

भारत सरकार
जल शक्ति मंत्रालय
जल संसाधन नदी विकास एवं गंगा संरक्षण विभाग
केन्द्रीय जल आयोग
प्रशिक्षण निदेशालय



Government of India
Ministry of Jal Shakti
Dept. of Water Resources, RD & GR
Central Water Commission
Training Directorate

OFFICE ORDER

Approval of the Chairman, CWC is hereby conveyed in respect of the **16 officers/officials of CWC** as per **Annexure enclosed** for their participation in “**Interactive and hands-on Training on SWAT Hydrological Modelling**” at **NWA Pune from 21st Aug-2023 to 26th Aug-2023.**

2. The nominated officers/officials are requested to ensure to attend the above training.
3. The above officers/officials will be governed by the following terms and conditions:
 - a. They will be entitled to draw TA/DA as admissible under rules.
 - b. They will get full pay and allowances during the programme.
 - c. No substitute will be provided in their place.
4. The program schedule is **enclosed**.

Encl: As above

Signed by Neeraj Kumar
Sharma
Date: 18-08-2023 10:46:28
Reason: Approved

(Neeraj Kumar Sharma)
Deputy Director (Training)

Copy to:

1. PPS to Chairman, CWC, New Delhi.
2. PPS to Member, (RM)/(WP&P)/(D&R), CWC, New Delhi
3. Chief Engineer, HRM, CWC, New Delhi.
4. Chief Engineer, NWA, CWC, Pune.
5. All Chief Engineers, CWC (HQ)/Field with a request to ensure that the concerned officers/officials are relieved on time to attend the aforementioned training as per schedule attached.
6. Secretary, CWC, New Delhi.
7. Director (Coordination), WP&P/RM/D&R, CWC, New Delhi.
8. Director, NWA and Course Director, CWC, Pune.
9. Under Secretary, Esstt-VI, CWC, New Delhi.
10. Officers/Officials concerned through CWC website.

Annexure

List of 16 officers/officials of CWC for their participation in “Interactive and hands-on Training on SWAT Hydrological Modelling” at NWA Pune from 21st Aug-2023 to 26th Aug-2023

Sl. No.	Name (Sh./Ms.)	Designation and current place of posting
1	S. N. Pande	Director, NWA, CWC, Pune
2	S. K. Das	Director, NWA, CWC, Pune
3	Abhishek Sinha	Director, Basin Planning-I, CWC, Delhi
4	Chaitanya K S	Deputy Director, NWA, CWC, Pune
5	Tarun Singh	Deputy Director, Basin Planning-I, CWC, Delhi
6	Ashish Tripathi	Deputy Director, Monitoring, MTBO, CWC, Gandhinagar
7	Navlesh Kumar*	Assistant Director, Hydrology (Urban), CWC, Delhi
8	Javed Hasan Khan	Assistant Director-II, Control Board, CWC, Delhi
9	Akanksha Kumari	Assistant Director-II, NWA, CWC, Pune
10	Rohit Kumar Yadav	Assistant Director-II, Morpho & CC, CWC, Delhi
11	Bhuwan Chandra Singh	Assistant Director-II, River Data Compilation-I, CWC, Delhi
12	Grishma Krishnan	Assistant Director-II, River Conservation, CWC, Delhi
13	Sunil Sharma	Assistant Director-II, NBO, CWC, Bhopal
14	Saurav Patwal	Junior Engineer, Estt. VI, CWC, Delhi
15	Kunal Kansal	Junior Engineer, River Data Compilation-II, CWC, Delhi
16	Ramesh Rai	Scientific Assistant, Hydrology (N), CWC, Delhi

*The nominated officer at S. No. 7 is permitted to join the said training on 22.08.2023 after Hon'ble President Meet scheduled on 21.08.2023.

नई लाइब्रेरी बिल्डिंग,
राम कृष्ण पुरम, नई दिल्ली-110066
दूरभाष : 011-29583531,
जल संरक्षण-सुरक्षित भविष्य



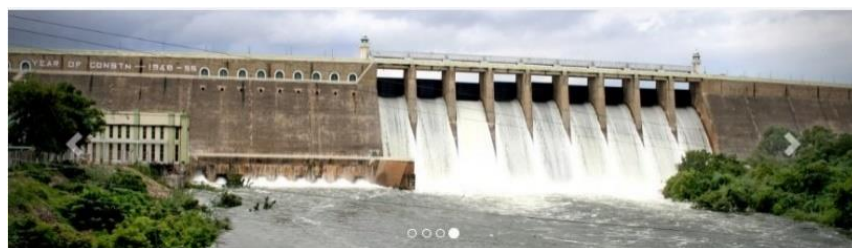
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**Government of India
Ministry of Jal Shakti
Department of Water Resources,
River Development & Ganga Rejuvenation
Central Water Commission**

**Interactive and hands-on Training on SWAT Hydrological
Modelling**

**(In-person mode)
21 – 26 August 2023**



**Hosted by
NATIONAL WATER ACADEMY, CWC**

**in cooperation with
INDIA-EU WATER PARTNERSHIP ACTION-PHASE 2**

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INTRODUCTION & BACKGROUND

GIZ is implementing the Indo-German Technical Cooperation Project Support to Ganga Rejuvenation, Phase II (SGR II) on behalf of the BMZ in conjunction with the Development and implementation support to the India-EU Water Partnership, Phase 2 (IEWP Action, Phase 2) through co-financing by the EU and BMZ. One of the key activities of the project focuses on River Basin Management (RBM) Planning in India. In collaboration with relevant Indian central and state government institutions, RBM Plans for the Tapi and Ramganga Basins are being developed. To support this process, SWAT (Soil and Water Assessment Tool) hydrological model has been used extensively to simulate the surface water quantity and quality aspects and to predict the environmental impacts of land use, land management practices, and climate change on the hydrological regimes of both Tapi and Ramganga River Basins. To achieve the relevant capacity development of Indian officials from various government agencies, hands-on training on the SWAT hydrological model including the basics, input data preparation, modelling steps, calibration and validation and interpretation of results is being organized at NWA, Pune campus during 21 –26 August 2023.

PROGRAM OUTLINE

A hydrological modelling training plan comprises the following parts:

- Introduction to hydrological modelling: Concept, need and benefits.
- Concept of SWAT hydrological model, its feature and capabilities.
- Hands-on training on data requirements and data assembling for setting up a hydrological model for Tapi/Ramganga Basin
- Hands-on training on the model setup and running of the SWAT hydrological model for a river basin, including calibration and validation steps.
- Introduction to the water quality aspect of SWAT used in Tapi and Ramganga Basin.
- Basic Introduction and Overview of Groundwater model set-up
- Analyses of results generated by the model and utility of these results in river basin planning and management.

PROGRAM FORMAT

The program will be hosted on MOODLE LMS of National Water Academy (NWA), Pune i.e. www.nwapune.gov.in. All the participants are requested to submit their nominations through the Google form link provided herewith. The NWA, Pune will register the participants in the e-learning site of NWA and will email the username and password to the selected participants for joining the course. A WhatsApp Group will also be created to facilitate smooth interaction for facilitating the course. All the course-related queries and discussions will be addressed through the course website only using the Course Forum/ Discussion Forum.

EXPERT RESOURCE PERSONS

The experts from INRM Consultants Pvt. Ltd. provide the training. Experts from the INRM part of the developer and contributor team of

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PROGRAM FEE

There is no Program Fee.

TARGET GROUP

The program is intended to benefit the officers working in Central & State PSUs, State Govts., River Boards, Engineering Research Institutes, Pollution Control Boards, Research Organizations & Central and State Govt. agencies involved in the environmental monitoring of Water Resources Development and Management. Please take into account that number of available nominations for the course is limited.

Prerequisite Technical Proficiencies

The nominated officials should hold basic knowledge of hydrological processes and related terminologies. Further, working knowledge of GIS and related techniques is required.

PARTICIPATION

The nomination of the officers may be sent to the Program Coordinator latest by **15th August 2023** through the Google Form link given below:

Form link	Scan code
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Travel and Accommodation

To be drafted

CONTACT

For sending nominations or for any information on this Program, Please contact :

S N Pande

Director & Program Co-Ordinator
National Water Academy, CWC,
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PROGRAM SCHEDULE (In-person mode)

Date	Time (IST)	Topic	Speaker
Setting the Scene: Basics on the Hydrological Modelling Process and Introduction to SWAT model			
21 August 2023	09:00-10:00	Launch of the training- Welcome address and introduction to the overall training	CWC, GIZ
	10:00-10:45	Interaction with Participants and Overview of 5 days session Overview of 5 days training session	GIZ/INRM
	11:00-13:00	Introduction to the concept and background – Hydrological Modelling - Importance and benefits of the hydrological modelling. Including a comparison of their strengths and limitations	Prof. A K Gosain, Director, INRM Consultants Pvt. Ltd. (Online)
	15:00-16:00	Introduction to the SWAT – Hydrological Modelling Overview of SWAT model and hydrological modelling process, SWAT model advantages community and acceptability	INRM Consultants Pvt. Ltd.
	16:00-17:00	Participants learning and Q&A session Interactive session with the participants to know about their requirements and advantage of using the hydrological model and the SWAT model	All Experts and Participants Moderation: Prof. A K Gosain (Online)
Data and Files Requirement for SWAT – Walk Through			
22 August 2023	10:00-10:45	Walk through the SWAT Model various versions and system requirement Various versions of SWAT and software requirement of the SWAT hydrological model	INRM Consultants Pvt. Ltd.
	11:00-12:00	Basic Input Data Requirement Input data used in SWAT	INRM Consultants Pvt. Ltd.
	12:00-13:00	Basic Settings up of SWAT Model – SWAT Model Walkthrough SWAT Complete Model setup using example dataset	INRM Consultants Pvt. Ltd.
	15:00-17:00	Demonstration and training interaction session (hands-on) based on examples Hand-on session on example dataset	INRM Consultants Pvt. Ltd.

Hand-on Training on Delineation Process Using Actual Data			
23 August 2023	10:00-11:30	About Delineation Process and Theory Behind It Processes involved in the Delineation of Catchment (Concept and theory)	Prof. A K Gosain, Director, INRM Consultants Pvt. Ltd. (Online)
	12:00-13:00	Delineation in SWAT Delineation process in SWAT using actual Tapi dataset. Each process shall be explained starting from defining the threshold, Adding/deleting reservoir/nodes etc. Delineation of Catchment shall be covered. Parallely hands-on shall be carried out	INRM Consultants Pvt. Ltd.
	15:00-17:00	Setting up of SWAT Model with Input Data Hand-on and Interactive training session Continuation of the Delineation process along with reading and writing of other input parameters, like a reservoir, management practices, etc. in SWAT using actual Tapi dataset and Q&A	INRM Consultants Pvt. Ltd.
	SWAT Outputs and Result Visualization and Utility. Scenario Generation		
24 August 2023	10:00-12:00	Providing Point Source and Non-Point Source Data into SWAT Model Hand-on and Interactive training session How water quality, both point and non-point source data can be provided into SWAT. Hands-on session	INRM Consultants Pvt. Ltd.
	12:00-14:00	Calibration of Model Parameters & Validation of Model Outputs Hand-on and Interactive training session How to calibrate critical parameters and how to validate the model output using observed/Satellite data	INRM Consultants Pvt. Ltd.
	15:00 - 17:00	Understanding various SWAT– along with Hands-on exposure Different output parameters available in SWAT	INRM Consultants Pvt. Ltd.

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SWAT Outputs and Result Visualization and Utility. Scenario Generation			
25 August 2023	10:00 - 11:00	<u>Scenarios and their utility – Basic concepts</u> Scenario Generation and its Utility	TBD (online)
	11:00- 14:00	<u>Scenario Generation and its utility – along with Hands-on</u> Scenario Generation and its Utility	INRM Consultants Pvt. Ltd.
	15:00- 17:00	<u>Results Visualization and other SWAT Utilities – along with Hands-on</u> Visualization of outputs and other utilities available	INRM Consultants Pvt. Ltd.
Groundwater model overview and participants queries			
26 August 2023	10:00 - 13:00	<u>Overview of the Groundwater Model Setup using SWAT, groundwater recharge Data</u> Presentation on Model setup, input data and understanding the outputs	INRM Consultants Pvt. Ltd.
	14:00- 15:00	<u>Queries and feedback from the participants</u>	Moderation: GIZ
	15:00- 16:00	<u>Closure of the training, way forward and Vote of Tanks</u>	NWA/GIZ
End of The Training			

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