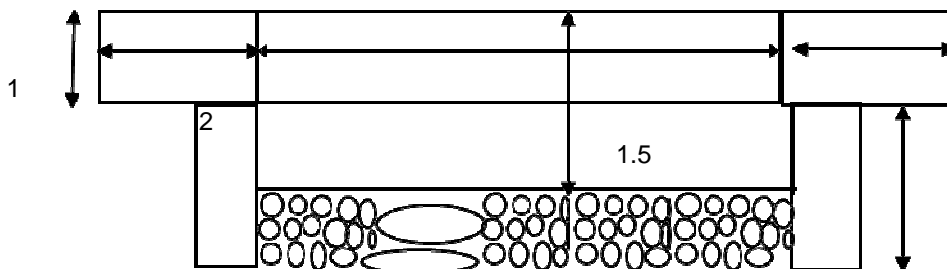
S.N.	ITEMS	QTY.	RATE	AMOUNT
1	EXCAVATION IN DRY OR MOIST SOIL INCLUDING DRESSING & DISPOSAL OF EXCAVATED SOIL WITHEN INITIAL LEAD UPTO 30M & LIFT 1.5 M IN H.S.	16	75.13	1202.08
		7.6	83.01	630.876
		CUM		
2	DRY STONE MASONARY UP TO 3M HT. INCLUDING STONE RATE	14.75	831.00	12257.25
		CUM		
3	DRY STONE PITCHING OR KHARANJA HAMMER DRESSED INCLUDING STONE RATE	1.61	777.00	1250.97
4	LEAD CHARGES OF STONE FROM LEAD KM UP TO 10	CUM		
5	LOADING CHARGES OF STONE			
6	UNLOADING CHARGES OF STONE			
7	EARTH WORK FOR BUND IN DRY OR MOIST SOIL INCLUDING DRESSING & BREAKING OF CLODS ,SORTING OF GRESS ETC INCLUDING DISPOSAL OF EXCAVATED SOIL WITHEN INITIAL LEAD 30M& LIFT 1.5 M IN H.S.			
9	REHANDLING OF STONE	22.534		
TOTAL				15341.18
say				15300
no of lscd				2
				30600

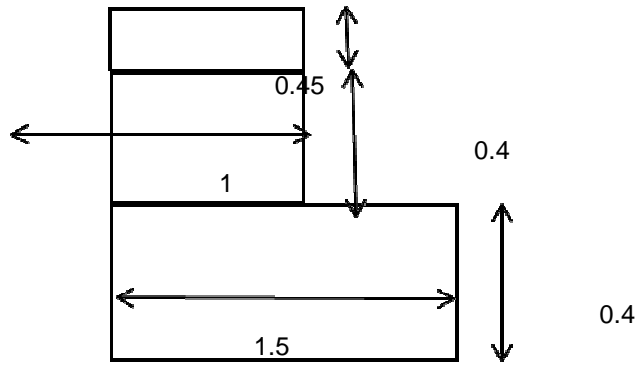
DETAIL ESTIMATE E.C.D. **3** metet wide

B.W. 1.5 Ht. 0.8
T.W. 1 FOUNDATION 0.3

S.N.	ITEMS	NO	LENGTH	WIDTH	HEIGHT	QTY
1	EXCAVATION IN DRY OR MOIST SOIL INCLUDING DRESSING & DISPOSAL OF EXCAVATED SOIL WITHEN INITIAL LEAD UPTO 30M & LIFT 1.5 M IN H.S. H.W.	1	3	1.5	0.3	1.35

		H.W.E.	2	2	1	1.25	5.00
		S.W.	2	0.5	1	1.25	1.25
		APRON	1				7.6
2		DRY STONE MASONARY UP TO 3M HT. INCLUDING STONE RATE FOUNDATION					
		H.W.	1	3	1.5	0.3	1.35
		H.W.E.	2	1.5	1	0.3	0.9
		S.W.	2	1	1	0.3	0.6
	S/S	H.W. I STEP	1	3	2	0.4	2.4
		H.W. II STEP	1	5	1	0.4	2
		H.W.E.	2	2	1	1.25	5
		S.W.	2	1	1	1.25	2.5
							14.8
3		DRY STONE PITCHING OR KHARANJA HAMMER DRESSED INCLUDING STONE RATE					
		APRON	1	3	0	0.23	0
		LEFT BANK	1	2	1.75	0.23	0.805
		RIGHT BANK	1	2	1.75	0.23	0.805
							1.61
4		LEAD CHARGES OF STONE FROM LEAD KM UP TO 10					17.996
5		LOADING CHARGES OF STONE					22.5335
6		UNLOADING CHARGES OF STONE					22.5335
7		REHANDLING OF STONES 200M					22.5335
8		EARTH WORK FOR BUND IN DRY OR MOIST SOIL INCLUDING DRESSING & BREAKING OF CLOUDS ,SORTING OF GRESS ETC INCLUDING DISPOSAL OF EXCAVATED SOIL WITHEN INITIAL LEAD 30M& LIFT 1.5 M IN H.S.					





DETAIL AGRO FORESTRY IN AREBALE LAND(PRODUCTION)

K.H. NO

AREA 2.0 HAC
 PLANTATION IN 1
 HA = 50

S.N.	PARTICULAR	NO	L	B	H	QTY
1	EXCAVATION IN DRY OR MOIST SOIL INCLUDING DRESSING & DISPOSAL OF EXCAVATED SOIL WITHIN INITIAL LEAD UPTO 30M & LIFT 1.5 M IN FOR PITS H.S. O.M. C.M.	22.00				22.00
2	TREATMENT OF PITS WITH PESTICIDE & INSECTICIDE	22.00				22.00
3	TRANSPORTATION OF PLANT FROM NURSARY TO SITE INCLUDING PLANTING INCLUDING LOADING & UNLOADING FROM 40 KM	24.20				24.20
4	PLANTING OF PLANTS INCLUDING RAMMING ETC. COMPLETE	22.00				22.00
5	WEEDING & HOEING OF PLANTS	41.80				41.80
6	WATERING OF PLANTS BY HEAD LOADS UPTO 2KM	83.60				83.60
7	MATERIAL (A) PLANTS (D) Cholori pyriphos	28.60 0.04				28.60 0.04

COST ABSTRACT

AREBALE PLANTATION

K.H. NO

AREA

2.0

HAC

S.N.	PARTICULAR	QTY	UNIT	RATE	AMT
1	EXCAVATION IN DRY OR MOIST SOIL INCLUDING DRESSING & DISPOSAL OF EXCAVATED SOIL WITHEN INITIAL LEAD UPTO 30M & LIFT 1.5 M IN FOR PITS at 5 m spacing .45*.45*.45	22.00	NO	6.80	149.60
	H.S. O.M. C.M.				
2	TREATMENT OF PITS WITH PESTICIDE & INSECTI CIDE	22.00	NO	0.30	6.60
3	TRANS PORTATION OF PLANT FROM NURSARY TO SITE INCLUDING PLANTING LOADING & UNLOADING FROM 40 KM	24.20	NO	0.59	14.28
4	PLANTING OF PLANTS INCLUDING RAMMING ETC. COMPLETE	22.00	NO	3.00	66.00
5	WEEDING & HOEING OF PLANTS	41.80	NO	1.20	50.16
6	WATERING OF PLANTS BY HEAD LOADS UPTO 3KM	83.60	NO	1.80	150.48
7	MATRIAL (A) PLANTS (D) Cholori pyriphos	28.60 0.04	NO LIT	3.50 250.00	100.10 11.00
TOTAL					548.22
GRAND TOTAL					548.22
eskalation of lab					0.0
say					550.0
cost for I year					550.0
cost for ii year					610.0
cost for iii year					670.0
cost for iv year					740.0

ESTIMATE MEDH BANDHI

Please don't Disturb the Green Cells & Black Fonts

कार्यालय सहायक अभियन्ता (आईडब्लुएमपी) पंचायत समिति					रियां बड़ी	जिला-नागौर		
FORM		PS-		रियां बड़ी				
Name of Work-					Work CODE-			
Beneficiary					AS No.-			
Gram-					Date-			
GP-					AS Amount-			
Location-					Time of Comp.-			
Scheme-	iwmp				Working Agency-			
Labour TASK Red. %					0	COST	7000.00	
Excavation		Area-Hact.	No.	L	C	H	US-Slope 1:	DS-Slope1:
		1.00	1	100	3.04	0.30	2.00	1.50
100.00		EARTH STRATA Soft soil = SS Hard soil = HS Mixed with boulders = MB				Bund Hight	0.9	
Mtr Medh Bandhi Per Hactare		hs						

तकमीना

कार्य का नाम -													
ग्राम - ग्राम पंचायत -													
योजना का नाम- iwmp													
लाभार्थी का नाम- 0													
Location - 0						यूनिक कोड नं. - 0							
क्र. सं.	कार्य का विवरण	संख्या	लम्बाई	चौड़ाई	उंचाई / गहराई	मात्रा	इकाई	दर			लागत राशि		
								अकुशल श्रम	कुल श्रम	कुल दर	अकुशल श्रम	कुल श्रम	कुल लागत
1	मिट्टी का कार्य बन्द निर्माण में (सूखी या गीली), मिट्टी को पाल पर समतल करना डेला को तोड़ना, दरेसी करना व हाथ के दूरमट से दबाना/कूटना, 1.5 मी. उठान तथा 50 मी. दूरी के लिये सख्त मिट्टी में।	1	100	3.04	0.30	91.20	घ.मी.						
	Total					91.20	घ.मी.	72.11	72.11	74.10	6576.43	6576.43	6757.92
2	बीज पैलेटस बुवाई बनाये गये रिज पर।	3	100			300	मीटर	0.59	0.59	0.59	177.00	177.00	177.00
3	बीज की लागत (कुमट बीज 3 ग्राम प्रति मीटर) (Cost of Sheed as per Market Rate 60/- per Kg. CAZARI Special Sheed Cost 80/- per Kg.)	3	100			0.90	कि ग्रा.	0.00	0.00	80.00	0.00	0.00	72.00
	Total										6753.43	6753.43	7006.92
	Total										6753.43	6753.43	7006.92
	Contengency 3%										0.00	0.00	210.21
	Total Cost										6753.43	6753.43	7217.13
	Labour Amount												0.07
	Material Amount												0.00
	Contengency												0.00
	Total Amount												0.07

कार्यालय सहायक अभियन्ता (आईडब्लुएमपी) पंचायत समिति
जिला-नागौर

रियां बड़ी

कार्य का नाम -

ग्राम - ग्राम पंचायत -

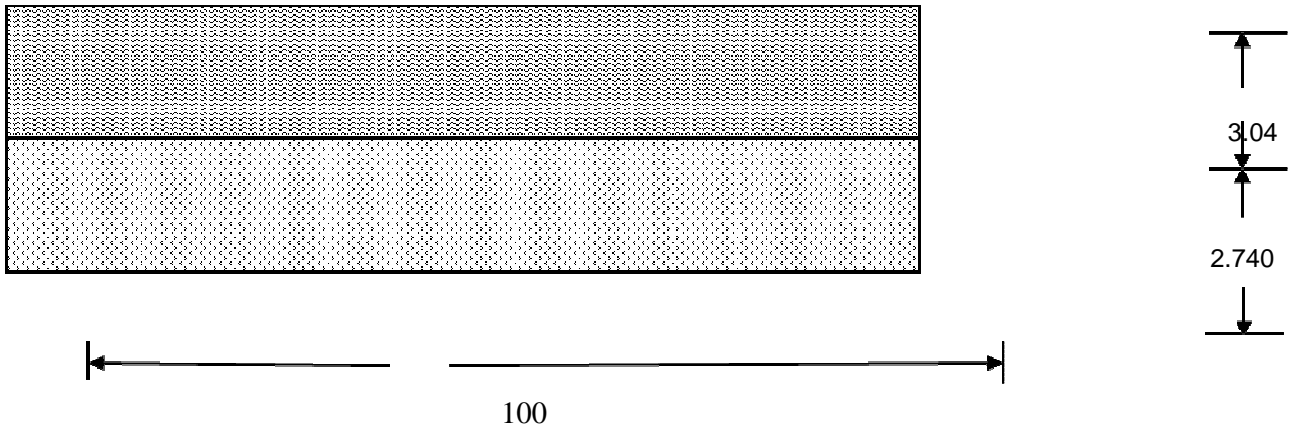
लाभार्थी का नाम- 0

कार्य का यूनिक कोड नं. - 0

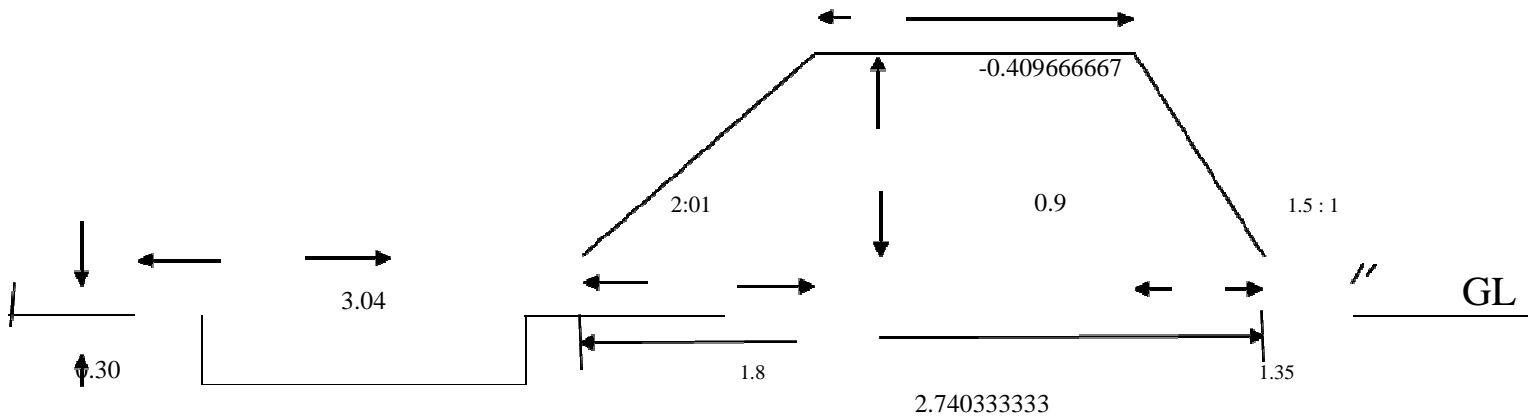
Excavation Cross Section 0.912

Bund Cross Section 1.0488

Top width -0.409667

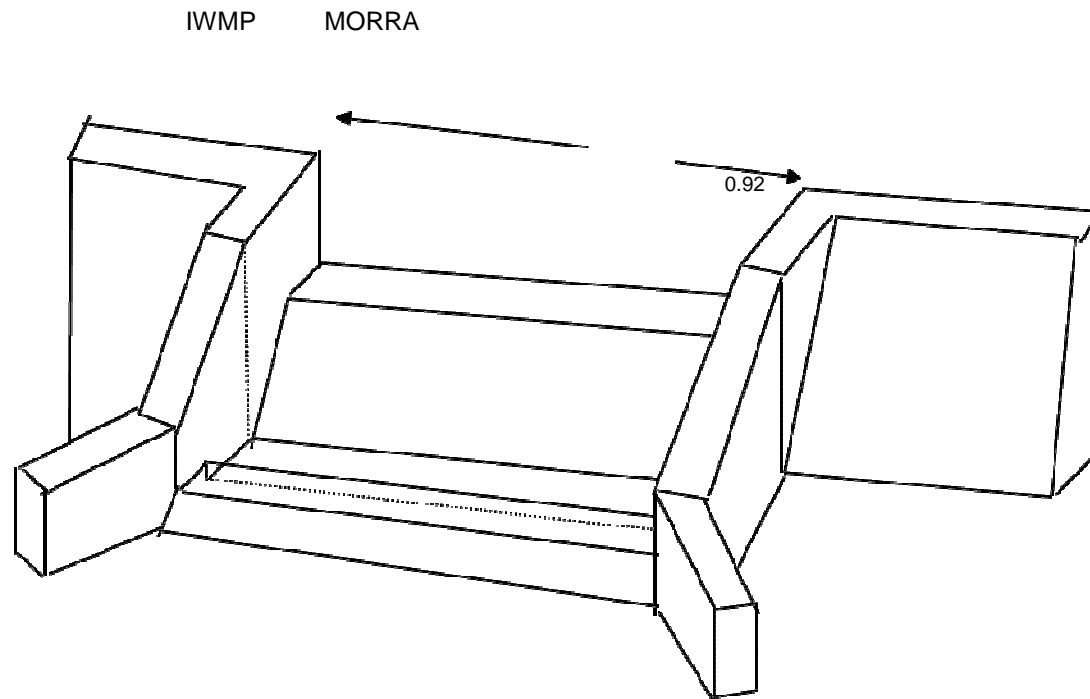


TOP PLAN



Cross Section

*Model Estimate
waste weir & earthen bund*



Design as per contour and field topography

Area	1 ha.
Slope	0 to 1 %
maximum height	2 mtr.
maximum length of traval	200 mtr.

Abstract of cost

Cost of waste weir	55612
Cost of earthen bund	544173
Total	599785

Say **6.00 lacs**

waste weir & earthen bund

Data to put	A	C	L	H	h	l	Df
	1	0.3	200	2	0.4	10	25

Hydrologic Design

Q=0.0276 CIA

Q= Peak rate run off in Cum/Sec.

C= Weighted coefficient of run off

l= Intensity of rain fall in Cm./hr.

for equal to time of constration at a given Frequency

A= Catchment area in Hectares

Q	Coefficient	l	A	C
0.397	0.0276	48	1	0.3

TC=0.0195 K^{0.77}

TC=Time of constration in minute

TC=Time of constration in minute

K= L^{3/2}/H^{1/2}

L= Max. length of travel in Mtr.

H=Difference elevation in Mtr.

K	L	L ^{3/2}	H	H ^{1/2}
2000	200	2828	2	1.414

TC	Coefficient	K	K ⁷⁷
6.789	0.0195	2000	348.2

48 Use this As l

As Reference

10

l=one hour rain fall intensity in cm/hour

Hydraulic Design

Q	Coefficient	L	h	h ^{1.5}
0.397	1.71	0.92	0.4	0.253

3.013

F	Coefficient	h _w
0.105	1.5	0.07

0.1

h _w	Coefficient	D _f	D _f ^{0.5}
0.07	0.014	25	5.00
d	h	F	
0.5	0.4	0.1	

h=head over the crest in mtr
L=length of the crest wall in mtr

F=free board in mtr

D_f=fatch length in mtr
h_w=wave length in mtr

Structural Design

0

H	h	d	p
0.6	0.4	0.5	2.3

1	Top width of head wall a	a=h/(p-1) ^{0.5}	h	p	p-1	(p-1) ^{0.5}
		0.35	0.4	2.3	1.3	1.14

Say 0.45

2	Bottom width of head wall b	b=h+H/(p-1) ^{0.5}	h	H	H+h	p	p-1	(p-1) ^{0.5}
		0.877	0.4	0.6	1	2.3	1.3	1.14

Say 1.00

3	Length of head wall ext l	l=H+d+1	H	d	coefficient
		2.1	0.6	0.5	1

4	Hight of head wall ext	H+d	H	d
		1.1	0.6	0.5

5	Bottom width of head wall ext	0.5(H+h)	H	h	H+h	coefficient
		0.5	0.6	0.4	1	0.5

0.45

6	Top width of head wall ext	0.4*H	H	coefficient
		0.24	0.6	0.4

7	Length of basin LB	0.75(H+d)+H	H	d	H+d	0.75(H+d)
		1.43	0.6	0.5	1.1	0.825

8	Thickness of basin	t
		0.5

9	Hight of the side wall at head wall joint	H+d	H	d
		1.1	0.6	0.5

10	Hight of the side wall at toe wall joint	1.5*h	coefficient	h
		0.6	1.5	0.4

11	Length of wing wall	2.25*h	coefficient	h
		0.9	2.25	0.4

12	Height of wing wall	1.5*h	coefficient	h
		0.6	1.5	0.4

13	Top width of toe wall	0.45
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14	Height of toe wall	0.3
----	--------------------	-----

15	Thickness of side wall	0.45
----	------------------------	------

- a = Top width of head wall in m.
- b = Bottom width of head wall in m.
- Fa = Water force in Kg
- Fb = Water force in Kg
- Fc = Water force in Kg
- U = uplift force in Kg
- ρ = Specific gravity of dam material kg/cum(2300kg/cum)
- w = Unit weight of water in kg/cum(1000 kg/cum)
- H = Height of head wall
- h = head over the crest
- C = Coefficient in uplift (0.5)
- μ = Coefficient of friction (0.65 to 0.75)

a	b	H	h	ρ	C	w
0.45	1.00	0.6	0.4	2300	0.5	1000

W1 =

$a H \rho$	a	H	ρ
621	0.45	0.6	2300

W2 =

$\frac{1}{2}(b-a)H\rho$	b	a	H	ρ	coefficient
379.5	1.00	0.45	0.6	2300	0.5

U =

$\frac{1}{2}Cw(H+h)b$	w	H	h	H+h	b	coefficient
250	1000	0.6	0.4	1	1.00	0.5

Fa =

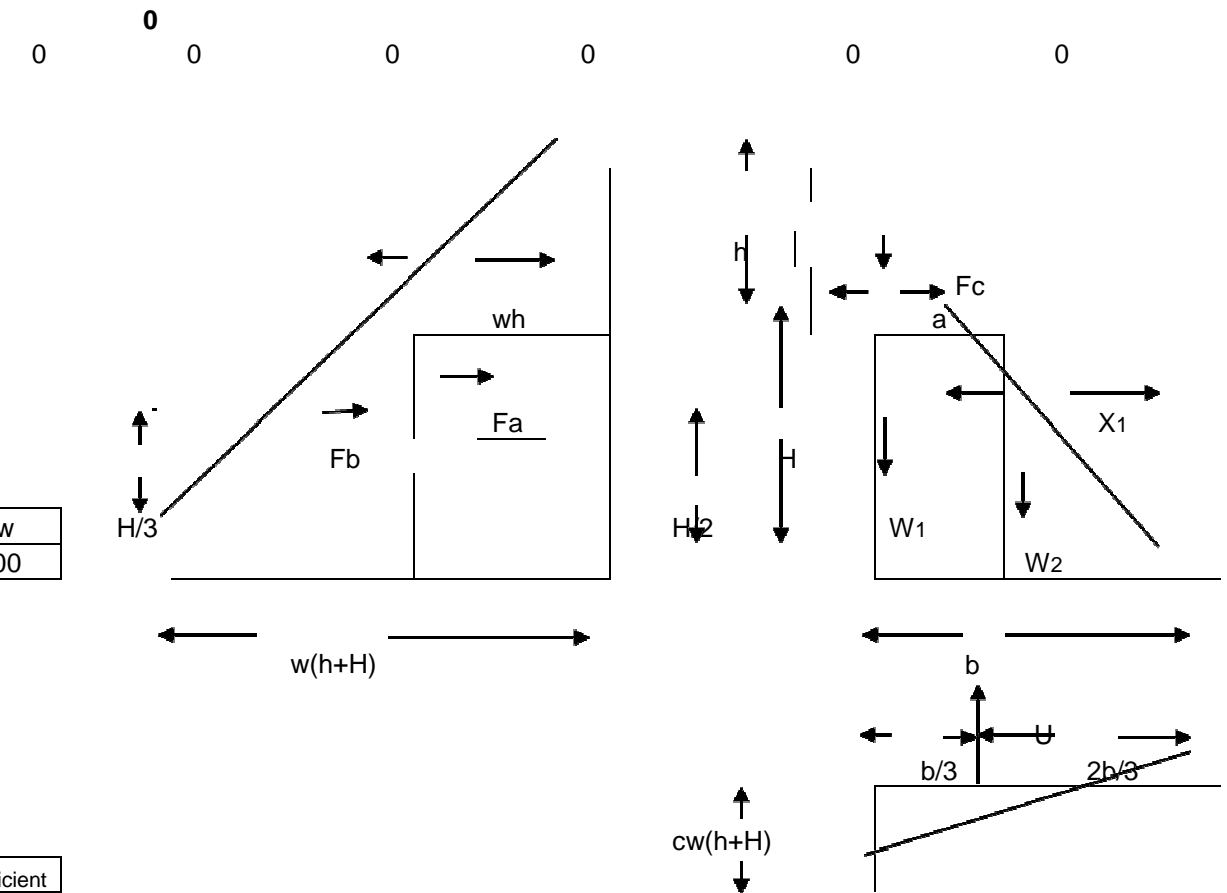
whH	w	h	H
240	1000	0.4	0.6

Fb =

$\frac{wH^2}{2}$	w	H	H	H^2	coefficient
180	1000	0.6	0.6	0.36	0.5

Fc =

wah	w	a	h
180	1000	0.45	0.4



H	0.60		
h	0.4	W1	621
a	0.45	W2	379.5
b	1.00	U	250
w	1000	Fa	240
		Fb	180
		Fc	180

Safety against overturning

Micro no. 0 Near Khasra no. 0 DLT 0

W1	x1	Fc	Fa	Fb	U	a	b	W2
621	0.775	180	240	180	250	0.45	1.00	379.5
	H	U						
	0.6	250						

RM	$W_1x_1 + Fcx_1 + W_2.2(b-a)/3$						
	W_1x_1	Fcx_1	$W_2.2(b-a)/3$	b	a	b-a	coffi
758.53	481.275	139.5	137.76	1.00	0.45	0.55	0.66

OM	$F_a x H/2 + F_b x H/3 + U x 2b/3$		
	$F_a x H/2$	$F_b x H/3$	$U x 2b/3$
274.6667	72	36	166.6667

RM	OM	RM/OM					
758.53	274.6667	2.761651	>1.5	Hance safe			

Safety against sliding

Tv	W1	W2	Fc	U
930.5	621	379.5	180	250
Th	Fa	Fb		
420	240	180		

C.F* T_v/T_h 1.77 >1.3 Hence safe Frictional coefficient 0.8

Safety against tension at base

$X = (RM - OM)/T_v$		RM-OM	T _v
0.520		483.87	930.5
$E = b/2 - X$	b/2	X	
-0.020	0.5	0.520	

e b/6
-0.020 0.167 b/6 > e
Hance safe

Estimate

Sr. no.	Name of work	Item no.	Average				Qty	rate	amount	
			No	Length	Width	Hight				
1	Earth work Excavation in hard soil up to 1.5 mt Hight and deposited excavated material lead op to 150	2B								
			Head wall	1	0.92	1.00	0.75	0.69		
			Head wall extention	2	2.1	0.45	0.75	1.42		
			side wall	2	2.33	0.45	0.75	1.57		
			Apron	1	0.92	0.88	0.9	0.72		
			Toe wall	1	0.92	0.6	0.75	0.41		
			Wing Wall	1	0.9	0.45	0.6	0.24		
						5.06	91	460.082		
2	Cement concrete 1:4:8 (1cement:4 sand:8 concrete) concrete Using mixture & vibrater	125 B								
			Head wall	1	0.92	1.00	0.3	0.28		
			Head wall extention	2	2.1	0.45	0.3	0.57		
			side wall	2	2.33	0.45	0.3	0.63		
			Apron	1	0.92	0.88	0.3	0.24		
			Toe wall	1	0.92	0.6	0.3	0.17		
			Wing Wall	1	0.90	0.45	0.3	0.12		
						2.00	2012	4020.79		
3	RR stone mesonary in Cement sand mortar 1 : 6	25C								
			Head wall	1	0.92	1.00	0.45	0.41		
			Head wall extention	2	2.1	0.45	0.45	0.85		
			side wall	2	2.33	0.45	0.45	0.94		
			Apron	1	0.92	0.88	0.15	0.12		
			Toe wall	1	0.92	0.6	0.45	0.25		
			Wing Wall	1	0.90	0.45	0.3	0.12		
						2.70	1629	4391.28		
4	RR stone mesonary in Cement sand mortar 1 : 6	25C								
			Head wall	1	0.92	0.725	0.6	0.40		
			Head wall extention	2	2.1	0.345	1.1	1.59		
			side wall	2	1.66	0.45	0.5	0.75		
			side wall	2	2.33	0.45	0.6	1.26		
			Apron	1	0.92	0.88		0.00		
			Toe wall	1	0.92	0.525	0	0.00		
Wing Wall	1	0.90	0.45	0.6	0.24					
						4.24	1629	6907.24		

cf

15779.4

Sr. no.	Name of work	Item no.	No	Length	Width	Hight	Qty	rate	amount
5	Cement concrete 1:3:6 (1cement:3 sand:6 concrete) 40/25 mm concrete Using mixture & vibrater	125A					bf		15779.4
	Head wall		1	0.92	0.45	0.1	0.041		
	Head wall extention		2	2.10	0.24	0.08	0.08064		
	side wall		2	1.00	0.45	0.08	0.072		
	side wall		2	1.01	0.45	0.08	0.073		
	Apron		1	0.92	0.88	0.08	0.064		
	Toe wall		1	0.92	0.45	0.08	0.033		
	Wing Wall		1	0.90	0.45	0.08	0.032		
							0.396	2218	879.055
6	Cement Plaster 1 : 6 (1 cement : 6 sand) 25 mm thick	71A							
	Head wall		1	0.92	0.45		0.413		
	Head wall		1	0.92	0.6		0.55		
	Head wall extention		2	2.10	0.24		1.01		
	Head wall extention		2	2.10	1.1		4.62		
	side wall		2	1.00	0.45		0.9		
	side wall		2	1.01	0.45		0.91		
	side wall		2	2.33	0.6		2.79		
	side wall		2	1.66	0.5		1.66		
	side wall		2	0.45	1.1		0.99		
	Apron		1	0.92	0.88		0.80		
	Toe wall		1	0.92	1.05		0.96		
	Wing Wall		2	0.90	0.45		0.81		
	Wing Wall		2	0.90	0.6		1.08		
Wing Wall		2	0.6	0.45		0.54			
							18.04	128	2309.21
7	Cement concrete 1:1.5:3 (1cement:1.5 sand:3 concrete) 25 mm concrete Using mixture & vibrater								
	Apron	126	1	0.92	0.875	0.15	0.12	3183	383.815
8	Pointing 1:3 (1 Cement : 3 Sand)	73							
	Head wall		1	0.92	0.81		0.75	49.8	37.2398

19388.7

Total 35168.1

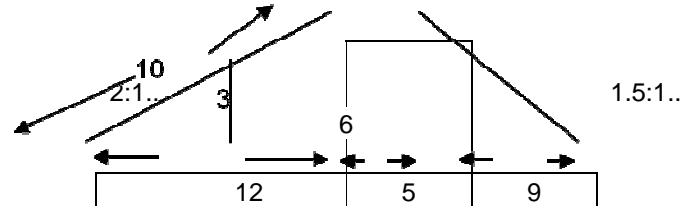
3% contengency 1055.04

55611.8

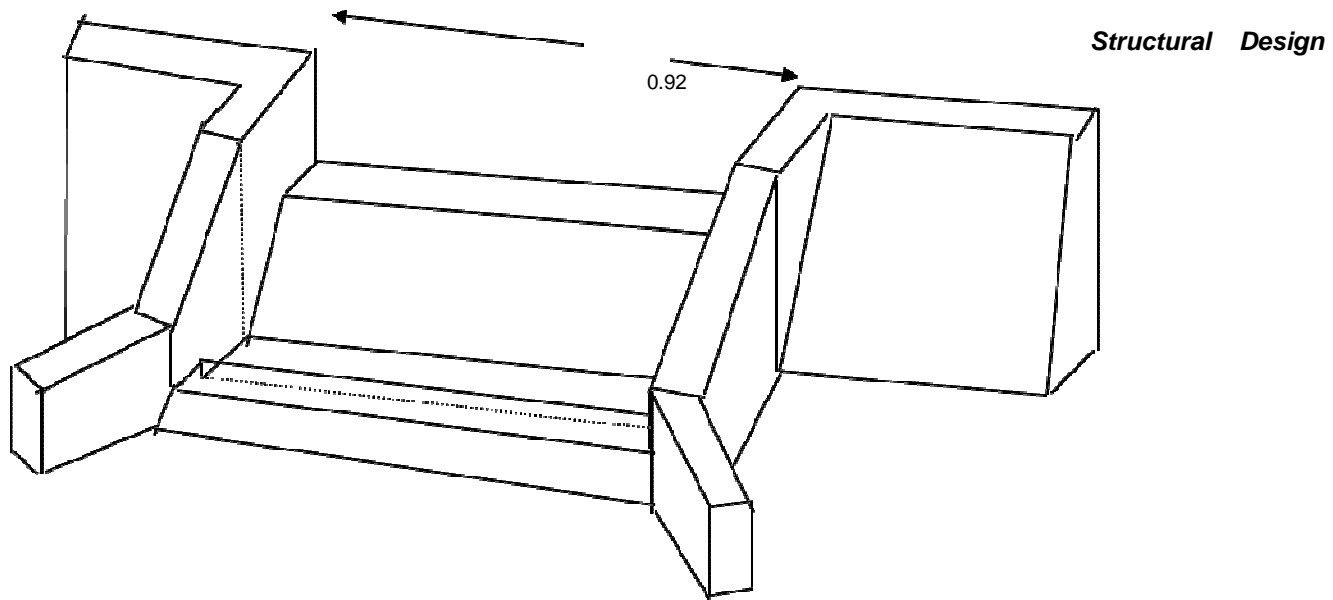
Say lac. 0.56

Name of work Khadeen m feet
length 800 2624
Name of scheme: lwmp

Length Per Ha 100 Mtr
Catch ment Area 50 Ha
5



So. No	Perticular of work	NO	length feet	Width feet	Hight feet	Qty	Rate	amount
1	Earth work excavation for bund Hard soil		2624	15.5	6	244032		
						Cum	6917.01	74.1 512550.2
2	Sowing of Dhaman seed Five Row	5	2624			13120		
						Rm	4000	0.59 2360
3	Cost of seed 1.66 Kg Per 100 m		5	13.28		66.4	80	5312
4	Dry Stone pitching in m3		435	4	0.625	1087.5		
						30.82	777	23950.89
						Total		544173.1
							Say	5.441731



Design as per contour and field topography

Area	1 ha.
Slope	0 to 1 %
maximum height	2 mtr.
maximum length of weir	200 mtr.

Abstract of cost

Cost of waste weir	55612
Cost of earthen bund	444409
Total	500021
Say	5.00 lacs

a = Top width of head wall in m.
 b = Bottom width of head wall in m.
 Fa = Water force in Kg

Fb = Water force in Kg
 Fc = Water force in Kg

U = uplift force in Kg
 ρ = Specific gravity of dam material kg/cum(2300kg/cum)
 w = Unit weight of water in kg/cum(1000 kg/cum)
 H = Height of head wall
 h = head over the crest
 C = Coefficient in uplift (0.5)
 μ = Coefficient of friction (0.65 to 0.75)

a	b	H	h	ρ	C	w
0.45	1.00	0.6	0.4	2300	0.5	1000

W1 =

a Hp	a	H	ρ
621	0.45	0.6	2300

W2 =

$\frac{1}{2}(b-a)Hp$	b	a	H	ρ	coefficient
379.5	1.00	0.45	0.6	2300	0.5

U =

$\frac{1}{2}Cw(H+h)b$	w	H	h	H+h	b	coefficient
250	1000	0.6	0.4	1	1.00	0.5

Fa =

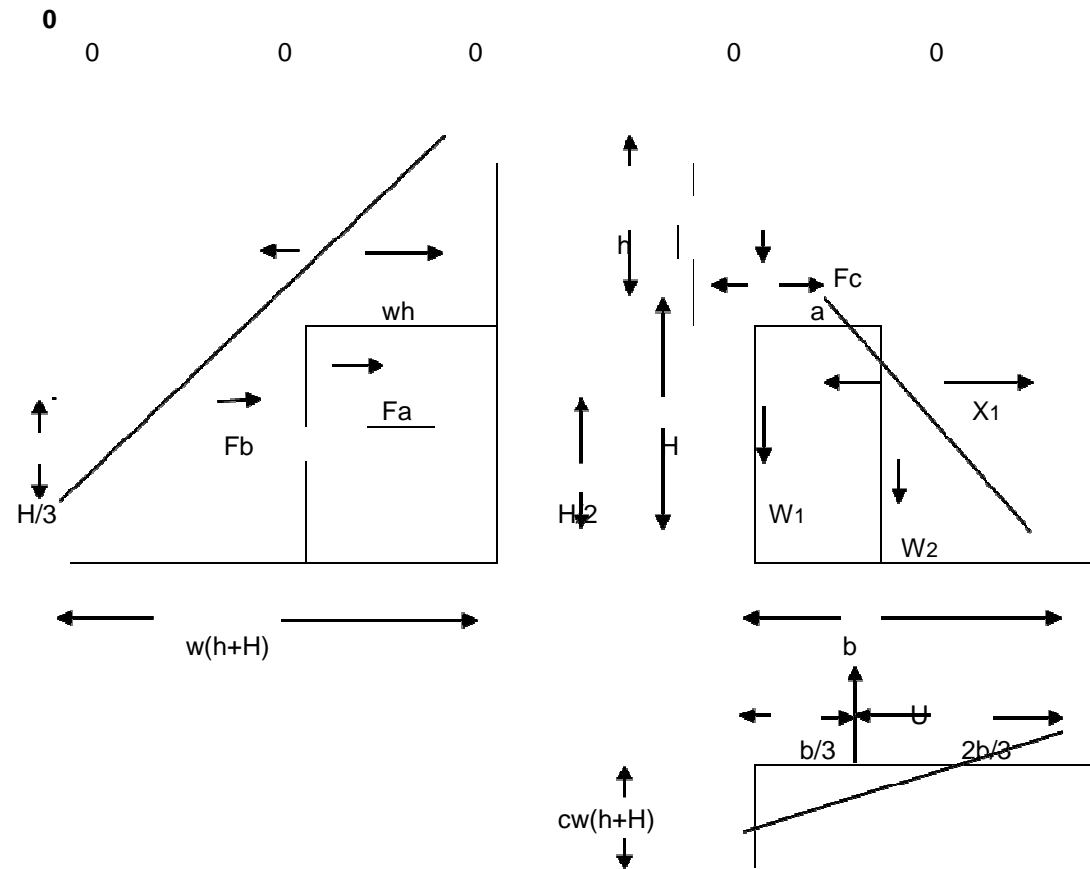
whH	w	h	H
240	1000	0.4	0.6

Fb =

$\frac{wH^2}{2}$	w	H	H	H^2	coefficient
180	1000	0.6	0.6	0.36	0.5

Fc =

wah	w	a	h
180	1000	0.45	0.4



H	0.60		
h	0.4	W1	621
a	0.45	W2	379.5
b	1.00	U	250
w	1000	Fa	240
		Fb	180
		Fc	180

Safety against overturning

Micro no. 0 Near Khasra no. 0 DLT 0

W1	x1	Fc	Fa	Fb	U	a	b	W2
621	0.775	180	240	180	250	0.45	1.00	379.5
	H	U						
	0.6	250						
RM	$W_1x_1 + Fcx_1 + W_2 \cdot 2(b-a)/3$							
	W_1x_1	Fcx_1	$W_2 \cdot 2(b-a)/3$	b	a	b-a	coffi	
758.53	481.275	139.5	137.76	1.00	0.45	0.55	0.66	
OM	$F_a x H/2 + F_b x H/3 + U x 2b/3$							
	$F_a x H/2$	$F_b x H/3$	$U x 2b/3$					
274.6667	72	36	166.6667					
RM	OM	RM/OM						
758.53	274.6667	2.761651	>1.5	Hance safe				

Safety against sliding

Tv	W1	W2	Fc	U	
930.5	621	379.5	180	250	
Th	Fa	Fb	Frictional coefficient		
420	240	180	0.8		
$C \cdot F \cdot Tv / Th$	1.77	>1.3	Hence safe		

Safety against tension at base

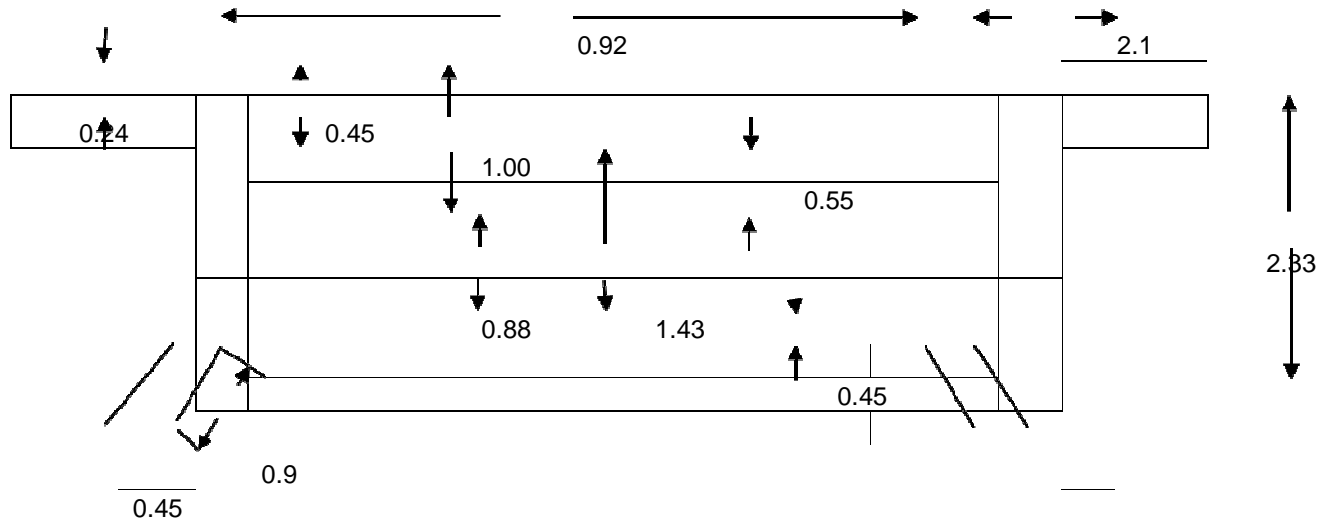
$X = (RM - OM) / Tv$		RM-OM	Tv
0.520		483.87	930.5
$E = b/2 - X$	b/2	X	
-0.020	0.5	0.520	

e b/6
-0.020 0.167

b/6 > e
Hance safe

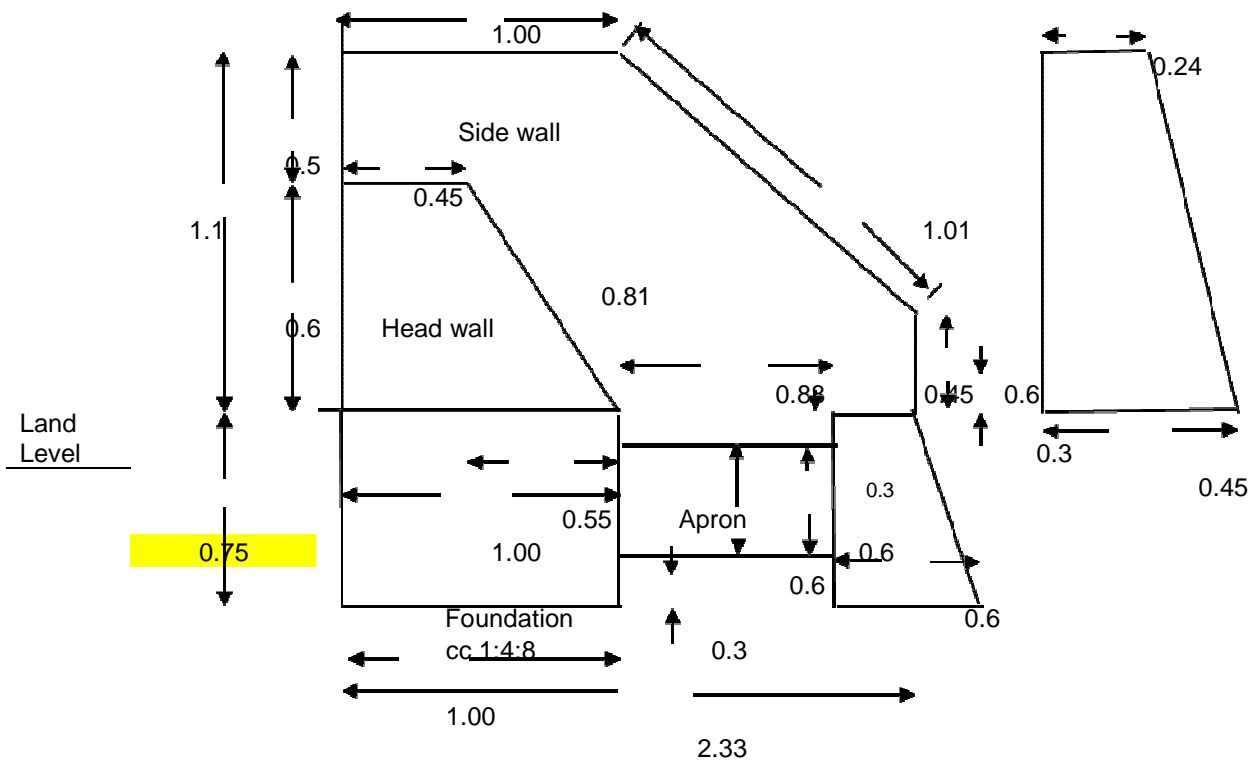
Structural Design
DLT 0
Top Plan

Micro no. 0
Near Khasra no. 0



Elevation

Head wall extension



Sr. no.	Name of work	Item no.	No	Length	Width	Hight	Qty	rate	amount
5	Cement concrete 1:3:6 (1cement:3 sand:6 concrete) 40/25 mm concrete Using mixture & vibrater	125A					bf		15779.4
	Head wall		1	0.92	0.45	0.1	0.041		
	Head wall extention		2	2.10	0.24	0.08	0.08064		
	side wall		2	1.00	0.45	0.08	0.072		
	side wall		2	1.01	0.45	0.08	0.073		
	Apron		1	0.92	0.88	0.08	0.064		
	Toe wall		1	0.92	0.45	0.08	0.033		
	Wing Wall		1	0.90	0.45	0.08	0.032		
						0.396	2218	879.055	
6	Cement Plaster 1 : 6 (1 cement : 6 sand) 25 mm thick	71A							
	Head wall		1	0.92	0.45		0.413		
	Head wall		1	0.92	0.6		0.55		
	Head wall extention		2	2.10	0.24		1.01		
	Head wall extention		2	2.10	1.1		4.62		
	side wall		2	1.00	0.45		0.9		
	side wall		2	1.01	0.45		0.91		
	side wall		2	2.33	0.6		2.79		
	side wall		2	1.66	0.5		1.66		
	side wall		2	0.45	1.1		0.99		
	Apron		1	0.92	0.88		0.80		
	Toe wall		1	0.92	1.05		0.96		
	Wing Wall		2	0.90	0.45		0.81		
	Wing Wall		2	0.90	0.6		1.08		
Wing Wall	2	0.6	0.45		0.54				
						18.04	128	2309.21	
7	Cement concrete 1:1.5:3 (1cement:1.5 sand:3 concrete) 25 mm concrete Using mixture & vibrater								
	Apron	126	1	0.92	0.875	0.15	0.12	3183	383.815
8	Pointing 1:3 (1 Cement : 3 Sand)	73							
	Head wall		1	0.92	0.81		0.75	49.8	37.2398

19388.7

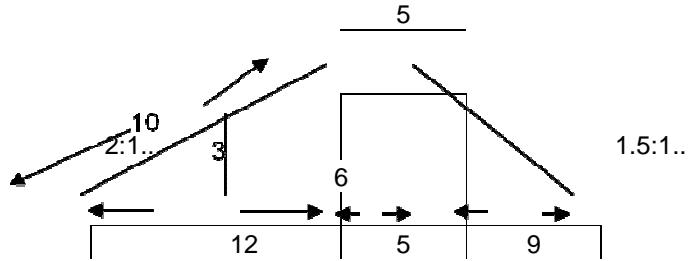
Total 35168.1

3% contengency 1055.04

55611.8

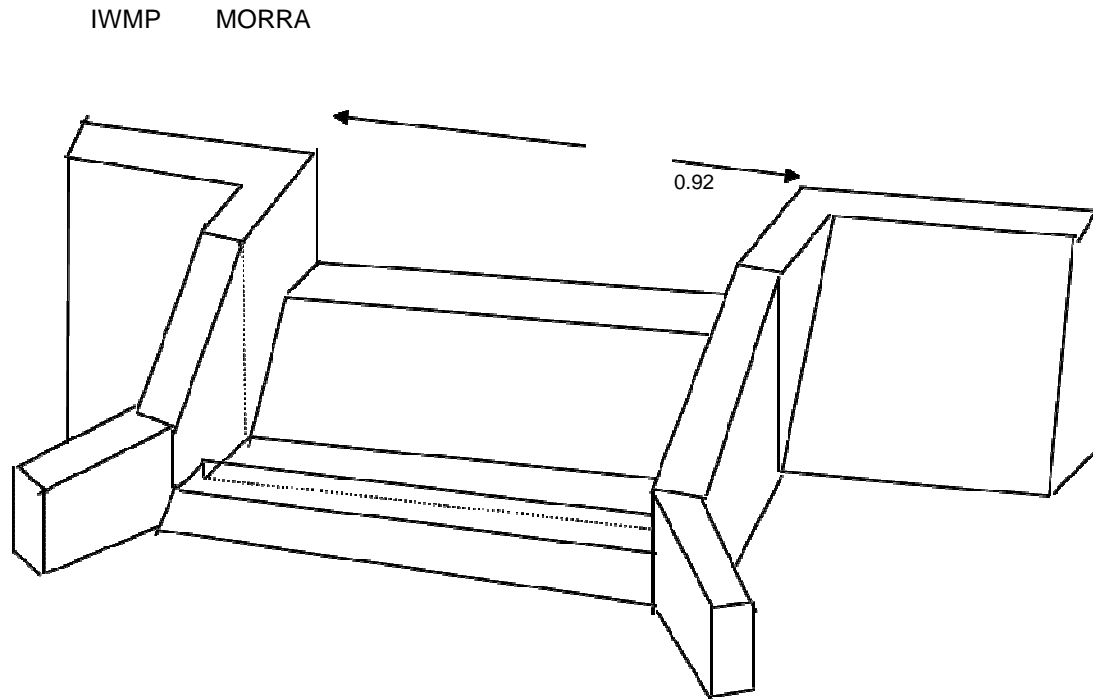
Say lac. 0.56

Name of work Khadeen
 Name of scheme: lwmp
 Length Per Ha 100 Mtr
 Catch ment Area 50 Ha



So. No	Particular of work	NO	length feet	Width feet	Hight feet	Qty	Rate	amount
1	Earth work excavation for bund Hard soil		2115.6	15.5	6	196750.8		
					Cum	5576.84	74.1	413243.6
2	Sowing of Dhaman seed Five Row	5	2115.6			10578		
					Rm	3225	0.59	1902.75
3	Cost of seed 1.66 Kg Per 100 m		5	13.28		66.4	80	5312
4	Dry Stone pitching in m3		435	4	0.625	1087.5		
						30.82	777	23950.89
					Total			444409.2
							Say	4.444092

*Model Estimate
waste weir & earthen bund*



Design as per contour and field topography

Area	1 ha.
Slope	0 to 1 %
maximum height	2 mtr.
maximum length of treval	200 mtr.

Abstract of cost

Cost of waste weir	55612
Cost of earthen bund	344645
Total	400257
Say	4.00 lacs

waste weir & earthen bund

Data to put

A	C	L	H	h	l	Df
1	0.3	200	2	0.4	10	25

Hydrologic Design

Q=0.0276 CIA

Q= Peak rate run off in Cum/Sec.

C= Weighted coefficient of run off

l= Intensity of rain fall in Cm./hr.

for equal to time of constration at a given Frequency

A= Catchment area in Hectares

Q	Coefficient	l	A	C
0.397	0.0276	48	1	0.3

TC=0.0195 K^{0.77}

TC=Time of constration in minute

TC=Time of constration in minute

K= L^{3/2}/H^{1/2}

L= Max. length of travel in Mtr.

H=Difference elevation in Mtr.

K	L	L ^{3/2}	H	H ^{1/2}
2000	200	2828	2	1.414

TC	Coefficient	K	K ⁷⁷
6.789	0.0195	2000	348.2

48 Use this As l As Reference

10 l=one hour rain fall intensity in cm/hour

Hydraulic Design

Q	Coefficient	L	h	h ^{1.5}
0.397	1.71	0.92	0.4	0.253

3.013

F	Coefficient	h _w
0.105	1.5	0.07

0.1

h _w	Coefficient	D _f	D _f ^{0.5}
0.07	0.014	25	5.00

d	h	F
0.5	0.4	0.1

h=head over the crest in mtr

L=length of the crest wall in mtr

F=free board in mtr

D_f=fatch length in mtr

h_w=wave length in mtr

Structural Design

0

H	h	d	p
0.6	0.4	0.5	2.3

1	Top width of head wall a	a=h/(p-1) ^{0.5}	h	p	p-1	(p-1) ^{0.5}
		0.35	0.4	2.3	1.3	1.14

Say 0.45

2	Bottom width of head wall b	b=h+H/(p-1) ^{0.5}	h	H	H+h	p	p-1	(p-1) ^{0.5}
		0.877	0.4	0.6	1	2.3	1.3	1.14

Say 1.00

3	Length of head wall ext l	l=H+d+1	H	d	cofficient
		2.1	0.6	0.5	1

4	Hight of head wall ext	H+d	H	d
		1.1	0.6	0.5

5	Bottom width of head wall ext	0.5(H+h)	H	h	H+h	cofficient
		0.5	0.6	0.4	1	0.5

0.45

6	Top width of head wall ext	0.4*H	H	cofficient
		0.24	0.6	0.4

7	Length of basin LB	0.75(H+d)+H	H	d	H+d	0.75(H+d)
		1.43	0.6	0.5	1.1	0.825

8	Thickness of basin	t
		0.5

9	Hight of the side wall at head wall joint	H+d	H	d
		1.1	0.6	0.5

10	Hight of the side wall at toe wall joint	1.5*h	cofficient	h
		0.6	1.5	0.4

11	Length of wing wall	2.25*h	cofficient	h
		0.9	2.25	0.4

12	Height of wing wall	1.5*h	cofficient	h
		0.6	1.5	0.4

13	Top width of toe wall	0.45
----	-----------------------	------

14	Height of toe wall	0.3
----	--------------------	-----

15	Thickness of side wall	0.45
----	------------------------	------

a = Top width of head wall in m.
 b = Bottom width of head wall in m.
 Fa = Water force in Kg

Fb = Water force in Kg
 Fc = Water force in Kg

U = uplift force in Kg
 ρ = Specific gravity of dam material kg/cum(2300kg/cum)
 w = Unit weight of water in kg/cum(1000 kg/cum)
 H = Height of head wall
 h = head over the crest
 C = Coefficient in uplift (0.5)
 μ = Coefficient of friction (0.65 to 0.75)

a	b	H	h	ρ	C	w
0.45	1.00	0.6	0.4	2300	0.5	1000

W1 =

a Hp	a	H	ρ
621	0.45	0.6	2300

W2 =

½(b-a)Hp	b	a	H	ρ	coefficient
379.5	1.00	0.45	0.6	2300	0.5

U =

½Cw(H+h)b	w	H	h	H+h	b	coefficient
250	1000	0.6	0.4	1	1.00	0.5

Fa =

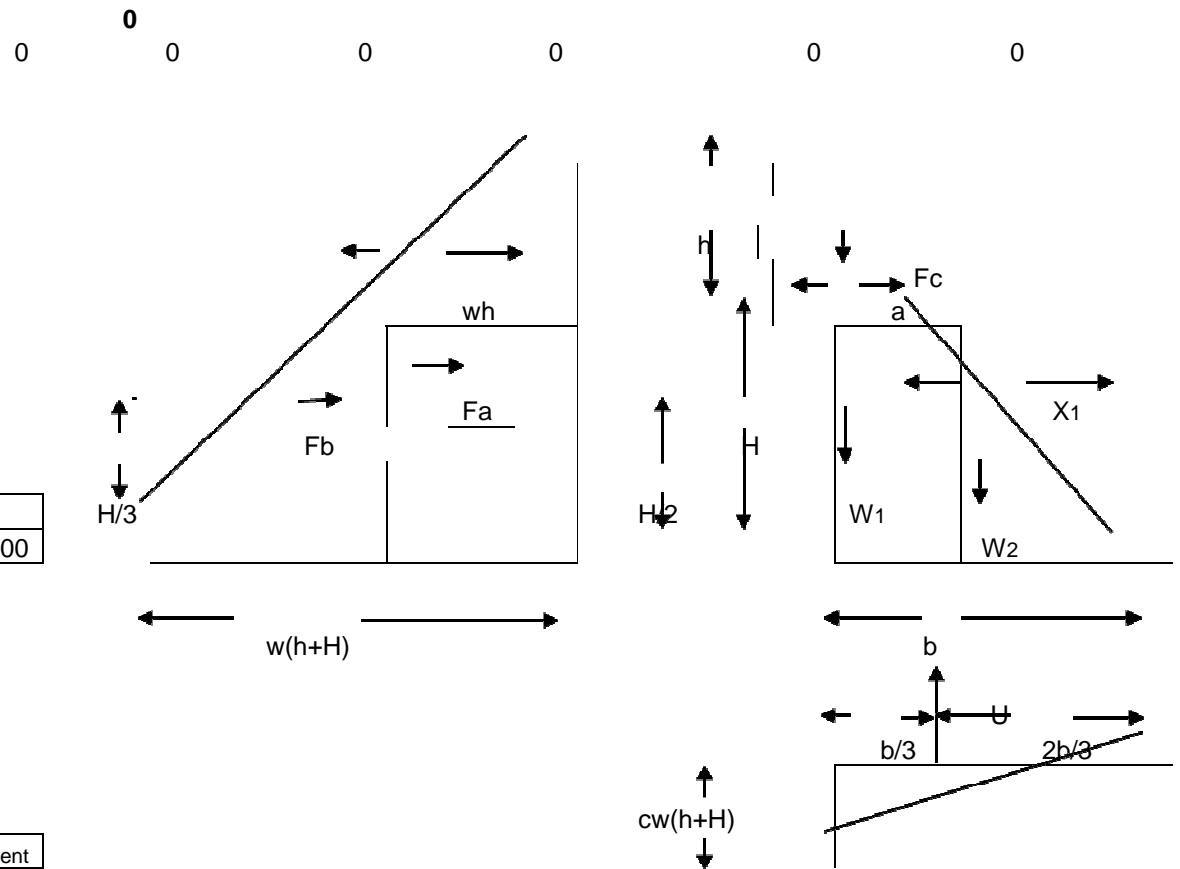
whH	w	h	H
240	1000	0.4	0.6

Fb =

wH ² / 2	w	H	H	H ²	coefficient
180	1000	0.6	0.6	0.36	0.5

Fc =

wah	w	a	h
180	1000	0.45	0.4



H	0.60		
h	0.4	W1	621
a	0.45	W2	379.5
b	1.00	U	250
w	1000	Fa	240
		Fb	180
		Fc	180

Safety against overturning

Micro no. 0 Near Khasra no. 0 DLT 0

W1	x1	Fc	Fa	Fb	U	a	b	W2
621	0.775	180	240	180	250	0.45	1.00	379.5
	H	U						
	0.6	250						

RM	$W_1x_1 + Fcx_1 + W_2.2(b-a)/3$						
	W_1x_1	Fcx_1	$W_2.2(b-a)/3$	b	a	b-a	coffi
758.53	481.275	139.5	137.76	1.00	0.45	0.55	0.66
OM	$F_a x H/2 + F_b x H/3 + U x 2b/3$						
	$F_a x H/2$	$F_b x H/3$	$U x 2b/3$				
274.6667	72	36	166.6667				
RM	OM	RM/OM					
758.53	274.6667	2.761651	>1.5	Hance safe			

Safety against sliding

Tv	W1	W2	Fc	U	
930.5	621	379.5	180	250	
Th	Fa	Fb	Frictional coefficient		
420	240	180	0.8		

$C.F * Tv / Th$ 1.77 >1.3 Hence safe

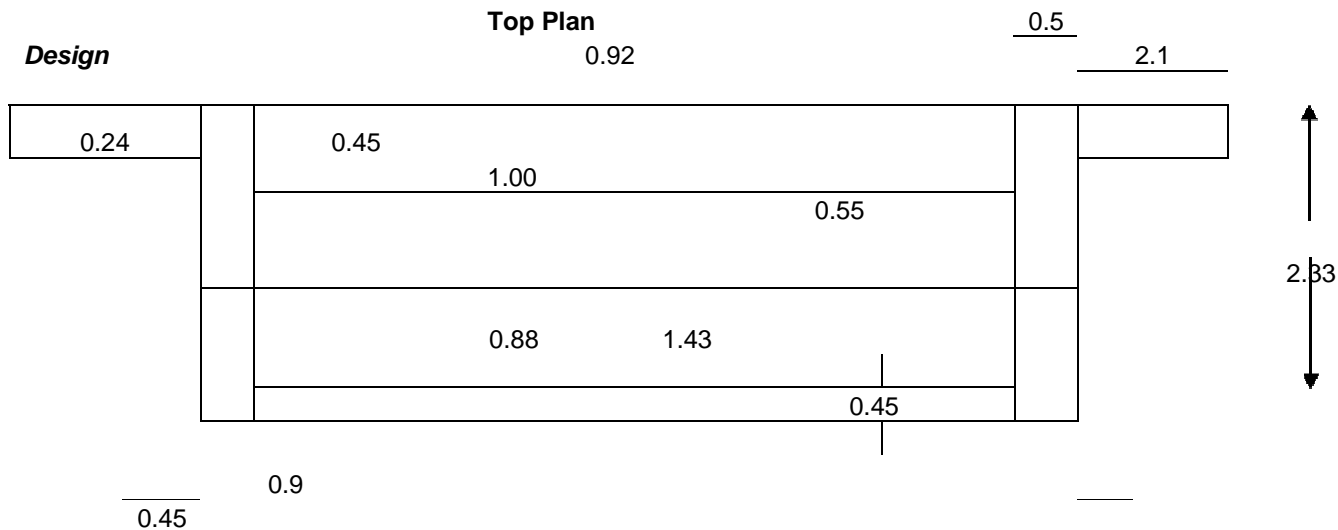
Safety against tension at base

$X = (RM - OM) / Tv$		RM-OM	Tv
0.520		483.87	930.5
$E = b/2 - X$	b/2	X	
-0.020	0.5	0.520	

e b/6
-0.020 0.167 b/6 > e
Hance safe

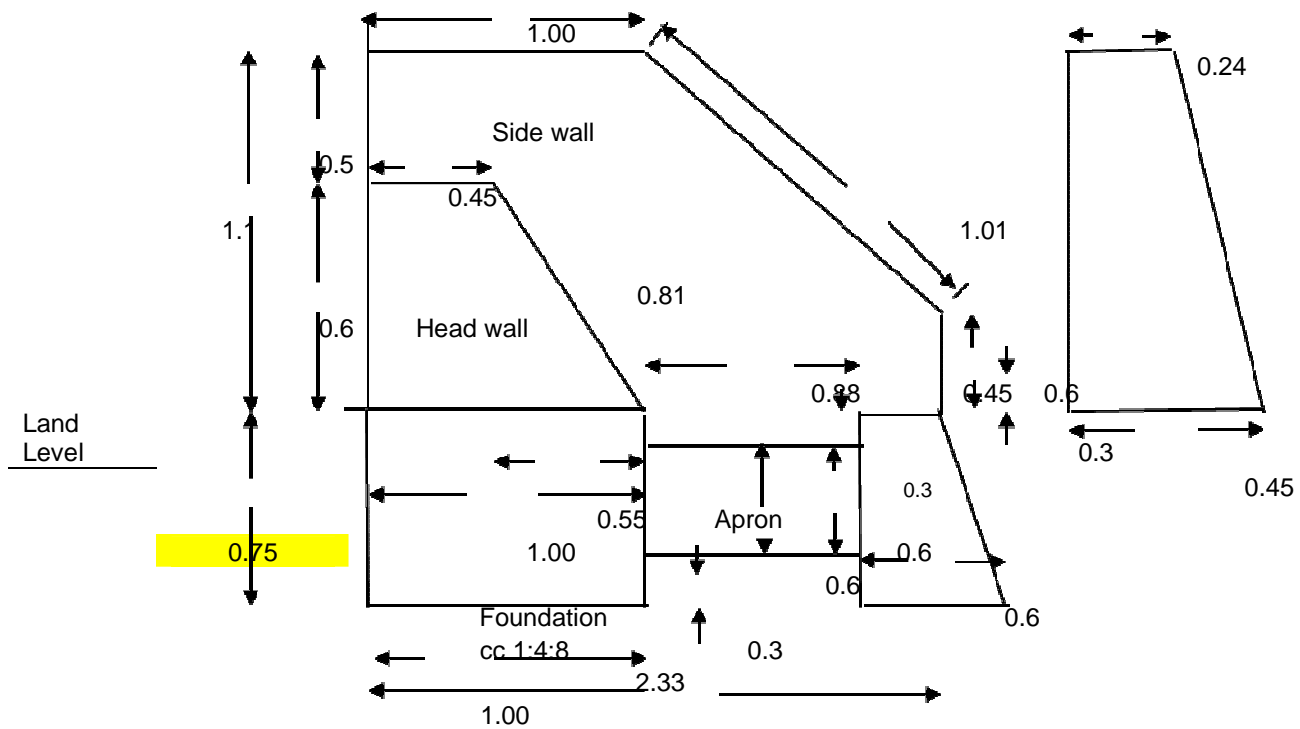
Structural Design

Top Plan



Elevation

Head wall extension



Estimate

Sr. no.	Name of work	Average	Item no.	Average				Qty	rate	amount	
				No	Length	Width	Hight				
1	Earth work Excavation in hard soil up to 1.5 mt Hight and deposited excavated meterial lead op to 150		2B								
				Head wall	1	0.92	1.00	0.75	0.69		
				Head wall extention	2	2.1	0.45	0.75	1.42		
				side wall	2	2.33	0.45	0.75	1.57		
				Aprpon	1	0.92	0.88	0.9	0.72		
				Toe wall	1	0.92	0.6	0.75	0.41		
				Wing Wall	1	0.9	0.45	0.6	0.24		
						5.06	91	460.082			
2	Cement concrete 1:4:8 (1cement:4 sand:8 concrete) concrete Using mixture & vibrater	40/25 mm	125 B								
				Head wall	1	0.92	1.00	0.3	0.28		
				Head wall extention	2	2.1	0.45	0.3	0.57		
				side wall	2	2.33	0.45	0.3	0.63		
				Aprpon	1	0.92	0.88	0.3	0.24		
				Toe wall	1	0.92	0.6	0.3	0.17		
						2.00	2012	4020.79			
3	RR stone mesonary in Cement sand mortar 1 : 6		25C								
				Head wall	1	0.92	1.00	0.45	0.41		
				Head wall extention	2	2.1	0.45	0.45	0.85		
				side wall	2	2.33	0.45	0.45	0.94		
				Aprpon	1	0.92	0.88	0.15	0.12		
				Toe wall	1	0.92	0.6	0.45	0.25		
						2.70	1629	4391.28			
4	RR stone mesonary in Cement sand mortar 1 : 6		25C								
				Head wall	1	0.92	0.725	0.6	0.40		
				Head wall extention	2	2.1	0.345	1.1	1.59		
				side wall	2	1.66	0.45	0.5	0.75		
				side wall	2	2.33	0.45	0.6	1.26		
				Aprpon	1	0.92	0.88		0.00		
				Toe wall	1	0.92	0.525	0	0.00		
						4.24	1629	6907.24			

cf 15779.4

Sr. no.	Name of work	Item no.	No	Length	Width	Hight	Qty	rate	amount
5	Cement concrete 1:3:6 (1cement:3 sand:6 concrete) 40/25 mm concrete Using mixture & vibrater	125A					bf		15779.4
	Head wall		1	0.92	0.45	0.1	0.041		
	Head wall extention		2	2.10	0.24	0.08	0.08064		
	side wall		2	1.00	0.45	0.08	0.072		
	side wall		2	1.01	0.45	0.08	0.073		
	Apron		1	0.92	0.88	0.08	0.064		
	Toe wall		1	0.92	0.45	0.08	0.033		
	Wing Wall		1	0.90	0.45	0.08	0.032		
						0.396	2218	879.055	
6	Cement Plaster 1 : 6 (1 cement : 6 sand) 25 mm thick	71A							
	Head wall		1	0.92	0.45		0.413		
	Head wall		1	0.92	0.6		0.55		
	Head wall extention		2	2.10	0.24		1.01		
	Head wall extention		2	2.10	1.1		4.62		
	side wall		2	1.00	0.45		0.9		
	side wall		2	1.01	0.45		0.91		
	side wall		2	2.33	0.6		2.79		
	side wall		2	1.66	0.5		1.66		
	side wall		2	0.45	1.1		0.99		
	Apron		1	0.92	0.88		0.80		
	Toe wall		1	0.92	1.05		0.96		
	Wing Wall		2	0.90	0.45		0.81		
	Wing Wall		2	0.90	0.6		1.08		
Wing Wall		2	0.6	0.45		0.54			
						18.04	128	2309.21	
7	Cement concrete 1:1.5:3 (1cement:1.5 sand:3 concrete) 25 mm concrete Using mixture & vibrater								
	Apron	126	1	0.92	0.875	0.15	0.12	3183	383.815
8	Pointing 1:3 (1 Cement : 3 Sand)	73							
	Head wall		1	0.92	0.81		0.75	49.8	37.2398

19388.7

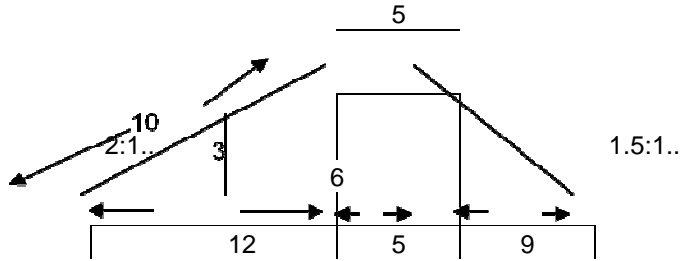
Total 35168.1

3% contengency 1055.04

55611.8

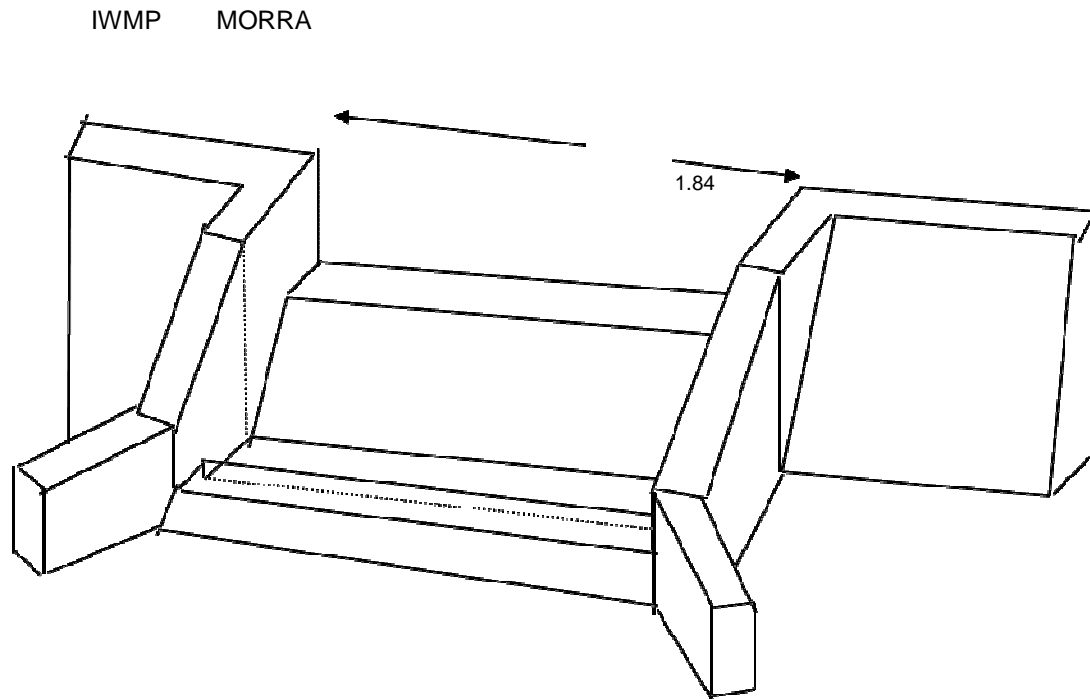
Say lac. 0.56

Name of work Khadeen
 Name of scheme: lwmp
 Length Per Ha 100 Mtr
 Catch ment Area 50 Ha



So. No	Perticular of work	NO	length feet	Width feet	Hight feet	Qty	Rate	amount
1	Earth work excavation for bund Hard soil		1607.2	15.5	6	149469.6		
					Cum	4236.67	74.1	313937
2	Sowing of Dhaman seed Five Row	5	1607.2			8036		
					Rm	2450	0.59	1445.5
3	Cost of seed 1.66 Kg Per 100 m		5	13.28		66.4	80	5312
4	Dry Stone pitching in m3		435	4	0.625	1087.5		
						30.82	777	23950.89
					Total			344645.4
							Say	3.446454

*Model Estimate
waste weir & earthen bund*



Design as per contour and field topography

Area	2 ha.
Slope	0 to 1 %
maximum height	2 mtr.
maximum length of treval	200 mtr.

Abstract of cost

Cost of waste weir	61892
Cost of earthen bund	21553
Total	83445
Say	0.83 lacs

waste weir & earthen bund

Data to put

A	C	L	H	h	I	Df
2	0.3	200	2	0.4	10	25

Hydrologic Design

Q=0.0276 CIA

Q= Peak rate run off in Cum/Sec.

C= Weighted coefficient of run off

I= Intensity of rain fall in
Cm./hr.

for equal to time of constration at a given Frequency

A= Catchment area in
Hectares

Q	Coefficient	I	A	C
0.795	0.0276	48	2	0.3

TC=0.0195 K^{0.77}

TC=Time of constration in minute

TC=Time of constration in minute

K= L^{3/2}/H^{1/2}

L= Max. length of travel in Mtr.

H=Diffrence elevation in Mtr.

K	L	L ^{3/2}	H	H ^{1/2}
2000	200	2828	2	1.414

TC	Coefficient	K	K ⁷⁷
6.789	0.0195	2000	348.2

48 Use this As I As Reference

10 I=one hour rain fall intensity in cm/hour

Hydraulic Design

Q	Coefficient	L	h	h ^{1.5}
0.795	1.71	1.84	0.4	0.253

6.027

F	Coefficient	h _w
0.105	1.5	0.07

0.1

h _w	Coefficient	D _f	D _f ^{0.5}
0.07	0.014	25	5.00

d	h	F
0.5	0.4	0.1

h=head over the crest in mtr

L=length of the crest wall in mtr

F=free board in mtr

D_f=fatch length in mtr

hw=wave length in mtr

Structural Design

0

H	h	d	p
0.6	0.4	0.5	2.3

1	Top width of head wall a	a=h/(p-1) ^{0.5}	h	p	p-1	(p-1) ^{0.5}
		0.35	0.4	2.3	1.3	1.14

Say 0.45

2	Bottom width of head wall b	b=h+H/(p-1) ^{0.5}	h	H	H+h	p	p-1	(p-1) ^{0.5}
		0.877	0.4	0.6	1	2.3	1.3	1.14

Say 1.00

3	Length of head wall ext l	l=H+d+1	H	d	cofficient
		2.1	0.6	0.5	1

4	Hight of head wall ext	H+d	H	d
		1.1	0.6	0.5

5	Bottom width of head wall ext	0.5(H+h)	H	h	H+h	cofficient
		0.5	0.6	0.4	1	0.5

0.45

6	Top width of head wall ext	0.4*H	H	cofficient
		0.24	0.6	0.4

7	Length of basin LB	0.75(H+d)+H	H	d	H+d	0.75(H+d)
		1.43	0.6	0.5	1.1	0.825

8	Thickness of basin	t
		0.5

9	Hight of the side wall at head wall joint	H+d	H	d
		1.1	0.6	0.5

10	Hight of the side wall at toe wall joint	1.5*h	cofficient	h
		0.6	1.5	0.4

11	Length of wing wall	2.25*h	cofficient	h
		0.9	2.25	0.4

12	Height of wing wall	1.5*h	cofficient	h
		0.6	1.5	0.4

13	Top width of toe wall	0.45
----	-----------------------	------

14	Height of toe wall	0.3
----	--------------------	-----

15	Thickness of side wall	0.45
----	------------------------	------

- a = Top width of head wall in m.
- b = Bottom width of head wall in m.
- Fa = Water force in Kg

- Fb = Water force in Kg
- Fc = Water force in Kg

- U = uplift force in Kg
- ρ = Specific gravity of dam material kg/cum(2300kg/cum)
- w = Unit weight of water in kg/cum(1000 kg/cum)
- H = Height of head wall
- h = head over the crest
- C = Coefficient in uplift (0.5)
- μ = Coefficient of friction (0.65 to 0.75)

a	b	H	h	ρ	C	w
0.45	1.00	0.6	0.4	2300	0.5	1000

W1 =	a Hp	a	H	ρ
	621	0.45	0.6	2300

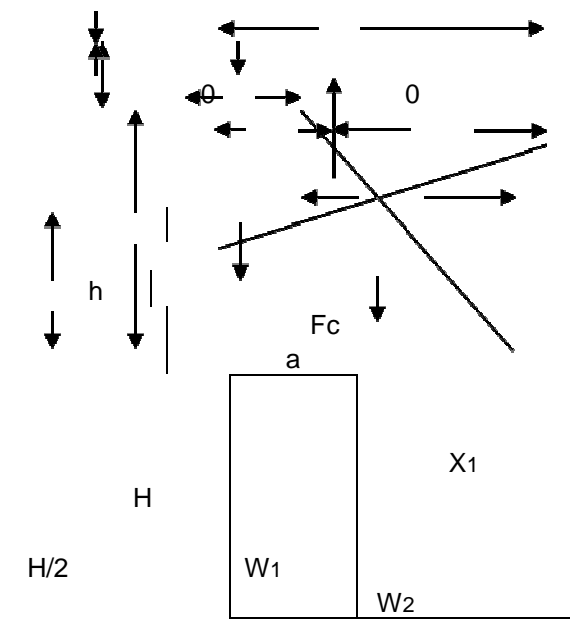
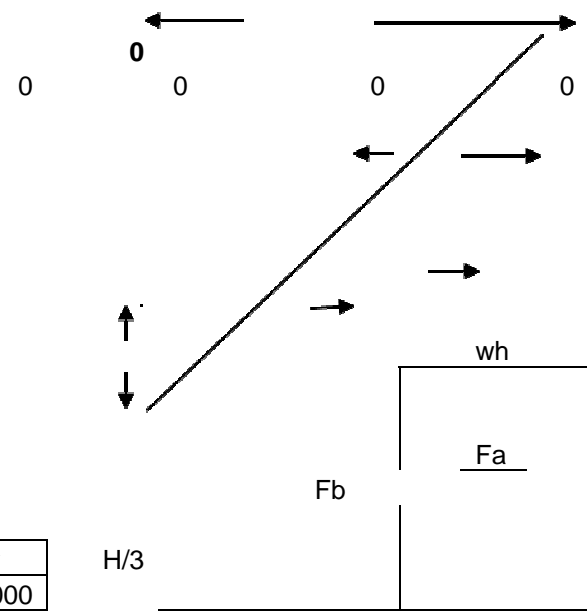
W2 =	$\frac{1}{2}(b-a)Hp$	b	a	H	ρ	coefficient
	379.5	1.00	0.45	0.6	2300	0.5

U =	$\frac{1}{2}Cw(H+h)b$	w	H	h	H+h	b	coefficient
	250	1000	0.6	0.4	1	1.00	0.5

Fa =	whH	w	h	H
	240	1000	0.4	0.6

Fb =	$\frac{wH^2}{2}$	w	H	H	H^2	coefficient
	180	1000	0.6	0.6	0.36	0.5

Fc =	wah	w	a	h
	180	1000	0.45	0.4



H	0.60		
h	0.4	W1	621
a	0.45	W2	379.5
b	1.00	U	250
w	1000	Fa	240
		Fb	180
		Fc	180

Safety against overturning

Micro no. 0 Near Khasra no. 0 DLT 0

W1	x1	Fc	Fa	Fb	U	a	b	W2
621	0.775	180	240	180	250	0.45	1.00	379.5
	H	U						
	0.6	250						
RM	$W_1x_1 + Fcx_1 + W_2 \cdot 2(b-a)/3$							
	W_1x_1	Fcx_1	$W_2 \cdot 2(b-a)/3$	b	a	b-a	coffi	
758.53	481.275	139.5	137.76	1.00	0.45	0.55	0.66	
OM	$F_a x H/2 + F_b x H/3 + U x 2b/3$							
	$F_a x H/2$	$F_b x H/3$	$U x 2b/3$					
274.6667	72	36	166.6667					
RM	OM	RM/OM						
758.53	274.6667	2.761651	>1.5	Hance safe				

Safety against sliding

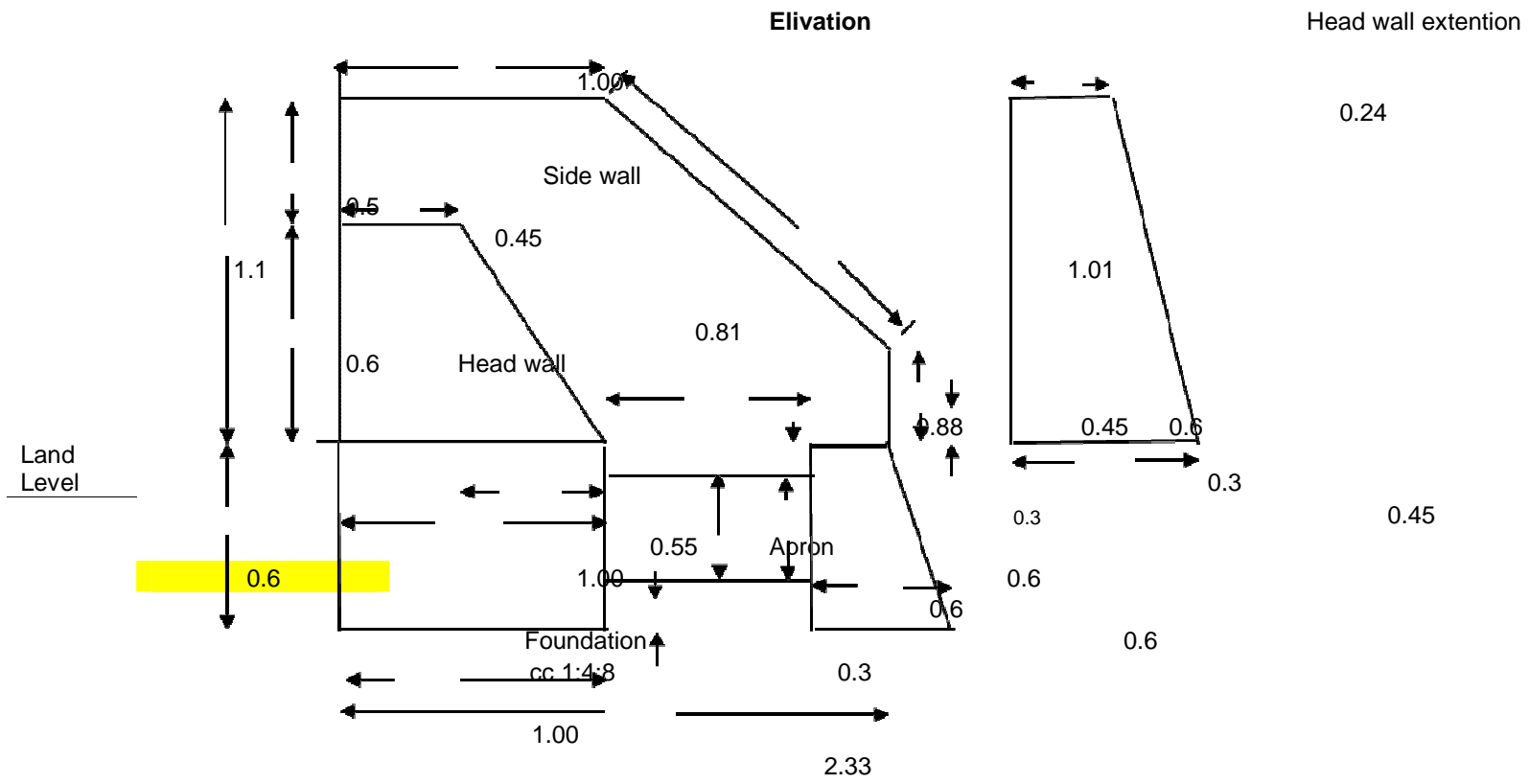
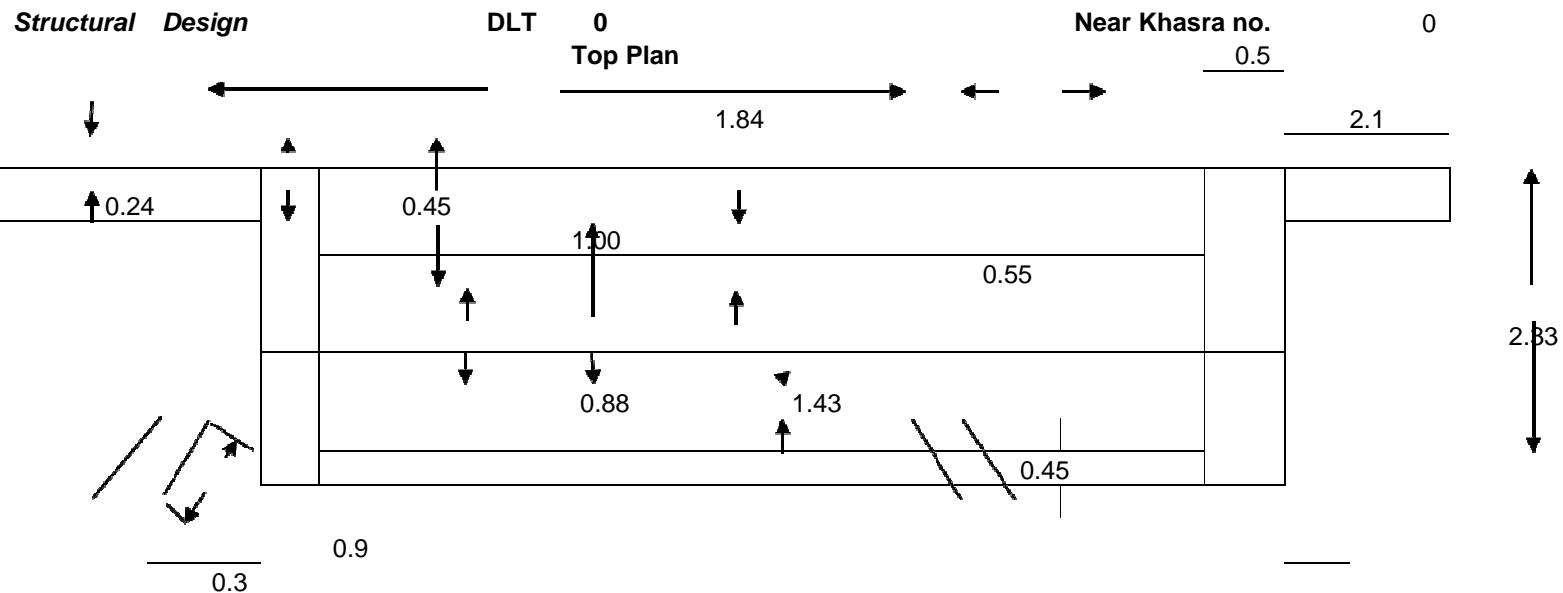
Tv	W1	W2	Fc	U	
930.5	621	379.5	180	250	
Th	Fa	Fb	Frictional coefficient 0.8		
420	240	180			
$C \cdot F \cdot Tv / Th$		1.77	>1.3	Hence safe	

Safety against tension at base

$X = (RM - OM) / Tv$		RM-OM	Tv
0.520		483.87	930.5
$E = b/2 - X$	b/2	X	
-0.020	0.5	0.520	

e b/6
-0.020 0.167

b/6 > e
Hance safe



Estimate

Sr. no.	Name of work	Average	Item no.	No	Head wall	H.W.E	Side wall	Toe Wall	rate	amount	
					0.725	0.345	1.66	0.525			
1	Earth work Excavation in hard soil up to 1.5 mt Hight and deposited excavated material lead op to 150		2B								
				Head wall	1	1.84	1.00	0.6	1.10		
				Head wall extention	2	2.1	0.45	0.6	1.13		
				side wall	2	2.33	0.45	0.6	1.26		
				Apron	1	1.84	0.88	0.9	1.45		
				Toe wall	1	1.84	0.6	0.6	0.66		
				Wing Wall	1	0.9	0.3	0.6	0.16		
								5.76	91	524.382	
2	Cement concrete 1:4:8 (Icement:4 sand:8 concrete) concrete Using mixture & vibrater	40/25 mm	125 B								
				Head wall	1	1.84	1.00	0.3	0.55		
				Head wall extention	2	2.1	0.45	0.3	0.57		
				side wall	2	2.33	0.45	0.3	0.63		
				Apron	1	1.84	0.88	0.3	0.48		
				Toe wall	1	1.84	0.6	0.3	0.33		
				Wing Wall	1	0.90	0.3	0.3	0.08		
								2.64	2012	5311.79	
3	RR stone mesonary in Cement sand mortar 1 : 6		25C								
				Head wall	1	1.84	1.00	0.3	0.55		
				Head wall extention	2	2.1	0.45	0.3	0.57		
				side wall	2	2.33	0.45	0.3	0.63		
				Apron	1	1.84	0.88	0.15	0.24		
				Toe wall	1	1.84	0.6	0.3	0.33		
				Wing Wall	1	0.90	0.3	0.3	0.08		
								2.40	1629	3907.79	
4	RR stone mesonary in Cement sand mortar 1 : 6		25C								
				Head wall	1	1.84	0.725	0.6	0.80		
				Head wall extention	2	2.1	0.345	1.1	1.59		
				side wall	2	1.66	0.45	0.5	0.75		
				side wall	2	2.33	0.45	0.6	1.26		
				Apron	1	1.84	0.88		0.00		
				Toe wall	1	1.84	0.525	0	0.00		
Wing Wall	1	0.90	0.3	0.6	0.16						
								4.56	1629	7426.31	

cf

17170.3

Sr. no.	Name of work	Item no.	No	Length	Width	Hight	Qty	rate	amount
5	Cement concrete 1:3:6 (1cement:3 sand:6 concrete) concrete Using mixture & vibrater	40/25 mm	125A						
							bf		17170.3
	Head wall		1	1.84	0.45	0.1	0.083		
	Head wall extention		2	2.10	0.24	0.08	0.08064		
	side wall		2	1.00	0.45	0.08	0.072		
	side wall		2	1.01	0.45	0.08	0.073		
	Apron		1	1.84	0.88	0.08	0.129		
	Toe wall		1	1.84	0.45	0.08	0.066		
	Wing Wall		1	0.90	0.3	0.08	0.022		
							0.524	2218	1162.8
6	Cement Plaster 1 : 6 (1 cement : 6 sand) 25 mm thick		71A						
	Head wall		1	1.84	0.45		0.827		
	Head wall		1	1.84	0.6		1.10		
	Head wall extention		2	2.10	0.24		1.01		
	Head wall extention		2	2.10	1.1		4.62		
	side wall		2	1.00	0.45		0.9		
	side wall		2	1.01	0.45		0.91		
	side wall		2	2.33	0.6		2.79		
	side wall		2	1.66	0.5		1.66		
	side wall		2	0.45	1.1		0.99		
	Apron		1	1.84	0.88		1.61		
	Toe wall		1	1.84	1.05		1.93		
	Wing Wall		2	0.90	0.3		0.54		
	Wing Wall		2	0.90	0.6		1.08		
	Wing Wall		2	0.6	0.3		0.36		
							20.32	128	2601.46
7	Cement concrete 1:1.5:3 (1cement:1.5 sand:3 concrete) mm concrete Using mixture & vibrater	25							
		Apron	126	1	1.84	0.875	0.15	0.24	3183
8	Pointing 1:3 (1 Cement : 3 Sand)		73						
		Head wall		1	1.84	0.81		1.50	49.8

21776.6

Total 38946.9

3% contengency 1168.41

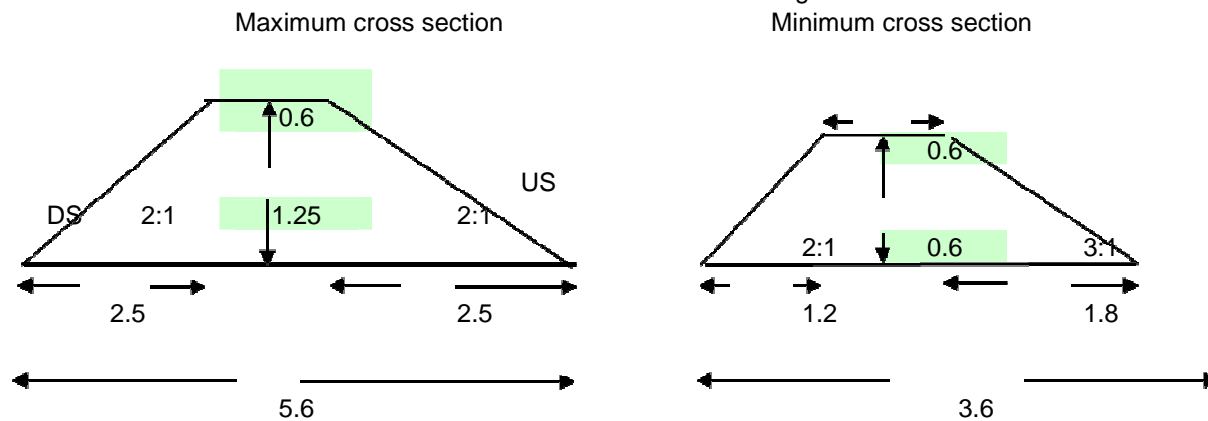
61892

Say lac. 0.62

IWMP MORRA

Earthen bund

Length Left 54
 Right 55
 Minimum cross section



$$CS = \frac{(Tw+Bw) * Hight}{2}$$

CS 3.875

CS 1.26

Average Cross section 2.5675

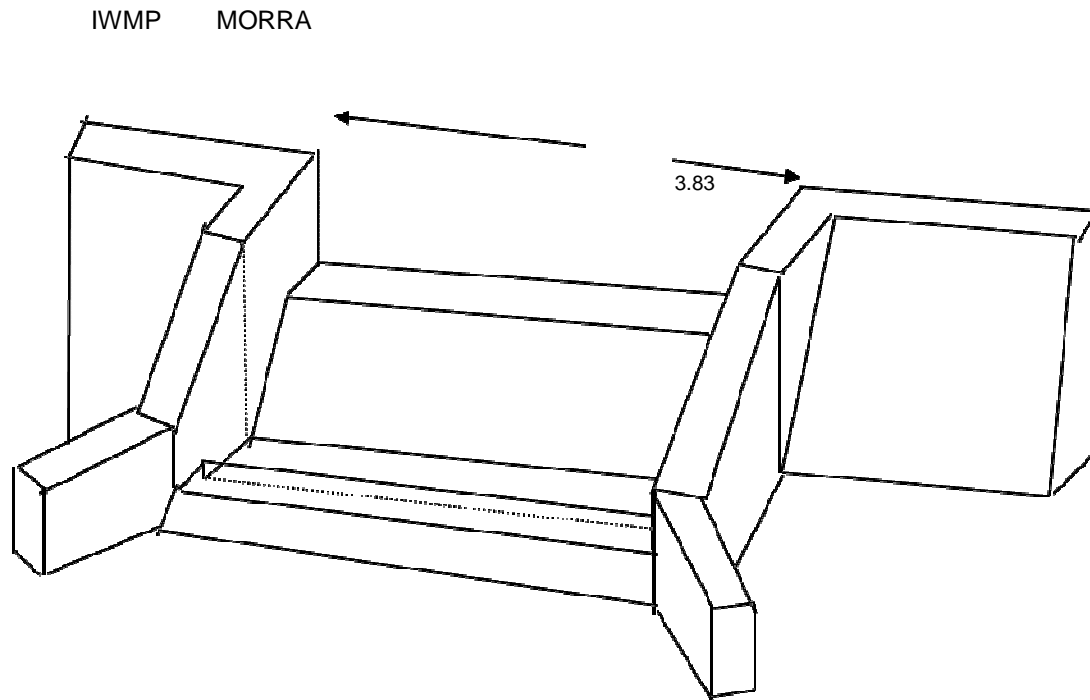
Sr.no.	Name of work				BSR Itam No	Length	Cross section	Qty	Unit	Rate	Amount
1	Earth work Excavation in hard soil up to 1.5 mt Hight and deposited excavated meterial lead op to 50				139 ii B	54	2.57	138.65			
						55	2.57	141.21			
								279.86	Cum	74.1	20737.44
2	cost of Cumath Seed	Row	Length	To.length	interwell	No per kg	0.73	Kg	60	43.6	
		3	109	327	1	450					
3	Seed Sowing (Cumtha)					327		327	mtr	0.44	143.88

20924.92

3% contengency 627.75

Total 21552.67

*Model Estimate
waste weir & earthen bund*



Design as per contour and field topography

Area	5 ha.
Slope	0 to 1 %
maximum hight	2 mtr.
maximum lenth of treval	200 mtr.

Abstruct of cost

Cost of waste weir	75912
Cost of earthen bund	46270
Total	122182
Say	1.22 lacs

waste weir & earthen bund

Data to put

A	C	L	H	h	l	Df
5	0.3	200	2	0.4	10	25

Hydrologic Design

Q=0.0276 CIA

Q= Peak rate run off in Cum/Sec.

C= Weighted coefficient of run off
l= Intensity of rain fall in Cm./hr.

for equal to time of constration at a given Frequency

A= Catchment area in Hectares

Q	Coefficient	l	A	C
1.656	0.0276	40	5	0.3

TC=0.0195 K^{0.77}

TC=Time of constration in minute

TC=Time of constration in minute

K= L^{3/2}/H^{1/2}

L= Max. length of travel in Mtr.

H=Diffrence elevation in Mtr.

K	L	L ^{3/2}	H	H ^{1/2}
2000	200	2828	2	1.414

TC	Coefficient	K	K ⁷⁷
6.789	0.0195	2000	348.2

40 Use this As l As Reference

10 l=one hour rain fall intensity in cm/hour

Hydraulic Design

Q	Coefficient	L	h	h ^{1.5}
1.656	1.71	3.83	0.4	0.253

12.56

F	Coefficient	h _w
0.105	1.5	0.07

0.1

h _w	Coefficient	D _f	D _f ^{0.5}
0.07	0.014	25	5.00

d	h	F
0.5	0.4	0.1

h=head over the crest in mtr

L=length of the crest wall in mtr

F=free board in mtr

D_f=fatch length in mtr

h_w=wave length in mtr

Structural Design

0

H	h	d	p
0.45	0.4	0.5	2.3

1	Top width of head wall a	a=h/(p-1) ^{0.5}	h	p	p-1	(p-1) ^{0.5}
		0.35	0.4	2.3	1.3	1.14

Say 0.45

2	Bottom width of head wall b	b=h+H/(p-1) ^{0.5}	h	H	H+h	p	p-1	(p-1) ^{0.5}
		0.745	0.4	0.45	0.85	2.3	1.3	1.14

Say 1.00

3	Length of head wall ext l	l=H+d+1	H	d	cofficient
		1.95	0.45	0.5	1

4	Hight of head wall ext	H+d	H	d	
		0.95	0.45	0.5	

5	Bottom width of head wall ext	0.5(H+h)	H	h	H+h	cofficient
		0.425	0.45	0.4	0.85	0.5

0.45

6	Top width of head wall ext	0.4*H	H	cofficient
		0.18	0.45	0.4

7	Length of basin LB	0.75(H+d)+H	H	d	H+d	0.75(H+d)
		1.16	0.45	0.5	0.95	0.7125

8	Thickness of basin	t		
		0.5		

9	Hight of the side wall at head wall joint	H+d	H	d
		0.95	0.45	0.5

10	Hight of the side wall at toe wall joint	1.5*h	cofficient	h
		0.6	1.5	0.4

11	Length of wing wall	2.25*h	cofficient	h
		0.9	2.25	0.4

12	Height of wing wall	1.5*h	cofficient	h
		0.6	1.5	0.4

13	Top width of toe wall	0.3
----	-----------------------	-----

14	Height of toe wall	0.3
----	--------------------	-----

15	Thickness of side wall	0.3
----	------------------------	-----

a = Top width of head wall in m.
 b = Bottom width of head wall in m.
 Fa = Water force in Kg

Fb = Water force in Kg
 Fc = Water force in Kg

U = uplift force in Kg
 ρ = Specific gravity of dam material kg/cum(2300kg/cum)
 w = Unit weight of water in kg/cum(1000 kg/cum)
 H = Height of head wall
 h = head over the crest
 C = Coefficient in uplift (0.5)
 μ = Coefficient of friction (0.65 to 0.75)

a	b	H	h	ρ	C	w
0.45	1.00	0.45	0.4	2300	0.5	1000

W1 =

a Hp	a	H	ρ
465.75	0.45	0.45	2300

W2 =

$\frac{1}{2}(b-a)Hp$	b	a	H	ρ	coefficient
284.625	1.00	0.45	0.45	2300	0.5

U =

$\frac{1}{2}Cw(H+h)b$	w	H	h	H+h	b	coefficient
212.5	1000	0.45	0.4	0.85	1.00	0.5

Fa =

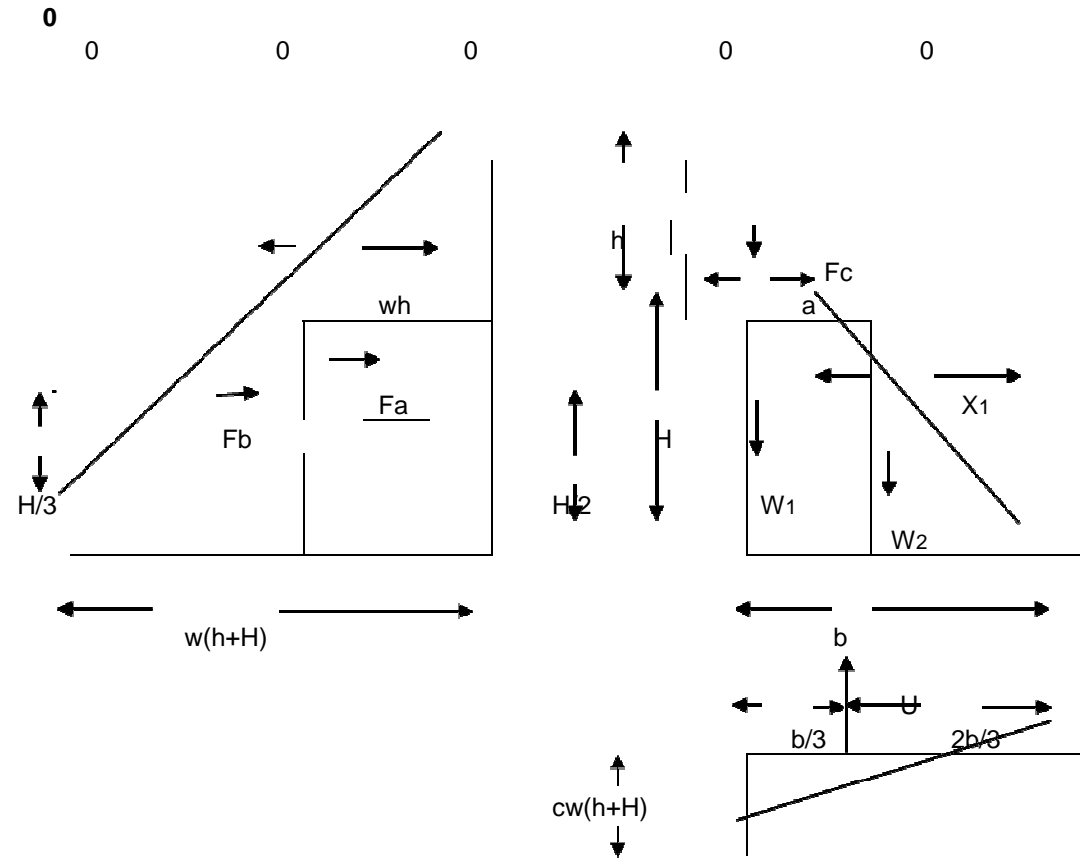
whH	w	h	H
180	1000	0.4	0.45

Fb =

$\frac{wH^2}{2}$	w	H	H	H^2	coefficient
101.25	1000	0.45	0.45	0.2025	0.5

Fc =

wah	w	a	h
180	1000	0.45	0.4



H	0.45		
h	0.4	W1	465.75
a	0.45	W2	284.625
b	1.00	U	212.5
w	1000	Fa	180
		Fb	101.25
		Fc	180

Safety against overturning

Micro no. 0 Near Khasra no. 0 DLT 0

W1	x1	Fc	Fa	Fb	U	a	b	W2
465.75	0.775	180	180	101.25	212.5	0.45	1.00	284.625
	H	U						
	0.45	212.5						
RM	$W_1x_1 + Fcx_1 + W_2.2(b-a)/3$							
	W_1x_1	Fcx_1	$W_2.2(b-a)/3$	b	a	b-a	coffi	
603.78	360.9563	139.5	103.32	1.00	0.45	0.55	0.66	
OM	$F_a x H/2 + F_b x H/3 + U x 2b/3$							
	$F_a x H/2$	$F_b x H/3$	$U x 2b/3$					
197.3542	40.5	15.1875	141.6667					
RM	OM	RM/OM						
603.78	197.3542	3.059348	>1.5	Hance safe				

Safety against sliding

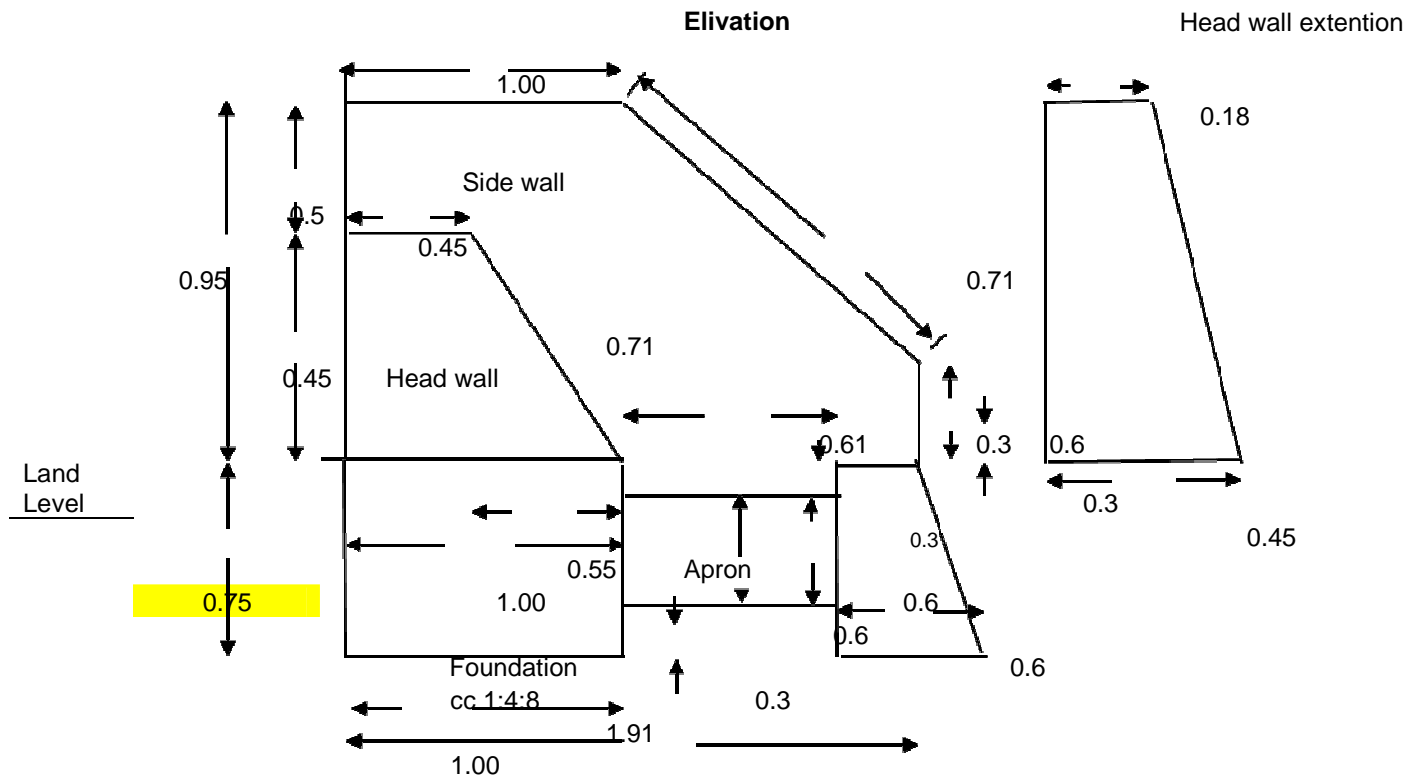
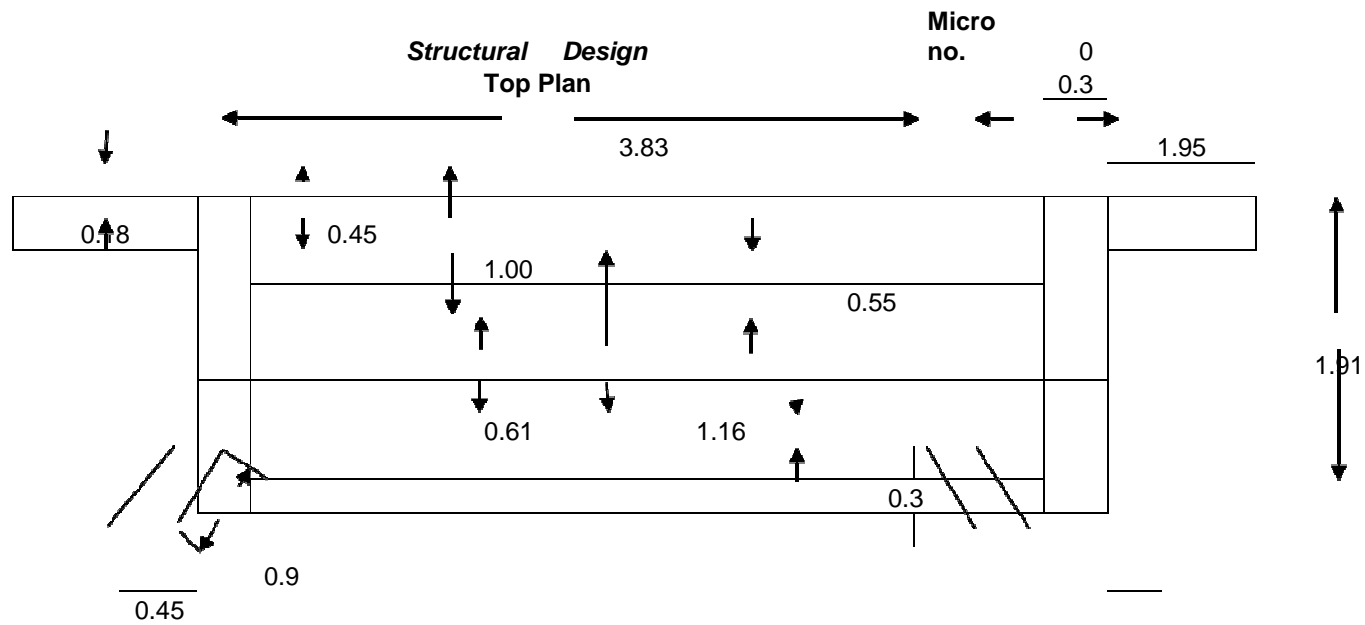
Tv	W1	W2	Fc	U	
717.875	465.75	284.625	180	212.5	
Th	Fa	Fb	Frictional coefficient		
281.25	180	101.25	0.8		
$C.F * Tv/Th$	2.04	>1.3	Hence safe		

Safety against tension at base

$X = (RM - OM)/Tv$		RM-OM	Tv
0.566		406.42	717.875
$E = b/2 - X$	b/2	X	
-0.066	0.5	0.566	

e b/6
-0.066 0.167

b/6 > e
Hance safe



Estimate

Sr. no.	Name of work	Average	Item no.	No	Average			Qty	rate	amount	
					Head wall	H.W.E	Side wall				
					0.725	0.315	1.46	0.45			
1	Earth work Excavation in hard soil up to 1.5 mt Hight and deposited excavated meterial lead op to 150		2B								
				Head wall	1	3.83	1.00	0.75	2.87		
				Head wall extention	2	1.95	0.45	0.75	1.32		
				side wall	2	1.91	0.3	0.75	0.86		
				Apron	1	3.83	0.61	0.9	2.11		
				Toe wall	1	3.83	0.6	0.75	1.72		
				Wing Wall	1	0.9	0.45	0.6	0.24		
							9.12	91	830.256		
2	Cement concrete 1:4:8 (Icement:4 sand:8 concrete) concrete Using mixture & vibrater	40/25 mm	125 B								
				Head wall	1	3.83	1.00	0.3	1.15		
				Head wall extention	2	1.95	0.45	0.3	0.53		
				side wall	2	1.91	0.3	0.3	0.34		
				Apron	1	3.83	0.61	0.3	0.70		
				Toe wall	1	3.83	0.6	0.3	0.69		
				Wing Wall	1	0.90	0.45	0.3	0.12		
							3.53	2012	7108.59		
3	RR stone mesonary in Cement sand mortar 1 : 6		25C								
				Head wall	1	3.83	1.00	0.45	1.72		
				Head wall extention	2	1.95	0.45	0.45	0.79		
				side wall	2	1.91	0.3	0.45	0.52		
				Apron	1	3.83	0.61	0.15	0.35		
				Toe wall	1	3.83	0.6	0.45	1.03		
				Wing Wall	1	0.90	0.45	0.3	0.12		
							4.54	1629	7388.33		
4	RR stone mesonary in Cement sand mortar 1 : 6		25C								
				Head wall	1	3.83	0.725	0.45	1.25		
				Head wall extention	2	1.95	0.315	0.95	1.17		
				side wall	2	1.46	0.3	0.35	0.31		
				side wall	2	1.91	0.3	0.6	0.69		
				Apron	1	3.83	0.61		0.00		
				Toe wall	1	3.83	0.45	0	0.00		
Wing Wall	1	0.90	0.45	0.6	0.24						
							3.65	1629	5951.19		

cf

21278.4

Sr. no.	Name of work	Item no.	No	Length	Width	Hight	Qty	rate	amount
5	Cement concrete 1:3:6 (1cement:3 sand:6 concrete) concrete Using mixture & vibrater	40/25 mm	125A						
							bf		21278.4
	Head wall		1	3.83	0.45	0.1	0.172		
	Head wall extention		2	1.95	0.18	0.08	0.05616		
	side wall		2	1.00	0.3	0.08	0.048		
	side wall		2	0.71	0.3	0.08	0.034		
	Apron		1	3.83	0.61	0.08	0.188		
	Toe wall		1	3.83	0.3	0.08	0.092		
	Wing Wall		1	0.90	0.45	0.08	0.032		
							0.622	2218	1379.88
6	Cement Plaster 1 : 6 (1 cement : 6 sand) 25 mm thick	71A							
	Head wall		1	3.83	0.45		1.723		
	Head wall		1	3.83	0.45		1.72		
	Head wall extention		2	1.95	0.18		0.70		
	Head wall extention		2	1.95	0.95		3.71		
	side wall		2	1.00	0.3		0.6		
	side wall		2	0.71	0.3		0.42		
	side wall		2	1.91	0.6		2.30		
	side wall		2	1.46	0.35		1.02		
	side wall		2	0.30	0.95		0.57		
	Apron		1	3.83	0.61		2.34		
	Toe wall		1	3.83	0.9		3.45		
	Wing Wall		2	0.90	0.45		0.81		
	Wing Wall		2	0.90	0.6		1.08		
	Wing Wall		2	0.6	0.45		0.54		
							20.98	128	2685.41
7	Cement concrete 1:1.5:3 (1cement:1.5 sand:3 concrete) mm concrete Using mixture & vibrater	25							
	Apron	126	1	3.83	0.613	0.15	0.35	3183	1119.46
8	Pointing 1:3 (1 Cement : 3 Sand)	73							
	Head wall		1	3.83	0.71		2.72	49.8	135.472

26598.6

Total 47877

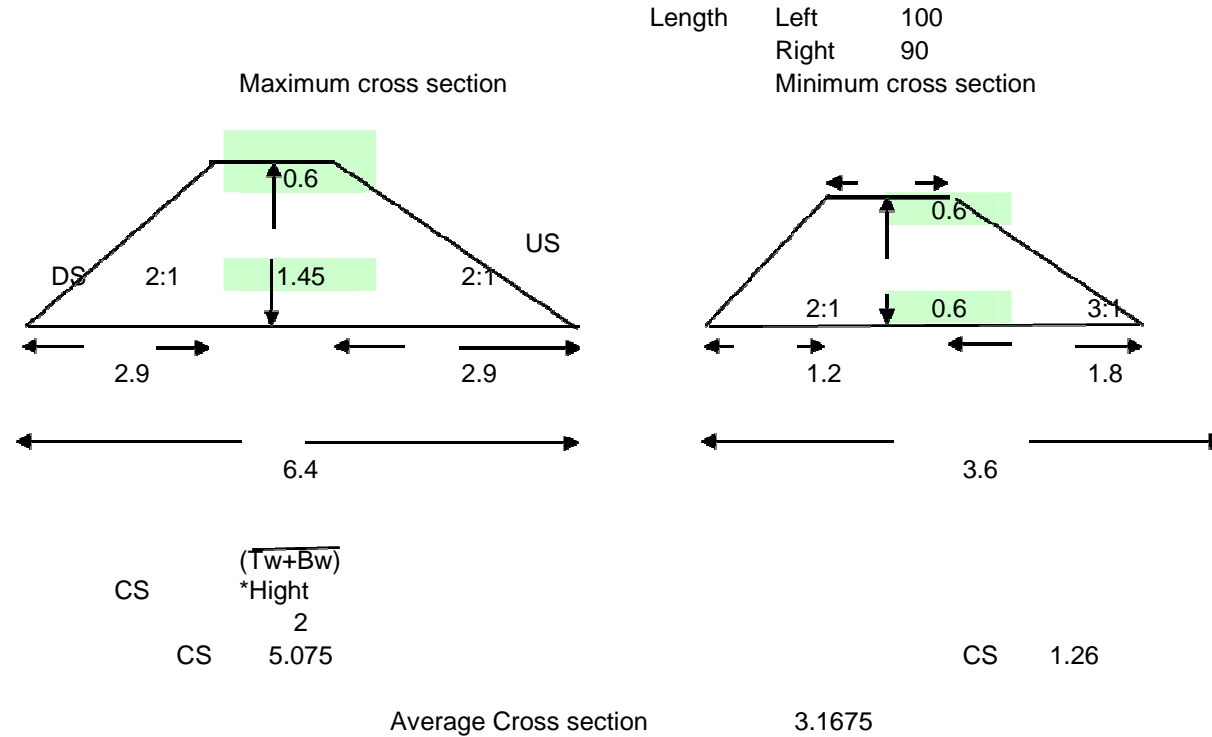
3% contengency 1436.31

75911.9

Say lac. 0.76

IWMP MORRA

Earthen bund



Sr.no.	Name of work				BSR Itam No	Length	Cross secction	Qty	Unit	Rate	Amount
1	Earth work Excavation in hard soil up to 1.5 mt Hight and deposited excavated materal lead op to 50				139 ii B	100	3.17	316.75			
						90	3.17	285.08			
								601.83	Cum	74.1	44595.23
2	cost of Cumath Seed	Row	Length	To.length	interwell	No per kg					
		3	190	570	1	450	1.27	Kg	60	76	
3	Seed Sowing (Cumtha)			570			570	mtr	0.44	250.8	

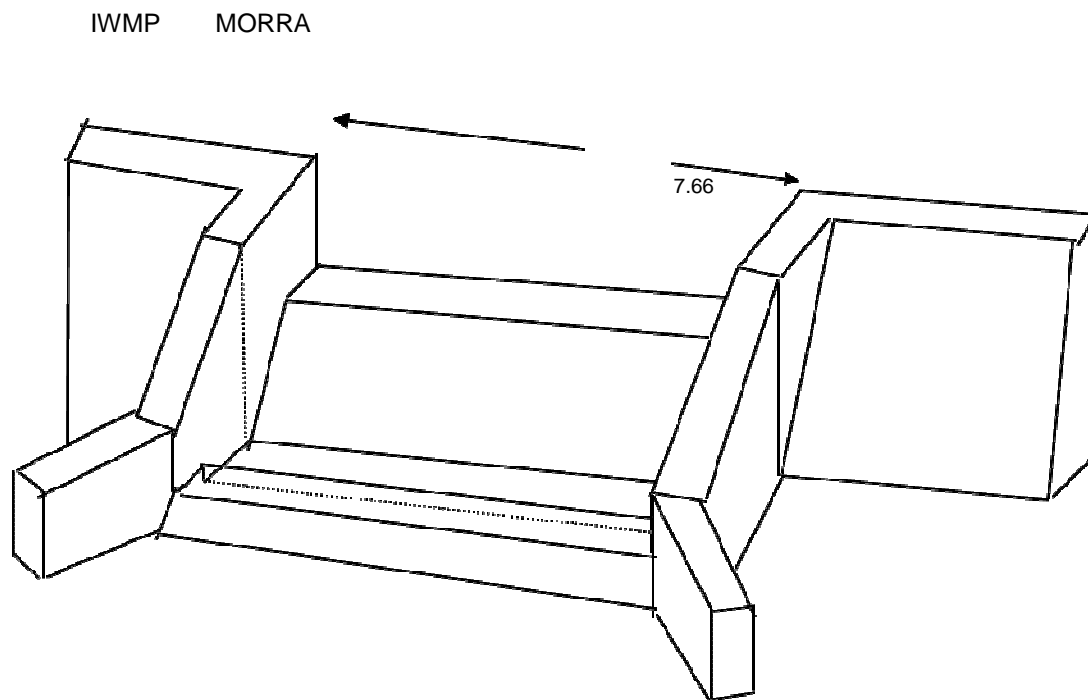
44922.03

3% contengency 1347.66

Total 46269.69

say lac. 0.46

*Model Estimate
waste weir & earthen bund*



Design as per contour and field topography

Area	10 ha.
Slope	0 to 1 %
maximum height	2 mtr.
maximum length of treval	200 mtr.

Abstract of cost

Cost of waste weir	122120
Cost of earthen bund	98657
Total	220777
Say	2.21 lacs

waste weir & earthen bund

Data to put

A	C	L	H	h	I	Df
10	0.3	200	2	0.4	10	25

Hydrologic Design

Q=0.0276 CIA

Q= Peak rate run off in Cum/Sec.

C= Weighted coefficient of run off

I= Intensity of rain fall in Cm./hr.

for equal to time of constration at a given Frequency

A= Catchment area in Hectares

Q	Coefficient	I	A	C
3.312	0.0276	40	10	0.3

TC=0.0195 K^{0.77}

TC=Time of constration in minute

TC=Time of constration in minute

K= L^{3/2}/H^{3/2}

L= Max. length of travel in Mtr.

H=Diffrence elevation in Mtr.

K	L	L ^{3/2}	H	H ^{3/2}
2000	200	2828	2	1.414

TC	Coefficient	K	K ⁷⁷
6.789	0.0195	2000	348.2

40 Use this As I As Reference

10 I=one hour rain fall intensity in cm/hour

Hydraulic Design

Q	Coefficient	L	h	h ^{1.5}
3.312	1.71	7.66	0.4	0.253

25.11

F	Coefficient	h _w
0.105	1.5	0.07

0.1

h _w	Coefficient	D _r	D _r ^{0.5}
0.07	0.014	25	5.00

d	h	F
0.5	0.4	0.1

h=head over the crest in mtr

L=length of the crest wall in mtr

F=free board in mtr

D_r=fatch length in mtr

hw=wave length in mtr

Structural Design

0

H	h	d	p
0.45	0.4	0.5	2.3

1	Top width of head wall a	a=h/(p-1) ^{0.5}	h	p	p-1	(p-1) ^{0.5}
		0.35	0.4	2.3	1.3	1.14

Say 0.45

2	Bottom width of head wall b	b=h+H/(p-1) ^{0.5}	h	H	H+h	p	p-1	(p-1) ^{0.5}
		0.745	0.4	0.45	0.85	2.3	1.3	1.14

Say 1.00

3	Length of head wall ext l	l=H+d+1	H	d	coefficient
		1.95	0.45	0.5	1

4	Hight of head wall ext	H+d	H	d
		0.95	0.45	0.5

5	Bottom width of head wall ext	0.5(H+h)	H	h	H+h	coefficient
		0.425	0.45	0.4	0.85	0.5

Say 0.45

6	Top width of head wall ext	0.4*H	H	coefficient
		0.18	0.45	0.4

7	Length of basin LB	0.75(H+d)+H	H	d	H+d	0.75(H+d)
		1.16	0.45	0.5	0.95	0.7125

8	Thickness of basin	t
		0.5

9	Hight of the side wall at head wall joint	H+d	H	d
		0.95	0.45	0.5

10	Hight of the side wall at toe wall joint	1.5*h	coefficient	h
		0.6	1.5	0.4

11	Length of wing wall	2.25*h	coefficient	h
		0.9	2.25	0.4

12	Height of wing wall	1.5*h	coefficient	h
		0.6	1.5	0.4

13	Top width of toe wall	0.3
----	-----------------------	-----

14	Height of toe wall	0.3
----	--------------------	-----

15	Thickness of side wall	0.3
----	------------------------	-----

- a = Top width of head wall in m.
- b = Bottom width of head wall in m.
- Fa = Water force in Kg
- Fb = Water force in Kg
- Fc = Water force in Kg

- U = uplift force in Kg
- ρ = Specific gravity of dam material kg/cum(2300kg/cum)
- w = Unit weight of water in kg/cum(1000 kg/cum)
- H = Height of head wall
- h = head over the crest
- C = Coefficient in uplift (0.5)
- μ = Coefficient of friction (0.65 to 0.75)

a	b	H	h	ρ	C	w
0.45	1.00	0.45	0.4	2300	0.5	1000

W1 =

$a H \rho$	a	H	ρ
465.75	0.45	0.45	2300

W2 =

$\frac{1}{2}(b-a)H\rho$	b	a	H	ρ	coefficient
284.625	1.00	0.45	0.45	2300	0.5

U =

$\frac{1}{2}Cw(H+h)b$	w	H	h	H+h	b	coefficient
212.5	1000	0.45	0.4	0.85	1.00	0.5

Fa =

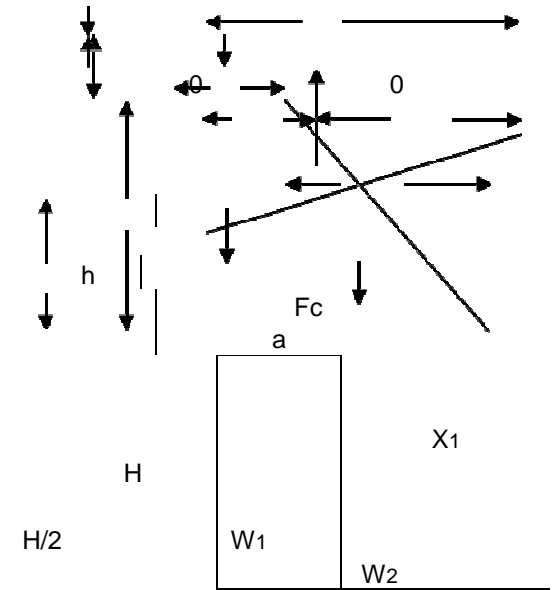
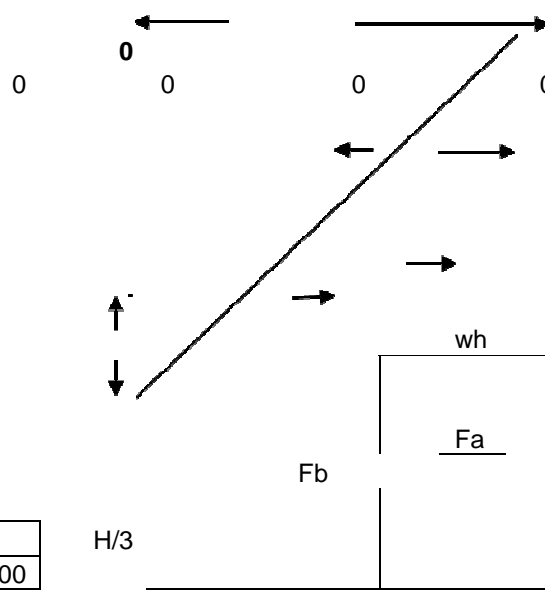
whH	w	h	H
180	1000	0.4	0.45

Fb =

$\frac{wH^2}{2}$	w	H	H	H^2	coefficient
101.25	1000	0.45	0.45	0.2025	0.5

Fc =

wah	w	a	h
180	1000	0.45	0.4



$w(h+H)$

H/2

$cw(h+H)$

H	0.45
h	0.4
a	0.45
b	1.00
w	1000

W1	465.75
W2	284.625
U	212.5
Fa	180
Fb	101.25
Fc	180

Safety against overturning

Micro no. 0 Near Khasra no. 0 DLT 0

W1	x1	Fc	Fa	Fb	U	a	b	W2
465.75	0.775	180	180	101.25	212.5	0.45	1.00	284.625
	H	U						
	0.45	212.5						

RM	$W_1x_1 + Fcx_1 + W_2 \cdot 2(b-a)/3$						
	W_1x_1	Fcx_1	$W_2 \cdot 2(b-a)/3$	b	a	b-a	coffi
603.78	360.9563	139.5	103.32	1.00	0.45	0.55	0.66
OM	$F_a \cdot xH/2 + F_b \cdot xH/3 + Ux2b/3$						
	$F_a \cdot xH/2$	$F_b \cdot xH/3$	$Ux2b/3$				
197.3542	40.5	15.1875	141.6667				
RM	OM	RM/OM					
603.78	197.3542	3.059348	>1.5	Hance safe			

Safety against sliding

Tv	W1	W2	Fc	U	
717.875	465.75	284.625	180	212.5	
Th	Fa	Fb	Frictional coefficient		
281.25	180	101.25	0.8		
$C \cdot F \cdot Tv / Th$	2.04	>1.3	Hence safe		

Safety against tension at base

$X = (RM - OM) / Tv$		RM-OM	Tv
0.566		406.42	717.875
$E = b/2 - X$	b/2	X	
-0.066	0.5	0.566	

e b/6
-0.066 0.167 b/6 > e
Hance safe

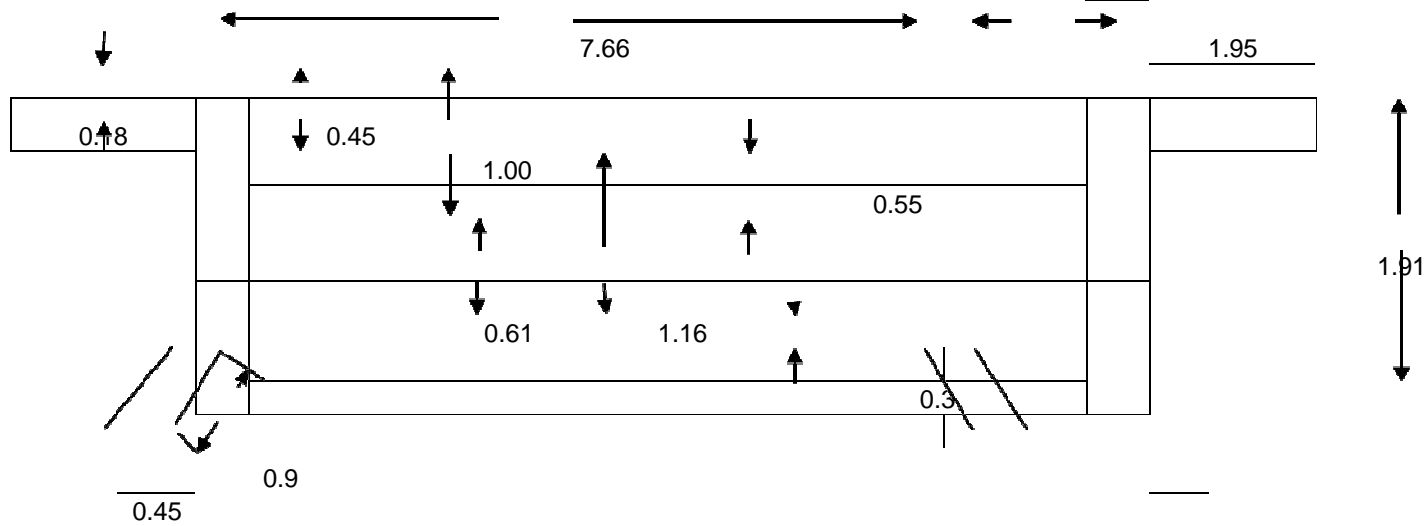
Structural Design

DLT 0

Micro no. 0

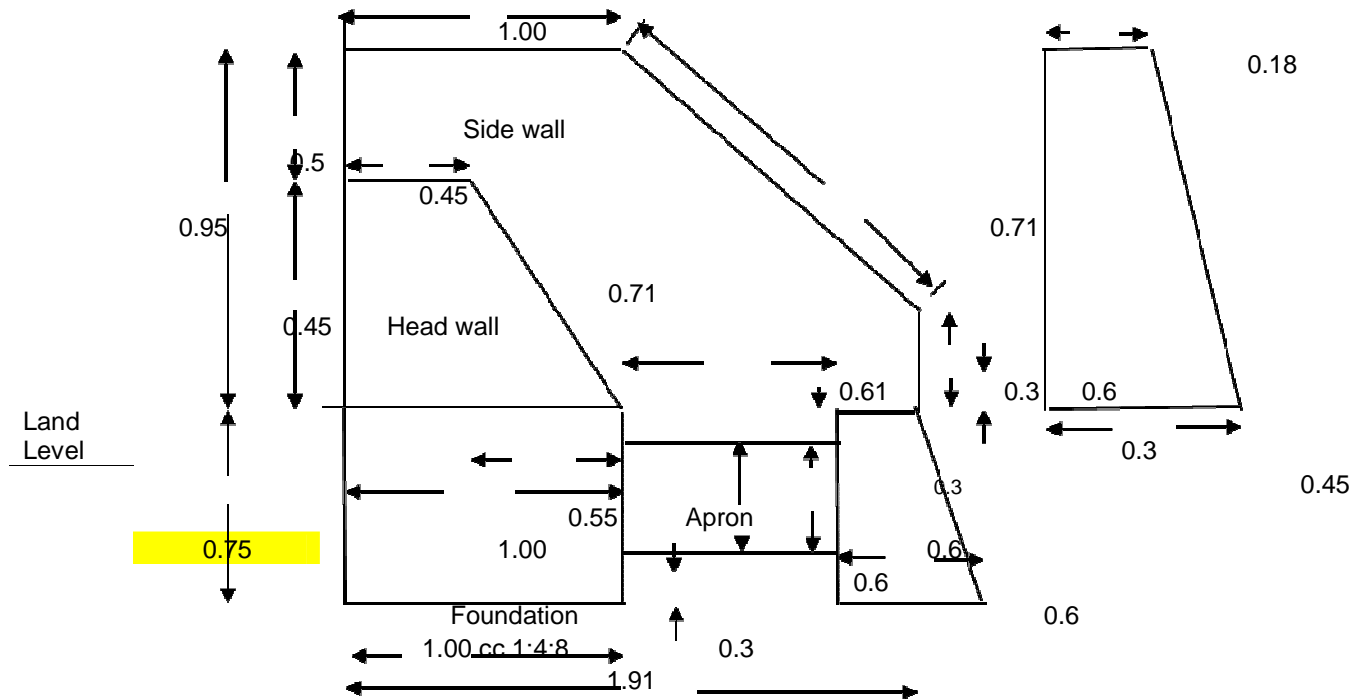
Near Khasra no. 0

Top Plan



Elevation

Head wall extension



Estimate

Sr. no.	Name of work	Item no.	No	Average		Side	Toe	rate	amount	
				Head wall	H.W.E	wall	Wall			
				0.725	0.315	1.46	0.45			
1	Earth work Excavation in hard soil up to 1.5 mt High and deposited excavated material lead up to 150	2B								
			Head wall	1	7.66	1.00	0.75	5.74		
			Head wall extention	2	1.95	0.45	0.75	1.32		
			side wall	2	1.91	0.3	0.75	0.86		
			Apron	1	7.66	0.61	0.9	4.22		
			Toe wall	1	7.66	0.6	0.75	3.45		
			Wing Wall	1	0.9	0.45	0.6	0.24		
									15.83	91
2	Cement concrete 1:4:8 (1cement:4 sand:8 concrete) concrete Using mixture & vibrater	125 B								
			Head wall	1	7.66	1.00	0.3	2.30		
			Head wall extention	2	1.95	0.45	0.3	0.53		
			side wall	2	1.91	0.3	0.3	0.34		
			Apron	1	7.66	0.61	0.3	1.41		
			Toe wall	1	7.66	0.6	0.3	1.38		
			Wing Wall	1	0.90	0.45	0.3	0.12		
						6.07	2012	12220.8		
3	RR stone mesonary in Cement sand mortar 1 : 6	25C								
			Head wall	1	7.66	1.00	0.45	3.45		
			Head wall extention	2	1.95	0.45	0.45	0.79		
			side wall	2	1.91	0.3	0.45	0.52		
			Apron	1	7.66	0.61	0.15	0.70		
			Toe wall	1	7.66	0.6	0.45	2.07		
			Wing Wall	1	0.90	0.45	0.3	0.12		
						7.64	1629	12451.1		
4	RR stone mesonary in Cement sand mortar 1 : 6	25C								
			Head wall	1	7.66	0.725	0.45	2.50		
			Head wall extention	2	1.95	0.315	0.95	1.17		
			side wall	2	1.46	0.3	0.35	0.31		
			side wall	2	1.91	0.3	0.6	0.69		
			Apron	1	7.66	0.61		0.00		
			Toe wall	1	7.66	0.45	0	0.00		
			Wing Wall	1	0.90	0.45	0.6	0.24		
						4.90	1629	7985.64		

cf

34097.8

Sr. no.	Name of work	Item no.	No	Length	Width	Hight	Qty	rate	amount
5	Cement concrete 1:3:6 (1cement:3 sand:6 concrete) 40/25 mm concrete Using mixture & vibrater	125A					bf		34097.8
	Head wall		1	7.66	0.45	0.1	0.345		
	Head wall extention		2	1.95	0.18	0.08	0.05616		
	side wall		2	1.00	0.3	0.08	0.048		
	side wall		2	0.71	0.3	0.08	0.034		
	Apron		1	7.66	0.61	0.08	0.375		
	Toe wall		1	7.66	0.3	0.08	0.184		
	Wing Wall		1	0.90	0.45	0.08	0.032		
							1.074	2218	2381.76
6	Cement Plaster 1 : 6 (1 cement : 6 sand) 25 mm thick	71A							
	Head wall		1	7.66	0.45		3.445		
	Head wall		1	7.66	0.45		3.45		
	Head wall extention		2	1.95	0.18		0.70		
	Head wall extention		2	1.95	0.95		3.71		
	side wall		2	1.00	0.3		0.6		
	side wall		2	0.71	0.3		0.42		
	side wall		2	1.91	0.6		2.30		
	side wall		2	1.46	0.35		1.02		
	side wall		2	0.30	0.95		0.57		
	Apron		1	7.66	0.61		4.69		
	Toe wall		1	7.66	0.9		6.89		
	Wing Wall		2	0.90	0.45		0.81		
	Wing Wall		2	0.90	0.6		1.08		
Wing Wall		2	0.6	0.45		0.54			
							30.21	128	3867.5
7	Cement concrete 1:1.5:3 (1cement:1.5 sand:3 concrete) 25 mm concrete Using mixture & vibrater								
	Apron	126	1	7.66	0.613	0.15	0.70	3183	2238.92
8	Pointing 1:3 (1 Cement : 3 Sand)	73							
	Head wall		1	7.66	0.71		5.44	49.8	270.944

42856.9

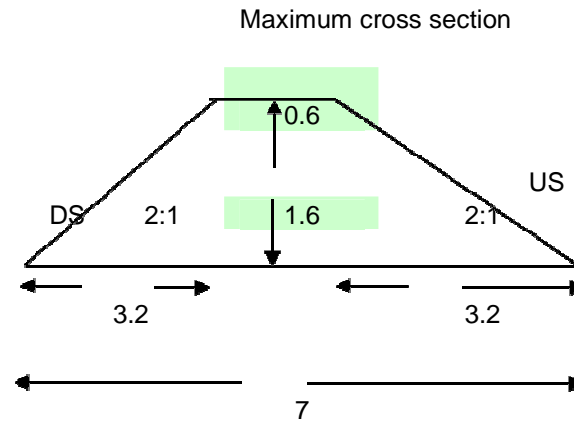
Total 76954.7

3% contengency 2308.64

122120

Say lac. 1.22

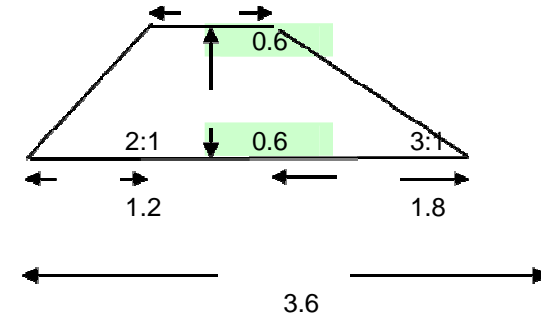
Earthen bund



$$CS = \frac{(T_w + B_w) * \text{Height}}{2}$$

CS 6.08

Length Left 200
 Right 150
 Minimum cross section



CS 1.26

Average Cross section

3.67

Sr.no.	Name of work				BSR Itam No	Length	Cross section	Qty	Unit	Rate	Amount
1	Earth work Excavation in hard soil up to 1.5 mt High and deposited excavated material lead op to 50				139 ii B	200	3.67	734.00			
						150	3.67	550.50			
								1284.50	Cum	74.1	95181.45
2	cost of Cumath Seed	Row	Length	To.length	interwell	No per kg	2.33	Kg	60	140	
		3	350	1050	1	450					
3	Seed Sowing (Cumtha)				1050			1050	mtr	0.44	462

95783.45

3% contengency 2873.50

Total 98656.95

Say lac. 0.99

Abstract cost of Khet Talai with Plantation work

IWMP MORRA

Area **0.50 Ha.**

For General & OBC Category

Sr. no	Name of work	Project cost			Convergence with Ag.Ext dept.			Measures	
		Project	Contribution	Total	Govt share	Farmer share	Total		
		90%	10%		75%	25%			
1	Cost of Khet Talai	1.32	1.184866	0.131651828	1.3165				Conservation measure for water harvesting
			60%	40%					
2	Cost of Horticulture plantation	15141	9084.6	6056.4	15141				Production
3	Cost of Barbered wire fencing with post fixing	34700	20820	13880	34700				Production
	Total Production	49841	29904.6	19936.4	49841	70%	30%		
4	Cost of Drip irrigation system	21000	0	0	0	14700	6300	21000	
		70842.32	29906	19937	49842	14700	6300	21000	
	Say	1.90	1.37	0.32	1.69	0.15	0.06	0.21	Lacs

Note :- 1 Rates are taken as per GKN Nagaur. & forest dept.
 2 For Horticulture plantation is as per norms of Agriculture ext. Dept.
 3 For development of this unit drip irrigation will be taken in convergence with Agriculture ext. Dept.

*IWMP
MORRA
Design of Khet talai*

Collection of Water =	Area * rainfall*30%	Capacity as per Structural design
Catchment Area =	0.12 ha.	Cum= Area*Hight
=	1200 Sqm	Area = 64
Rainfall =	0.3 Mtr	Hight = 1.50
Collection of water =	108 Cum	96 Cum
Capacity Cum*1000		Capacity Cum*1000
= 108000		= 96000

Hence rainfall on catchment area can fillup the tanka by water

Full capacity	96000
Evoporation 30%	28800
<i>Daily use for animal and birds 25%</i>	24000
<i>Net available water for Horticulture Plantation</i>	43200

Production

One watering require 15 Ltr

No of watering per Year 20 No

Total Ltr require per plant per year 300 Ltr

No of plant can survive = capacity/ water require per plant per year
 = 144
 say 139 plant

Model Estimate

Khet Talai

Water tank For collection of water

IWMP MORRA

Length	Width	Hight			Wall Width
		Excavation	Above GL	Mesonary	
8	8	1.8	0.6	2.1	0.45

Capacity		Plant	Ha.
96000	Ltr	139	0.50

S.no	Activity		No	Length	Width	Hight	Qty	Unit	Rate	Amount
1	Earth work Excavation in hard soil up to 1.5 mt Hight and deposited excavated meterial lead op to 150	2B	1	8	8	1.8	115.2	cum.	91	10483.2
2	Spreding And compection of excaveted soil in required profile	5	1	8	8	1.8	115.2	cum.	37	4262.4
2	Cement concrete 1:4:8 (1cement:4 sand:8 concrete) 40/25 mm concrete Using mixture & vibrater	125 B	1	8	8	0.3	19.2	cum.	2012	38630.4
3	RR stone mesonary in Cement sand mortar 1 : 6	25C	2	8.9	0.45	2.1	16.821			
			2	8	0.45	2.1	15.12			
								31.941	cum.	1629
5	50 mm Cement concrete 1 : 2 : 4 (1 cement : 2 sand : 4 concrete) 12mm	56	2	8.9	0.45		8.01			
			2	8	0.45		7.2			
								15.21	sqm.	210
6	Cement Plaster 1 : 6 (1 cement : 4 sand) 25 mm thick	71A	2	8		2.1	33.6			
			2	8		2.1	33.6			
								67.2	sqm.	128
7	Cement Plaster 1 : 6 (1 cement : 6 sand) 25 mm thick on stone	71A	2	8.9		0.6	10.68			
			2	8.9		0.6	10.68			
								21.36	sqm.	128

119937.7

Excavation will be done by farmer (-) 10483.2
Net (a) 109454.5

S.No	Discription			Length		Width		Hight		
				No/fector	Length	Width	Hight	Qty	Rate	Amount
1	Earth work Excavation in hard soil up to 1.5 mt Hight and deposited excavated meterial lead op to 150 A-B	2B	A	1	2.4	0.6	0.6	0.86		
			B	2	0.7	0.6	0.6	0.50		
								1.37	91	124.49
2	Cement concrete 1:5:10 (1cement:5 sand:10 concrete) 40 mm concrete A-B	10		1	2.4	0.6	0.3	0.43		
				2	0.7	0.6	0.3	0.25		
								0.68	1759	1203.16
3	RR stone mesonary in Cement sand mortar 1 : 6	25C		1	2.4	0.6	0.3	0.43		
				2	0.7	0.6	0.3	0.25		
				1	2.1	0.3	1.2	0.76		
				1	2.1	0.3	0.3	0.19		
				2	1	0.3	1.2	0.72		
				2	2.1	0.3	1	1.26		
				2	1	0.3	1	0.60		
								4.21	1629	6856.46
4	Dry stone kharnja	52		1	1	1.5	0.3	0.45	745	335.25
5	Cement concrete 1:5:10 (1cement:5 sand:10 concrete) 40 mm concrete	10		1	1	1.5	0.3	1.50	1759	2638.50
6	Cement Plaster 1 : 6 (1 cement : 4 sand) 25 mm thick	71A		2	1	1		2.00		
				2	1.5	1		3.00		
				2	2.1	2.2		9.24		
				2	1.6	2.2		7.04		
								21.28	128	2723.84
7	Roof on tanka with Jodhpur stone slabe including Pointing of joints & 50 mm Cement concrete 1 : 2 : 4 Gate A-B	51C	A	1	1	1.5		1.50		
			B	1	0.45	0.45		0.20		
								1.30	982	1274.15
8	50 mm Cement concrete 1 : 2 : 4 cement : 2 sand : 4 concrete) 12mm (1	56	A	1	1	1.5		1.50	210	315.00
9	Cement Plaster 1 : 6 (1 cement : 6 sand) 25 mm thick on stone	71A		1	1	1.5		1.50	128	192.00
10	Nal & Pipe,hand pump									1700.00
11	Gate as per voucher L .S.									500.00
12	Colour & name									500.00
	Total								(b)	18362.84

Total (a+b) 127817.31

Add 3% 3834.519

140

*Model estimate**Buded**Ber**Area* 0.50 *Ha*

Name of Plant

*Horticulture**Cost per plant*

No. of per ha. Plants 139

S.No	Discription	Year	Total		Length	Width	Hight	Qty	Unit	Rate	Amount	Amount for 139 Plants
			No./Year									
1	Diging of pit		1		0.9	0.9	0.9	0.73	cum.	61.5	44.83	6231.857
2	Apply of manure											
	(A) Compost Khad							5.00	kg.	0.4	2.00	278
	(B) S.S.P. (16%)							1.00	kg.	4	4.00	556
	(C) Endosulphan (4%)				100 gm			0.10	kg.	30	3.00	417
3	Mixing with soil & filling pit		1		0.9	0.9	0.75	0.61	cum.	27	16.40	2279.948
4	Plant cost		1					1.00	No	10	10.00	1390
5	Planting tree							1.00	No.	2.2	2.20	305.8
6	Weeding & hoeing	3	1					3.00	No.	0.9	2.70	375.3
7	Sprey											
	(A) Endosulphan (35 ec)	3	0.01	Ltr				0.03	Ltr.	280	8.40	1167.6
	(B) Sulpher	3	0.02	Kg				0.06		200	12.00	1668

8	Trancepotation of Plant from Jodhpur 100 km including loading and unloading							1.00	no	1.25	1.25	173.75
TOTAL											105.54	14669.50

14700

Add 3% contengency

441

15141

Note:-

And also Provide 50% subcidy for Bird net

Farmer will be traird for Horticulture palntation in Treaning programme be conducted by watershed (PIA)

Farmer will ensured for Watch and Ward by himself

Farmer will be benifited by Drip Irrigation by Ag.extention dept. seperetaly.

Problem:-

NEEL GAY (Roz) can destroy all plantation work. Such that six time barberbed wire fencing is require.

and farmer do not have much money about 0.33 Lacs for this

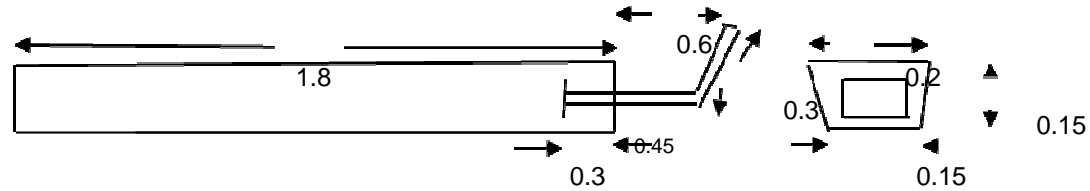
Such that project will provide Barberd

wire fencing.

Fencing post

IWMP MORRA

Model estimate



No of post 100

S.No	Name of work	Item no.	No	Length	Width	Hight	Qty	Unit	Rate	
1	Cement concrete 1:2:4		100	1.8	0.18	0.15	4.73	Cum	2487	11751.08
2	Centering & shutering		100	1.8	0.3		54	Sqm	96	5184.00
3	Rain forcement with tor bar 8mm bar Ring specing 0.20 mtr & Hook 6mm		400	1.8	720	0.5	360	KG		
			900	0.5	450	0.282	126.9	KG		
							486.9	KG	46	22397.40
4	Angle iron 25*25*3		100	1.05	105	1.176	123.48	Kg	47.7	5890.00

Cost for 100 posts

45222

Cost for one post

452

Add 3% contengency

14

466

Say

465

Area 0.5 Ha

Length 282.84 mtr.

Specing 6.5

Say 283 mtr.

No of post As per length=

Length/specing

44

Two Additional post require after every 10 Posts

8

52

Fencing will be done by Project

S.No	Discription	Item no.	No	Length of single wire	Total length	Kg/mtr	Quantity	Unit	Rate	Amount
1	Supply of barberbed wire fencing 14 gauge	65	6	283	1698	0.08	135.84	Kg	46	6248.64
2	Supply of cement concrete post	mo.est.	52				52.00	No	465	24180.00
3	Trancepotation of posts 2 km.	194C	52			0.04725	2.46	Cum	58.4	143.49
4	Trancepotation of posts to pit up to one km.		52				52.00	No	18.75	975.00
5	fixing of Rcc post in 45 cm. deep pit	2B	52	0.45	0.45	0.45	4.74	Cum	68	322.22
6	Cost of binding wire	mo.est.					5.1	Kg	47.41	241.79
7	Tidening of barberbed wire	5.5/forest					1698	mtr	0.95	1613.1

33724.24

Add 3% contengency

1011.73

34735.96

Say

34700

Calculation of B.C. ratio

(Amount in lacs)

S. No.	Year	Discount factor $1/(1+.07)^n$ (n=No. of yr.)	Capital cost	Benefits	Present Worth of actual cost(3X4)	Present worth of Benefit(3X5)	B.C. Ratio
1	2	3	4	5	6	7	8
1	I	0.93	190000.00	0.00	177570.09	0.00	2.79
2	II	0.87	2836.00	0.00	2477.07	0.00	
3	III	0.82	2836.00	104250.00	2315.02	85099.05	
4	IV	0.76	2836.00	104250.00	2163.57	79531.83	
5	V	0.71	2836.00	104250.00	2022.03	74328.81	
6	VI	0.67	2836.00	104250.00	1889.75	69466.18	
7	VII	0.62	2836.00	104250.00	1766.12	64921.66	
8	VIII	0.58	2836.00	104250.00	1650.58	60674.45	
9	IX	0.54	2836.00	104250.00	1542.60	56705.09	
10	X	0.51	2836.00	104250.00	1441.68	52995.41	
Total			215524	834000.00	194838.50	543722.48	

Abstract of cost

Horticulture Plantation work with drip

Sr. no	Name of work	<i>Project cost</i>			<i>Convergence with Ag.Ext dept.</i>			Measures	
			<i>Project</i>	<i>Contribution</i>	Total	<i>Govt share</i>	<i>Farmer share</i>		Total
			60%	40%					
1	<i>Cost of Horticulture plantation</i>	15141	9084.6	6056.4	15141	0	0	0	Production
	<i>Cost of Barbed wire fencing with post fixing</i>	34700	20820	13880	34700				Production
3	<i>Cost of Drip irrigation system</i>					70%	30%		
		21000	0	0	0	14700	6300	21000	Convergence
	<i>Total</i>	70841.00	29904.6	19936.4	49841	14700	6300	21000	
	Say	0.71	0.30	0.20	0.50	0.15	0.06	0.21	Lacs

- Note :-*
- 1 Rates are taken as per GKN Nagaur. & forest dept.
 - 2 For Horticulture plantation is as per norms of Agriculture ext. Dept.
 - 3 For development of this unit drip irrigation will be taken in convergence with Agriculture ext. Dept.

Name of Plant		<i>Buded Ber</i>		<i>Area 0.5 Ha</i>			<i>Model estimate</i>				
<i>Horticulture</i>		<i>Cost per plant</i>		<i>No. of per ha. Plants</i>			139				
S.No	Discription	Total		Length	Width	Hight	Qty	Unit	Rate	Amount	Amount for 139 Plants
		Year	No./Year								
1	Diging of pit		1	0.9	0.9	0.9	0.73	cum.	61.5	44.83	6231.857
2	Apply of manure										0
	(A) Compost Khad						5.00	kg.	0.4	2.00	278
	(B) S.S.P. (16%)						1.00	kg.	4	4.00	556
	(C) Endosulphan (4%)			100 gm			0.10	kg.	30	3.00	417
3	Mixing with soil & filling pit		1	0.9	0.9	0.75	0.61	cum.	27	16.40	2279.948
4	Plant cost		1				1.00	No	10	10.00	1390
5	Planting tree						1.00	No.	2.2	2.20	305.8
6	Weeding & hoeing	3	1				3.00	No.	0.9	2.70	375.3
7	Sprey										0
	(A) Endosulphan (35 ec)	3	0.01	Ltr			0.03	Ltr.	280	8.40	1167.6
	(B) Sulpher	3	0.02	Kg			0.06		200	12.00	1668
8	Trancepotation of Plant from Jodhpur 100 km including loading and unloading						1.00	no	1.25	1.25	173.75
	TOTAL									105.54	14669.5

14700

Add 3% contengency

441

Note :-

And also Provide 50% subcidy for Bird net

Total

15141

Farmer will be trairnd for Horticulture palntation in Treaning programme be conducted by watershed (PIA)

Farmer will ensured for Watch and Ward by himself

Farmer will be benifited by Drip Irrigation by Ag.extention dept. seperetaly.

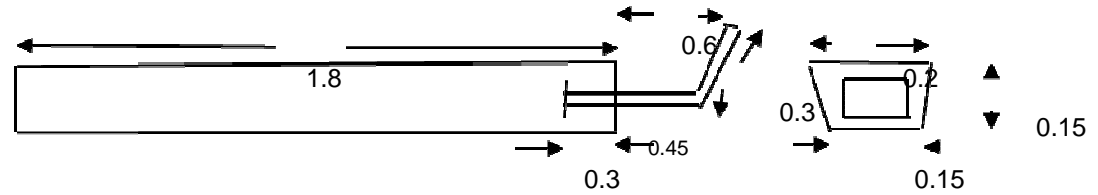
Problem :-

NEEL GAY (Roz) can destroy all plantation work. Such that six time barberbed wire fencing is require. and farmer do not have much money about 0.33 Lacs for this Such that project will provide Barberd wire fencing.

Fencing post

IWMMP MORRA

Model estimate



No of post 100

S.No	Name of work	Item no.	No	Length	Width	Hight	Qty	Unit	Rate	
1	Cement concrete 1:2:4		100	1.8	0.18	0.15	4.73	Cum	2487	11751.08
2	Centering & shutering		100	1.8	0.3		54	Sqm	96	5184.00
3	Rain forcement with tor bar 8mm bar Ring specing 0.20 mtr & Hook 6mm		400	1.8	720	0.5	360	KG		
			900	0.5	450	0.282	126.9	KG		
							486.9	KG	46	22397.40
4	Angle iron 25*25*3		100	1.05	105	1.176	123.48	Kg	47.7	5890.00

Cost for 100 posts **45222**

Cost for one post 452

Add 3% contengency 14

466

Say **465**

Area 0.5 Ha Length 282.84 mtr. Specing 6.5

Say 283 mtr.

No of post As per length= Length/specing 44

Two Additional post require after every 10 Posts 8

52

Fencing will be done by Project

S.No	Discription	Item no.	No	Length of single wire	Total length	Kg/mtr	Quantity	Unit	Rate	Amount
1	Supply of barberbed wire fencing 14 gauge	65	6	283	1698	0.08	135.84	Kg	46	6248.64
2	Supply of cement concrete post	mo.est.	52				52.00	No	465	24180.00
3	Trancepotation of posts 2 km.	194C	52			0.04725	2.46	Cum	58.4	143.49
4	Trancepotation of posts to pit up to one km.		52				52.00	No	18.75	975.00
5	fixing of Rcc post in 45 cm. deep pit	2B	52	0.45	0.45	0.45	4.74	Cum	68	322.22
6	Cost of binding wire	mo.est.					5.1	Kg	47.41	241.79
7	Tidening of barberded wire	5.5/forest					1698	mtr	0.95	1613.1

33724.24

Add 3% contengency 1011.73

34735.96

ESTIMATE TANKA

Please don't disturb the Green Cells & Black Fonts

कार्यालय सहायक अभियन्ता (आईडब्लुएमपी) पंचायत समिति				रियांबड़ी		जिला-नागौर	
FORM		PS-		रियांबड़ी			
Work Name-	टांका निर्माण			Work CODE-			
Beneficiary-				AS No.-			
Gram-				Date-			
GP-				AS Amount-			
Location-				Time of Comp.-			
Scheme-	IWMP			Working Agency-			
Labour TASK Red. %			0		COST		0.62
TANKA	OUTER D	WALL THICK	INNER d	INNER Ht.	PLINTH ht.	PCC TH.	
	12.50	1.25	10.00	10.00	1.50	0.50	
ANGAUR	D	d	Wall th.	$Dm=(D+d)/2$	H	h	Foun.dep.
	35.00	33.00	1.00	34.00	2.00	1.25	0.75

तकमीना

कार्य का नाम –		टांका निर्माण													
ग्राम –		ग्राम पंचायत –					Location - 0								
योजना का नाम–		MGNREGS					यूनिक कोड–		04/11-12/1215						
लाभार्थी –		0													
क. सं.	कार्य विवरण	सं.	लं.	चौ. /मो.	ग. /ऊ.	मात्रा	इकाई	श्रमिक दर			लागत				
								अकुशल श्रम	कुल श्रम	कुल दर	अकुशल श्रम	कुल श्रम	कुल लागत		
	(अ) टांका														
	(अ) 1.5 मी. गहराई तक मिट्टी की खुदाई करना, साधारण/मुलायम मिट्टी में।														
		0.785	12.50	12.50	1.00	122.66	घन फी.								
	या					3.47	घन मी.	67.50	75	75	234	260	260		
	(ब) 1.5 मी. गहराई तक मिट्टी की खुदाई करना, सख्त/चिकनी मिट्टी में।														
		0.785	12.50	12.50	4.00	490.63	घन फी.								
	या					13.88	घन मी.	83.70	91	91	1162	1264	1264		
1	(स) 3 मी. गहराई तक मिट्टी की खुदाई करना, सख्त/चिकनी मट्टी में एक अतिरिक्त उठान (lift) के साथ														
		0.785	12.50	12.50	5.00	613.28	घन फी.								
	या					17.36	घन मी.	93.22	101.00	101.00	1618	1753	1753		
	(द) 4.5 मी. गहराई तक मिट्टी की खुदाई करना, सख्त/चिकनी मट्टी में दो अतिरिक्त उठान (lift) के साथ														
		0.785	12.50	12.50	1.00	122.66	घन फी.								
	या					3.47	घन मी.	102.74	111	111	357	385	385		
2	सीमेंट काक्रीट नींव में 40 मि.मी. नामीय माप की पत्थर की गिट्टी सीमेंट रेत मसाला 1 सीमेंट : 4 रेत : 8 गिट्टी अनुपात में मिलाकर, डालना तथा कुटाई करना, तराई समेत।														
		0.785	12.50	12.50	0.50	61.33	घन फी.								
	या					1.74	घन मी.	287.55	320	1946	499	555	3377		
3	नींव तथा कुर्सी में पत्थर की बे रद्धा-ढोका सीमेंट-बजरी 1 : 6 मसाले में, मय बगल की झिरी बन्द करना तथा तराई आदि।														
		0.785	12.50	12.50	10.00	1226.56	घन फी.								
	घटाएँ	0.785	10.00	10.00	10.00	785.00	घन फी.								
	शेष					441.56	घन फी.								
	या					12.50	घन मी.	189.00	416	1629	2362	5198	20356		
4	पत्थर के सिरदल (लिटल) 15 से.मी. मोटाई की आपूर्ति कर, चिनाई में उपयोग की गई मसाले में उसे लगाना।														
		2	10.00		1.00	20.00	वर्ग फी.								
	या					1.86	वर्ग	27.00	157	809	50	292	1503		

							मी.							
5	सीमेंट प्लास्टर दीवार पर 1:6 अनुपात में सीमेंट-बजरी मिलाकर कर जोड़ों को कुरेदने तथा तराई सहित 25 मि.मी. में।													
		3.14	10.00		10.00	314.00	वर्ग फी.							
	या					29.17	वर्ग मी.	25.65	67	128	748	1954	3734	
6	टांको (कुण्डों) के ऊपर पट्टियों की छत डालना, सीमेंट मसाला 1:3 से जोड़ भरना, 50 मिमी मोटाई में 2 ^ण 5 मीटर विस्तार तक सीमेंट कंक्रीट 1:2:4 का फर्श का कार्य संपूर्ति सहित, पूर्ण कार्य													
		0.785	10.00	10.00		78.50	वर्ग फी.							
		(-)	1.50	1.50		2.25	वर्ग फी.							
	योग					76.25	वर्ग फी.							
	या					7.08	वर्ग.मी	89.00	163	952	630	1155	6744	
7	50 मी. मी. मोटाई में सीमेंट कंक्रीट 1:2:4 मिश्रण जिसमें 1 सीमेंट 2 बजरी 4 पत्थर की 12 मी. मी. नामीय माप की गिट्टी के साथ मिलाकर डालना, कूटना, दबाना तथा तराई आदि समेत।													
		0.785	10.00	10.00		78.50	वर्ग फी.							
		3.14	11.25	1.25		44.16	वर्ग फी.							
	योग					122.66	वर्ग फी.							
	या					11.39	वर्ग मी.	31.05	79	210	354	900	2393	
8	सीमेंट प्लास्टर दीवार पर 1:6 अनुपात में सीमेंट-बजरी मिलाकर जोड़ों को कुरेदने तथा तराई समेत 20 मी. मी.													
		3.14	12.50		1.50	58.88	वर्ग फी.							
	या					5.47	वर्ग मी.	21.60	41	87	118	224	476	
	(ब) अंगोर की दिवार													
1	1.5 मी. गहराई तक मिट्टी की खुदाई करना,साधारण/मुलायम मिट्टी में													
		3.14	34.00	1.00	0.75	80.07	घन फी.							
	या					2.27	घन मी.	67.50	75	75	153	170	170	
3	नींव तथा कुर्सी में पत्थर की बे रद्धा-ढोका सीमेंट-बजरी 1 : 8 मसाले में, मय बगल की झिरी बन्द करना तथा तराई आदि।													
		3.14	34.00	1.00	2.00	213.52	घन फी.							
	या					6.04	घन मी.	189.00	416	1629	1142	2514	9843	
4	50 मी. मी. मोटाई में सीमेंट कंक्रीट 1:2:4 मिश्रण जिसमें 1 सीमेंट 2 बजरी 4 पत्थर की 12 मी. मी. नामीय माप की गिट्टी के साथ मिलाकर डालना, कूटना, दबाना तथा तराई आदि समेत।													
		3.14	34.00	1.00		106.76	वर्ग फी.							
	योग					106.76	वर्ग फी.							
	या					9.92	वर्ग मी.	31.05	79	210	308	784	2083	
5	पत्थर के काम पर सपाट या रूल्ड टीप 1:3 अनुपात में सीमेंट बजरी मसाले में मय तराई के।													
		3.14	35.00		1.25	137.38	वर्ग फी.							

	या					12.76	वर्ग मी.	13.84	39.00	49.80	177	498	636	
	(द) अन्य कार्य													
1	खुदी हुई मिट्टी/रेत को नींव में तथा कुर्सी में 50 मीटर तक दूरी में डालना तथा समतल करना, पानी डालना तथा दुरमुट से कूटना।													
		0.785	33.00	33.00	0.50	427.43	घन फी.							
	घटायें	0.785	12.50	12.50	0.50	61.33	वर्ग फी.							
	शेष					366.10	वर्ग फी.							
	या					10.36	घन मी.	33.75	37	37	350	383	383	
2	टांके के अंगोर में ग्रेवल / झीकरा डालना, बिछाना एवं कूटना													
					LS						0	0	3500	
3	टांके का ढक्कन, जालियां, हैण्ड पम्प													
4	फोटो व बोर्ड													
						कुल योग					रूपये	10262	18289	60660
												10262	18289	60660
	Contingency 3%											0	0	1820
											कुल योग रूपये	10262	18289	62480
Labour Amount												0.10		
Material Amount												0.50		
Contingency												0.02		
Total Amount												0.62		

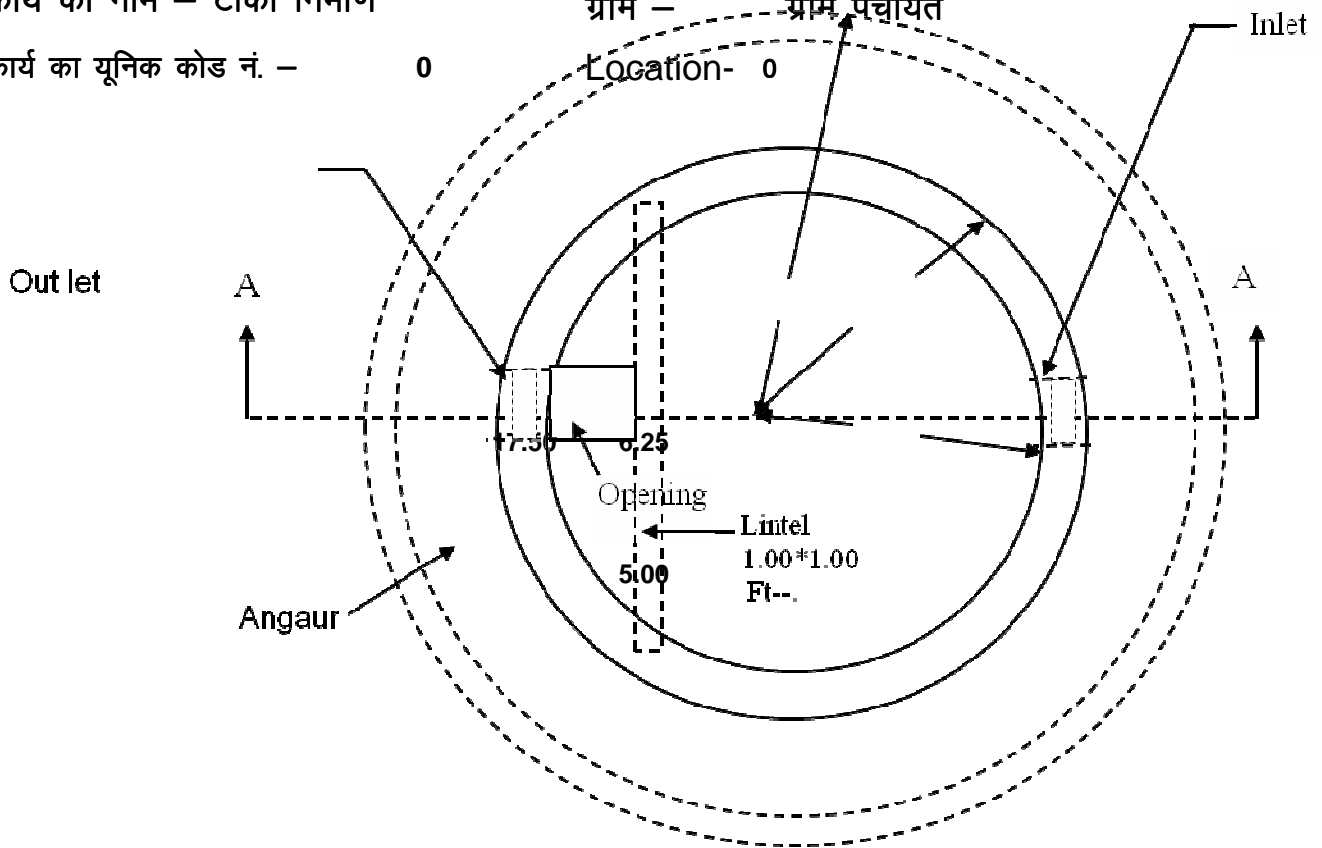
सामग्री विवरण						
चुना	बजरी	सिमेन्ट	गिट्टि(40मिमि)	गिट्टि(20मिमि)	पत्थर	पटियां
क्वि.	घन मी.	बैग	घन मी.	घन मी.	घन मी.	वर्ग मी.
0.00	5.49	40.48	1.81	1.28	21.43	83.88

कार्यालय सहायक अभियन्ता (आईडब्लुएमपी) पंचायत समिति रियांबड़ी जिला-नागौर
कार्य का नाम - टांका निर्माण

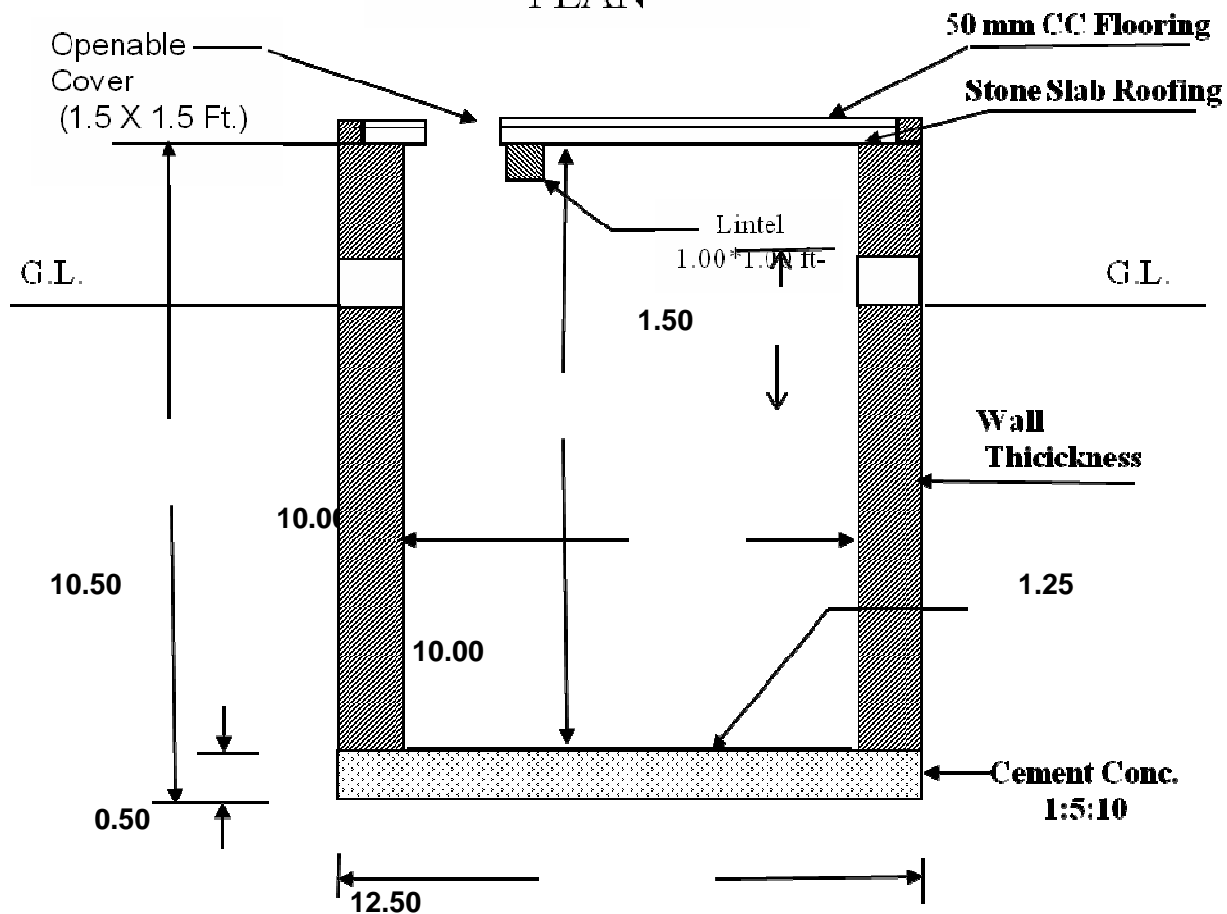
कार्य का यूनिक कोड नं. - 0

ग्राम - ग्राम पंचायत

Location- 0



PLAN



SECTION ON 'A-A'

ESTIMATE TANKA

Please don't disturb the Green Cells & Black Fonts

कार्यालय सहायक अभियन्ता (आईडब्लुएमपी) पंचायत समिति		रियांबड़ी	जिला-नागौर				
FORM	PS-	रियांबड़ी					
Work Name-	टांका निर्माण				Work CODE-		
Beneficiary-					AS No.-		
Gram-					Date-		
GP-					AS Amount-		
Location-					Time of Comp.-		
Scheme-	IWMP				Working Agency-		
Labour TASK Red. %			0	COST			0.62
TANKA	OUTER D	WALL THICK	INNER d	INNER Ht.	PLINTH ht.	PCC TH.	
	13.00	0.75	11.50	10.00	1.50	0.50	
ANGAUR	D	d	Wall th.	$Dm=(D+d)/2$	H	h	Foun.dep.
	42.00	40.00	1.00	41.00	2.00	1.25	0.75

तकमीना

कार्य का नाम –		टांका निर्माण						Location - 0					
ग्राम –		ग्राम पंचायत –						यूनिक कोड– 04/11-12/1215					
योजना का नाम–		MGNREGS						लाभार्थी – 0					
क्र. सं.	कार्य विवरण	सं.	लं.	चौ. /मो.	ग. /ऊ.	मात्रा	इकाई	श्रमिक दर			लागत		
								अकुशल श्रम	कुल श्रम	कुल दर	अकुशल श्रम	कुल श्रम	कुल लागत
1	(अ) टांका												
	(अ) 1.5 मी. गहराई तक मिट्टी की खुदाई करना, साधारण/मुलायम मिट्टी में।												
		0.785	13.00	13.00	1.00	132.67	घन फी.						
	या					3.75	घन मी.	67.50	75	75	253	282	282
	(ब) 1.5 मी. गहराई तक मिट्टी की खुदाई करना, सख्त/चिकनी मिट्टी में।												
		0.785	13.00	13.00	4.00	530.66	घन फी.						
	या					15.02	घन मी.	83.70	91	91	1257	1367	1367
	(स) 3 मी. गहराई तक मिट्टी की खुदाई करना, सख्त/चिकनी मिट्टी में एक अतिरिक्त उठान (lift) के साथ												
		0.785	13.00	13.00	5.00	663.33	घन फी.						
	या					18.77	घन मी.	93.22	101	101	1750	1896	1896
	(द) 4.5 मी. गहराई तक मिट्टी की खुदाई करना, सख्त/चिकनी मिट्टी में दो अतिरिक्त उठान (lift) के साथ												
		0.785	13.00	13.00	1.50	199.00	घन फी.						
या					5.63	घन मी.	102.74	111	111	579	625	625	
2	सीमेंट कांक्रीट नींव में 40 मि.मी. नामीय माप की पत्थर की गिट्टी सीमेंट रेत मसाला 1 सीमेंट : 4 रेत : 8 गिट्टी अनुपात में मिलाकर, डालना तथा कुटाई करना, तराई समेत।												
		0.785	13.00	13.00	0.50	66.33	घन फी.						
	या					1.88	घन मी.	287.55	320	1946	540	601	3653
3	नींव तथा कुर्सी पर 1 : 2 : 4 अनुपात की कन्ट्रोलड कांक्रीट एम 20 ग्रेड की 20/25 मि.मी. साईज की ग्रेट क्रशर से टूटी हुई को मिलाना, डालना तथा नीडल कम्पन मशीन (बाईग्रेटर) मय बगल की झिरी बन्द करना तथा तराई आदि।												
		0.785	13.00	13.00	10.00	1326.65	घन फी.						
	घटाएँ	0.785	11.50	11.50	10.00	1038.16	घन फी.						
	शेष					288.49	घन फी.						
या					8.16	घन मी.	247.05	315	1629	2017	2572	13299	
4	पत्थर के सिरदल (लिटल) 15 से.मी. मोटाई की आपूर्ति कर, चिनाई में उपयोग की गई मसाले में उसे लगाना।												
		2	11.50		1.00	23.00	वर्ग फी.						
	या					2.14	वर्ग मी.	27.00	157	809	58	335	1729

5	सीमेंट प्लास्टर दीवार पर 1:6 अनुपात में सीमेंट-बजरी मिलाकर कर जोड़ों को कुरेदने तथा तराई सहित 25 मि.मी. में।												
		3.14	11.50		10.00	361.10	वर्ग फी.						
	या				33.55	वर्ग मी.	25.65	67	128	860	2248	4294	
6	टांको (कुण्डों) के ऊपर पट्टियों की छत डालना, सीमेंट मसाला 1:3 से जोड़ भरना, 50 मिमी मोटाई में 2 ^ण 5 मीटर विस्तार तक सीमेंट कंक्रीट 1:2:4 का फर्श का कार्य संपूर्ण सहित, पूर्ण कार्य												
		0.785	11.50	11.50		103.82	वर्ग फी.						
		(-)	1.50	1.50		2.25	वर्ग फी.						
	योग				101.57	वर्ग फी.							
	या				9.44	वर्ग.मी	89.00	163	952.00	839.76	1537.99	8982.60	
7	50 मी. मी. मोटाई में सीमेंट कंक्रीट 1:2:4 मिश्रण जिसमें 1 सीमेंट 2 बजरी 4 पत्थर की 12 मी. मी. नामीय माप की गिट्टी के साथ मिलाकर डालना, कूटना, दबाना तथा तराई आदि समेत ।												
		0.785	11.50	11.50		103.82	वर्ग फी.						
		3.14	12.25	0.75		28.85	वर्ग फी.						
	योग				132.67	वर्ग फी.							
	या				12.32	वर्ग मी.	31.05	79	210	383	974	2588	
8	सीमेंट प्लास्टर दीवार पर 1:6 अनुपात में सीमेंट-बजरी मिलाकर जोड़ों को कुरेदने तथा तराई समेत 20 मी. मी.												
		3.14	13.00		1.50	61.23	वर्ग फी.						
	या				5.69	वर्ग मी.	21.60	41	87	123	233	495	
(ब) अंगोर की दिवार													
1	1.5 मी. गहराई तक मिट्टी की खुदाई करना,साधारण/मुलायम मिट्टी में												
		3.14	41.00	1.00	0.75	96.56	घन फी.						
	या				2.73	घन मी.	67.50	75.00	75.00	184.44	204.94	204.94	
3	नींव तथा कुर्सी में पत्थर की बे रद्धा-ढोका सीमेंट-बजरी 1 : 8 मसाले में, मय बगल की झिरी बन्द करना तथा तराई आदि ।												
		3.14	41.00	1.00	2.00	257.48	घन फी.						
	या				7.29	घन मी.	189.00	416	1629	1377	3031	11870	
4	50 मी. मी. मोटाई में सीमेंट कंक्रीट 1:2:4 मिश्रण जिसमें 1 सीमेंट 2 बजरी 4 पत्थर की 12 मी. मी. नामीय माप की गिट्टी के साथ मिलाकर डालना, कूटना, दबाना तथा तराई आदि समेत ।												
		3.14	41.00	1.00		128.74	वर्ग फी.						
	योग					128.74	वर्ग फी.						
	या				11.96	वर्ग मी.	31.05	79	210	371	945	2512	
5	पत्थर के काम पर सपाट या रूल्ड टीप 1:3 अनुपात में सीमेंट बजरी मसाले में मय तराई के ।												
		3.14	42.00		1.25	164.85	वर्ग फी.						
	या				15.31	वर्ग	13.84	39	49.80	212	597	763	

							मी.						
(द) अन्य कार्य													
1	खुदी हुई मिट्टी/रेत को नींव में तथा कुर्सी में 50 मीटर तक दूरी में डालना तथा समतल करना, पानी डालना तथा दुरमुट से कूटना।												
		0.785	40.00	40.00	0.50	628.00	घन फी.						
	घटायें	0.785	13.00	13.00	0.50	66.33	वर्ग फी.						
	शेष				561.67	वर्ग फी.							
	या				15.90	घन मी.	33.75	37	37	536	588	588	
2	टांके के अंगोर में ग्रेवल / झीकरा डालना, बिछाना एवं कूटना												
				LS						0	0	3500	
3	टांके का ढक्कन, जालियां, हैण्ड पम्प												1500
4	फोटो व बोर्ड												300
					कुल योग					रूपये	11341	18036	60447
											11341	18036	60447
	Contingency 3%										0	0	1813
										कुल योग रूपये	11341	18036	62261
Labour Amount											0.11		
Material Amount											0.49		
Contingency											0.02		
Total Amount											0.62		

सामग्री विवरण						
चुना	बजरी	सिमेन्ट	गिट्टि(40मिमि)	गिट्टि(20मिमि)	पत्थर	पटियां
विव.	घन मी.	बैग	घन मी.	घन मी.	घन मी.	वर्ग मी.
0.00	4.47	38.57	2.19	1.52	18.59	111.72

Silvi Pasture Development

Area 20ha

Benefit

Dhaman seed
Dhaman grass

Area	Production		Rate	Amount	Expenditure		Net return	Net return for three year
	Ha	Kg/ha			Kg	per kg		
20	25	500	100	50000	10	5000	45000	135000
20	2000	40000	4	160000	1	40000	120000	360000

165000 495000

Abstract of Cost

Name of work	Cost
Pond	1.70
over head water tank	0.19
v-ditch	2.81
agro -forestry	6.38
Fencing	2.25
Total in lac.	13.33

Note:- This benefit is for initial phase. If we manage it best we can fulfill other requirement of villagers like fodder problem &, fuel wood problem

To get final phase proper management require for this through WDF fund

We will get Desi Babul wood for furniture making to support livelihood of land less labours

Note :-

Over head tank has been taken to life saving watering for plantation.and to supply drinking water for pets animal & birds

*IWMP
MORRA
Design of Water Harvesting Structure*

Collection of Water =	Area * rainfall*30%	Capacity as per Structural design
Catchment Area =	0.186 ha.	Cum= Area*Hight
=	1860 Sqm	Area = 88
Rainfall =	0.3 Mtr	Hight = 1.50
Collection of water =	167.4 Cum	132 Cum
Capacity =	Cum*1000 = 167400	Capacity = Cum*1000 = 132000

Hence rainfall on catchment area can fillup the tanka by water

Production

Total requirement of water for pasture development=

	No of plant	water require per plant	Total water require	Avable water	Water require from outhur source	Source
One watering require	5000	60	300000	Ltr	132000	168000
No of watering per Year		4	No			
Total Ltr require per plant per year		60	Ltr			
No of plant can survive = capacity/ water require per plant per year		=	2200			
	say		2800	plant		

Model Estimate

Water Harvesting Structure

Water tank For collection of water

iwmp morra

Length	Width	Hight			Wall Width
		Excavation	Above GL	Mesonary	
11	8	2.2	0.6	2.5	0.45

Capacity		Plant	Ha.
167200	Ltr	139	0.50

Activity		No	Length	Width	Hight	Qty	Unit	Rate	Amount
Earth work Excavation in hard soil up to 1.5 mt Hight and deposited excavated material lead op to 150	2B	1	11	8	2.2	193.6	cum.	91	17617.6
Spreding And compection of excaveted soil in required profile	5	1	11	8	2.2	193.6	cum.	37	7163.2
Cement concrete 1:4:8 (1cement:4 sand:8 concrete) 40/25 mm concrete Using mixture & vibrater	125 B	1	11	8	0.3	26.4	cum.	2012	53116.8
RR stone mesonary in Cement sand mortar 1 : 6	25C	2	11.9	0.45	2.5	26.775			
		2	8	0.45	2.5	18			
						44.775	cum.	1629	72938.48
50 mm Cement concrete 1 : 2 : 4 (1 cement : 2 sand : 4 concrete) 12mm	56	2	11.9	0.45		10.71			
		2	8	0.45		7.2			
						17.91	sqm.	210	3761.1
Cement Plaster 1 : 6 (1 cement : 6 sand) 25 mm thick	71A	2	11		2.5	55			
		2	8		2.5	40			
						95	sqm.	128	12160
Cement Plaster 1 : 6 (1 cement : 6 sand) 25 mm thick on stone	71A	2	11.9		0.6	14.28			
		2	8.9		0.6	10.68			
						24.96	sqm.	128	3194.88

169952.1

Total say 1.70

Over Head Water tank,

Capacity

1500 Ltr

S.No	Discription			Length		Width		Hight		
				No/fector	Length	Width	Hight	Qty	Rate	Amount
				1	1.5	0.6	0.3	0.6	1.2	1
1	Earth work Excavation in hard soil up to 1.5 mt Hight and deposited excavated meterial lead op to 150 A-B	2B	A	1	2.4	0.6	0.6	0.86		
			B	2	0.7	0.6	0.6	0.50		
								1.37	91	124.49
2	Cement concrete 1:5:10 (1cement:5 sand:10 concrete) 40 mm concrete A-B	10		1	2.4	0.6	0.3	0.43		
				2	0.7	0.6	0.3	0.25		
								0.68	1759	1203.16
3	RR stone mesonary in Cement sand mortar 1 : 6	25C		1	2.4	0.6	0.3	0.43		
				2	0.7	0.6	0.3	0.25		
				1	2.1	0.3	1.2	0.76		
				1	2.1	0.3	0.3	0.19		
				2	1	0.3	1.2	0.72		
				2	2.1	0.3	1	1.26		
				2	1	0.3	1	0.60		
								4.21	1629	6856.46
4	Dry stone kharnja	52		1	1	1.5	0.3	0.45	745	335.25
5	Cement concrete 1:5:10 (1cement:5 sand:10 concrete) 40 mm concrete	10		1	1	1.5	0.3	1.50	1759	2638.50
6	Cement Plaster 1 : 6 (1 cement : 6 sand) 25 mm thick	70A		2	1	1		2.00		
				2	1.5	1		3.00		
				2	2.1	2.2		9.24		
				2	1.6	2.2		7.04		
								21.28	128	2723.84
7	Roof on tanka with Jodhpur stone slabe including Pointing of joints & 50 mm Cement concrete 1 : 2 : 4 Gate A-B	51C	A	1	1	1.5		1.50		
			B	1	0.45	0.45		0.20		
								1.30	982	1274.15
8	50 mm Cement concrete 1 : 2 : 4 (1 cement : 2 sand : 4 concrete) 12mm	56	A	1	1	1.5		1.50	210	315.00
9	Cement Plaster 1 : 6 (1 cement : 6 sand) 25 mm thick on stone	71B		1	1	1.5		1.50	128	192.00
10	Nal & Pipe,hand pump									1700.00
11	Gate as per voucher L .S.									500.00
12	Colour & name									500.00

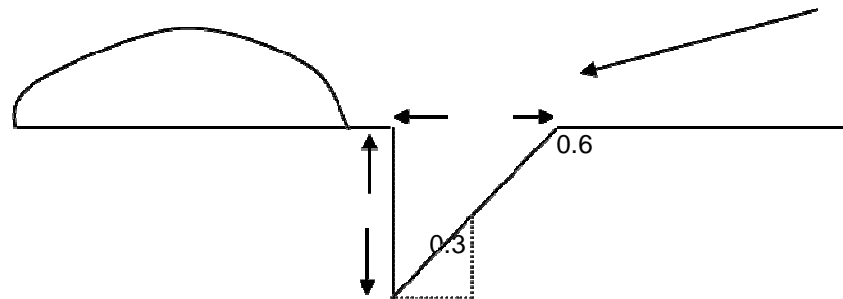
Total							(b)	18362.84
						Total	(a+b)	18364.54
						Add 3% contengency		550.9362
								18915.48
						Say lac.		0.19

Estimate for V.Ditch

Area	Length	Width	Interwell	No of row	Length
Ha	mtr	mtr	mtr		mtr
20	2000	100	5	400	40000

Dhaman require =5 kg/ha
Spacing
Spacing of grass seed

50 Kg
5 mtr
15 Cm



Sr. no.	Name of work	Item no.	No	Length	Width	Hight	Qty	Unit	Rate	Amount
1	Jungal clearence July flora	107		800	60		48000	Sqm	0.6	28800
2	Earth work Excavation in hard soil up to 1.5 mt Hight and deposited excavated meterial lead op to 50	139 ii B	0.5	40000	0.60	0.3	3600.00	Cum	74.1	266760.0
			Kg							
3	Making of balls of grass seed(1:1:2:2) 1 grass seed:1FYM : 2 sand : 2 clay	3/1/9 forest	50 kg				50.00	Per 6 kg meterial	17	141.7

4	Showing of balls of grass seed by dibling method at 30 cm spacing	3/2/9 forest	50 kg			50	Per 6 kg material	109	908.3
5	Cost of seed			CAZARI Jodhpur		50	Kg	100	5000

272810.0

Add 3%
contengecy

8184.3

Total

280994.3

Say

2.81

	<i>Length</i>	<i>Width</i>	<i>Area</i>		<i>Model estimate</i>
Plant to pant Spacing	5	5	25	<i>Sqm</i>	<i>No of plant</i> 8000
Available Area			20	<i>Ha</i>	<i>Gap filling 20%</i> 1600
				Total no of Plants	9600

Plantation

Cost per plant

S.No	Discription	Item no	Total		Length	Width	Hight	Qty	Unit	Rate	Amount	Amount for 10 ha.
			Year	No./Year								
1	Diging of pit(kankar boulder soil)	132 b		1	0.45	0.45	0.45	1.00	No	6.8	6.80	65280
2	Mixing with soil & filling pit	5		1	0.45	0.45	0.3	0.06	cum.	37	2.25	21578.4
3	Cost of Plant	As per forest						1.00	No.	5	5.00	48000
4	Planting tree	133(b)						1.00	No.	3	3.00	28800
5	Making thavla	137(b)	3	1				1.00	No.	1.8	5.40	43200
6	Hoeing	136	3	1				3.00	No.	1.2	3.60	28800
7	Insecticide treatment	Market rate	3		0.03 ml			0.009	Ltr	400	3.60	28800
8	Watering	135	3	4				12.000	no	1.8	21.60	172800
9	Watch & ward	Minimum weges	3	36				36.00	Month	4000	18	144000
				Water require per watering	Waterring per year	No of plant		Water requirement				
10	Supply of water tanker	196(e)	3	15	4	1		180.00	per 1000 ltr 2km	26.2	4.72	37728
	TOTAL										74	618986

Contengency 3% 18570
Grand total **637556**
Say 6.37556

Problem & solution:-

NEEL GAY (Roz) can destroy all plantation work. Such that Watch and ward require on agriment

Note :-

We have Chokidar for this Area in this estimate. We supplying water by Tanker .
Estimate include gap filling 20 %

तकमीना

कार्य का नाम -

ग्राम - ग्राम पंचायत -

योजना का नाम-	0				कार्य का यूनिक कोड नं. -				0								
	लाभार्थी का नाम-		0		Location		-		0								
कार्य का विवरण	संख्या	टांकाई	चौड़ाई	उंचाई	मात्रा	इकाई	दर				राशि						
							कुल	ला	श्रम	कुल	ला	श्रम	कुल	ला	श्रम	कुल	ला
मिट्टी का कार्य बन्ड निर्माण में (सूखी या गीली), मिट्टी को पाल पर समतल करना डेला को तोड़ना, दरेसी करना व हाथ के दूरमट से दबाना/कूटना, 1.5 मी. उठान तथा 50 मी. दूरी के लिये																	
कंकर मिट्टी में।																	
	1	2147	(1.6 + 0.6)/2 = 1.10	1.00	2361.15	घ.मी.											
	Total				2361.15	घ.मी.	83.70	91.00	91.00	197628	214865	214865					
बीज पैलेटस बुवाई बनाये गये रिज पर।	3	2147			6440	मीटर	0.44	0.44	0.44	2833	2833	2833					
बीज की लागत (कुमट बीज 3 ग्राम प्रति मीटर)	3	2147			19.32	कि. ग्रा.	0.00	0.00	50.00	0	0	966					
Total										200462	217698	218664					
Contengency 3%																6560	
Grand Total										200462	217698	225224					
Total Cost										200462	217698	225224					
Labour Amount																217698	
Material Amount																7526	
Total Amount																225224	

कार्य का नाम -

ग्राम - ग्राम पंचायत -

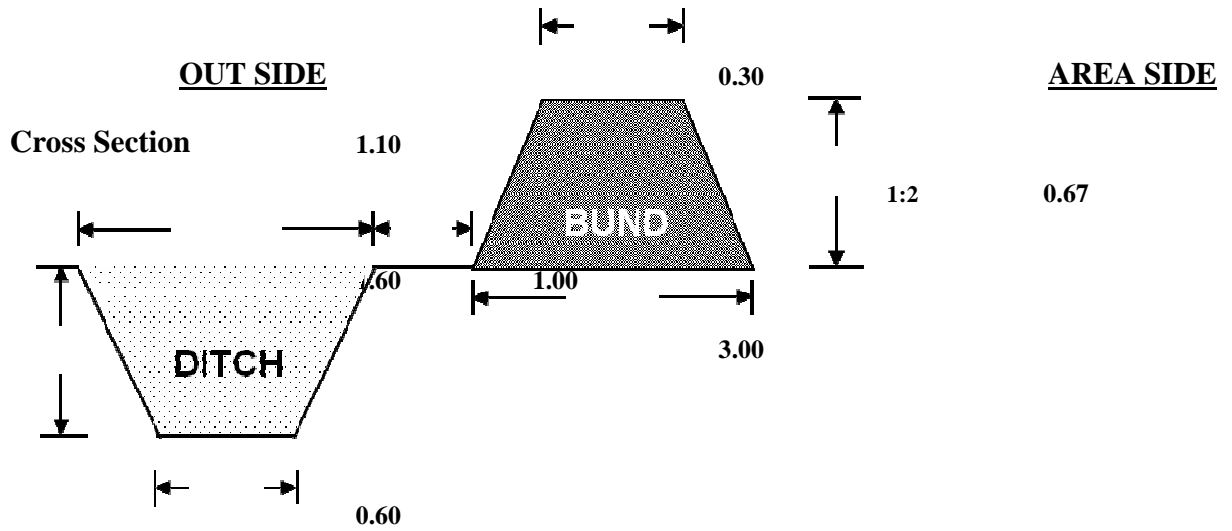
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कार्य का यूनिट कोड नं. - 0

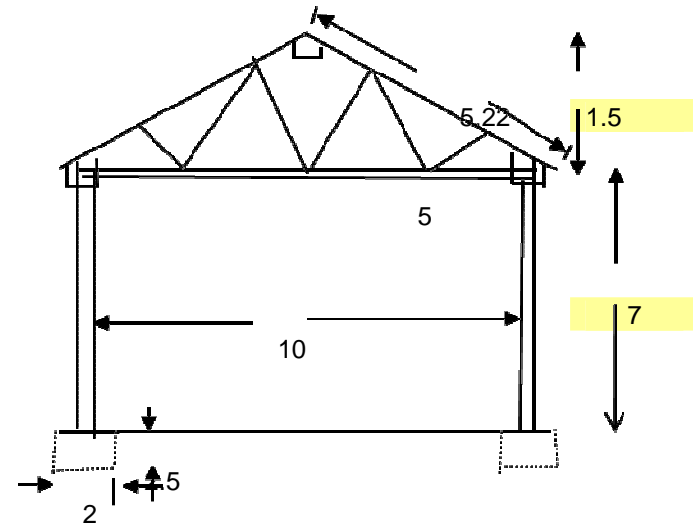
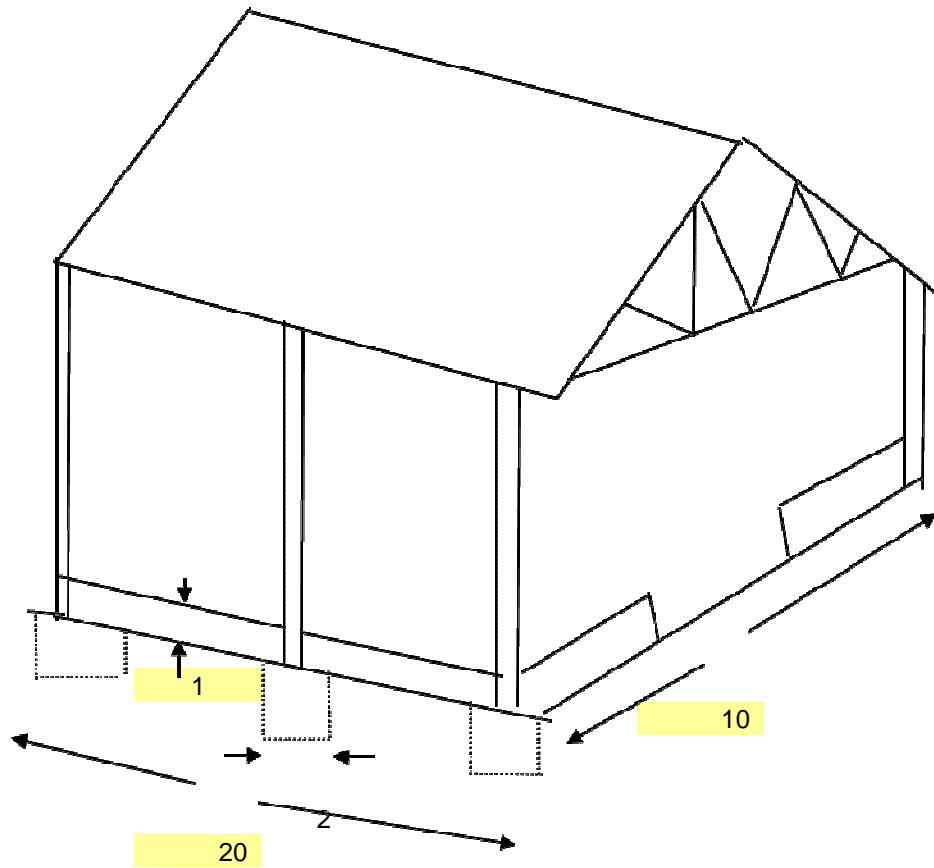
Diagram

Earthen Bund

LENGTH 2146.50



Iwmp Morra



Model Estimate

Vermi Compost

IWMP MORRA

So.No	Name of work	Item no.	No	Length	width	Hight	Qty	Unit	Rate	Amount	
1	Excavation Hard soil	2B	6	2	2	2.5	60				
							1.70	Cum	91	154.76	
2	C/C (1:5:10)	10	6	2	2	1	24				
							0.68	Cum	1759	1196.60	
3	Stone mesonary (1:6)	25C	6	2	2	1.5	36				
			2	16.25	1	1	32.5				
			2	10	1	1	20				
						88.5	cuf				
						2.51	Cum	1629	4086.35		
				25C + 26	6	1.25	1.25	7	65.625		
						1.86	Cum	1766	3284.97		
4	Pillor mesonary	28					1.86	Cum	418	777.53	
5	Plaster (1:6) 25 mm	71A	6	5		7	210				
			2	16.25		3	97.5				
			2	10		3	60				
							367.5	Sqf			
							34.15	Sqm	128	4371.747	
6	Chenal 3" * 1.5" Angle(1.5"*1.5") Angle (1"*1")				Length	Kg/feet	Kg				
			3	20	60	1.25	75	Kg	46.2	3465	
			6	5.22	31.32	0.9	28.19	Kg	43	1212.12	
			3	10	30	0.9	27.00	Kg	43	1161	
			3	8	24	0.35	8.40	Kg	43	361.2	
7	Cement sheets		14	6	3		252				
							23.42	Sqm	202	4730.855	
8	color and finising									500	
9	Warmi					2	Kg	600		1200	

26502.13

Say

27000

IWMP MORRA

Entry Point Activity

<i>Village Name</i>	<i>Area</i>	<i>Amount earmarked for EPA</i>	<i>Activity</i>	<i>Estimated Cost</i>	<i>Expected outcome</i>
<i>Dhanapa</i>	<i>1885.84</i>	<i>11.32</i>	<i>Water source Development & Demonstration Activity</i>	<i>11.32</i>	<i>Village public will happy and trust to our project activity & creation of awareness</i>
<i>Tuqaliya</i>	<i>810.16</i>	<i>4.86</i>	<i>Water source Development & Demonstration Activity</i>	<i>4.86</i>	<i>Village public will happy and trust to our project activity & creation of awareness</i>
<i>Ramnagar</i>	<i>664.35</i>	<i>3.99</i>	<i>Solar Demonstration Activity</i>	<i>4.00</i>	<i>Village public will happy and trust to our project activity & creation of awareness</i>
<i>Talanpur</i>	<i>1880.71</i>	<i>11.28</i>	<i>Water source Development & Demonstration Activity</i>	<i>11.27</i>	<i>Village public will happy and trust to our project activity & creation of awareness</i>
<i>Gotan</i>	<i>466.94</i>	<i>2.80</i>	<i>Water source Development & Demonstration Activity</i>	<i>2.80</i>	<i>Village public will happy and trust to our project activity & creation of awareness</i>
<i>Total</i>	<i>5708</i>	<i>34.25</i>		<i>34.24</i>	

ANIMAL CAMP -COST

Many endemic diseases are found in live stock and increases mortality so we prevention endemic diseases in water shed area we held after four month Organization a animal camp per year three camp per village these both clinical and nutrition aspect .

Nine camps per year TOTAL FIVE YEAR CAMPS - 45 COST OF PER CAMPS

S.NO	TOTAL POPULATION OF LIVE STOCK	NAME OF MEDICINE	PACKING UNIT	RATES	QUANTATY OF MEDICINE	COST OF MEDICINE
1	5580	BOLUS - ORIPRIM	5X4 BOL	92.40	3 PACKET	277.20
2	5580	INJ. FPP 20 LAC	-	9.37	20 VIAL	187.4
3	5580	ESGIPIRYN	5MLx20	127.64	5 PACKET	638.2
4	5580	PENDISTRIN-SH	6 ML	13.25	15 TUBE	198.75
5	5580	INJ- TRIBIVET	30 ML	39	5 VIAL	195
6	5580	INJ- ENROCIN 10%	30 ML	41.2	10 VIAL	412.3
7	5580	INJ- INTAMOX	0.5 GM	7.16	10 VIAL	71.6
8	5580	INJ- OXYTETRA- CYCLINE	100 ML	32.82	10 VIAL	328.2
9	5580	BOL- SUPRAZOLE (ALBANDAZOLE 1.5G.)	2 BOLUS	15.78	50 PACKET	789
10	5580	BOL- FENTAS 3 GM	2 BOLUS	29.8	40 PACKET	1192
11	5580	INJ- INVRME- CTIN (CLAVOTIN)	20 ML	70	3 VIAL	210
12	5580	INJ- PREDNISOLONE	10 ML	25.19	4 VIAL	100.76
13	5580	CREAM- LOREXON	30 GN	18	3 PACKET	54
14	5580	D- MAGSPRAY	50 ML	55.9	5	279.5
15	5580	TAB. COCU-R	100 TAB	29	5	145
16	5580	INJ- ANISTAMIN	100 ML	18.8	10 VIAL	188
17	5580	INJ- BERINEL- RTU	20 ML	40.39	5 VIAL	201.95
18	5580	INJ- ORIPRIM	30 ML	30.73	5 VIAL	153.65
19	5580	INJ- VITA- A	2 ML x6	64.16	1 PACKET	64.16
20	5580	INJ- RINTOSE	1 LTR	59	8	472
21	5580	INJ-T-PHOS OIL- TUR	30 ML	71	5 VIAL	355
22	5580	INJ- CENTROCYCLINE L.A.	30 ML	40.5	5 VIAL	202.5
23	5580	INJ- P- DEPOT	2 ML	33.75	3 VIAL	101.25
24	5580	INJ- MELONEX-POWER	30 ML	44.9	7 VIAL	314.3
25	5580	INJ- D.C.R.	2.5 GM	18.72	30 VIAL	561.6
26	5580	INJ- EPIDIOCIN	30 ML	65.32	2 VIAL	130.64
27	5580	INJ- BELAMYL	100 ML	63.36	3 VIAL	196.08
28	5580	INJ- DNS 5	500 ML	16.75	5	83.75
29	5580	INJ- INTASEF-TAZO	3375 MG	211.16	3 VIAL	633.48
30	5580	BOL- WOKAGEST	4 BOLUS	31.6	15 PACKET	474
31	5580	SPRY- TOPICURE	250 ML	150	1	150
32	5580	VACCINE- E.T.	500 ML	100	1 VIAL	100
33	5580	VACCINE- H.S.	500 ML	100	1 VIAL	100

34	5580	VACCINE- F.M.D.	100 ML	160	1 VIAL	160
					TOTAL	9721.27
VILAGE PER CAMP COST			9800.00	SAY		9800.00
JEEP FOR 2 DAYS ONE FOR ADVERTISEMENT & OTHER FOR CAMP			3200			
	TOTAL		13000.00			
	PER YEAR COST	13000*9	117000			
	FIVE YEAR COST	117000*5	585000			

INFERTILITY CAMPS

Deficiency are found in major minerals and vitamins project area's land so increases infertility in heifer animals if we add mineral mixture in concentrate (bata) then hiefer animal proper indicate heat

COST OF INFERTILITY CAMP

S.NO	POPULATION OF HEIFER ANIMAL	NAME OF MEDICINE	PACKING UNIT	RATES	QUANTITY OF MEDICINE	COST OF MEDICINE
1	224	SUPPLEVITE - M	250 GM	18.48	100 PACKET	1848.00
2	224	SUPPLEVITE - M	2.50 KG	145.20	124 PACKET	18004.80
					TOTAL	19852.80

**JEEP FOR 2 DAYS ONE FOR
ADVERTISEMENT & OTHER
FOR CAMP**

3000.00

**GRAND TOTAL
SAY**

22852.80

22900.00

we held one infertility camp per year per village Total five year five

Total cost of infertility camp (five year)

549600

BREED IMPROVEMENTS

Whole water shed area's owner have indigenous (non-describe) breed of cows and buffaloes These are milk production is very low like is indogenous cows - 2.25 lt/day if we take breed improvements so we increase milk production - for that - ARTIFICIAL INSEMINATION METHOD - BUFFALO BULL

COST OF ARTIFICIAL INSEMINATION

S.NO	EQUIPMENT	COST	CONVERGENCE
1	LN-2 JAR (3 LT)	17000	-
2	A.I. GUN	450	-
3	SLEEVE PACKETS	120/ PK	VETY HOSPITAL
4	SEMEN STRAW	25/ STRAW	VETY HOSPITAL
5	LIQUID NITROGEN	300/REPILL	VETY HOSPITAL
6	SHEATH	120/PK	-
7	STRAW HOLDING FORCEPS	260	-
8	TRANSPORTAION	500	-
	TOTAL	18775	-

Say

19000

COST FOR FIVE
YEAR

95000

Chapter v

Activity wise total Abstract of cost

The first step in budgeting is dividing the cost of the project into various components as detailed in the common guidelines and done accordingly. It helps us in further identifying activities under different components and allocate appropriate funds.

Budget at a glance

Budget at a glance Budget Component	Cost requirement (lac.)
Net Project Cost	750
-Administrative Costs	75
-Monitoring	7.5
-Evaluation	7.5
Preparatory phase:	
-Entry point activities	30
-Institution and capacity building	37.5
-Detailed Project Report (DPR)	7.5
Watershed Works Phase:	
-Watershed Development works,	450
-Livelihood activities for the asset less persons,	112.5
-Production system and micro enterprises	
Consolidation Phase	22.5
TOTAL	750

component wise budget available under IWMP in Lac.

Sr.no.	Name of Waershed	Activity							
		EP A	Institution and CB	DPR	Watershed development Work	Livelihood for asset less	Production system and Micro enterprises	Consolidation	Tota (Lac.)
1	Morra	30	37.5	7.5	450	112.5		22.5	660

Gap in funds requirement

Sr. No.	Name of Watershed	Total cost requirement	Total funds available under IWMP	Gap in funds requirement
1	Morra	825 (Lac.)	750 (Lac.)	75 (Lac.)

Details of Convergence of IWMP with other Schemes

S. No.	Name of Watershed	Activity to be carried out	Fund made available to IWMP due to convergence (Rs. in lakh)	Scheme with which convergence take place	Level at which decision for convergence By taken
1	Morra	Tanka & Medhbandhi	75 (lac.)	MGNREGS	District Level (DWDU)

atment													
D		<i>Component Wise & Yearwise Breakup of watershed Activities</i>											
			0.00					0.00		0.00			100%
+ C)			523.95			Area 5000	Unit Cost 170.63 0.15	Total Cost 143.63 750		107.02			MC 72

(A) Preparatory phase activities capacity building trainings & EPA

Activity	Yearwise											
	Total		1st year		2nd year		3rd year		4th year		5th year	
	%	Fin	%	Fin	%	Fin	%	Fin	%	Fin	%	Fin
n.	10.00	75.00	1.00	7.50	2.00	15.00	2.00	15.00	2.00	15.00	2.00	15.00
ring	1.00	7.50	0.10	0.75	0.20	1.50	0.20	1.50	0.20	1.50	0.20	1.50
tion	1.00	7.50	0.00	0.00	0.30	2.25	0.00	0.00	0.35	2.63	0.00	0.00
l	4.00	30.00	4.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B	5.00	37.50	1.50	11.25	1.50	11.25	0.50	3.75	1.00	7.50	0.00	0.00
R.	1.00	7.50	1.00	7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l	22.00	165.00	7.60	57.00	4.00	30.00	2.70	20.25	3.55	26.63	2.20	16.50

(B) Natural resource management

	Unit no	Unit cost	Total cost	Yearwise									
				1st year		2nd year		3rd year		4th year		5th year	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
asures for f							0.00		0.00		0.00		0.00
getative bandhi	2500	7000	175	0	0	700	49.00	700	49.00	600	42.00	400	28.00
weist weir	4	6	24	0	0	2	12	1	6.00	1	6.00	0	0.00
weist weir	4	5	20			2	10	1	5.00	1	5.00	0	0.00
weist weir	8	4	32	0	0	5	20	1	4.00	1	4.00	1	4.00
th earthen (ha.)	42	83445	35.05	0	0	15	12.52	15	12.52	10	8.34	3	2.50
th earthen (ha.)	9	122182	11.00	0	0	2	2.44	2	2.44	3	3.67	2	2.22
th earthen (ha.)	3	220777	6.62	0	0	1	2.21	1	2.21	1	2.21	0	0.00
alai	8	190000.00	15.2	0	0.00	2	3.80	2	3.80	2	3.80	2	3.80
g	238	62000.00	147.56			50	31.00	50	31.00	50	31.00	50	31.00
			466.43				142.97		115.97		106.02		71.50
res for non f													
oha.	4	13.33	53.32			2	26.66	2	26.66				
of grasses	210	2000.00	4.20	0	0.00	50	1.00	50	1.00	50	1.00	50	1.00
			57.52				27.66	0.00	27.66		1.00		1.00

(C) Production System and micro enterprise

Activity	no	Unit cost	Total cost	Yearwise							
				1st year		2nd year		3rd year		4th year	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Production measures for arable land											
rabi crop demonstration	400	1000.00	4.00	0	0.00	100	1.00	100	1.00	100	1.00
rabi crop demonstration	400	1000.00	4.00	0	0.00	100	1.00	100	1.00	100	1.00
Agro-forestry	1150	550.00	6.33	0	0.00	150	0.825	400	2.20	300	1.65
Dry land Horticulture plant	16	71000	11.36	0	0.00	4	2.84	4	2.84	4	2.84
Vermi compost	25	27000	6.75	0	0.00	10	2.70	8	2.16	5	1.35
home stead kitchen garden	410	1000	4.10	0	0.00	100	1.00	100	1.00	100	1.00
House hold prod. system	298	2500	7.45	0	0.00	73	1.8250	75	1.88	75	1.88
Crop Demonstration											
Total (A)			43.99				11.19		12.08		10.72
Live stock & foddar development											
breed improvement											
Distribution of bulls /sheep/goat castration	12	20000	2.40	0	0.00	6	1.20	6	1.20	0	0.00
natural services/A.I	5	19000	0.95	0	0.00	1	0.19	1	0.19	1	0.19
Total (B)			3.35	0	0.00				1.39		0.19
Foddar demonstration	500	420	2.10	0	0.00	120.00	0.60	100.00	0.50	100.00	0.50
animal fertility camp	10	22900	2.29	0	0.00	2.00	0.46	2.00	0.46	2.00	0.46
Animal Husbandry camp	25	13000	3.25	0	0.00	5.00	0.65	5.00	0.65	5.00	0.65
Total (c)			7.64				1.71		1.61		1.61
(c) Consolidation			22.50								
Project Total			766.42		7.60		187.53		161.40		123.08

(E) Convergence with NREGA & Agriculture ext. department

Activity	no	Unit cost	Total cost	Yearwise							
				1st year		2nd year		3rd year		4th year	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
NREGA											
Nadi Excavation & Paj making	0		0.00								

<i>Tanka work Cat-4</i>	123	0.62	76.57			50	31.00	25	15.50	25	15.50
<i>Anicuts</i>	0		0.00								
<i>Total (a)</i>			76.57				31.00		15.50		15.50
<i>Grand Total</i>			825.00								

CHAPTER VII

PROJECT OUTCOME:-

(A) NRM:-

(i) Drinking water :-

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

Status of Drinking water:-

S. No.	Names of Villages	Availability of drinking water		Quality of drinking water		Comments
		(no. of months in a year)				
		Pre-project	Expected Post project	Pre-project	Expected Post project	
1	Morra	4 Month	6 Month	High TDS	Potable	
2	morri ghoda	4 Month	6 Month	High TDS	Potable	
3	pharaspura	4 Month	6 Month	High TDS	Potable	
4	Basni sumer	4 Month	6 Month	High TDS	Potable	
5	Karkawal	4 Month	6 Month	High TDS	Potable	
6	dhadh lash uda	4 Month	6 Month	High TDS	Potable	
7	Dhadh lash chak	4 Month	6 Month	High TDS	Potable	

8	Dhadhlah jalap	4 Month	6 Month	High TDS	Potable	
9	Dotolai	4 Month	6 Month	High TDS	Potable	
10	Dholeraw khurd	4 Month	6 Month	High TDS	Potable	
11	Raliyawata	4 Month	6 Month	High TDS	Potable	

(ii)Ground water table:- Rainfall has been scanty but demand for ground water has been increasing all the time. Presently it stands at 35 m. The ground water table thus has depleted over the years. Proper water harvesting structures and percolation tanks would go a long way in increasing water table depth from 35m in the pre-project level to 30 m in the post project period.

(B) Agriculture production measure:-

(i) Crop: - Agriculture primarily depends upon water: but this is what is lacking in Morra project. The surface water is scanty due to low rainfall and groundwater is saline, which is unfit for crop production. All this can change with the integrated land and water management during the watershed project. The planned Check dam, farm pond would prevent the saline water from the area to mix with the sweet rain water and also help percolate sweet water underground, and preserve some moisture in the soil. This will help in additional area coming under cultivation and increasing productivity too. The farmers can take more than one season of crops. Different varieties of crops can be taken.

Name of watershed	Name of crops	Pre-project			Post -project		
		area(ha.)	Average yield (Ton) per ha.	Productivity (kg/ha)	area(ha.)	Average yield (Ton) per ha.	Productivity (kg/ha)
Morra	Kharif						
	(i) Jwar	810	317.52	392	1000	450	450
	(ii) Bajra	730	428.50	523	950	617.5	650
	(iii) Green gram (Mung)	1785	731.85	410	2200	1100	500
	(iv) Til (sesam)	100	30.8	308	200	95	475
	Rabi						
	(i) taramira	1650	536.25	325	2000	800	400
	(ii) Gram	730	313.9	430	1000	5000	500

Details of crop area and yield in the project areas

(C)Dry land Horticulture plant/flori culture Additional income

Area under horticulture

S. No.	Name of Watershed	Existing area under dry land Horticulture plant (ha)	Area under dry land horticulture plant proposed to be covered through IWMP
1.	Morra	0	550 (Ha.)

(D) **Live stock** :- The village has quite a good of livestock population. There include cows, bullocks, buffaloes, goats, sheep and camels. 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 equipment distribution in the village. It is expected that the post project period would see a substantial increase in livestock population and yield from them.

Details of livestock in the project areas:-

S.No.	Description of animals	pre -Project			Post- Project			Comment
		Population in No.	Yield (Milk in lt.)	income	Population in No.	Yield (Milk in lt.)	income	
1	Cows	1870			2300			
	Indigenous	1694	3388	84700	2000	5082	127050	
	Hybrid	176	1232	30800	300	1760	44000	
2	Buffaloes	310	1550	38750	400	2170	54250	
3	Goat & Sheep	1985	992.5	19850	3000	1488.75	29775	
4	Camel	43	0		60			
5	Poultry	423	0		600			
6	Piggery	70	0		100			
	Total	6571	7162.5	174100			255075	

(E) **Livelihood**:-

(i) The livelihood of the community is mainly dependent on a combination of agriculture, wage labour and Natural resources. However, due to increasing demographic pressure and declining agricultural productivity coupled with other factors have resulted in heavy pressure on the natural resources leading to their degradation.

(ii) The area is mainly rain fed and hence it supports single crop in Kharif season. In small pockets where irrigation is not available for Rabi crop. Due to small land holdings, single cropped area and low productivity of the land,

most of the families face food-grain scarcity for 3-6 months in a year. This forces these families to option for wage labour and seasonal migration, with some households sending their adult children to far off places like etc.

Migration: - Low rainfall results in very little fodder availability in the locality. The relatively well off farmers bring fodder from other part of state (approximately 100kms away) collectively; but the resource poor cannot afford it. 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.

Details of seasonal migration from Project area:-

sr.no	Name of village	Pre-project		Post-Project		Remark
		No. of persons migrating	No. of days per year of migration	No. of persons migrating	No. of days per year of migration	
1	morra	220	160	165	120	
2	mori ghoda	35	160	26	120	
3	pharaspura	94	160	70	120	
4	basni sumer	85	160	63	120	
5	karkawal	135	160	100	120	
6	dhadhlah uda	120	160	90	120	
7	dhadhlah chak	80	160	60	120	
8	dhadhlah jalap	30	160	22	120	
9	Dotolai	5	160	4	120	
10	Raliyawata	120	160	90	120	
11	Dholeraw khurd	90	160	68	120	
	total	1014		758		

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 too. So, animal husbandry does not keep them engaged full time. Thus the people mainly depend upon casual labour, either in the village itself or outside it. The project plans for creation of both wage employment and self employment opportunities. Wage employment would be created by engaging people in watershed physical works like construction of earthen bunds, farm bunds, village pond, plantation, etc. self employmen would be created by providing the people with cash support in the form of direct livelihood activities like agriculture, animal husbandry and enterprise development.

Employment in project area

Sr.No.	Names of villages	Wage employment								self employment			
		No. of mandays				No. of beneficiaries				No. of beneficiaries			
		sc	ST	others	total	sc	ST	others	total	sc	ST	others	total
1	morra	175	0	250	425	125	0	200	325	25	0	100	125
2	mori ghoda	200	0	300	500	150	0	225	375	40	0	125	165
3	pharaspura	100	0	250	350	75	0	200	275	30	0	70	100
4	basni sumer	50	0	300	315	40	0	250	290	30	0	60	90
5	karkawal	60	0	150	175	45	0	125	170	30	0	50	80
6	dhadhlash uda	150	0	250	400	100	0	200	300	40	0	60	100
7	dhadhlash chak	50	0	125	175	40	0	100	140	20	0	40	60
8	dhadhlash jalap	75	0	100	175	50	0	80	130	15	0	40	55
9	Dotolai	200	0	250	450	150	0	200	350	45	0	75	125
10	Raliyawata	175	0	400	575	150	0	350	500	40	0	55	95
11	Dholeraw khurd	150	0	300	450	100	0	250	350	35	0	65	100

(f) micro enterprises:-

the provision of Micro, Small & Medium Enterprises Development (MSMED) Act, 2006 the Micro, Small and Medium Enterprises (MSME) are classified in two Classes:

(a) **Manufacturing Enterprises**- The enterprises engaged in the manufacture or production of goods pertaining to any industry

specified in the first schedule to the industries (Development and regulation) Act, 1951). The Manufacturing Enterprise is **defined in terms of investment in Plant & Machinery.**

(b) **Service Enterprises:** The enterprises engaged in providing or rendering of services and are **defined in terms of investment in equipment.**

The limit for investment in plant and machinery / equipment for manufacturing / service enterprises,

Manufacturing Sector	
Enterprises	Investment in plant & machinery
Micro Enterprises	Does not exceed twenty five lakh rupees
Small Enterprises	More than twenty five lakh rupees but does not exceed five crore rupees
Medium Enterprises	More than five crore rupees but does not exceed ten crore rupees
Service Sector	
Enterprises	Investment in equipments
Micro Enterprises	Does not exceed ten lakh rupees:
Small Enterprises	More than ten lakh rupees but does not exceed two crore rupees
Medium Enterprises	More than two crore rupees but does not exceed five core rupees

Context

Micro-Enterprise plays a critical role in the economic development of any economy, but particularly in those economies that are undergoing a transition from the traditional subsistence to a modern industrial economy. In India, the micro and small industries sector has a long historical tradition and since independence has contributed significantly to the overall economic development of the country.

Given its employment pattern, growth, geographical dispersion and contribution to total industrial output, the micro-enterprise sector will continue to play a significant role in eradicating poverty and promoting higher levels of gainful employment.

To play a significant role in facilitating the poor to increase their income levels through micro-enterprises. Self-employment through micro-enterprise can play a considerable role in poverty alleviation for the millions of poor in our country.

This programme is being prepared to train the middle and higher-level functionaries of different Organization so that they can understand the concepts of micro enterprise development. The programme is being organised to take the learning back to the community level to generate employment and fight poverty.

Objectives

The principle objectives of the training programme on Promotion and Development of Micro Enterprises are:

To understand the concepts of livelihoods, → entrepreneurship and micro-enterprise.

To understand the relevance of marketing in promoting → micro enterprises.

To impart the knowledge among the participants about → the various tools used for livelihoods analysis, identification of business ideas, business planning and feasibility analysis.

To sensitise the participants on the need to analyse → the business environment for proper use of the concepts and tools.

Content

- The concept of livelihood interventions
- Livelihood analysis tools
- Approaches to livelihood promotion
- Business vs. Welfare Approach
- The concept of Business
- Characteristics of entrepreneur
- Marketing concepts and its applications
- Business selection and study
- Business feasibility analysis and business planning
- Forms of organizations (of enterprises)
- Financial resourcing of micro-enterprises
- **Methodology**

The training programme on Promotion & Development of Micro Enterprise would be conducted in participatory way by using methods like lectures participatory discussion, group discussions, case studies, games and exercise and field visits. The experiences of the participants would be used during adaptation of these methods.

Target Audience

The programme is open to middle level professionals of NGOs and officials of governments / banks who are, or are likely to be engaged in managing micro-enterprise and micro-finance development. The participants should have a good command over written and spoken Hindi to derive optimal benefit from the interactions. The maximum number of participants in the programme will be 15.

Training Organization

With almost 80 per cent of the Indian population fighting for survival everyday, it is of utmost importance to identify new ways and means to provide resources they need to better their lives. Grant or subsidies are far too small in macro-economic terms to do much in the face of the vastness of the problem. There is a need to identify ways to encourage survivors rather than creating helpless dependents. This necessitates a basic change in the mindset of both givers and takers.

One sustainable way of dealing with the situation is to create sustainable livelihoods. Government agencies and the formal sector clearly cannot absorb the entire workforce. In this scenario, there is a need to promote entrepreneurship in the informal sector.

Any enterprise, whether in the formal or informal sector, needs financial resources for working capital and investment purposes. As far as the formal sector is concerned, it is well serviced by various commercial banks and other financial institutions.

Informal units operate under conditions of extreme shortage of all types of resources. These include a poor endowment of fixed capital and working capital. The qualitative and quantitative limitations in terms of having access to outdated technologies, lead to a low level of productivity and extremely high cost. The low level of working capital will force small producers to buy inputs in small quantity. This will result in considerable loss of time, interruption and lack of continuity in production processes. The shortage of funds also makes it difficult to even keep minimum inventories and explore more favourable market options.

Credit is a powerful development tool. Institutional credit can make it possible to:

- a. finance simple technological improvements and consequently attain greater productivity, and
- b. Provide the necessary working capital to improve quality, timely availability and cost of inputs as well as to find market opportunities.

But like any tool, its effectiveness depends on how it is used. Any credit programme must be designed keeping in mind the needs, aspirations, skills and the social, economic, cultural and political system of the population to be served. The most important element of any credit institution to work with the informal sector, is to demonstrate that the credit to the informal sector is financially viable.

Formal financial institutions cover their credit risks and profit from a mix in their loan portfolio. Adding small producers to the portfolio would increase the credit risk. Further, it generally costs more to administer a portfolio split up into very small loans than a theme involving only a few large customers. Traditional banking practice tends to give much weight to a portfolio involving large customers who can provide guarantees when considering an application for credit but sufficient attention is not always paid to the analysis of factors affecting the risk of default i.e. lack of non-financial support services.

This has a number of important implications. Formal financial institutions prefer to finance a customer with sufficient assets that can be pledged as security. Secondly, these institutions consider recovery of their portfolio as the only major factor to be taken into account. They are not determining the composition of the portfolio according to the needs of the financial resources of the informal sector. They also have a very high operating cost.

In this scenario, credit though important, cannot by itself resolve all of the structural and functional problems. Credit is a condition that is necessary though it is not sufficient for the development and transformation of small-scale informal production.

Small producers, who traditionally have no access to institutional credit, have greater needs for training and technical assistance as well. Therefore, it is becoming increasingly important for the lending agency to work in association with, or in coordination with, promotional agencies specializing in training and technical assistance for informal activities.

At the same time, it is important to find ways to make the financial operations attractive and profitable in funding small scale operations to attract the inflow of funds in the lending agency. To be able to meet the credit needs of a small, informal unit, financial intermediaries have to reduce the relatively high operating costs, increase revenue, reduce risks and undertake organizational adaptation.

It is of utmost importance, therefore, to have an efficient and competent promotion agency with experience or capability of quickly adapting to the circumstances. It also requires a financial intermediary that agrees to adjust requirements, criteria and procedures, without sacrificing financial viability.

One of the most significant global changes in the increasing use of public-private partnership approaches to finance infrastructure development and in other areas with the assumption that the benefits of such partnerships would trickle down in the system and would create better living conditions.

As a result of the efforts for promoting an innovative mechanism for providing finance and support services to Micro Small Entrepreneurs (MSEs), two corporate entities have been recently established in India. Indian Micro Enterprises The Foundation will help in creating an enabling environment for micro and small enterprises. The Foundation will provide support services to Micro Small Entrepreneurs (MSEs) and Micro Credit Finance Institutions in the NGO Sector; and the Finance Corporation will provide credit to the MSE sector using innovative financial instrumentalities (including venture capital financing).

The financial package offered by the Finance Corporation has features such as close proximity, quick and uncomplicated disbursement of credit, credit sanctioning on the basis of actual requirements, suitable credit duration and repayment modalities and credit disbursement to be linked with non-financial support services.

In the formal sector, two common sources of failure of development financial intermediaries are imperfect information and imperfect enforcement. The Foundation and the Corporation have plans to tackle this gap in a strategic way by setting up an information centre to have a strong database.

For the purpose of the Corporation and the Foundation, micro and small enterprises have been defined to include those enterprises which have a total investment in plant and equipment ranging from Rs 10,000 to Rs 10 lakhs and from Rs 10 lakhs to Rs 1 crore, respectively and whose operations/outputs are eco-friendly and technology-based with inputs of market-driven indigenous or imported technology.

The Foundation will provide support service in the following areas:

- Market/feasibility, studies
- Technology acquisition
- Marketing
- Skill development
- Identification of supplier
- Facilitating access to information
- Credit rating of micro and small enterprises
- Catalyzing horizontal and vertical linkages of MSEs with big business, finance institutions, and integration with global markets.

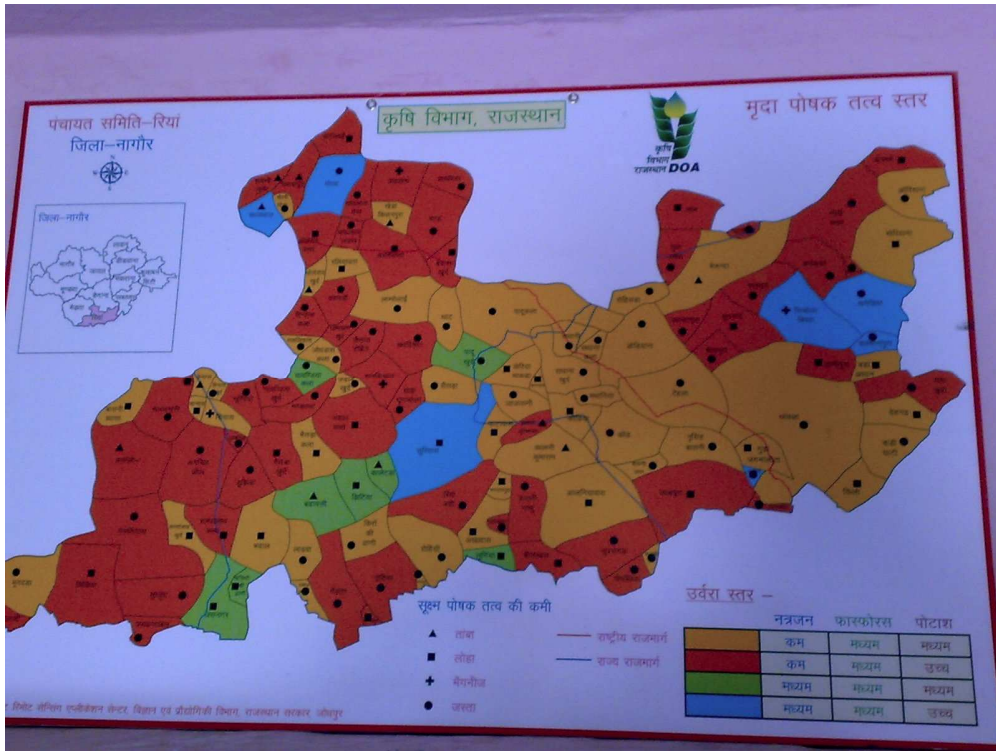
The Foundation will also provide support services to Micro Credit Finance Institutions (MCFIS) through strategic alliances with appropriate private and public sector agencies and NGOs, and engage itself in capacity and skill development of MCFIS to enhance their capabilities for adequate and sustainable supply of micro and small enterprises. Support services to MCFIS would be as follows:

- Innovations in micro credit finance technologies, systems, and infrastructure support
- Development methodologies and systems for monitoring flow and end-use of funds of micro credit finance institutions
- Designing performance criteria for micro credit finance institutions
- Development methodologies for credit rating of micro credit finance institutions
- Facilitate replication of best practices and innovative financial technologies by developing borrower-friendly process documentation

The strategies adopted by the Finance Corporation and the Foundation to ensure regular flow of funds, on a sustainable basis, focus upon strengthening a new business relationship between the private sector and the informal financial intermediaries, by providing viable investment opportunities in a huge untapped market.

List Of Abbreviation		
1	A	Catchment Area (ha)
2	B	Bottom width
3	C	Weighted Coefficient
4	c	Catchment coefficient
5	CI	Contour Interval
6	CN	Curve Number
7	D	Depth of foundation
8	e	Eccentricity
9	fs	Factor of safety
10	GL	Ground level
11	GTS	Geo Tropic Sheet
12	h	Flow depth over weir
13	lo	Intensity of Rainfall (cm/m)
14	L	One hr rainfall (cm)
15	l	Mean length of travel by runoff water
16	M	Crest length
17	m	Difference of elevation Catchment area (Km ²)
18	Mo	Overturning moment
19	Mr	Restoring moment
20	S	Storage capacity
21	T	Top width
22	Tc	Time of concentration
23	V	Volume(m ³)
24	WHS	Water Harvesting structure
25	WC	Water Commetti
26	WDF	Watershed Development Fund
27	SHG	Self help Group
28	DWDU	District watershed development unit
29	PIA	Project Implementing Agency
30	PRI	Panchayati Raj Institute
31	DPC	District Programme Cordinator
32	PRA	Panchayati Raj Institute
33	PLA	Participator Learning Agency
34	SLNA	State level nodel Agency
35	UG	Uger Group
36	NRAA	National Rainfed Area authiraty
37	CBP	capacity building phase
38	MGNREGA	Mahatama Gandhi National Rural Employment Gaurantee Act
39	NI	Natural Insemination
40	AI	Artificial Ihsemination





CARTOSAT - 1 SATELLITE IMAGE

**WATERSHED PROJECT - MORRA, PANCHAYAT SAMITI - RIYABADI
DISTRICT NAGAU**



Legend

-  Settlement
-  Village Boundary

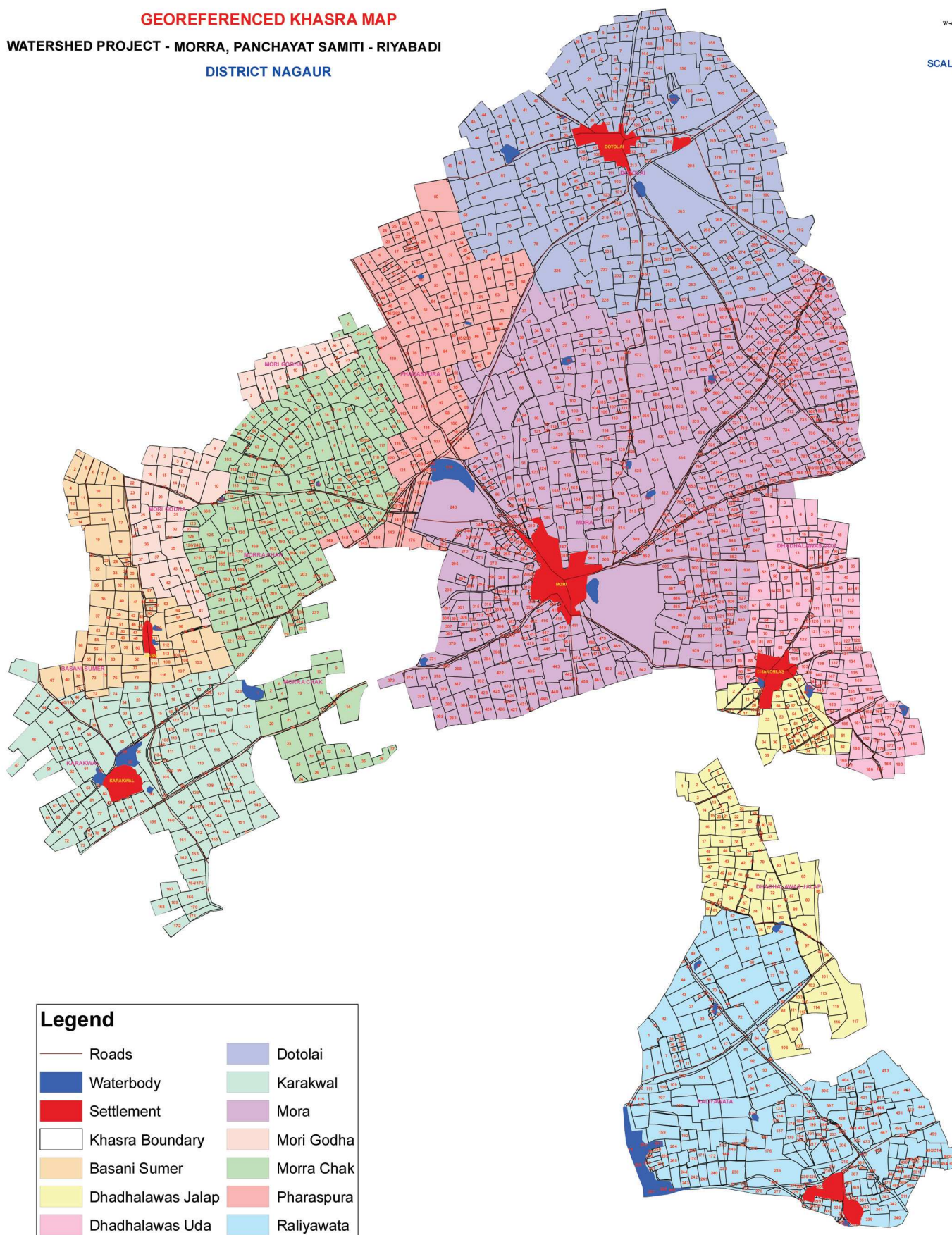
Source: Cartosat-1 Satellite Data, Digitized by the National Remote Sensing Centre, Dehradun, India.

GEOREFERENCED KHASRA MAP

WATERSHED PROJECT - MORRA, PANCHAYAT SAMITI - RIYABADI
DISTRICT NAGOUR



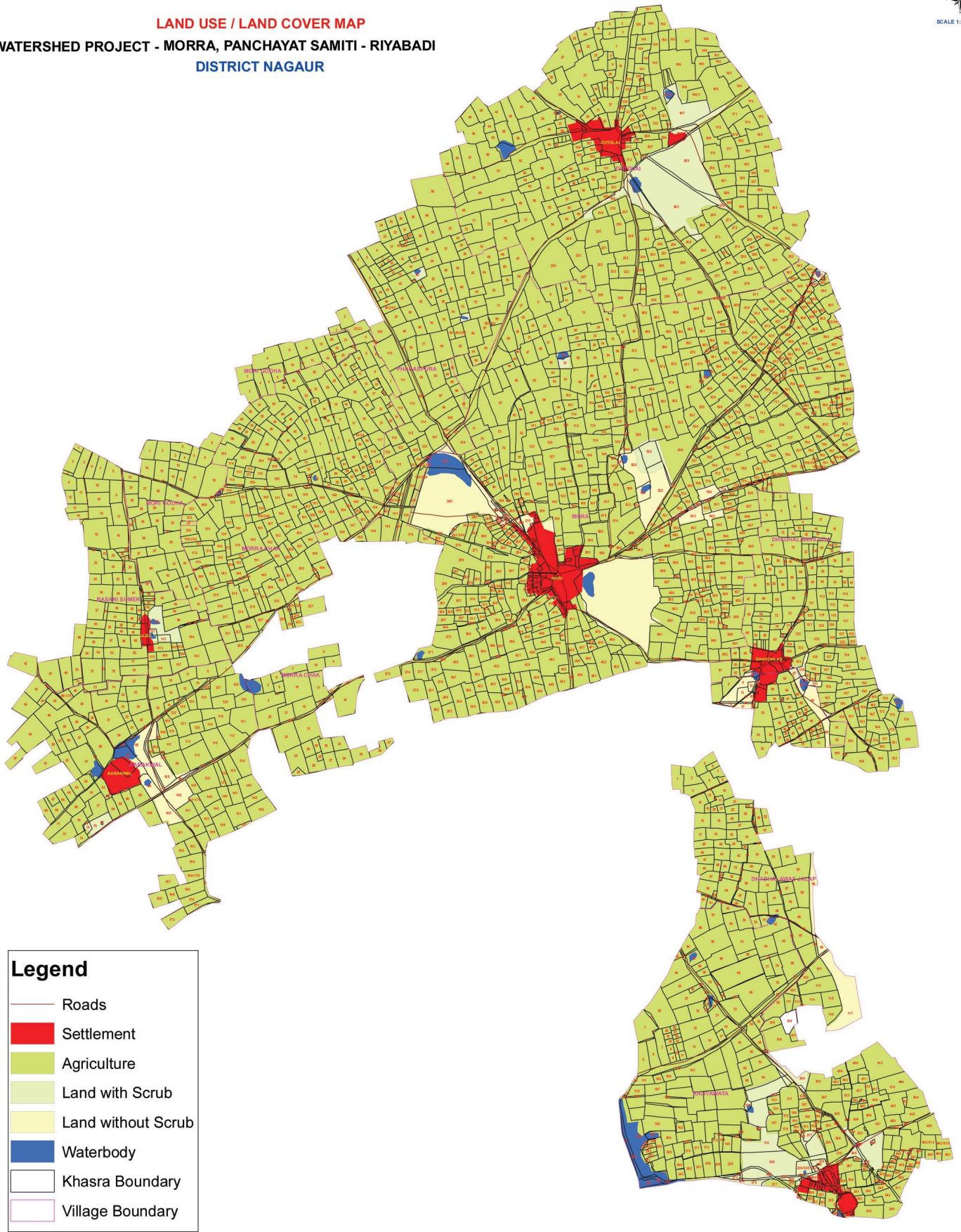
SCALE 1:10,000



Legend

— Roads	Dotolai
Waterbody	Karakwal
Settlement	Mora
Khasra Boundary	Mori Godha
Basani Sumer	Morra Chak
Dhadhalawas Jalap	Pharaspura
Dhadhalawas Uda	Raliyawata

LAND USE / LAND COVER MAP
WATERSHED PROJECT - MORRA, PANCHAYAT SAMITI - RIYABADI
DISTRICT NAGOUR



Legend

- Roads
- Settlement
- Agriculture
- Land with Scrub
- Land without Scrub
- Waterbody
- Khasra Boundary
- Village Boundary

THANKS