Water Management By Using Modern Techiques HES – RAS

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Introduction : -

To the farmer, good water management means getting the right amount of water to the crops at the right time with minimum labour& expense. To the irrigation district good water management means meeting the water needs of its customers as efficiently as possible with minimum waste or loss.

In history for selection of site we use surveying instrumentsbut now a day we are using some advance techniques such as GIS, Remote sensing, etc. and this information is analyzed by modern technique like HES – RAS.

Statement of Problem : -

"Water Management By Using Modern Techniques HES –RAS."

HES-RAS = Hydrological Engineering Centre – River Analysis System

Need of Research :-

Rivers are affected by natural and human factors, rivers usually undergo severe erosion on bed or banks sedimentation and sectional movements. These caused dramatic changes to riversin long run leading to what is known as geomorphological changes. One of the key to pics in river engineering is to investigate rivers morphology that describes the river geometry Today water management is very important in human life.Because rain was lost & strength of people is increasing in order. So water is in very less in quantity. Therefore we are choose this problem to small research.

Objectives of Research :-

The aim of study at understanding the current problems of water management and suggest best possible solutions of this study are as follows.

1) To manage the water in the drought condition.
2) Better water service to customers.
3) More effective use of available water supply
4) To reduce drought in pact.

Population & Sampling (tula[;k o U;kn'kZ)

To this problem we are used one back survey for veer dam. Veerdam is one of the famous back water place near Pune.

Description of HES-RAS software

The hydrological Engineering Centre's River Analysis System. This software allows us to perform one-dimensional steady flow one & two dimensional unsteady flow, sediment transport calculations, and water quality computations.

HEC has added the ability to perform two-dimensional (2D) hydrodynamic routing within the unsteady flow analysis portion of HEC-RAS. We can now perform one dimensional (1D) unsteady flow mudding two dimensional (2D) unsteady flow modeling as well as combined 1D and 2D unsteady flow routing. The 2D flow areas in HEC-RAS can be used in number of ways.

Data Storage and Management :-

Data storage is accomplished through the use of "flat" files the HEC-DSS (Data Storage System) and HDFS (Hierarchical Data format, version-5)

Input data are stored in flat files under separate categories of project, plan geometry, steady flow, unsteady flow, quasi-steady flow, sediment data, and water quality information out put data is predominantly stored in separate binary files. Data can be transferred between HEC-RAS & other programs by utilizing the HEC-DSS Data management is accomplished through the user interface. The interface provides for renaming, moving and deletion of files on a project by project basic

Water demand Estimation

Estimations of total water use for domestic, live stock and agriculture were calculated as discussed in the methodology. The irregular wet & dry spell distribution of rainfall during the monsoon month affect the rain dependent Kharif Crops. The rain in June is of great importance for the Kharif Crop cultivation and rains in October for Rabbi Crops.

The domestic water requirement for rural area per year is 350.51m3 as per 2013-14 year and the total domestic water requirement in Nira basin is 574.31 m3. The water requirement for livestock is shown in below table.

Tabular data of Req. and Supply of water in 2013-14.

Year 2013-14	Storage	Kharif	
		Req.	Supply
July	161.56	147.38	149.24
Aug.	278.24	174.5	177.96
Sept.	270.55	125.09	128.16
Oct.	276.88	31.29	33.18

Year 2013-14	Storage	Rabbi	
		Req.	Supply
Oct	271.53	3.784	5.46
Nov	239.54	108.51	110.66
Dec.	128.88	147.28	148.77
Jan.	115.7	152.01	153.36
Feb.	102.54	116.96	118.47

Year 2013-14	Starry	Hot weather	
		Req.	Supply
March	94.97	73.21	76.8
April	105.75	168.99	173.59
May	85.88	171.78	175.05
June	41.07	13.51	15.56

Water Availabity : -

The existing storage systems could be used for water supply to the nearby villages. The village administration could manage the distribution & monitoring of the sources effectively. However, villages do not have any water source in their proximity whose total population of 2,06,935 needs 120,03 m3/yrs for drinking water.

Water losses :-

Dams and their associated reservoirs provide many services including water storage flow regulation, navigation, hydropower, in steam & stream uses flood projection amongst others. However, these artificial lakes & reservoirs evaporate more water than the natural surface water flow before the dam was built because dams generally increase the surface are of the body of water. This means that more water is exposed to air and direct sunlight thus increasing evaporation. This "lost" water is referred to as consumed because it is removed from the system. In some cases this water consumption can be quite substantial.

Conclusion :-

From the above study the regular demand of water is almost fire through out the year hence by using obtaining results we can forecast probable results of next year storage and discharge through RBC & LBC from occurrence of precipitation of monsoon month. If the situations like drought condition then using modern techniques like HEC-RAS software we take the water management problem which is very important for particular areas. So we prepared for drought can help to mitigate some of those costs & damages.

References

1. Amir Humzeh Haghiabi "EVALUATION OF HEC-RAS ABILITY IN EROSION AND SEDIMENT TRANSPORT FORECASTING" World Applied Sciences Journal 17(11):1490-1497,2012.
2. Gary Brunner"SEDIMENT TRANSPORT COMPUTATIONS WITH HES-RAS" Proceedings of the Eighth Federal Interagency Sedimentation Conference (8thFISC),April 2-6,2006.
3. Sunil Kute"FLOOD MODELING OF RIVER GODAVARI USING HEC-RAS" A research supported Scientific research pp-1-8,2014.