**Training Report - DL on Project Hydrology**

**(07-18 June 2021)**

1. **Program Name**

Purpose Oriented Training Program Through Distance Learning on “Project Hydrology”

1. **Introduction:**

Hydrological Analysis and Studies are the most important component for the planning process of any Water Resources Development Projects. These Studies are required at all stages of Water Resources Projects viz Pre-Feasibility Stage, Preparation of Feasibility Report, Planning & Design of Project, Execution of Project and Operation & Maintenance of the Project.

Hydrological studies of any Water Resources Projects comprise of three main components namely Water Availability Study, Design Flood Study and Sedimentation Studies. The whole planning of any project depends upon the availability of water resources at the project site.

The success of the project depends on the accurate estimation of water availability at Detailed Project Report (DPR) preparation stage both in terms of temporal and spatial scale. Both over-estimation as well as under-estimation of water availability will lead to reduction in overall benefits expected from the project. Therefore, the water availability needs to be assessed carefully and judiciously considering both upstream & Downstream requirements in addition to other technical aspects. Estimation and selection of rational Design Flood is equally important. A higher value would obviously lead to an uneconomical structure and lower value may result in greater risk of structural failure.

Sedimentation studies help in determining useful life of the structure and duration up to which the benefits of the projects can be reaped. Through these studies, the volumetric silt deposition as expected from the catchment is estimated and based on which dead storage & new zero elevation of the reservoirs are fixed.

Hydro-meteorological data forms the basis of the above analysis. Method of data collection, methodology for data processing and analysis & validation of data to arrive at accurate estimation of Design parameters shall also be included.

The proposed training programme shall cover all above aspects of Hydrology and aims to acquaint in-service Water Resources Engineers with various Hydrological Analysis techniques and other related aspects of Hydrology.

1. **Program Contents**

The program comprised of online sessions and covered the following topics:

* Basin Hydrology, Project Hydrology and Hydrological aspects in Project Planning & Preparation of DPR
* Data Collection, Processing and Check for Consistency
* Delineation of catchment using ARC-GIS
* Water Availability Analysis for Water Resources Project
* Design Flood Studies - Basics, Approaches, and Process in Hydro- meteorological Approach
* Preparation of Synthetic Unit Hydrograph (SUH)
* Use of PMP Atlas
* Design Storm and Design Flood Analysis
* Flood Frequency Analysis
* Flood Routing Techniques- Channel & Reservoir Routing
* Introduction to Use of Software tools (HEC-HMS) for Design Flood estimation & Flood Routing
* Reservoir Sedimentation- Assessment, Estimation and Management

1. **Program Format**

* Online lecture modules and Discussions using “Google Classroom”.
* Registering themselves in the “Google Classroom” using their “Gmail account“.
* Registered participants were provided with Class Code by NWA for accessing the training modules.
* Participants were required to complete an online Assessment through Multiple Choice Questions (MCQ) after completion of each lecture.
* WhatsApp group was created for resolving technical issues in respect of training.
* (MCQ) and hands on training task based on the topics covered in the program.

1. **Participants List**

Participants Registered: 92 ; Actual participation : 92. The Final List of participants are attached at Annex -1. 18 Female and 74 Male Participants attended the training program. Participants comprised of officers from Academic Institutions = 8, Central Organization = 13, Central Water Commission = 13, Pvt. Companies and Pvt. Consultants = 5, State Irrigation Departments = 52 and one Deputy Secretary from MoJS, DoWR, RD&GR, Total = 92 Participants.

1. **Training Program Schedule & material**

The Training Program Schedule is enclosed at **Annex-2**. It also has links for the corresponding lecture videos which can also be download using the link.

1. **Quiz & Assignment:**

This training was for 2 weeks viz; 10 training days. After each lecture, 10 MCQs on that topic was given on the same day to access the performance of the trainees **(Annex-3a to 3f)**. In all 100 MCQs were given during the whole training. Maximum number of trainees attempted MCQs on each day. Average score each day remain between 8-9 out of 10.

1. **Feedback:**

Feedback was collected from the participants in the form of google form. 65 participants have given their feedback. The feedback response is attached at **Annex-4**

**\*\*\*\*\* end of report \*\*\*\***