

**APPROVED MINUTES OF THE 74<sup>th</sup> MEETING OF  
TECHNICAL ADVISORY COMMITTEE OF  
NATIONAL INSTITUTE OF HYDROLOGY  
Held on 15 December 2020(VC mode)**

The 74<sup>th</sup> meeting of the Technical Advisory Committee (TAC) of the National Institute of Hydrology, Roorkee was held in VC mode on 15 December 2020. The meeting was chaired by Er. R. K. Jain, Chairman, CWC. The list of the participants is given in Annexure-I.

Dr. J. V. Tyagi, Director, NIH first welcomed the Chairman, members and invitees, and then invited the Chairman for his opening remarks. At the outset, the Chairman in his opening remarks welcomed the participants. He appreciated the research being carried out by NIH and desired that the Institute should try to align the research outcome with the practical utility for the water sector in India.

After a round of introduction, Dr. V. C. Goyal, Member-Secretary, delivered a brief presentation on the organizational set up and activities of NIH for the benefit of new members. He then took up the agenda items.

**ITEM NO. 74.2: Confirmation of the Minutes of 73<sup>rd</sup> Meeting of TAC**

The Member-Secretary informed that minutes of the 73<sup>rd</sup> meeting of TAC held on Dec. 17, 2019 were circulated to all the members and invitees vide email dated Jan. 13, 2020. Since no comments were received from the members, the Minutes were confirmed by the TAC.

**ITEM NO. 74.3: Action Taken on Decisions/Recommendations in the Previous Meeting**

The Member-Secretary presented a table showing comments and suggestions of the members during the previous meeting. He informed that the suggestions offered during the previous meeting have been noted for compliance, and actions initiated accordingly.

Regarding the request of Shri Baboota for a study on discharge measurement in Himalayan basins by use of AWLR, the Chairman mentioned that such study is important even for CWC and desired that NIH may take up these studies on pilot basis to understand and clarify to the field agencies the complexities of discharge measurement in hilly terrains.

**ITEM NO. 74.4: Status of the Work Programme for the Year 2019-20**

The Member-Secretary briefly mentioned about the studies carried out by the Institute during the year 2019-2020. Members appreciated the number of publications brought out by the Institute and number of training/workshop/symposium organized by the Institute.

Prof. Jayakumar, NIT, Warangal advised NIH to publish the research papers in reputed, peer-reviewed journals indexed in Scopus. He also requested NIH to prepare a 'Research Digest in Hydrology' as an output of Indian National Committee-Inter-Governmental Hydrological Programme (INC-IHP), compiling abstract of research papers on hydrology-related topics published by NIH and others in India.

Prof. Arup Sarma, IIT Guwahati, wanted to know the purpose of re-developing hydrological software, which was clarified by Dr. M. K. Goel that both the platform and the user interface of the software developed earlier have been changed. The software packages have now become more user-friendly and are available on Windows platform.

Dr. Wani, Consultant, IRRI, insisted on working out the impacts of research studies on ground while keeping in mind the concept of return on investment (ROI).

Prof. Jayakumar enquired if NIH is carrying out urban hydrology studies. He informed that IISc, IIT Madras and BITS-Pilani have published results of their research on various urban hydrology studies and suggested that NIH should consult these publications.

The following studies completed during 2019-2020 were presented during the meeting:

1. Development of regional methods for design flood estimation in Uttarakhand (Dr. J. P. Patra)
2. Development of Habitat Suitability Curves for the Aquatic Species of Western Himalayan Streams and Assessment of Environmental Flows (Dr. Pradeep Kumar)
3. Catchment scale evaluation of cold-arid cryospheric system Hydrology, Gangglass catchment, Ladakh (Dr. Renoj J. Thayyen)

TAC noted the progress of the works of the Institute during the year 2019-2020.

#### **ITEM NO. 74.5: Proceedings of the Working Group and Regional Coordination Committee (RCC) Meetings**

The Member-Secretary briefly mentioned about the 50<sup>th</sup> meeting of the Working Group of NIH which was held in VC mode during 20-21 Aug., 2019 and the RCC meetings held at the different Regional Centres. During these meetings, the Working Group/RCC members reviewed the progress of studies for the year 2019-2020.

#### **ITEM NO. 74.6: Work Programme for the year 2020-21**

The Member-Secretary briefly mentioned about the proposed work programme of the Institute for the year 2020-21 which was discussed during the 50<sup>th</sup> Working Group meeting and various RCC meetings of NIH. The proposed work programme of the Regional Centres, as recommended by the respective RCCs, was also placed before the TAC.

TAC approved the work programme of the Institute for the year 2020-21 (Annexure-II).

#### **ITEM NO. 74.7: Major projects and activities of national importance**

It was informed by the Member-Secretary that the following three major R&D projects are currently ongoing at NIH:

1. National Hydrology Project (NHP)- funded by The World Bank & GoI
2. National Mission for Sustaining the Himalayan Ecosystem (NMSHE)- funded by DST (GoI)
3. Innovation Centre for Eco-Prudent Wastewater Solutions (IC-EcoWS)- funded by DST (GoI)

**ITEM NO. 74.8: Reporting Items**

Details of the consultancy projects carried out by NIH during the year 2019-2020 were noted by the TAC.

**ITEM NO. 74.9: Additional items with the permission of the Chair**

With the permission of the Chair, two short films prepared in-house by the Research Management and Outreach (RMO) Division of NIH were screened. These short films are being prepared to showcase the work carried out by NIH scientists on topics of hydrologic research for societal benefits.

The meeting ended with a vote of thanks to the Chair.

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**LIST OF PARTICIPANTS IN THE 74th MEETING OF TAC OF NIH**

1.	Er. R K Jain, Chairman, CWC	In-chair
2.	Sh. G C Pati, Chairman, CGWB	Member
3.	Dr. J V Tyagi, Director, NIH	Member
4.	Er. C Lal, CWC, New Delhi	Member
5.	Sh. S K Manik, Sc.C, IMD, New Delhi	Rep. DDGM(H)
6.	Prof. K P Sudheer, IIT Madras	Member
7.	Prof. K V Jayakumar, NIT, Warangal	Member
8.	Dr. Man Singh, Project Director, WTC-IARI, New Delhi	Member
9.	Dr. Suhas P Wani, Consultant, IRRI	Member
10.	Prof. Rohit Goyal, MNIT, Jaipur	Member
11.	Dr. Himanshu Kulkarni, Advanced Centre for Water Resource Development and Management (ACWDAM), Pune	Member
12.	Prof. Arup Sarma, IIT, Guwahati	Member
13.	Dr. V C Goyal, Sc.G, NIH, Roorkee	Member-Secretary

**INVITEES**

1. Dr. Rakesh Kumar, Sc.G & Head, SWH Division, NIH, Roorkee
2. Dr. Sanjay Jain, Sc. G & Head, WRS Division, NIH, Roorkee
3. Dr. M K Goel, Sc. G & Head, GWHD, NIH, Roorkee
4. Dr. R P Pandey, Sc. G & Head, EH Division, NIH, Roorkee
5. Dr. A K Lohani, Sc.G, NIH, Roorkee
6. Smt. Deepa Chalisgoankar, Sc.G, NIH, Roorkee
7. Sh. B. Chakraborty, Sc.G, CFMS, Patna
8. Er. Omkar Singh, Sc.F, NIH, Roorkee
9. Dr. A R Senthil Kumar, Sc.F, NIH, Roorkee
10. Dr. Anupma Sharma, Sc.F, NIH, Roorkee
11. Dr. Surjeet Singh, Sc.F, NIH, Roorkee
12. Dr. Suhas Khobragade, Sc.F, NIH, Roorkee
13. Dr. M Someshwar Rao, Sc.F, NIH, Roorkee
14. Sh. B. Ventkatesh, Sc.F, HRRC, Belgavi
15. Sh. Pankaj Mani, Sc.F, CFMS, Patna
23. Dr. B K Purendara, Sc.F, HRRC, Belgavi
16. Dr. S V Vijaya Kumar, Sc.F, DRC, Kakinada
17. Dr. Renoj Thayyen, Sc.E, NIH, Roorkee
18. Dr. Manohar Arora, Sc.E, NIH, Roorkee
19. Dr. (Mrs) Archana Sarkar, Sc.E, Roorkee
20. Dr. M K Jose, Sc.E, HRRC, Belgavi
21. Dr. T. Thomas, Sc.E, CIHRC, Bhopal
22. Sh. S R Kumar, Sc.E, CFMS, Patna
23. Dr. Ravi Galkate, Sc.E, CIHRC, Bhopal
24. Dr. P C Nayak, Sc.E, DRC, Kakinada
25. Dr. V S Jeyakanthan, Sc.E, DRC, Kakinada
26. Sh. N G Pandey, Sc.E, CFMS, Patna
27. Dr. S S Rawat, Sc.D, NIH, Roorkee
28. Dr. P G Jose, Sc.D, WHRC, Jammu
29. Dr. Manish Nema, Sc.D, NIH, Roorkee
30. Sh. J P Patra, Sc.D, NIH, Roorkee
31. Dr. Pradeep Kumar, Sc.D, NIH, Roorkee

32. Dr. Gopal Krishan, Sc.C, NIH, Roorkee
33. Dr. Ashwini Ranade, Sc.C, NIH, Roorkee
34. Dr. Sunil Gurrapu, Sc.C, NIH, Roorkee
35. Dr. S M Pingale, Sc.C, NIH, Roorkee
36. Dr. Sanjay Kumar Sharma, Sc. C, CFMS, Guwahati
37. Dr. P K Mishra, Sc.C, NIH, Roorkee
38. Sh. T. Vijay, Sc.B, DRC, Kakinada

## ENVIRONMENTAL HYDROLOGY DIVISION

## APPROVED WORK PROGRAMME FOR THE YEAR 2020-21

SN	Study	Study Team	Duration/Status
<b>Sponsored Projects (Ongoing)</b>			
1.	Environmental Assessment of Aquatic Ecosystem of Upper Ganga Basin	M. K. Sharma(PI) Manohar Arora Pradeep Kumar Rajesh Singh <b>D. S. Malik (GKU)</b>	5 Years (04/16-03/21) Sponsored by: DST (NMSHE) Project Cost: Rs. 2.25 Crore Status: In-progress
2.	Ground Water Quality Assessment with Special Reference to Sulphate Contamination in Bemetara District of Chhattisgarh State and Ameliorative Measures	M. K. Sharma (PI) Surjeet Singh Pradeep Kumar <b>Partner: WRD, Raipur, CGWB, Raipur</b>	3 Years (09/17-08/20) Sponsored by: NHP-PDS Project Cost: Rs. 25.4 Lakh Status: In-progress <i>Extension granted upto 03/21</i>
3.	Water Quality Assessment of Southwest Punjab Emphasizing Carcinogenic Contaminants and their Possible Remedial Measures	Rajesh Singh (PI) Pradeep Kumar M. K. Sharma Sumant Kumar <b>Partner: Irrigation Department, Punjab</b>	3 Years (09/17-08/20) Sponsored by: NHP-PDS Project Cost: Rs. 65.6 Lakh Status: In-progress <i>Extension granted upto 03/21</i>
4.	Leachate Transport Modeling for Gazipur landfill site for suggesting ameliorative measures	Anjali (PI) Sudhir Kumar, J. V. Tyagi, M. K. Sharma, Nitesh Patidar <b>Partner: CGWB (Delhi unit)</b>	3 Years (11/19 – 10/22) Project cost: Rs. 76.10 Lakh Sponsored by: NHP-PDS Status: In-progress
<b>Internal Study (Ongoing)</b>			
5.	Water quality assessment of Haridwar District	R.K. Nema (PI) Rajesh Singh J. V. Tyagi Pradeep Kumar	3 years (05/19-12/20) Project cost: 17.10 lakh Status: In-progress
6.	Simulation of Non-Point Source Pollution Processes in Song River	Pradeep Kumar (PI) J. V. Tyagi M. K. Sharma Rajesh Singh R. K. Nema	4 years (11/19-10/23) Project cost:43.02 lakh Status: In-progress
<b>Internal Study (New)</b>			
7.	Development of rejuvenation plan for Hindon river system	M. K. Sharma (PI) Sudhir Kumar, R. P. Pandey, Anupma Sharma, Anjali, Vishal Singh, Pradeep Kumar, Nitesh Patidar, Surjeet Singh, Rajesh Singh	3 Years (07/20-06/23) Project cost: Rs. 20.24 Lakh Sponsored by: Internal Status: New Project
8.	Influence of Anthropogenic Factors on River Ganga in the stretch from Rishikesh to Haridwar	Rajesh Singh (PI) J. V. Tyagi, R.K. Nema, Pradeep Kumar, M. K. Sharma	2 Years (06/20-05/22) Project cost: Rs. 23.71 Lakh Sponsored by: Internal Status: New Project

Consultancy Projects (New Project)			
9.	Estimation of Economic Losses in Real Terms per Hectare Basis due to Forest Fire in Uttarakhand and Madhya Pradesh	J. V. Tyagi (PI) Pradeep Kumar (Co-PI) T. Thomas (Co-PI) L. N. Thakural, P. K. Singh, M. K. Sharma, Rajesh Singh, R. K. Nema	2 Years (03/20-02/22) Sponsored by: ICFRE Project Cost: Rs. 1.1033 Crore Status: New Project

### Training Programmes

SN	Topic	Duration	Place
1.	Water Quality Management under NHP-PDS (Coordinator: Dr. M. K. Sharma)	5 Days	Roorkee
2.	Water Quality Assessment & Management under NHP-PDS (Coordinator: Dr. Rajesh Singh)	5 Days	Roorkee
3.	Water Quality: Concepts and Analysis under NHP (Coordinator: Dr. Pradeep Kumar)	5 Days	Roorkee
4.	Contaminant Transport Modeling under NHP-PDS (Coordinator: Ms. Anjali)	5 Days	Roorkee

## GROUND WATER HYDROLOGY DIVISION

### APPROVED WORK PROGRAM FOR THE YEAR 2020-21

S. No.	Project	Project Team	Duration & Status	Funding Source
<b>Internal Studies</b>				
1. NIH/GWH /NIH/19- 21	Application of Satellite Data Products for Water Resources Assessment	Suman Gurjar (PI), Vishal Singh, Surjeet Singh, C. P. Kumar, P. K. Singh	2 years (05/19 - 04/21) <i>Status: In progress</i>	Internal Study
2. NIH/GWH /NIH/19- 20	The Regional Hydrological Impact of Agricultural Water Saving Measures in the Gangetic Plains	Sumant Kumar (PI), C. P. Kumar, Archana Sarkar, Surjeet Singh, P. K. Mishra	1 year 8 months (08/19 – 03/21) <i>Status: In progress</i>	Internal Study (in collaboration with CSIRO, Australia)
3. NIH/GWH /DoWR/20 -20	Impact on Salinity of River Mahadayi due to Proposed Dams on River Mahadayi	Gopal Krishan (PI), B. Venkatesh, Nitesh Patidar	5 months (07/20 – 11/20)	Referred by DoWR (MoJS)
4. NIH/GWH /NIH/20- 22	Integrated GEE-MODFLOW based Groundwater Recharge Assessment System for Hindon River System	Nitesh Patidar (PI), Gopal Krishan, Suman Gurjar	2 years (08/20 – 07/22) <i>Status: New Study</i>	Internal Study
<b>Sponsored Projects</b>				
5. NIH/GWH /NMSHE/ 16-20	Study of River - Aquifer Interactions and Groundwater Potential at Selected Sites in the Upper Ganga Basin up to Dabrani	Surjeet Singh (PI), C. P. Kumar, R. J. Thayyen, Sudhir Kumar, Manohar Arora, Gopal Krishan, Nitesh Patidar, Anjali	5 years (01/16 - 12/20) <i>Status: In progress</i>	Sponsored by DST under NMSHE SP-8

6. NIH/GWH /BGS/17- 20	Groundwater Fluctuations and Conductivity Monitoring in Punjab - New Evidence of Groundwater Dynamics in Punjab from High Frequency Groundwater Level and Salinity Measurements	Gopal Krishan (PI), Surjeet Singh, C. P. Kumar, M. S. Rao  <i>From: BGS, UK</i> Dr. Dan Lapworth (PI) Prof. Alan MacDonald	3.5 years (12/17-06/21)  <i>Status: In progress</i>	Sponsored byBGS, UK
7. NIH/GW H/PDS/1 7-20	Hydro-geochemical Evolution and Arsenic Occurrence in Aquifer of Central Ganges Basin	Sumant Kumar (PI), Sudhir Kumar, Rajesh Singh, Gopal Krishan, Anju Chaudhary <i>Partner Organization:</i> MWRD, Bihar <i>Collaborator:</i> Brijesh Yadav, IIT Roorkee and N.S Maurya, NIT Patna	3.5 years (12/17-06/21)  <i>Status: In progress</i>	Sponsored by NHP under PDS
8. NIH/GW H/PDS/1 7-21	Assessment of Impacts of Groundwater Salinity on Regional Groundwater Resources, Current and Future Situation in Mewat, Haryana – Possible Remedy and Resilience Building Measures	Gopal Krishan (PI), Surjeet Singh, C. P. Kumar, <i>IIT-Roorkee:</i> M. L. Kansal, Brijesh Yadav (PI) <i>Sehgal Foundation,</i> <i>Gurgaon:</i> Lalit Mohan Sharma	4 years (12/17-11/21)  <i>Status: In progress</i>	Sponsored by NHP under PDS
9. NIH/GW H/PDS/1 7-21	Ganges Aquifer Management in the Context of Monsoon Runoff Conservation for Sustainable River Ecosystem Services - A Pilot Study	Surjeet Singh (PI), C. P. Kumar, Sudhir Kumar, Suman Gurjar, Gopal Krishan	4 years (12/17-11/21) <i>Status:</i> <i>In progress</i>	Sponsored by NHP under PDS
10. NIH/GWH /DST/18- 20	Future Secular Changes and Remediation of Groundwater Arsenic in the Ganga River Basin - FAR GANGA	B. Chakravorty (India Lead), Surjeet Singh (Dy. Lead), Sumant Kumar, Gopal Krishan, Suman Gurjar <i>Other India Partners:</i> IITR, IITKg, MCS, Patna <i>UK Partners:</i> Univ. of Manchester, BGS, Salford University, Univ. of Birmingham	3 years (01/18 - 12/20)  <i>Status: In progress</i>	DST-Newton Bhabha- NERC- India- UK Water Quality Research Programme
11. NIH/GWH /DST/18- 20	Impact of Rainwater Harvesting on Groundwater Quality in India with Specific Reference to Fluoride and Micro-pollutants	Anupma Sharma (India Lead), Sumant Kumar, Gopal Krishan, Suman Gurjar, M. K. Sharma <i>Other Indian Partners:</i> IIT Ropar, IIT Jodhpur <i>UK Partner:</i> Cranfield University <i>Project Partners:</i> Water Harvest, Excellent Development (UK based NGOs)	3 years (01/18 - 12/20)  <i>Status: In progress</i>	DST-Newton Bhabha- NERC- India- UK Water Quality Research Programme



12. NIH/GWH /CEHM/18 -22	Integrated Management of Water Resources for Quantity and Quality in Upper Yamuna Basin upto Delhi	Anupma Sharma (PI), Sanjay K. Jain, Archana Sarkar, M. K. Sharma, L. N. Thakural, Sumant Kumar, Suman Gurjar, Vishal Singh, Nitesh Patidar <i>Partner Organizations:</i> Irrigation & Water Resources Dept. Haryana, Groundwater Dept. UP, Yamuna Basin Organization, CWC, New Delhi	4 years (04/18-03/22)  <i>Status: In progress</i>	Special Project under “Centre of Excellence” (NHP)
13. NIH/GWH /DST/19- 23	Enhancing Food and Water Security in Arid Region through Improved Understanding of Quantity, Quality and Management of Blue, Green and Grey Water	Anupma Sharma (Lead NIH), C. P. Kumar, Suman Gurjar, Nitesh Patidar  <i>(Lead: CAZRI Jodhpur, Partners: NIH Roorkee, IISWC Dehradun, CSWRI Bikaner, CIAH Bikaner, NIAM Jaipur)</i>	5 years (03/19 - 02/24)  <i>Status: In progress</i>	Sponsored by DST
14. NIH/GWH /CCRBF/2 0-23	Expansion of the Indo-German Competence Centre for Riverbank Filtration – CCRBF	Gopal Krishan (PI & Coordinator)	3 years (07/20 – 06/23) <i>Status: New Study</i>	Sponsored by Federal Ministry of Education and Research, Germany
<b>Consultancy Projects</b>				
1.	Assessment of Saline and Freshwater Zone in Faridkot, Fazilka and Muktsar Districts of Malwa Region of Punjab	Gopal Krishan (PI)	1.5 year (03/19-09/20) Cost: 17.70 lakh <i>Status: In progress</i>	Punjab Government
2.	Expansion of Salinization in Aquifers in Punjab	Gopal Krishan (PI)	1.5 year (03/19-09/20) Cost: 1.18 crore <i>Status: In progress</i>	Punjab Government
3.	Water Availability Study based on Hydrological Investigations and Rainfall-Runoff Modeling of Upper Hindon Basin	Anupma Sharma (PI)	1.5 year (04/19-09/20) Cost: 11.80 lakh <i>Status: In progress</i>	Irrigation Deptt., Saharanpur

## HYDROLOGICAL INVESTIGATIONS DIVISION

### APPROVED WORK PROGRAMME FOR THE YEAR 2020-2021

S. N.	Project Title	Study Team	Duration	Status
<b><u>INTERNAL STUDIES:</u></b>				
1	Hydrological investigations of selected springs in Tehri Garhwal District , Uttarakhand	S M Pingale (PI), Sudhir Kumar S. D. Khobragade Soban Singh Rawat Er. Padam Singh, (UUFH, Ranichauri), Rajeev Gupta	3 years (04/19-03/22)	Continuing Study
2	Groundwater Recharge estimation in a part of Sabarmati basin	M. Someshwar Rao(PI) Sudhir Kumar Vipin Aggarwal	2 years (9/20 – 8/22)	<i>New Study</i>
3	Integrated Hydrological Investigations of Renuka lake, Himachal Pradesh, for its Conservation and Management	SD Khobragade (PI) Sudhir Kumar, Hukam Singh, Rajiv Gupta, Vipin Agarwal, Scientist from GoH.P.	3 years (9/20-8/23)	<i>New study</i>
<b><u>SPONSORED PROJECTS:</u></b>				
1.	Understanding of hydrological processes in Upper Ganga basin by using isotopic techniques	Suhas Khobragade(PI) Sudhir Kumar, Rajesh Singh, M. Arora, R. J. Thayyen	5 Years (04/16-03/21)	Continuing Study under NMSHE Project
2.	Dating very old ground waters of deeper aquifers in Ganga Plains, India	M. Someshwar Rao (PI) Sudhir Kumar	3 Years (06/16 -05/19) Extended upto 03/21	Continuing Study IAEA under CRP
3.	Chemical & Isotopic Characterization of Deep Aquifer Groundwater of Middle Ganga Basin	Sudhir Kumar (PI) M. Someshwar Rao Vipin Aggarwal	3 ½ year (1/18 – 6/21)	Continuing Study PDS under NHP
4.	Integrated Study on groundwater dynamics in the coastal aquifers of West Bengal for sustainable groundwater management	M. Someshwar Rao (PI), Sudhir Kumar A. R. Senthil Kumar V. S. Jeyakanthan	3 ½year (1/18 – 6/21)	Continuing Study PDS under NHP
5.	Development of a comprehensive plan for conservation and sustainable management of Bhimtal and Naukuchiatal lakes, Uttarakhand	Suhas Khobragade (PI) Sudhir Kumar	3 Years (1/18 – 12/20)	Continuing Study PDS under NHP
6.	Unravelling Submarine Discharge (SGD) zones along the Indian subcontinent and its islands (Mission SGD) – Pilot Study	Sudhir Kumar (PI) SM Pingale, M. Someshwar Rao BK Purandara, YRS Rao	1 year (04/19 – 03/20) Extended till 03/21	Continuing Study under NCESS, MoES
7.	Groundwater Rejuvenation As Climate changeE Resilience for marginalized and gender sensitive GangeS (GRACERS)	Sudhir Kumar (PI) M. Someshwar Rao SM Pingale	2 years (06/19 – 5/21)	IIT Bombay, Mumbai

**Table 2: Training Courses/Workshops proposed by HI Division for the year 2020-2021**

S. N.	Title of Training Course/Workshop	Duration	Venue	Co-ordinator
1.	Advanced tools and techniques for hydrological investigations	November 2020	NIH, Roorkee	S. M. Pingale
2.	Conservation and management of lakes, wetlands and springs	December 2020	NIH, Roorkee	S. D. Khobragade

**SURFACE WATER HYDROLOGY DIVISION****APPROVED WORK PROGRAM FOR THE YEAR 2020-21**

<b>ONGOING STUDIES (SPONSORED)</b>			
S. No. & Ref. Code	Title	Study Team	Duration
1.NIH/SWHD /16-21	Hydrological modeling in Alaknanda basin and assessment of climate change impact (NMSHE)	A.K.Lohani Sanjay K. Jain Archana Sarkar V.S. Jeyakanthan L.N. Thakural	5 years (April 2016 to March 2021)
2.NIH/SWHD /19-20	Rainfall-Runoff Modelling of Selected Basin based on LULC pattern and development of Correlation (NHP)	A.K. Lohani R.K. Jaiswal Sushant Jain WRD Rajasthan Sanjay Agarwal Shailendra Kumar	15 months (Oct. 2019 to Dec. 2020)
<b>ONGOING STUDIES (INTERNAL)</b>			
S. No. & Ref. Code	Title	Study Team	Duration
4.NIH/SWHD/ 17-21	Development of regional relationships for water availability analysis and flood estimation for lower Godavari basin (3f)	Sanjay Kumar Rakesh Kumar J.P. Patra Pankaj Mani	4 years (April 2017 to March 2021)
5.NIH/SWHD/1 8-20	Assessment of Climate Change Impact on Water Availability and Agriculture in part of Banas basin	Archana Sarkar Surjeet Singh Suman Gurjar Sunil Gurrapu	2 years (Nov. 2018 to October 2020) Extended up to March 31, 2021)
6.NIH/SWHD/ 15-19	Study of Hydrological Changes in selected Watersheds in view of Climate Change in India	L.N. Thakural D.S. Rathore Surjeet Singh Sanjay K. Jain Sharad K. Jain	4 years (April 2015 to March 2019) Extended upto Dec., 2020
7.NIH/SWHD/ 18-21	Evaluation of seasonal extreme rain events across river basins of India in 3D global temperature change scenario.	Ashwini Ranade Archana Sarkar	3 years (April 2018 to March 2021)
8.NIH/SWHD/ 18-21	Evaluation of the influence of low-frequency atmosphere-ocean oscillations on annual floods in the watersheds of the Indian subcontinent	Sunil Gurrapu Ashwini Ranade J.P. Patra	3 years (Nov 2018 to October 2021)

9.NIH/SWHD/ 18-20	Evaluation of water quality of Government schools in Roorkee block, District Haridwar	N.K. Bhatnagar M.K. Sharma L.N. thakural Reena Rathore	2 years (Oct 2018 to sept. 2020)
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#### NEW STUDIES (INTERNAL)

S. No. & Ref. Code	Title	Study Team	Duration
10.NIH/SWHD /20-21	Application of unified-extreme-value (UEV) distribution for flood frequency: (1) Lower Narmada & Tapi subzone-3b, (2) Lower Godavari subzone-3f	S.K. Singh	One year (April 2020 to March 2021)
11.NIH/SWHD /20-22	Probabilistic dam break flood wave simulation and flood risk assessment for preparation of EAP for Mahi Bajaj Sagar dam in Rajasthan.	J.P. Patra Rakesh Kumar Pankaj Mani Sunil Gurrapu	2 years (Aug 2020 to Jul 2022)

### WATER RESOURCES SYSTEMS DIVISION

#### APPROVED WORK PROGRAMME FOR THE YEAR 2020-2021

SN	Title	Study Team	Duration	Funding (Rs. Lakh)
<b>Ongoing Internal Studies</b>				
1.	Developments of Water Accounts for Subarnarekha Basin Using Water Accounting Plus (WA+) Framework	P. K. Singh P. K. Mishra, M. K. Goel, Suman Gurjar	2 years (12/18-12/20)	
2.	Real time flood modelling using HEC-RTS modelling framework	Vishal Singh A. K. Lohani	2 years (12/18-12/20)	
3.	Seasonal Characterization of Gangotri Glacier melt runoff and simulation of streamflow variation under different climate scenarios	M. Arora Sanjay K. Jain	3 years (04/18-03/21)	
<b>Ongoing Sponsored Studies</b>				
1.	Development of a project website and hydrological database in Upper Ganga Basin <b>(Sub-project – 1)</b>	M. K. Goel; M. Arora; A. K. Lohani; D. S. Rathore; D. Chalisgaonkar; A. R. S. Kumar; S. Singh; P. Mani; A. Sarkar; M. K. Nema; P. K. Mishra	5 years (01/16-12/20)	DST (52.15)
2.	Real-time snow cover information system for Upper Ganga basin <b>(Sub-project – 2)</b>	D. S. Rathore D. Chalisgaonkar, V. S. Jeyakanthan L. N. Thakural	5 years (01/16-12/20)	DST (48.83)
3.	Glacial Lakes & Glacial Lake Outburst Flood (GLOF) in Western Himalayan Region <b>(Sub-project – 3)</b>	Sanjay K. Jain A. K. Lohani Sudhir Kumar Praveen Thakur (IIRS)	5 years (01/16-12/20)	DST (36.79)
4.	Assessment of downstream impact of Gangotri glacier system at Dabrani and future runoff	Renoj J.Thayyen; Sanjay K. Jain; Sharad K. Jain	5 years (01/16-12/20)	DST 86.1 (NIH)

	variations under climate change scenarios <b>(Sub-project – 4)</b>	(Retd.) P. K. Mishra; M. Arora; AP Dimri (JNU)		+ 73.2 (JNU)
5.	Observation and modelling of various hydrological processes in a small watershed in Upper Ganga basin <b>(Sub-project – 5)</b>	M K Nema; Sharad K. Jain (Retd.); Renoj J.Thayyen; Sanjay K. Jain; P K Singh, P. K. Mishra; P. K. Agarwal AP Dimri (JNU)	5 years (01/16-12/20)	DST (54.07)
6.	Water Census and Hotspot analysis in selected villages in Upper Ganga basin <b>(Sub-project – 11)</b>	P. K. Mishra; M. K. Nema; Renoj J. Thayyen; Pradeep Kumar	5 years (01/16-12/20)	DST (90.99)
7.	Measurements and Modeling of Evapotranspiration and other Hydrological Processes in Lesser Himalayas	M K Nema; Renoj J. Thayyen; Sharad Jain (Retd.); Sanjay Jain; P. K. Mishra; AP Dimri	3 years (2016-19) Extended up to Dec. 2020	MOES (Rs. 98 Lakh)
8.	Investigating Water Stress using Hydro-meteorological and Remote Sensing data	D. S. Rathore; L. N. Thakural; Sanjay Kumar; B. Venkatesh M. K. Jose; T. Chandramohan	3 years 2017-2020	PDS under NHP (50.23 Lakh)
9.	Snow and glacier contribution and impact of climate change in Teesta river basin in Eastern Himalaya	Sanjay K. Jain P. K. Singh; M. Arora Renoj J. Thayyen; A. K. Lohani; Vishal Singh; Suman Gurjar	3 years (11/19-11/22)	NMHS- MoEF (143 Lakh)
10.	Assessment of seasonal variations in Hydrology and Cryosphere of upper Ganga Basin	Renoj J. Thayyen A. P. Dimri (JNU) Sanjay K. Jain	3 years (06/19-11/22)	(23.19 Lakh)
11.	Permafrost mapping and characterisation of Ladakh Region	Renoj J. Thayyen; A. P. Dimri (JNU); G. Jeelani (KU); V. Agnihotri (GBPNI)	3 years (11/19-11/22)	NMHS- MoEF (197.48 Lakh)
<b>New Internal/ Sponsored Studies</b>				
1.	Impacts of glacier and climate change on runoff for selected basins of Himalayan region	Vishal Singh Sanjay K. Jain Manohar Arora	2 years (08/20-07/22)	NIH
2.	Henvel Experimental Watershed: Observations and modelling (Phase II)	M K Nema Renoj J. Thayyen P K Mishra	3 years (08/20-07/23)	NIH
3.	Upgradation of NIH_ReSyP to .NET Platform– a Reservoir Operation Package	D. Chalisgaonkar M. K. Goel	1 year (08/20-07/21)	NIH
4.	Development of Water Accounts for the different sub-basins of Brahmaputra and Barak River Basins in the state of Meghalaya Using Water Accounting Plus (WA+) Framework.	P K Singh P K Mishra	2 years (08/20-07/22)	NHP (14.50 Lakh)
5.	Preparation of Guidelines for the “Management of Glacial Hazards and Risks especially GLOFs & LLOFs”	Sanjay K. Jain A K Lohani	1 year (12/19-12/20)	NDMA (14.36 Lakh)

**RESEARCH MANAGEMENT AND OUTREACH DIVISION (RMOD)**

**APPROVED WORK PROGRAM FOR THE YEAR 2020-21**

SN	Title of Project/Study	Funding	Study Team	Duration	Status
<b>Internal Study</b>					
1	Conservation of ponds in Ibrahimpur- Masahi Village and performance evaluation of natural treatment system	NIH, CEH-UK	NIH: Omkar Singh (PI) V C Goyal, Rajesh Singh, Digambar Singh, Subhash Kichlu, Rajesh Agrawal, Rakesh Goel, NR Allaka; CEH-UK: Prof. Laurence Carvalho & Team	Apr 2018-Mar 2021	On-going
2	Integrated assessment of water resources for sustainable use in Upper Dhasan basin in Bundelkhand region	NIH	Jyoti Patil (PI) T Thomas (Co-PI), P K Mishra Rohit Sambare	Jul 2020- Dec 2022	New
3	Establishing hydrologic regime and ecohydrological functions of Jhilmil Jheel wetland (Haridwar District, Uttarakhand)	NIH	Rohit Sambare (PI) V C Goyal (Co-PI), Suhas Khobragade; Gajendra Singh-USAC, Dehradun; WI-SA, New Delhi; HESCO, Dehradun	Jul 2020- Jun 2022	New
4	Hydrology-based scenario planning for water productivity and optimization of income from farming practices in Mewat region, Haryana	NIH	A R Senthil Kumar (PI) Omkar Singh (Co-PI) Rajesh Agarwal, N R Allaka Scientist from KVK/Agri Univ.	Jul 2020- Jun 2022	New
<b>Sponsored Projects</b>					
1	Hydrological modelling in Bhagirathi basin up to Tehri dam and assessment of climate change impact	DST-NMSHE	A R Senthil Kumar (PI) J. V. Tyagi, M. K. Goel, S. D. Khobragade, P. C. Nayak, Manohar Arora	Mar 2016-Mar 2021	On-going
2	Rejuvenation of village ponds in identified villages of Baghpat, Ghaziabad and Meerut districts of Uttar Pradesh	MoJS (through Scheme funds)	Omkar Singh (PI), Rajesh Singh, V C Goyal, Digambar Singh, Subhash Kichlu, Rajesh Agrawal, Rakesh Goel, NR Allaka	Jan. 2018-Dec. 2020	On-going
3	Innovation Centre for Eco-Prudent Wastewater Solutions (IC-EcoWS)	DST (GoI)	V.C. Goyal (PI), Omkar Singh, Rajesh Singh, Jyoti P. Patil, Rohit Sambare, Project Team, HQ (IC-EcoWS) Partners: NIH, MNIT-Jaipur, IIT-Bombay, IRMA-Anand	Apr 2019-Mar 2024	On-going

**Proposed Training/Workshops during 2020-21**

S.N.	Outreach Activity	Tentative Date & Month	Place	Target Participants	Team
1	Training on 'Water security for resilience to deal with disasters and outbreaks',	Nov. 2020	Virtual training	Youth and YPs associated with WR	V C Goyal, Jyoti P Patil, Amrendra Bhushan,

	under aegis of INC-IHP (proposal approved by Director, NIH)			Assessment & Management	Victor Shinde (NIUA)
2	Hands-on training on 'Life Cycle Approach for rejuvenation of ponds and lakes using Nature Based Solutions', to be funded by SERB, DST, GoI (proposal approved by Director, NIH )	Dec. 2020	NIH Roorkee	PG and PhD students of Water resources management/ engineering	Jyoti P Patil, V C Goyal, Omkar Singh, T Thomas, Rajesh Singh, Rohit Sambhare
3	Three-day training program on "Hydrology of water bodies and their development under climatic uncertainty"	Jan 2021	NIH Roorkee	Engineers in Irrigation/PHE/ SWC departments	A. R. Senthil kumar, Santosh M Pingale, Rohit Sambhare, N R Alakka
4	Awareness program on Ecohydrology for Wetland Conservation	Feb./ Mar. 2021	NIH Roorkee	Research scholars, and PG students	Rohit Sambhare, Suhas Khobragade
5	Awareness Program for School Children	Oct/Nov 2020	5 Schools in Roorkee/ Nearby Roorkee	School Children	Digambar Singh, Omkar Singh, Subhash Kichlu, Rajesh Agarwal, N R Allaka
6	Awareness Programme on "Water quality and water budgeting in 5 sub Villages of Ibrahimpur Masahi", Dist. Haridwar	Feb/Mar, 2021 (5 days)	Vill. Ibrahimpur Masahi,	Progressive Farmers	Omkar Singh, Rajesh Singh, Digambar Singh, Subhash Kichlu, Rajesh Agarwal, NR Allaka

#### Proposed Outreach Activities during 2020-21

S.N.	Activity
1	Preparation of a guidebook on 'Role of hydrology in district level planning' (V C Goyal, Jyoti Patil)
2	Preparation of Short Videos (5-10 min) on i) CW & FW/Nature Based Solutions/ Pond Rejuvenation ii) Wetland Hydrology iii) Crop diversity, water productivity & farmer's income iv) On studies and projects of NIH Scientists
3	River Walk of Solani River (stretch to be identified)
4	Any other outreach activity on demand/assigned

#### HARD ROCK REGIONAL CENTRE, BELAGAVI

#### APPROVED WORK PROGRAM FOR THE YEAR 2020-21

SNo.	Title of the Study	Study Group	Duration	Status
<b>Internal R &amp; D Studies</b>				
1	Development of prediction tools for Assessment of Water Resources in Ungauged catchments of West Flowing Rivers of Western Ghats Region	CMT(PI), BV and CK & Officer from WRDO	3 years (4/18-3/21)	Ongoing
2	Climate Change Impact assessment for Jayakwadi Reservoir	BV (PI), MKJ, Ahilash and	3 years (05/18-	Ongoing

		officers from WRD, Govt. Maharashtra)	9/21)	
3	Flood Vulnerability Assessment and developing mitigation plan for Thiruvananthapuram City, Kerala	CM, BV, MKJ and CS	2 years (9/19 - 8/21)	Ongoing
4	Study on the impact of extensive sand extraction on the river environment and aquifer regime in Godavari basin	MKJ, BV, CMT Abhilash and Officials form TSGWD	2 years (9/19 - 8/21)	Ongoing
<b>Sponsored Projects</b>				
5	Impact of Land use/Land cover Changes on Ground water – A Case	BKP ,BV, SKJ, and CPK	3 years (4/18-3/21)	Ongoing study sponsored by MoES
6	Studies on Occurrence, Distribution and Sustainability of Natural Springs for Rural Water Supply in parts of Western Ghats, India	BKP (PI), SK, NV, Abhilash, & Ujwal,	3 years (9/17-7/20)	Ongoing PDS under NHP (Seeking an extension of 6 months upto March 2021
7	Estimation of Submarine Groundwater Discharge in parts of Karnataka	BKP, SK, JVT and NV	2 years (4/19-3/21)	Ongoing study sponsored by NCESS (MoES)
8	Groundwater Model Development In Micro Basin Of Hard Rock In Krishna And Godavari River Basins Of Telangana	BV, MKJ, AS , Abhilash & Officials form TSGWD	3 years (9/19 -8/22)	Ongoing PDS under NHP
<b>Consultancy Projects</b>				
1	Flood Review in Kali and Sharavathy river basin, Dam Break analysis, inundation mapping and preparation of Emergency Action Plan for Dams in Kali, Sharavathi and Varahi river basin	BV (PI)	2 years	KPCL, Govt. of Karnataka
2	Preparation of Emergency Action Plan (EAP) and Study of Tail Channel Design Flood Carrying Capacity of Ambazari Lake, Nagpur	BV (PI)	1 year	Irr. Dept. Nagpur Govt. Of Maharashtra,
3	Preparation of Report On Hydrology of Bandura Nala And Kalasanala Diversion Scheme For Drinking Water Supply	BV (PI)	1 year	KNNL, Bangalore
4	Hydrogeological Studies in and around “Redi Iron Ore Mine” (Block I) of M/S Gogte Minerals, Located at Village Redi, TalukaVengurla, District Sindhudrug, Maharashtra	BKP (PI)	1 year	M/s Redi Mines, Sindhudrug, Maharashtra
5	Hydrogeological Studies in and around “Redi Iron Ore Mine” (Patni Mine) of M/S Minerals & Metals, Located at Village Redi, TalukaVengurla, District Sindhudrug, Maharashtra	BKP (PI)	1 Year	M/s Gogte Mines, Tilakwadi (Belagavi)
<b>Training Workshop</b>				
1	Hydrological Modelling using SWAT	CMT (PI)	5 day	Proposed
2	Brain Storming Session on “Rejuvenation of Rivers in Hard Rock Region”	BV(PI)	1 day	Proposed



JVT : J.V. Tyagi, Scientist G                      SK : Sudhir Kumar, Scientist G  
 BV : B.Venkatesh, Scientist F                    BKP : Purandara, Scientist F  
 CMT : Chandramohan T., Scientist D           MKJ : Mathew K. Jose, Scientist D  
 NV : N Varadarajan, PRA                          CK : Chandra Kumar S., SRA

**WESTERN HIMALAYAN REGIONAL CENTRE, JAMMU**

**APPROVED WORK PROGRAM FOR THE YEAR 2020-21**

S. No.	Title of Study	Team	Duration	Remarks
<b>Internal Studies</b>				
1.	Assessment of Hydrological Characteristics of a Western Himalayan river – A study of River Ujh	D. Khurana P. G. Jose S. S. Rawat R. V. Kale	24 months (June 2018 - May 2020)	Ongoing/ to be completed by October, 2020
2	Hydrologic and hydraulic modeling for floodplain inundation mapping under future climate change scenarios: A case study of Tawi River, India.	R. V. Kale P. G. Jose D. S. Bisht	03 years (Aug 2018 - Mar 2021)	Ongoing
3.	Statistical evaluation of global precipitation estimates over data scarce Western Himalayan Region of India	D. S. Bisht V. Singh S. S. Rawat P. G. Jose	02 Years (Sept 2019 - Sept 2021)	Ongoing
4.	Estimation of changes in snow cover and glacier mass balance for Upper Chenab River Basin	P. G. Jose D. S. Bisht	02 Years (Aug 2020 – Aug 2022)	New proposal
<b>PDS under National Hydrology Project (NHP) at NIH</b>				
1.	Web GIS based Spring inventory for vulnerability assessment and hydro-geological investigation of selected springs for sustaining local water demand in Ravi Catchment of Himachal Pradesh	S. S. Rawat P. G. Jose S. Gurjar D. S. Bisht S. Kumar	04 years (Apr 2017 - Mar 2021)	Ongoing PDS under NHP
<b>Externally funded R &amp; D Studies</b>				
1.	Web-enabled Inventory of Natural Water Springs of Tawi River Catchment of Jammu and Kashmir State of India for Vulnerability Analysis and Developing Adaptive Measures for Sustaining Tawi River	S. S. Rawat P. G. Jose S. Gurjar D. S. Bisht	03 years (Apr 2019 - Mar 2022)	Ongoing study funded by NMHS
2.	Operational coastal flood management through short-to-medium range (real-time) flood vulnerability mapping in the Brahmani-Baitarani River Basin integrating human and climate induced impacts	B. Sahoo, (PI, IIT-Kgp) R. V. Kale, (Co-PI)	03 years (July, 2020 – June, 2023)	Ongoing Study funded under STARS by MHRD, GoI.

**CENTRAL INDIA HYDROLOGY REGIONAL CENTRE, BHOPAL**

**APPROVED WORK PROGRAM FOR THE YEAR 2020-21**

<b>Sl. No</b>	<b>Name of the project</b>	<b>Duration</b>	<b>Status (Period)</b>	<b>PI</b>
<b>Ongoing Studies</b>				
1.	Modeling of Tawa Reservoir Catchment and Development of Tawa Reservoir Operation Policy under Climate Change	3 Years	Ongoing (09/17-08/20) <i>To be extended for 1 year</i>	PI: Er. S.P. Indwar
2.	Evaluation of the impact of Rabi irrigation in Ganga River sub-basin of Madhya Pradesh	3 years	Ongoing (11/17-10/20) <i>To be extended for 1 year</i>	PI: Er. R. V. Galkate
3.	Impacts of Upcoming Irrigation Projects and Climate Change on the Droughts and Desertification Scenario for Chambal Basin in Western Madhya Pradesh	4 years	Ongoing (12/17-11/21)	PI: Dr. T. Thomas
4.	Integrated Assessment of the Impacts of Climate Change and Land-use Change on the Hydrology of the Narmada basin through Hydrological Modelling Approaches	5 years	Ongoing (02/18-01/23)	PI: Dr. T. Thomas
5.	Modeling of Narmada using GWAVA. (International Collaborative Project with CEH Wallingford, UK)	2 years from 04/15 Extended further for 2 years. Again extended for 1 more year.	Ongoing (04/15-03/20)	PI: Dr. T. Thomas
6.	Hydrological Modeling for Evaluation of Return Flow and Irrigation Planning for Optimal Utilization of Water Resource in the Command of Sanjay Sagar Project in Madhya Pradesh	4 years	Ongoing (04/19-03/23)	PI: Dr. R. K. Jaiswal
7.	Development of Decision Tool for Efficient Utilization of Water Resource in Parbati Canal & Dholpur Piped Irrigation Project of Rajasthan	3 years	Ongoing (04/19-03/22)	PI: Dr. R. K. Jaiswal
<b>Proposed New Studies</b>				
1	An experimental assessment of low-cost Auger Hole Technique for accelerating groundwater recharge	3 year	In-house collaborative study September 2020 to August 2023	PI: Ravi Galkate Co-PI: Dr. R.K. Jaiswal

**DELTAIC REGIONAL CENTRE, KAKINADA**

**APPROVED WORK PROGRAM FOR THE YEAR 2020-21**

<b>S. No</b>	<b>Title of the Project</b>	<b>Team</b>	<b>Duration (Start date and End date)</b>	<b>Funding</b>
<b>I. Internal R &amp; D Studies</b>				
1	Forecasting of Flash flood and Management for east flowing rivers of India's Subzone 4(a)	R.VenkataRamana (PI) Y.R. Satyaji Rao V.S.Jeyakanthan T.Vijay	3 Years (Dec'17 - Nov'20)	Internal (NIH)
<b>II. Sponsored Projects (Ongoing (7))</b>				
2	Sedimentation Study of Hirakud Reservoir, Odisha using Optic and Microwave Remote Sensing Technology	V.S.Jeyakanthan (PI) J.V.Tyagi, Y.R.Satyaji Rao R.VenkataRamana	3 Years (Nov'17 - Mar'21)	NHP(PDS) (SP-28/2017-18/PDS-3)
3	Groundwater salinity source identification in Godavari delta, Andhra Pradesh	Y.R.Satyaji Rao (PI) T.Vijay, R.VenkataRamana Gopala Krishana S.V.Vijaya Kumar	3 Years (Mar'18'-Jul'21)	NHP(PDS) (SP-28/2017-2018/PDS-13)
4	Study of the behavior of Multi-Aquifer system & Aquifer mapping for an effective Groundwater Management in Gunderu Sub-Basin, West Godavari district, AP	S.V.Vijaya Kumar (PI) Anupama Sharma J.V.Tyagi Y.R.Satyaji Rao T.Vijay	3 Years (Apr'18 - Mar'21)	NHP(PDS) (LA:AP State GW&WA Dept.,) AP_1_2017_80
5	Dam break studies of Kandaleru and Pulichintala dams in Andhra Pradesh	P.C.Nayak (PI) Y.R.Satyaji Rao A.K. Lohani B. Venkatesh A. R. S. Senthil Kumar T. Thomas	3 Years (Apr'19 - Mar'22)	NHP(PDS). SP-43/2019-21/1
6	Urban hydrological studies of critical pilot area using of hydrological instruments in the Greater Hyderabad Municipal Corporation (GHMC) area Hyderabad.	R.VenkataRamana (PI) Y.R.Satyaji Rao V.S.Jeyakanthan T.Vijay	3 Years (Jan'20 - Apr 23)	NHP(PDS) (LA: Hydrology and Investigations, I &CAD, Govt.,Telengana) TEL-6_2017_86
7	High Performance Advanced Septic System for Villages and Roadside Restaurants	Y.R Satyaji Rao (PI) T.Vijay	2 Years (Apr'18 - Dec'20)	IC-IMPACT, Canada
8	Unravelling Submarine Groundwater Discharge (SGD) Zones along A.P and Odisha States (Mission SGD)- Pilot Study	Y.R. Satyaji Rao (PI) T.Vijay	2 Years (Apr'19 to Mar'21)	MoES, Govt., of India.

**CENTRE FOR FLOOD MANAGEMENT STUDIES, GUWAHATI**

**APPROVED WORK PROGRAM FOR THE YEAR 2020-21**

<b>Sl.No</b>	<b>Title</b>	<b>Study Group</b>	<b>Duration (Month/Year)</b>	<b>Remarks</b>
1.	Flood Inundation Mapping of Beki River Basin of Assam	S.K Sharma, Rakesh Kumar, Pankaj Mani, Jagadish Prasad Patra, G. Arun	3 years (4/18 to 3/21)	Internal
2.	Development of regional methods for design flood estimation in North Brahmaputra subzone 2 (a).	S.K Sharma, Rakesh Kumar, Pankaj Mani, Jagadish Prasad Patra, G. Arun	3 years (4/18 to 3/21)	Internal
3.	Linear Hydrological routing using Satellite precipitation datasets for flood forecasting in parts of Brahmaputra Basin	GulshanTurkey, S. K. Sharma, P. Mani, G.Arun	3 years (4/18 to 3/21)	Internal
4.	Impact of Climate Change on Runoff and Sediment Yield for a Major Tributary of River Brahmaputra	Swapnali Barman, J.V. Tyagi, R.K. Bhattacharya, W.R. Singh	3 years (11/18 to 10/21)	Internal
5.	Groundwater Quality Assessment of Morigaon district of Assam with emphasis on Arsenic & Fluoride Contamination	S.K. Sharma Rajesh Singh G. Turkey Waikhom Rahul Singh	2 years (4/19 to 3/21)	Internal
6.	Comparison of Hydrological Behaviour of two mid-sized Mountainous Catchments under the influence of Climate and Land Use Changes	Waikhom Rahul Singh, A.K.Lohani, A. Bandyopahdyay Swapnali Barman NiteshPatidar	3 years (7/19-3/22)	Internal
7.	River basin planning studies in Teesta basin up to confluence with Rangit River in Sikkim	Swapnali Barman M.K. Goel, A.K. Lohani D.S. Rathore DeeptiRaani G. Arun, W.R. Singh	3 years (3/19 to 2/22)	PDS under NHP
8.	Study on Behaviors of Flooding and Unexpected Drought like Situations in Garo Hills District of Meghalaya	S. K. Sharma R.P. Pandey GulshanTurkey Swapnali Barman G. Arun, W.R. Singh	3 years (10/19 to 9/22)	PDS under NHP
9.	Rainfall Induced Flood Hazard Risk Vulnerability Assessment in East Jaintia Hills, Meghalaya	G. Turkey, S. K. Sharma, A. K. Lohani, G. Arun,	3 years (4/20-3/23)	Internal New Study

**CENTRE FOR FLOOD MANAGEMENT STUDIES, PATNA**

**APPROVED WORK PROGRAM FOR THE YEAR 2020-21**

Sl	Title	Study Team	Duration
Internal Studies			
1	Identification and Assessment of Meteorological Drought Trends for Agro-climatic Zones of South Bihar	SR Kumar (PI), RP Pandey, Rakesh Kumar and Nitesh Patidar	3 years (4/19 - 3/22)
2	Integrated Flood Management Plan for a stretch of Burhi Gandak River from Sikanderpur to Rosera	B Chakravorty (PI), Pankaj Mani and NG Pandey	2 years (04/20-03/22)
3	Performance evaluation of Upper Morhor Canal System of South Bihar	NG Pandey (PI) B Chakravorty	2 years (04/20-03/22).
4.	Modelling and Management of Erosion and Sedimentation Processes in Alluvial River Using Morpho-dynamic Modeling	Pankaj Mani (PI), Rakesh Kumar, JP Patra, B Chakravorty and WRD Bihar	3 years (04/19-03/22)