

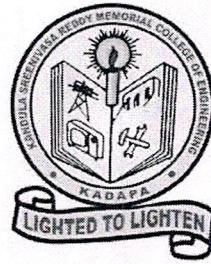
**Kandula Srinivasa Reddy Memorial College of Engineering
(Autonomous)**

Kadapa-516003. AP

(Approved by AICTE, Affiliated to JNTUA, Ananthapuramu, Accredited by NAAC)

(An ISO 9001-2008 Certified Institution)

Department of Civil Engineering



Certification Course

On

INTEGRATED WATERSHED MANAGEMANT

Resource person : **Dr. T. Kiran Kumar,**
Professor, Dept. Civil Engg., KSRMCE

Coordinators : **Dr. P. Kishore Kumar Reddy**
Associate Professor, Dept. Civil Engg., KSRMCE

Date : **25/03/2022 to 18/05/2022**



K.S.R.M. COLLEGE OF ENGINEERING (UGC-AUTONOMOUS)

Kadapa, Andhra Pradesh, India- 516 003

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Lr./KSRMCE/CE/2021-22/

Date: 18-03-2022

From

Dr. P. Kishore Kumar Reddy,
Associate Professor,
Dept. of Civil Engineering,
KSRMCE,
Kadapa.

To

The Principal,
KSRMCE,
Kadapa.

Sub: Permission to Conduct Certificate Course – Reg.

Respected Sir,

The Department of Civil Engineering is planning to offer a certification course on “Integrated Watershed Management” for B. Tech. students of KSRMCE. The course will start on 25th March, 2022 and will run for one-month duration. In this regard, I am requesting you to accept the proposal to conduct certification course.

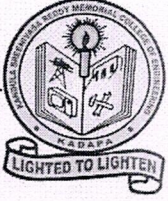
Thanking you

Forwarded to Principal Sir
[Signature]

Yours faithfully

[Signature]
(Dr. P. Kishore Kumar Reddy)

Permitted
V. S. S. murethy



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Cr./KSRMCE/CE/2021-22/

Date: 18/03/2022

Circular

The Department of Civil Engineering is offering a certification course on "Integrated Watershed Management". The course will start on 25-03-2022 in seminar hall, Department of Civil Engineering. In this regard, interested students of KSRMCE are required to register for the Certification Course. The students are instructed to contact the course coordinator for registration.

The Course Coordinator
Dr. P. Kishore Kumar Reddy,
Associate Professor,
Dept. of Civil Engineering,
KSRMCE, Kadapa.


HOD-CE

Cc to:

IQAC-KSRMCE

Registration form for "Certification course on Integrated watershed management"

Resource person : Dr. T. Kiran Kumar, Professor, CED, KSRMCE

Coordinator : Dr. P. Kishore Kumar Reddy, Associate Professor, CED, KSRMCE

Date : From 25/03/22 to 18/05/22

reddysrinu@ksrmce.ac.in [Switch account](#)



Your email will be recorded when you submit this form

* Required

Student Roll No. *

Your answer

Student Name *

Your answer

Mail ID *

Your answer

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Department of Civil Engineering

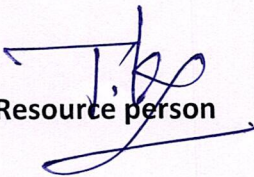
Registration list of Certification course
on

INTEGRATED WATERSHED MANAGEMENT

Sl. No.	Student Roll No.	Student Name	Mail ID
1	199Y1A0102	Sampurna Rani Bollavaram	199Y1A0102@ksrmce.ac.in
2	199Y1A0103	Suryanarayana Byrisetty	199Y1A0103@ksrmce.ac.in
3	199Y1A0106	Haritha Chinamadula	199Y1A0106@ksrmce.ac.in
4	199Y1A0107	Arun Kumar Dantham	199Y1A0107@ksrmce.ac.in
5	199Y1A0108	Anusha Dhamerla	199Y1A0108@ksrmce.ac.in
6	199Y1A0109	Chennakeshava Dirasantha	199Y1A0109@ksrmce.ac.in
7	199Y1A0112	Suneel Giddaluru	199Y1A0112@ksrmce.ac.in
8	199Y1A0115	Faheem Hachhulukatte	199Y1A0115@ksrmce.ac.in
9	199Y1A0116	Venkata Sai Janapati	199Y1A0116@ksrmce.ac.in
10	199Y1A0118	Chaitanya Kanta	199Y1A0118@ksrmce.ac.in
11	199Y1A0119	Vekrishna Yadav Katuboina	199Y1A0119@ksrmce.ac.in
12	199Y1A0120	Kejiya Kola	199Y1A0120@ksrmce.ac.in
13	199Y1A0122	Nagarathna Kumbhagiri	199Y1A0122@ksrmce.ac.in
14	199Y1A0123	Veera Sai Kumar Reddy Lomati	199Y1A0123@ksrmce.ac.in
15	199Y1A0127	Yagna Priya Moram	199Y1A0127@ksrmce.ac.in
16	199Y1A0131	Harsha Vardhan Mundlapati	199Y1A0131@ksrmce.ac.in
17	199Y1A0133	Venkata Siva Pagidi	199Y1A0133@ksrmce.ac.in
18	199Y1A0141	Divya Ragi	199Y1A0141@ksrmce.ac.in
19	199Y1A0143	Hima Bindu Ravella	199Y1A0143@ksrmce.ac.in
20	199Y1A0145	Pavankumarreddy Salindra	199Y1A0145@ksrmce.ac.in

21	199Y1A0146	Mahammad Salivemula	199Y1A0146@ksrmce.ac.in
22	199Y1A0147	Sudharshan Sandella	199Y1A0147@ksrmce.ac.in
23	199Y1A0158	Kavitha Sirangi	199Y1A0158@ksrmce.ac.in
24	199Y1A0159	Venkata Sai Pavan Sravanaboina	199Y1A0159@ksrmce.ac.in
25	199Y1A0160	Rajesh Reddy Sreeredy	199Y1A0160@ksrmce.ac.in
26	199Y1A0162	Mohammed Junaid Syed	199Y1A0162@ksrmce.ac.in
27	199Y1A0164	Anil Kumar Reddy Thummala	199Y1A0164@ksrmce.ac.in
28	199Y1A0167	Chandrasekhar Vadde	199Y1A0167@ksrmce.ac.in
29	199Y1A0168	Shaik Fayaz Hussain Vanipenta	199Y1A0168@ksrmce.ac.in
30	199Y1A0170	Prathyusha Yambadi	199Y1A0170@ksrmce.ac.in
31	199Y1A0172	Bramhini Yeddula	199Y1A0172@ksrmce.ac.in
32	199Y1A0173	Palakondaiah Yeddulakonda	199Y1A0173@ksrmce.ac.in
33	199Y1A0174	Mounika Yerragudipadu	199Y1A0174@ksrmce.ac.in

34	209Y5A0110	B.V. Harsha Vardhini	209Y5A0110@ksrmce.ac.in
35	209Y5A0112	C.Upendra	209Y5A0112@ksrmce.ac.in
36	209Y5A0123	G. V. Chandana	209Y5A0123@ksrmce.ac.in
37	209Y5A0128	J.Kalinga	209Y5A0128@ksrmce.ac.in
38	209Y5A0129	K.Guru vinod	209Y5A0129@ksrmce.ac.in
39	209Y5A0134	K. Ramakrishna	209Y5A0134@ksrmce.ac.in
40	209Y5A0131	Dharama teja	209Y5A0131@ksrmce.ac.in
41	209Y5A0164	P.Mohanbabu	209Y5A0164@ksrmce.ac.in
42	209Y5A0167	R. Divya sree	209Y5A0167@ksrmce.ac.in
43	209Y5A0172	S. Mohammad Abbas	209Y5A0172@ksrmce.ac.in
44	209Y5A0180	U. Vinod Kumar	209Y5A0180@ksrmce.ac.in
45	189Y5A0119	C. Chandra Kanth	189Y5A0119@ksrmce.ac.in
46	189Y5A0164	S.Mahammad Afridi	189Y5A0164@ksrmce.ac.in
47	189Y5A0165	Shaik Mansoor	189Y5A0165@ksrmce.ac.in


Resource person


Coordinator


HOD-Civil Engg.

Head
Department of Civil Engineering
K.S.R.M. College of Engineering
(Autonomous)
KADAPA 516 003. (A.P.)

CERTIFICATE COURSE ON INTEGRATED WATERSHED MANAGEMENT

Pre-requisites: Engineering Hydrology.

Course Outcomes: After completion of the course, student will be able to

- CO1: To Understand the necessity of management of natural resources and their Objectives.
CO2: Identify the causes of soil erosion
CO3: Plan and design soil conservation measures in a watershed
CO4: Plan and design water harvesting and groundwater recharging structures
CO5: Plan measures for reclamation of saline soils

Detailed Syllabus:

1. Introduction, concept of watershed, need for watershed management, concept of sustainable development, Hydrology of small watersheds.
2. Principles of soil erosion, causes of soil erosion, types of soil erosion, estimation of soil erosion from small watersheds, Control of soil erosion, methods of soil conservation – structural and non-structural measures.
3. Principles of water harvesting, methods of rainwater harvesting, design of rainwater harvesting structures.
4. Artificial recharge of groundwater in small watersheds, methods of artificial recharge.
5. Reclamation of saline soils, Micro farming, biomass management on the farm.

TEXT BOOKS:

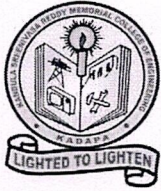
1. Chatterjee, S. N., Water Resources Conservation and Management, Atlantic Publishers, 2008.
2. Murthy, V.V.N., Land and Water Management, Khalyani Publishers, 2004.
3. Muthy, J. V. S., Watershed Management, New Age International Publishers, 1998.
4. Suresh Rao, Soil and Water Conservation Practices, Standard Publishers, 1998.



Head

Department of Civil Engineering
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V. S. S. Murthy
PRINCIPAL
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Department of Civil Engineering

Certification course

on

“INTEGRATED WATERSHED MANAGEMENT”

Date	Timing	Course Instructor	Topic to be covered
25/03/22	4 PM to 6 PM	Dr. T. Kiran Kumar	Discuss about objectives, outcomes, Importance.
26/03/22	4 PM to 6 PM	Dr. T. Kiran Kumar	Introduction about Watershed management, Need for watershed management
28/03/27	4 PM to 5 PM	Dr. T. Kiran Kumar	CHAPTER-1: Concept of sustainable development
29/03/22	4 PM to 6 PM	Dr. T. Kiran Kumar	Hydrology small watershed
31/03/22	4 PM to 5 PM	Dr. T. Kiran Kumar	CHAPTER-2: Soil erosion, causes of soil erosion
06/04/22	4 PM to 6 PM	Dr. T. Kiran Kumar	Estimation of soil conservation
08/04/22	4 PM to 6 PM	Dr. T. Kiran Kumar	Structural and Non-Structural measures
13/04/22	4 PM to 6 PM	Dr. T. Kiran Kumar	CHAPTER-3: Principle of water harvesting, Methods of Rain water harvesting.
05/05/22	4 PM to 5 PM	Dr. T. Kiran Kumar	Design of rain water harvesting
06/05/22	4 PM to 5 PM	Dr. T. Kiran Kumar	CHAPTER-4: Artificial recharge of ground water in small watershed
08/05/22	4 PM to 5 PM	Dr. T. Kiran Kumar	Methods of artificial recharge
09/05/22	4 PM to 5 PM	Dr. T. Kiran Kumar	CHAPTER-5: Saline soil, Water logging
10/05/22	4 PM to 5 PM	Dr. T. Kiran Kumar	Micro Irrigation
11/05/22	4 PM to 5 PM	Dr. T. Kiran Kumar	Bio-Mass management
13/05/22	4 PM to 6 PM	Dr. T. Kiran Kumar	Review of certification course
14/05/22	9 PM to 1 PM	Dr. T. Kiran Kumar	Field visit
14/05/22	2 PM to 6 PM	Dr. T. Kiran Kumar	Field visit
18/05/22	4 PM to 5 PM	Dr. T. Kiran Kumar	Examination

Instructor:

Coordinator:

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17	199Y1A0133	Venkata Siva Pagidi	a	a	P.siva	P.siva	P.siva	P.siva	P.siva	P.siva	P.siva	a	P.siva	P.siva	a	P.siva	a	P.siva	P.siva	P.siva
18	199Y1A0141	Divya Ragi	Divya	Divya	Divya	Divya	Divya	a	Divya	Divya	Divya	Divya	Divya	Divya	Divya	Divya	Divya	Divya	Divya	Divya
19	199Y1A0143	Hima Bindu Ravella	Bindu	Bindu	Bindu	Bindu	Bindu	Bindu	Bindu	Bindu	Bindu	a	Bindu	Bindu	Bindu	Bindu	Bindu	Bindu	Bindu	Bindu
20	199Y1A0145	Pavankumarreddy Salindra	Sal	Sal	Sal	Sal	Sal	Sal	Sal	Sal	Sal	Sal	Sal	Sal	Sal	Sal	Sal	a	Sal	a
21	199Y1A0146	Mahammad Salivemula	a	Moham	a	Moham	Moham	Moham	Moham	Moham	Moham	Moham	a	Moham	Moham	a	Moham	Moham	Moham	Moham
22	199Y1A0147	Sudharshan Sandella	Sudhar	a	Sudhar	Sudhar	Sudhar	Sudhar	Sudhar	Sudhar	Sudhar	Sudhar	Sudhar	Sudhar	Sudhar	Sudhar	Sudhar	Sudhar	Sudhar	Sudhar
23	199Y1A0158	Kavitha Sirangi	S.kavitha	S.kavitha	S.kavitha	S.kavitha	S.kavitha	S.kavitha	S.kavitha	S.kavitha	S.kavitha	S.kavitha	S.kavitha	S.kavitha	S.kavitha	S.kavitha	S.kavitha	S.kavitha	S.kavitha	S.kavitha
24	199Y1A0159	Venkata Sai Pavan Sravanaboina	Sai Pavan	Sai Pavan	Sai Pavan	Sai Pavan	Sai Pavan	Sai Pavan	Sai Pavan	Sai Pavan	Sai Pavan	Sai Pavan	Sai Pavan	Sai Pavan	Sai Pavan	Sai Pavan	Sai Pavan	Sai Pavan	Sai Pavan	Sai Pavan
25	199Y1A0160	Rajesh Reddy Sreerreddy	Rajesh	Rajesh	Rajesh	Rajesh	a	Rajesh	Rajesh	Rajesh	Rajesh	Rajesh	Rajesh	Rajesh	Rajesh	Rajesh	Rajesh	Rajesh	Rajesh	Rajesh
26	199Y1A0162	Mohammed Junaid Syed	M.Sy	M.Sy	M.Sy	M.Sy	M.Sy	M.Sy	M.Sy	M.Sy	M.Sy	M.Sy	M.Sy	M.Sy	M.Sy	M.Sy	M.Sy	M.Sy	M.Sy	M.Sy
27	199Y1A0164	Anil Kumar Reddy Thummala	T.Anil	T.Anil	T.Anil	T.Anil	T.Anil	T.Anil	T.Anil	T.Anil	T.Anil	T.Anil	T.Anil	T.Anil	T.Anil	T.Anil	T.Anil	T.Anil	T.Anil	T.Anil
28	199Y1A0167	Chandrasekhar Vadde	a	Chand	Chand	Chand	Chand	Chand	Chand	Chand	Chand	Chand	Chand	Chand	Chand	Chand	Chand	Chand	Chand	Chand
29	199Y1A0168	Shaik Fayaz Hussain Vanipenta	Fayaz	Fayaz	Fayaz	Fayaz	Fayaz	Fayaz	Fayaz	Fayaz	Fayaz	Fayaz	Fayaz	Fayaz	Fayaz	Fayaz	Fayaz	Fayaz	Fayaz	Fayaz
30	199Y1A0170	Prathyusha Yambadi	Prath	a	Prath	Prath	Prath	Prath	Prath	Prath	Prath	Prath	Prath	Prath	Prath	Prath	Prath	Prath	Prath	Prath
31	199Y1A0172	Bramhini Yeddula	Bram	Bram	Bram	Bram	Bram	Bram	Bram	Bram	Bram	Bram	Bram	Bram	Bram	Bram	Bram	Bram	Bram	Bram
32	199Y1A0173	Palakondaiah Yeddulakonda	Palak	Palak	Palak	Palak	Palak	Palak	Palak	Palak	Palak	Palak	Palak	Palak	Palak	Palak	a	Palak	Palak	Palak
33	199Y1A0174	Mounika Yerragudipadu	a	Yerr	Yerr	Yerr	Yerr	Yerr	Yerr	Yerr	Yerr	Yerr	Yerr	Yerr	Yerr	Yerr	Yerr	Yerr	Yerr	Yerr
34	209Y5A0110	B.V. Harsha Vardhini	Harsh	Harsh	Harsh	Harsh	Harsh	Harsh	Harsh	Harsh	Harsh	Harsh	Harsh	Harsh	Harsh	Harsh	Harsh	Harsh	Harsh	Harsh
35	209Y5A0112	C.Upendra	Upend	a	Upend	Upend	Upend	Upend	Upend	Upend	Upend	a	Upend	Upend	Upend	Upend	a	Upend	Upend	Upend
36	209Y5A0123	G. V. Chandana	Chand	Chand	Chand	Chand	Chand	Chand	Chand	Chand	Chand	a	Chand	Chand	Chand	Chand	Chand	Chand	Chand	Chand
37	209Y5A0128	J.Kalinga	Kaliga	Kaliga	Kaliga	Kaliga	Kaliga	Kaliga	Kaliga	Kaliga	Kaliga	Kaliga	Kaliga	Kaliga	Kaliga	Kaliga	Kaliga	Kaliga	Kaliga	Kaliga
38	209Y5A0129	K.Guru vinod	a	Vinod	Vinod	Vinod	Vinod	a	Vinod	Vinod	Vinod	a	Vinod	Vinod	a	Vinod	Vinod	a	Vinod	a

39	209Y5A0134	K. Ramakrishna	Rama	Rama	a	Rama	Rama	Rama	Rama	Rama	a	a	a	Rama	Rama	Rama	Rama	a	Rama	Rama
40	209Y5A0131	Dharama teja	a	a	Teja	a	Teja	Teja	a	Teja	Teja	Teja	Teja	a	a	a	Teja	Teja	Teja	a
41	209Y5A0164	P.Mohanbabu	Moh	Moh	Moh	Moh	a	Moh	Moh	Moh	Moh	Moh	Moh	Moh	Moh	Moh	Moh	Moh	Moh	Moh
42	209Y5A0167	R. Divya sree	Divy	Divy	Divy	Divy	Divy	Divy	Divy	Divy	Divy	Divy	Divy	Divy	Divy	Divy	Divy	Divy	Divy	Divy
43	209Y5A0172	S. Mohammad Abbas	Abbas	Abbas	Abbas	Abbas	Abbas	Abbas	Abbas	Abbas	Abbas	Abbas	Abbas	Abbas	Abbas	Abbas	Abbas	Abbas	Abbas	Abbas
44	209Y5A0180	U. Vinod Kumar	Vinod	Vinod	a	Vinod	Vinod	Vinod	Vinod	Vinod	Vinod	Vinod	Vinod	a	a	Vinod	Vinod	a	Vinod	Vinod
45	189Y5A0119	C. Chandra Kanth	Can	Can	Can	a	Can	Can	Can	Can	Can	Can	Can	Can	Can	Can	Can	Can	Can	Can
46	189Y5A0164	S.Mahammad Afridi	Afrid	Afrid	Afrid	Afrid	Afrid	Afrid	Afrid	Afrid	Afrid	Afrid	Afrid	Afrid	Afrid	Afrid	Afrid	Afrid	Afrid	Afrid
47	189Y5A0165	Shaik Mansoor	Mansoor	Mansoor	Mansoor	Mansoor	Mansoor	Mansoor	Mansoor	Mansoor	Mansoor	Mansoor	Mansoor	Mansoor	Mansoor	Mansoor	Mansoor	Mansoor	Mansoor	Mansoor

P. K. Reddy
Coordinator

[Signature]
HOD-Civil Engg.

Head
Department of Civil Engineering
K.S.R.M. College of Engineering
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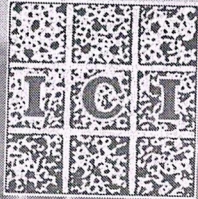
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DEPARTMENT OF CIVIL ENGINEERING



KSNR
lives on..



Certificate Course on

Integrated Watershed Management

Resource person

Prof. T Kiran Kumar
Dept. of Civil Engineering, KSRMCE

CE 111 (Seminar hall)



25-03-2022

Coordinators: Dr. P Kishore Kumar Reddy, D Viswanath

Dr. N Amaranatha Reddy
HOD

Prof. V S S Murthy
Principal

Dr. K Chandra Obul Reddy
Managing Director

Smt. K Rajeswari
Correspondent Secretary,

Sri K Madan Mohan Reddy
Vice Chairman

Sri K Raja Mohan Reddy
Chairman



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Report

of

Certification Course on Integrated watershed management

From 25/03/22 to 18/05/22

Target Group	:	Students
Details of Participants	:	47 Students
Resource person	:	Dr. T. Kiran Kumar
Coordinator	:	Dr. P. Kishore Kumar Reddy
Organizing Department	:	Civil Engineering
Venue	:	Offline (seminar hall)

Description:

The Department of Civil Engineering organized a certification course on "Integrated watershed management" from 25th March 2022 to 18th May 2022. The program is inaugurated by HOD civil engineering department and certification course in-charge Dr.

- I. Srinivas Reddy. In this program Resource person Dr.T.Kiran Kumar, Coordinator, CO-coordinator, all the faculty members, registered participants are present. In the beginning the coordinator present a brief report, course coordinator explains the importance of certification course, head of the department address the gathering the Resource person explain the importance of integrated watershed management and its role in water resources management, and he present a detailed course structure. The course duration was 30 hours and the session on every day is from 4PM-6PM depends upon the student's classes and also the duration is extended from 20-04-2022 to 18-05-2022. In this course to create awareness and to gain

practical knowledge arranged field visits for different irrigation structures, rain water harvesting structures, storage structures, cross drainage works, canal regulation works and also visited micro irrigation systems like drift and sprinklers the field visit supervised by irrigation engineers of veligallu reservoir, Dr. T.Kiran Kumar and Dr. Kishore Kumar. For this course coordinators: V. Chandrasekhar, D. Chennakeshava.

Co-coordinators: B.Suryanarayana, M.harashavardhan,R.Himabindu,rajeshreddy acted as a student co-coordinator. The necessity of integrated watershed management briefly as follows for stable and growing economy of drought prone and rainfed areas, proper and optimum utilization of natural resources namely land and water are must; particularly in the field of agriculture. It is well-known fact that large number of physical and chemical characteristics and hydrological behavior of soil are responsible for obtaining best production interaction between land and water resources.

In order to obtain maximum benefits from technological advancements, which constantly improve the output from per unit of soil and water, it is imperative to properly protect and judiciously utilize the natural resources of soil and water. The basic foundation upon which maximum efficiency of modern technology rests on the adoption of suitable soil and water conservation practices.

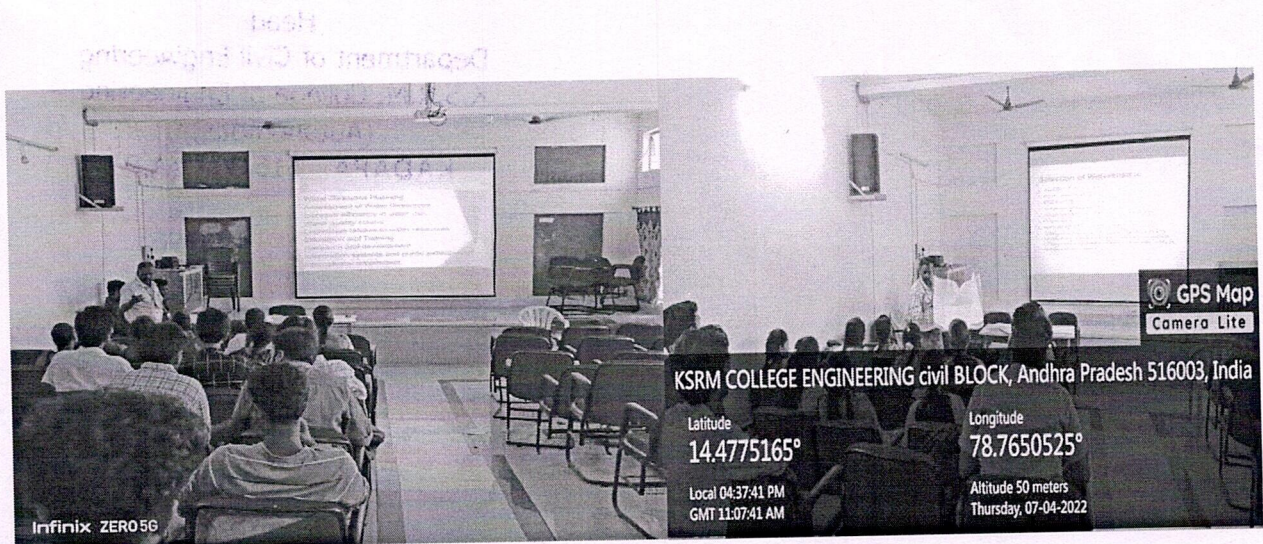
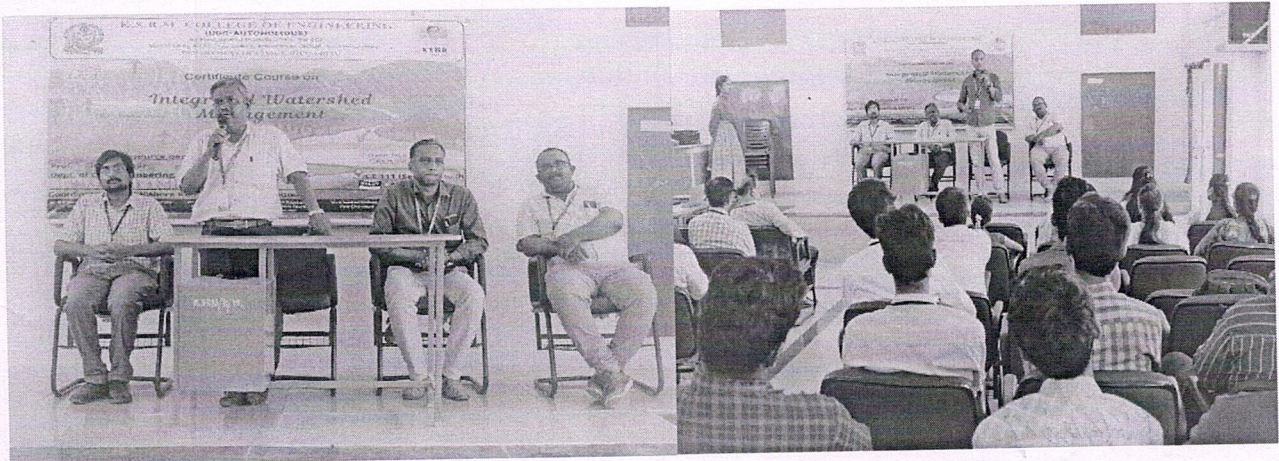
The main objective of each watershed development project is to achieve sustainable production of bio-mass and restoration of ecological balance in the drought prone and rainfed areas and improve the standard of livelihood of people. The specific objectives are:

1. Conservation, upgradation and utilization of natural endowments namely land, water and vegetation in harmonious and integrated manner;
2. Generation of massive employment during the project period and regular employment after the project completion for enhancing the work opportunities in the backward rainfed area with a view to ensure livelihood security, particularly for the under-privileged sections of the rural population
3. Improvement of production environment and restoration of ecological balance through scientific management of land and rain water, in-situ moisture conservation, introduction of scientific production system, creation of network of

- run-off management structures and devices for recharge of ground water and recycling for drinking purposes, domestic consumption and lifesaving irrigation;
4. To promote social forestry and horticulture activity on all suitable lands, and
 5. To enhance cash available with farmers and landless agricultural laborers through increased casual employment, marketable surplus of agricultural and dairy produce.

Photo:

The pictures taken during the course are as follows:



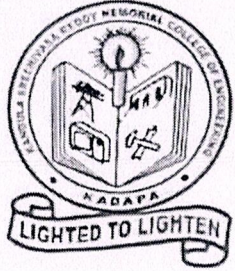


The validity function is conducted on 1/06/2022 .The head of the department ,the coordinators, faculty, student participants are attend the program ,coordinator, resource person HOD address the participants and student participants shared the feedback. Finally HOD distributed the certificates and the student coordinator present the vote of thanks.

Plagmesy
Course Coordinator

[Signature]
HOD, Civil Engg.

Head
Department of Civil Engineering
K.S.R.M. College of Engineering
(Autonomous)
KADAPA 516 003. (A.P.)



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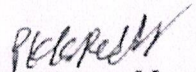
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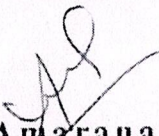
A certification course on **INTEGRATED WATERSHED MANAGEMENT**

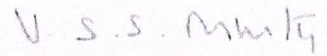
Certificate of Participation

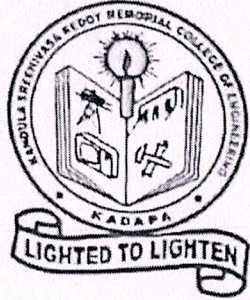
This is to certify that Mr./Ms. Suneel Giddahow has participated in certification course on **“INTEGRATED WATERSHED MANAGEMENT”** conducted by Department of Civil Engineering during 25-03-2022 to 18-05-2022 (30 hours).

Resource Person : Prof. T. Kiran Kumar, CE, KSRMCE, Kadapa.


Dr. P. Kishore Kumar Reddy
coordinator


Dr. N. Anjanatha Reddy
Head of department


Dr. V.S.S. Murthy
Principle



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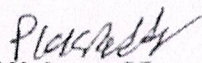


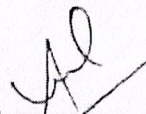
A certification course on **INTEGRATED WATERSHED MANAGEMENT**

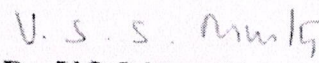
Certificate of Participation

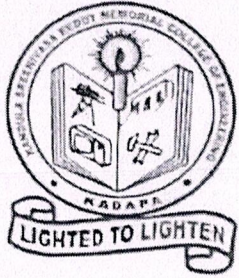
This is to certify that Mr./Ms. Anusha Dhamerla has participated in certification course on “**INTEGRATED WATERSHED MANAGEMENT**” conducted by Department of Civil Engineering during 25-03-2022 to 18-05-2022 (30 hours).

Resource Person : Prof. T. Kiran Kumar, CE, KSRMCE, Kadapa.


Dr. P. Kishore Kumar Reddy
coordinator


Dr. N Anjanatha Reddy
Head of department


Dr. V.S.S Murthy
Principle



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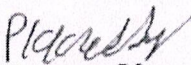
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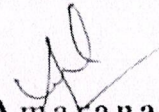
A certification course on **INTEGRATED WATERSHED MANAGEMENT**


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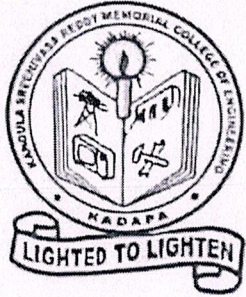
This is to certify that Mr./Ms. Chaitanya Kanda has participated in certification course on **“INTEGRATED WATERSHED MANAGEMENT”** conducted by Department of Civil Engineering during 25-03-2022 to 18-05-2022 (30 hours).

Resource Person : Prof. T. Kiran Kumar, CE, KSRMCE, Kadapa.


Dr. P. Kishore Kumar Reddy
coordinator


Dr. N. Amaranatha Reddy
Head of department


Dr. V.S.S. Murthy
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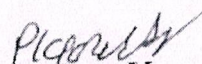
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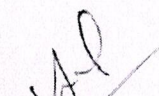
A certification course on **INTEGRATED WATERSHED MANAGEMENT**


Certificate of Participation

This is to certify that Mr./Ms. Divya Rani has participated in certification course on **“INTEGRATED WATERSHED MANAGEMENT”** conducted by Department of Civil Engineering during 25-03-2022 to 18-05-2022 (30 hours).

Resource Person : Prof. T. Kiran Kumar, CE, KSRMCE, Kadapa.


Dr. P. Kishore Kumar Reddy
coordinator


Dr. N. Anjanatha Reddy
Head of department


Dr. V.S.S. Murthy
Principle

Feedback form for "Certification course on Integrated watershed management"

reddysrinu@ksrmce.ac.in [Switch account](#)



Your email will be recorded when you submit this form

* Required

Name of The Student *

Your answer

Roll. No. *

Your answer

Do you understand the Watershed concepts? *

Yes

No

Are the lecture hours sufficient to cover the topic? *

Yes

No



Rate the course instructor *

1-Low, 5-High

1

2

3

4

5

Is this course useful for your Carrier? *

Yes

No

May be

Rate the entire course? *

1-Low, 5-High

1

2

3

4

5

Submit

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Department of Civil Engineering

Feedback of students on Certification Course on Integrated watershed management

Sl. No.	Reg. No.	Name of The Student	Do you understand the watershed concept ?	Are the lecture hours are sufficient to cover the topic?	Rate the course instructor	Is this course useful for your Carrier?	Rate the entire course?
1	199Y1A0102	Sampurna Rani Bollavaram	Yes	Yes	5	Yes	5
2	199Y1A0103	Suryanarayana Byrisetty	Yes	Yes	5	Yes	4
3	199Y1A0106	Haritha Chinamadula	Yes	Yes	5	Yes	5
4	199Y1A0107	Arun Kumar Dantham	Yes	Yes	4	Yes	5
5	199Y1A0108	Anusha Dhamerla	Yes	Yes	4	Yes	4
6	199Y1A0109	Chennakeshava Dirasantha	Yes	Yes	5	Yes	5
8	199Y1A0115	Faheem Hachhulukatte	Yes	Yes	5	Yes	5
9	199Y1A0116	Venkata Sai Janapati	Yes	Yes	5	Yes	5
10	199Y1A0118	Chaitanya Kanta	Yes	Yes	4	Yes	5
11	199Y1A0119	Vekrishna Yadav Katuboina	Yes	Yes	4	May be	5
12	199Y1A0120	Kejiya Kola	Yes	Yes	5	Yes	5
13	199Y1A0122	Nagarathna Kumbhagiri	Yes	Yes	5	Yes	4
14	199Y1A0123	Veera Sai Kumar Reddy Lomati	Yes	Yes	5	Yes	5
15	199Y1A0127	Yagna Priya Moram	Yes	Yes	4	Yes	5
16	199Y1A0131	Harsha Vardhan Mundlapati	Yes	Yes	5	Yes	5
17	199Y1A0133	Venkata Siva Pagidi	Yes	Yes	3	Yes	4
18	199Y1A0141	Divya Ragi	Yes	Yes	5	Yes	5

19	199Y1A0143	Hima Bindu Ravella	Yes	Yes	5	Yes	5
20	199Y1A0145	Pavankumarreddy Salindra	Yes	Yes	5	Yes	5
21	199Y1A0147	Sudharshan Sandella	Yes	Yes	5	May be	5
21	199Y1A0159	Venkata Sai Pavan Sraavanaboina	Yes	Yes	5	Yes	5
22	199Y1A0160	Rajesh Reddy Sreeredy	Yes	Yes	5	Yes	5
23	199Y1A0162	Mohammed Junaid Syed	Yes	Yes	5	Yes	5
24	199Y1A0164	Anil Kumar Reddy Thummala	Yes	Yes	5	Yes	5
25	199Y1A0167	Chandrasekhar Vadde	Yes	Yes	4	Yes	5
26	199Y1A0168	Shaik Fayaz Hussain Vanipenta	Yes	Yes	4	May be	4
27	199Y1A0170	Prathyusha Yambadi	Yes	Yes	5	Yes	5
28	199Y1A0172	Bramhini Yeddula	Yes	Yes	5	Yes	5
29	199Y1A0173	Palakondaiah Yeddulakonda	Yes	Yes	5	Yes	5
30	199Y1A0174	Mounika Yerragudipadu	Yes	Yes	5	Yes	5

Resource person

Coordinator

HoD-CiviEngg.

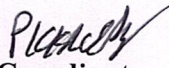
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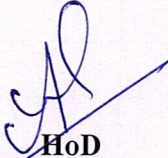
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DEPARTMENT OF CIVIL ENGINEERING
CERTIFICATE COURSE ON
INTEGRATED WATERSHED MANAGEMENT
MARKS AWARD LIST

S.No	Roll Number	Name of the Student	Marks Obtained
1	199Y1A0102	Sampurna Rani Bollavaram	17
2	199Y1A0103	Suryanarayana Byrisetty	13
3	199Y1A0106	Haritha Chinamadula	16
4	199Y1A0107	Arun Kumar Dantham	10
5	199Y1A0108	Anusha Dhamerla	8
6	199Y1A0109	Chennakeshava Dirasantha	16
7	199Y1A0112	Suneel Giddaluru	10
8	199Y1A0115	Faheem Hachhulukatte	17
9	199Y1A0116	Venkata Sai Janapati	19
10	199Y1A0118	Chaitanya Kanta	15
11	199Y1A0119	Vekrishna Yadav Katuboina	13
12	199Y1A0120	Kejiya Kola	14
13	199Y1A0122	Nagarathna Kumbhagiri	12
14	199Y1A0123	Veera Sai Kumar Reddy Lomati	15
15	199Y1A0127	Yagna Priya Moram	18
16	199Y1A0131	Harsha Vardhan Mundlapati	19
17	199Y1A0133	Venkata Siva Pagidi	11
18	199Y1A0141	Divya Ragi	14
19	199Y1A0143	Hima Bindu Ravella	5
20	199Y1A0145	Pavankumarreddy Salindra	14
21	199Y1A0146	Mahammad Salivemula	17
22	199Y1A0147	Sudharshan Sandella	18
23	199Y1A0158	Kavitha Sirangi	16
24	199Y1A0159	Venkata Sai Pavan Sravanaboina	15
25	199Y1A0160	Rajesh Reddy Sreeredy	15

26	199Y1A0162	Mohammed Junaid Syed	10
27	199Y1A0164	Anil Kumar Reddy Thummala	8
28	199Y1A0167	Chandrasekhar Vadde	6
29	199Y1A0168	Shaik Fayaz Hussain Vanipenta	13
30	199Y1A0170	Prathyusha Yambadi	15
31	199Y1A0172	Bramhini Yeddula	10
32	199Y1A0173	Palakondaiah Yeddulakonda	16
33	199Y1A0174	Mounika Yerragudipadu	15
34	209Y5A0110	B.V. Harsha Vardhini	14
35	209Y5A0112	C.Upendra	7
36	209Y5A0123	G. V. Chandana	12
37	209Y5A0128	J.Kalinga	18
38	209Y5A0129	K.Guru vinod	14
39	209Y5A0134	K. Ramakrishna	11
40	209Y5A0131	Dharama teja	17
41	209Y5A0164	P.Mohanbabu	13
42	209Y5A0167	R. Divya sree	12
43	209Y5A0172	S. Mohammad Abbas	16
44	209Y5A0180	U. Vinod Kumar	18
45	189Y5A0119	C. Chandra Kanth	14
46	189Y5A0164	S.Mahammad Afridi	8
47	189Y5A0165	Shaik Mansoor	11


Coordinator


HoD

Head
Department of Civil Engineering
K.S.R.M. College of Engineering
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8/20

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DEPARTMENT OF CIVIL ENGINEERING
CERTIFICATE COURSE ON
INTEGRATED WATERSHED MANAGEMENT
ASSESSMENT TEST

Name of the Student: A. Dhanela Reg. Number: 19941A0106

Time: 20 Min (Objective Questions) **Max. Marks: 20**

Note: Answer the following Questions and each question carries one mark.

1	What is a watershed?				
	A) A type of water treatment facility	B) An area of land that drains water into a common point	C) A type of dam used for flood control	D) A method of irrigation	[B] ✓
2	Why is integrated watershed management important?				
	A) It helps protect marine life.	B) It prevents soil erosion.	C) It promotes urban development.	D) It regulates traffic flow.	[C] ✓
3	Which of the following is a common goal of watershed management?				
	A) Increasing water pollution	B) Reducing the recharge of aquifers	C) Maximizing soil erosion	D) Sustaining water resources for the future	[C] ✓
4	What is the primary source of water for most watersheds?				
	A) Seawater	B) Underground aquifers	C) Desalination plants	D) Rainfall and surface runoff	[D] ✓
5	What is the primary function of a riparian buffer zone in watershed management?				
	A) To promote urban development	B) To prevent access to water bodies	C) To filter pollutants and reduce erosion	D) To store excess water	[B] ✓
6	What is meant by the term "non-point source pollution" in the context of watershed management?				
	A) Pollution originating from a single identifiable source	B) Pollution originating from a specific industrial facility	C) Pollution originating from diffuse sources, such as agriculture and urban runoff	D) Pollution originating from air emissions	[C] ✓
7	Which agency or organization is responsible for enforcing water quality regulations in many countries?				
	A) United Nations	B) Environmental Protection Agency (EPA)	C) World Bank	D) World Health Organization (WHO)	[B] ✓
8	What is the purpose of a watershed assessment in integrated watershed management?				
	A) To increase water pollution	B) To identify and prioritize conservation and restoration efforts	C) To maximize land development	D) To promote deforestation	[B] ✓
9	What is a Best Management Practice (BMP) in watershed management?				
	A) A method to increase water pollution	B) A technique to maximize soil erosion	C) A strategy or measure to reduce non-point source	D) A way to promote urbanization within a watershed	[C] ✓

			pollution	
10	Which of the following is NOT a common BMP in watershed management?			
	A) Riparian buffer zones	B) Afforestation	C) Paved parking lots	D) Rainwater harvesting
11	What is the primary purpose of afforestation in watershed management?			
	A) To increase soil erosion	B) To promote urban development	C) To increase the availability of wood products	D) To reduce runoff and improve water quality
12	What is the purpose of a watershed model in integrated watershed management?			
	A) To create flood maps	B) To predict land use changes	C) To simulate hydrological processes and evaluate management scenarios	D) To design dams
13	Which of the following is a key challenge in integrated watershed management?			
	A) Encouraging deforestation	B) Balancing conflicting land uses and interests	C) Promoting non-sustainable agricultural practices	D) Overregulation of land development
14	What is the main goal of soil conservation practices in watershed management?			
	A) To maximize soil erosion	B) To promote deforestation	C) To improve soil fertility	D) To prevent soil erosion and degradation
15	What is a "sub-watershed" in the context of watershed management?			
	A) A small river	B) A region located downstream	C) A smaller area within a larger watershed	D) A watershed with no outlets
16	Which of the following is an important principle of sustainable watershed management?			
	A) Maximizing non-sustainable land development	B) Encouraging pollution of water bodies	C) Balancing ecological, social, and economic factors	D) Ignoring the needs of local communities
17	What is the main objective of source water protection programs in integrated watershed management?			
	A) To increase water pollution	B) To maximize land development	C) To protect the quality and quantity of drinking water sources	D) To promote deforestation
18	What is the role of community participation in watershed management?			
	A) To hinder conservation efforts	B) To ensure that decisions reflect local knowledge and priorities	C) To maximize deforestation	D) To promote non-sustainable practices
19	Which of the following is an example of a direct economic benefit of watershed management?			
	A) Increased pollution	B) Reduced property values	C) Improved water quality for drinking and irrigation	D) Increased soil erosion
20	What is the primary purpose of monitoring and evaluation in integrated watershed management?			
	A) To promote urban development	B) To increase water pollution	C) To assess the effectiveness of management activities and adapt as needed	D) To maximize deforestation

17/20

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003
DEPARTMENT OF CIVIL ENGINEERING
CERTIFICATE COURSE ON
INTEGRATED WATERSHED MANAGEMENT
ASSESSMENT TEST

Name of the Student: B. Sampurna Devi Reg. Number: 1994/A0102

Time: 20 Min (Objective Questions) Max. Marks: 20

Note: Answer the following Questions and each question carries one mark.

1	What is a watershed?				
	A) A type of water treatment facility	B) An area of land that drains water into a common point	C) A type of dam used for flood control	D) A method of irrigation	[B]
2	Why is integrated watershed management important?				
	A) It helps protect marine life.	B) It prevents soil erosion.	C) It promotes urban development.	D) It regulates traffic flow.	[B]
3	Which of the following is a common goal of watershed management?				
	A) Increasing water pollution	B) Reducing the recharge of aquifers	C) Maximizing soil erosion	D) Sustaining water resources for the future	[D]
4	What is the primary source of water for most watersheds?				
	A) Seawater	B) Underground aquifers	C) Desalination plants	D) Rainfall and surface runoff	[D]
5	What is the primary function of a riparian buffer zone in watershed management?				
	A) To promote urban development	B) To prevent access to water bodies	C) To filter pollutants and reduce erosion	D) To store excess water	[C]
6	What is meant by the term "non-point source pollution" in the context of watershed management?				
	A) Pollution originating from a single identifiable source	B) Pollution originating from a specific industrial facility	C) Pollution originating from diffuse sources, such as agriculture and urban runoff	D) Pollution originating from air emissions	[A]
7	Which agency or organization is responsible for enforcing water quality regulations in many countries?				
	A) United Nations	B) Environmental Protection Agency (EPA)	C) World Bank	D) World Health Organization (WHO)	[B]
8	What is the purpose of a watershed assessment in integrated watershed management?				
	A) To increase water pollution	B) To identify and prioritize conservation and restoration efforts	C) To maximize land development	D) To promote deforestation	[B]
9	What is a Best Management Practice (BMP) in watershed management?				
	A) A method to increase water pollution	B) A technique to maximize soil erosion	C) A strategy or measure to reduce non-point source	D) A way to promote urbanization within a watershed	[C]

			pollution		
10	Which of the following is NOT a common BMP in watershed management?				[A]
	A) Riparian buffer zones	B) Afforestation	C) Paved parking lots	D) Rainwater harvesting	
11	What is the primary purpose of afforestation in watershed management?				[A]
	A) To increase soil erosion	B) To promote urban development	C) To increase the availability of wood products	D) To reduce runoff and improve water quality	
12	What is the purpose of a watershed model in integrated watershed management?				[C]
	A) To create flood maps	B) To predict land use changes	C) To simulate hydrological processes and evaluate management scenarios	D) To design dams	
13	Which of the following is a key challenge in integrated watershed management?				[B]
	A) Encouraging deforestation	B) Balancing conflicting land uses and interests	C) Promoting non-sustainable agricultural practices	D) Overregulation of land development	
14	What is the main goal of soil conservation practices in watershed management?				[D]
	A) To maximize soil erosion	B) To promote deforestation	C) To improve soil fertility	D) To prevent soil erosion and degradation	
15	What is a "sub-watershed" in the context of watershed management?				[C]
	A) A small river	B) A region located downstream	C) A smaller area within a larger watershed	D) A watershed with no outlets	
16	Which of the following is an important principle of sustainable watershed management?				[C]
	A) Maximizing non-sustainable land development	B) Encouraging pollution of water bodies	C) Balancing ecological, social, and economic factors	D) Ignoring the needs of local communities	
17	What is the main objective of source water protection programs in integrated watershed management?				[C]
	A) To increase water pollution	B) To maximize land development	C) To protect the quality and quantity of drinking water sources	D) To promote deforestation	
18	What is the role of community participation in watershed management?				[B]
	A) To hinder conservation efforts	B) To ensure that decisions reflect local knowledge and priorities	C) To maximize deforestation	D) To promote non-sustainable practices	
19	Which of the following is an example of a direct economic benefit of watershed management?				[C]
	A) Increased pollution	B) Reduced property values	C) Improved water quality for drinking and irrigation	D) Increased soil erosion	
20	What is the primary purpose of monitoring and evaluation in integrated watershed management?				[C]
	A) To promote urban development	B) To increase water pollution	C) To assess the effectiveness of management activities and adapt as needed	D) To maximize deforestation	

10

20

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DEPARTMENT OF CIVIL ENGINEERING
CERTIFICATE COURSE ON
INTEGRATED WATERSHED MANAGEMENT
ASSESSMENT TEST

Name of the Student: D. Aru Kumar Reg. Number: 199 Y1A0107

Time: 20 Min

(Objective Questions)

Max. Marks: 20

Note: Answer the following Questions and each question carries one mark.

1	What is a watershed?				
	A) A type of water treatment facility	B) An area of land that drains water into a common point	C) A type of dam used for flood control	D) A method of irrigation	[B] ✓
2	Why is integrated watershed management important?				
	A) It helps protect marine life.	B) It prevents soil erosion.	C) It promotes urban development.	D) It regulates traffic flow.	[B] ✓
3	Which of the following is a common goal of watershed management?				
	A) Increasing water pollution	B) Reducing the recharge of aquifers	C) Maximizing soil erosion	D) Sustaining water resources for the future	[A] ✓
4	What is the primary source of water for most watersheds?				
	A) Seawater	B) Underground aquifers	C) Desalination plants	D) Rainfall and surface runoff	[A] ✓
5	What is the primary function of a riparian buffer zone in watershed management?				
	A) To promote urban development	B) To prevent access to water bodies	C) To filter pollutants and reduce erosion	D) To store excess water	[C] ✓
6	What is meant by the term "non-point source pollution" in the context of watershed management?				
	A) Pollution originating from a single identifiable source	B) Pollution originating from a specific industrial facility	C) Pollution originating from diffuse sources, such as agriculture and urban runoff	D) Pollution originating from air emissions	[C] ✓
7	Which agency or organization is responsible for enforcing water quality regulations in many countries?				
	A) United Nations	B) Environmental Protection Agency (EPA)	C) World Bank	D) World Health Organization (WHO)	[A] ✓
8	What is the purpose of a watershed assessment in integrated watershed management?				
	A) To increase water pollution	B) To identify and prioritize conservation and restoration efforts	C) To maximize land development	D) To promote deforestation	[A] ✓
9	What is a Best Management Practice (BMP) in watershed management?				
	A) A method to increase water pollution	B) A technique to maximize soil erosion	C) A strategy or measure to reduce non-point source	D) A way to promote urbanization within a watershed	[A] ✓

			pollution	
10	Which of the following is NOT a common BMP in watershed management?			
	A) Riparian buffer zones	B) Afforestation	C) Paved parking lots	D) Rainwater harvesting
11	What is the primary purpose of afforestation in watershed management?			
	A) To increase soil erosion	B) To promote urban development	C) To increase the availability of wood products	D) To reduce runoff and improve water quality
12	What is the purpose of a watershed model in integrated watershed management?			
	A) To create flood maps	B) To predict land use changes	C) To simulate hydrological processes and evaluate management scenarios	D) To design dams
13	Which of the following is a key challenge in integrated watershed management?			
	A) Encouraging deforestation	B) Balancing conflicting land uses and interests	C) Promoting non-sustainable agricultural practices	D) Overregulation of land development
14	What is the main goal of soil conservation practices in watershed management?			
	A) To maximize soil erosion	B) To promote deforestation	C) To improve soil fertility	D) To prevent soil erosion and degradation
15	What is a "sub-watershed" in the context of watershed management?			
	A) A small river	B) A region located downstream	C) A smaller area within a larger watershed	D) A watershed with no outlets
16	Which of the following is an important principle of sustainable watershed management?			
	A) Maximizing non-sustainable land development	B) Encouraging pollution of water bodies	C) Balancing ecological, social, and economic factors	D) Ignoring the needs of local communities
17	What is the main objective of source water protection programs in integrated watershed management?			
	A) To increase water pollution	B) To maximize land development	C) To protect the quality and quantity of drinking water sources	D) To promote deforestation
18	What is the role of community participation in watershed management?			
	A) To hinder conservation efforts	B) To ensure that decisions reflect local knowledge and priorities	C) To maximize deforestation	D) To promote non-sustainable practices
19	Which of the following is an example of a direct economic benefit of watershed management?			
	A) Increased pollution	B) Reduced property values	C) Improved water quality for drinking and irrigation	D) Increased soil erosion
20	What is the primary purpose of monitoring and evaluation in integrated watershed management?			
	A) To promote urban development	B) To increase water pollution	C) To assess the effectiveness of management activities and adapt as needed	D) To maximize deforestation

16
20

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003
DEPARTMENT OF CIVIL ENGINEERING
CERTIFICATE COURSE ON
INTEGRATED WATERSHED MANAGEMENT
ASSESSMENT TEST

Name of the Student: C. Haritha Reg. Number: 19941A0106

Time: 20 Min (Objective Questions) **Max. Marks: 20**

Note: Answer the following Questions and each question carries one mark.

1	What is a watershed?				
	A) A type of water treatment facility	B) An area of land that drains water into a common point	C) A type of dam used for flood control	D) A method of irrigation	[B]
2	Why is integrated watershed management important?				
	A) It helps protect marine life.	B) It prevents soil erosion.	C) It promotes urban development.	D) It regulates traffic flow.	[B]
3	Which of the following is a common goal of watershed management?				
	A) Increasing water pollution	B) Reducing the recharge of aquifers	C) Maximizing soil erosion	D) Sustaining water resources for the future	[D]
4	What is the primary source of water for most watersheds?				
	A) Seawater	B) Underground aquifers	C) Desalination plants	D) Rainfall and surface runoff	[D]
5	What is the primary function of a riparian buffer zone in watershed management?				
	A) To promote urban development	B) To prevent access to water bodies	C) To filter pollutants and reduce erosion	D) To store excess water	[D] X
6	What is meant by the term "non-point source pollution" in the context of watershed management?				
	A) Pollution originating from a single identifiable source	B) Pollution originating from a specific industrial facility	C) Pollution originating from diffuse sources, such as agriculture and urban runoff	D) Pollution originating from air emissions	[B] X
7	Which agency or organization is responsible for enforcing water quality regulations in many countries?				
	A) United Nations	B) Environmental Protection Agency (EPA)	C) World Bank	D) World Health Organization (WHO)	[B]
8	What is the purpose of a watershed assessment in integrated watershed management?				
	A) To increase water pollution	B) To identify and prioritize conservation and restoration efforts	C) To maximize land development	D) To promote deforestation	[B] X
9	What is a Best Management Practice (BMP) in watershed management?				
	A) A method to increase water pollution	B) A technique to maximize soil erosion	C) A strategy or measure to reduce non-point source	D) A way to promote urbanization within a watershed	[C]

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13
20

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003
DEPARTMENT OF CIVIL ENGINEERING
CERTIFICATE COURSE ON
INTEGRATED WATERSHED MANAGEMENT
ASSESSMENT TEST

Name of the Student: B. Suryanarayana Reg. Number: 19951A0103

Time: 20 Min (Objective Questions) **Max. Marks: 20**

Note: Answer the following Questions and each question carries one mark.

1	What is a watershed?				[B]
	A) A type of water treatment facility	B) An area of land that drains water into a common point	C) A type of dam used for flood control	D) A method of irrigation	
2	Why is integrated watershed management important?				[B]
	A) It helps protect marine life.	B) It prevents soil erosion.	C) It promotes urban development.	D) It regulates traffic flow.	
3	Which of the following is a common goal of watershed management?				[D]
	A) Increasing water pollution	B) Reducing the recharge of aquifers	C) Maximizing soil erosion	D) Sustaining water resources for the future	
4	What is the primary source of water for most watersheds?				[D]
	A) Seawater	B) Underground aquifers	C) Desalination plants	D) Rainfall and surface runoff	
5	What is the primary function of a riparian buffer zone in watershed management?				[C]
	A) To promote urban development	B) To prevent access to water bodies	C) To filter pollutants and reduce erosion	D) To store excess water	
6	What is meant by the term "non-point source pollution" in the context of watershed management?				[C]
	A) Pollution originating from a single identifiable source	B) Pollution originating from a specific industrial facility	C) Pollution originating from diffuse sources, such as agriculture and urban runoff	D) Pollution originating from air emissions	
7	Which agency or organization is responsible for enforcing water quality regulations in many countries?				[B]
	A) United Nations	B) Environmental Protection Agency (EPA)	C) World Bank	D) World Health Organization (WHO)	
8	What is the purpose of a watershed assessment in integrated watershed management?				[B]
	A) To increase water pollution	B) To identify and prioritize conservation and restoration efforts	C) To maximize land development	D) To promote deforestation	
9	What is a Best Management Practice (BMP) in watershed management?				[C]
	A) A method to increase water pollution	B) A technique to maximize soil erosion	C) A strategy or measure to reduce non-point source	D) A way to promote urbanization within a watershed	

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[C]

[D]

[C]

[D]

[C]

[A]

[A]

[B]

[A]

[A]

[A]

WATERSHED Development ...

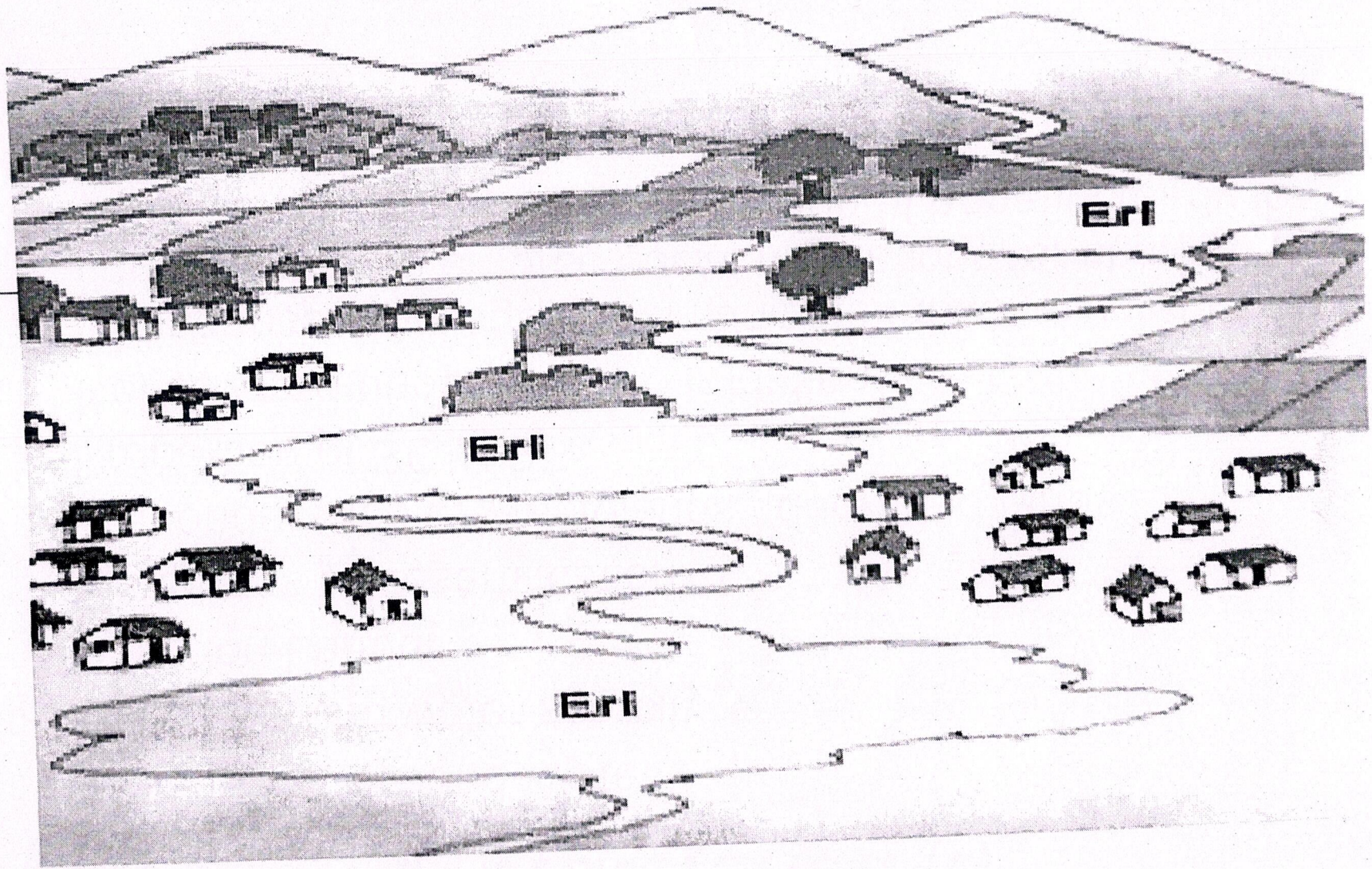
Parameters of Watershed

- Size
- Shape
- Physiography
- Climate
- Drainage
- Land use
- Vegetation
- Geology and Soils
- Hydrology
- Hydrogeology
- Socioeconomics

Definition

- A dynamic hydro geographical unit
- A Basin / Catchment area of Water outlet / stream

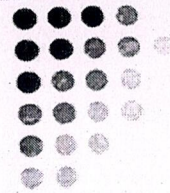
WATERSHED MODEL



Selection of Watershed (v)

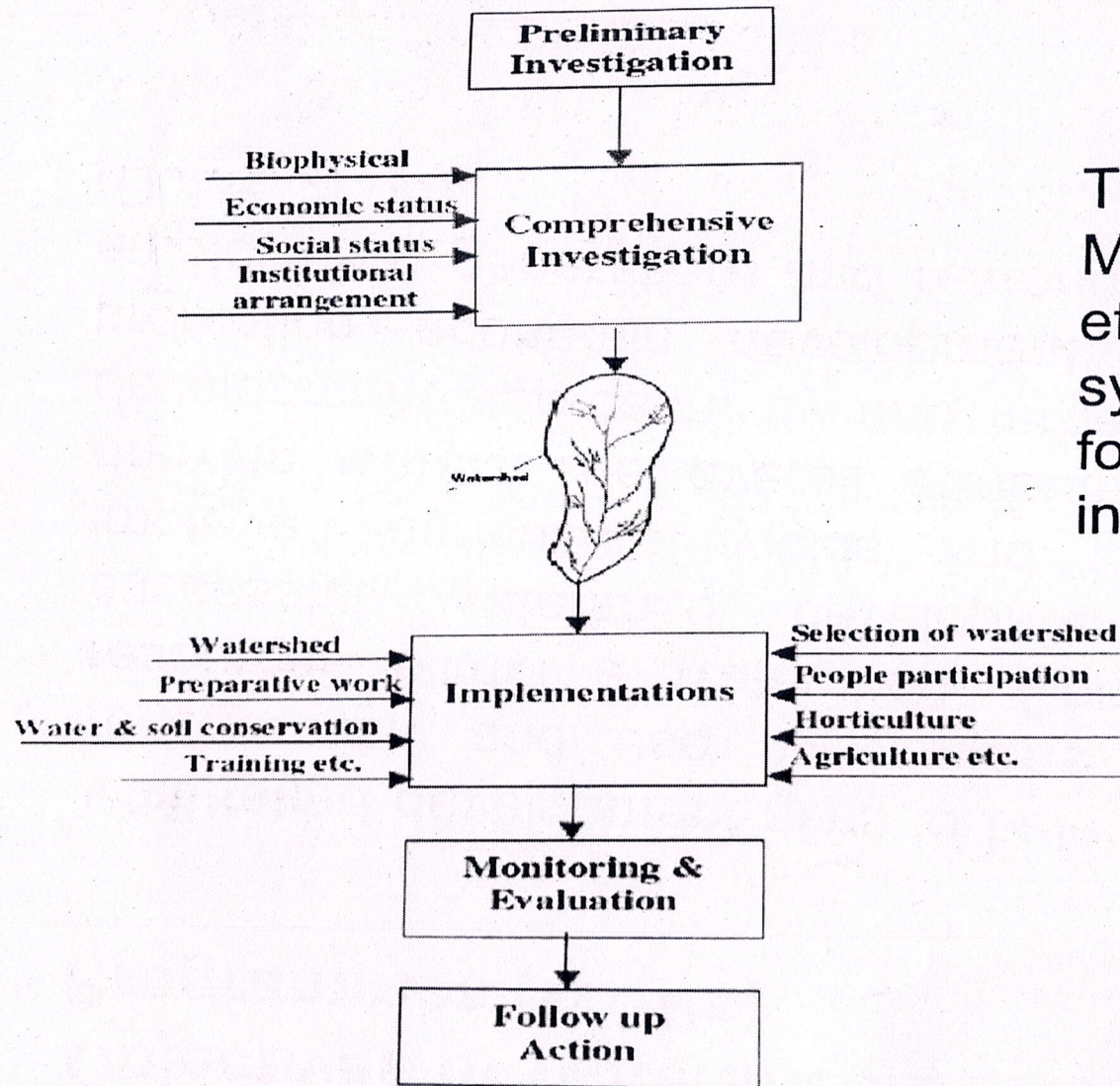
- Depletion of Ground Water
- Acute Drinking water scarcity
- Migration Labour
- Symptoms of desertification
- Preponderance of Wastelands / degraded lands
- Proportion of SCs / STs
- Not covered under assured irrigation
- Willingness of Villages community to make voluntary contributions, to enforce social regulations for sharing CPRs to make equitable distribution of benefits ready to maintain assets created.

Objectives of Watershed Development Programmes (WDPs)



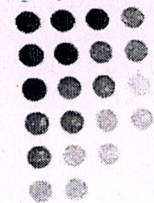
Watershed development aims to balance the conservation, regeneration and use by humans of land and water resources within a watershed. Common benefits from successful watershed development projects include improved agricultural yields and increased access to drinking water. The overall attributes of the watershed development approach, by and large, are three fold, viz. promoting economic development of the rural area, employment generation, and restoring ecological balance (DoLR, 2006).

STEPS IN WATERSHED MANAGEMENT



To carry any Watershed Management project effectively and in a systematic way, the following basic information is needed.

Watershed Development Programmes (WDPs)



Watershed Development Programmes (WDPs) are among the very important programmes placed under the purview of Department of Land Resources (DoLR), Ministry of Rural Development (MoRD). Three important schemes namely, IWDP, DPAP, and DDP are widely implemented by the State Governments with due priority. The DoLR has been committed in updating guidelines for these schemes with periodic inputs from Research Organizations, Voluntary Organizations, Technical Committees, Workshops and Seminars amongst others. Especially, the inputs from the C.H. Hanumantha Rao Committee and Parthasarathy Committee are quite popular.

~~Components of Watershed Development~~ **Programme**

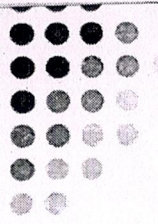


The components of watershed development programme would include;

-) soil and land management
-) water management
-) crop management
-) afforestation
-) pasture or fodder development
-) livestock management
-) rural energy management
-) other farm and non-farm activities
-) and development of community skills and resources.

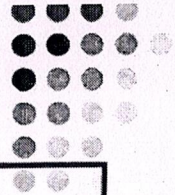
All these components are interdependent and interactive.

Need for Hydraulic structures in Watersheds



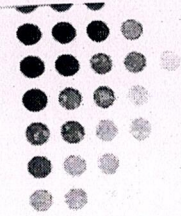
- Conserving Soil and Water
- Improving ability of land to hold the water
- Rainwater harvesting
- Groundwater Recharge
- To control the erosion
- To improve the soil moisture holding capacity
- Converting degraded agriculture lands and waste lands into productive and high yielding lands.

PURPOSE AND EFFECTS OF AREA TREATMENT



TREATMENT MEASURE	PURPOSE	EFFECT
Develop vegetative cover on the non-arable land	Reduce impact of raindrops on soil	Minimum disturbance and displacement of soil particles
Apply water infiltration measures on the area	Infiltration of water where it falls	In-situ soil and moisture conservation
Store the surplus rain water by constructing bunds, ponds in the area	Minimum surface runoff	Increased soil/moisture in area; ground water recharging
Treat the upper catchment first and then proceed towards the outlet of watershed	Ridge to valley sequencing	Economic designs, less risk of damage and longer lives of structures of lower catchments if upper has been treated before

Different types of Hydraulic Structures



1. Hydraulic Structures for Area Treatment

This covers treatments for converting degraded agricultural lands and wastelands into productive and high-yielding lands. This is achieved by soil and water conservation as well as optimum use of trees and crops.

2. Hydraulic Structures for Drainage Line Treatment

Drainage lines are the natural water carriers. In the watershed development programme drainage lines are treated by putting the artificial barriers across the courses to check soil erosion, recharge the ground water and to store the water.

TREATMENT MEASURE	PURPOSE	EFFECT
Plug the gullies since their beginning	Stops further deepening of gullies, Retains sediments of runoff.	Stops erosion. Ground water recharge at upper reaches.
Create series of temporary barriers in the nallas which are unfit for water storage tanks.	Reduces runoff velocity. Sedimentation in the nallas, hence passes cleaner water to the downstream side.	Delayed flow periods. Ground water recharge.
Treat the catchment of all types of structures before constructing them.	Minimum sedimentation in the storage basins. Less runoff and its velocity.	Economic design. Longer life. Less risk of damage.
Use local material and local skills for constructing the structures.	Lower costs of construction. Quality outputs due to local people's involvement.	Structures maintained locally.