APPROVED MINUTES OF 71st MEETING OF TECHNICAL ADVISORY COMMITTEE OF NATIONAL INSTITUTE OF HYDROLOGY Held on 23 April 2018 at New Delhi

The 71st meeting of the Technical Advisory Committee (TAC) of the National Institute of Hydrology, Roorkee was held in the Central Water Commission, New Delhi on 23 April 2018. The meeting was chaired by Er. S Masood Husain, Chairman, CWC. The list of the participants is given in Appendix -I.

At the outset, the Chairman in his opening remarks, welcomed the members and the invitees. He appreciated the works being carried out by NIH, and urged that the Institute should accord priority to conducting applied research, with focus on the latest development taking place in the water sector. After a round of introduction, general comments and suggestions were made by the TAC members on the working of NIH which are as follows:

Er Masood Husain, Chairman, CWC	1. R&D outcomes should be utilized by the intended users 2. Devise mechanism for review of completed studies and projects
Er N K Mathur, Member (D&R),CWC	1. Consult relevant standards for suitability of treated wastewater for use in MAR 2. Focus on lead research 3. Choose title of study carefully 4. NIH may consider a study on “Conjunctive use using NDVI” 5. Form a Working Group on “Impact of Climate Change on PMP”, with members from NIH, CWC, and IMD/IITM
Dr Suhas P Wani ICRISAT, Hyderabad	1. Research should be judged by not just IF publications but also by adoption of research outcomes 2. More projects should be demand-driven
Dr Alok Sikka IWMI, New Delhi	1. Report of a completed study should mention where the study is leading to?

Dr V C Goyal, Member-Secretary, also welcomed the Chairman, members and invitees. A brief presentation on the organizational set up and activities of NIH was made for benefit of the new members. He then took up the agenda items.

ITEM NO. 71.2: Confirmation of the Minutes of 70th Meeting of TAC

The Member-Secretary informed that minutes of the 70th meeting of TAC, held on September 1, 2017, were circulated to all the members and invitees vide email dated September 22, 2017. Since no comments were received from the members, the Minutes were confirmed by the TAC.

ITEM NO. 71.3: 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 on development of regional methods for water availability analysis and design flood estimation, and studies on urban flooding. On the issue of developing content of the modules on 'Awareness on Water Issues' to be prepared for inclusion in the text books, Dr Sikka opined that NIH may examine available NCERT text books, and Prof Jayakumar advised to consult books prepared for UNICEF by CWRDM.

ITEM NO. 71.4: Status of the Work Programme for the Year 2017-18

The Member-Secretary briefed about the studies carried out by the Institute during the year 2017-2018. Members appreciated the number of publications brought out by the Institute and number of training/workshop/symposium organized by the Institute.

The following studies completed during 2017-18 were presented during the meeting:

1. Web enabled conjunctive use model for management of surface and ground water using concept of MAR and ASR (Dr N C Ghosh, GWH Division)
2. Modeling of Narmada basin using GWAVA model (Dr T Thomas, RC-Bhopal)
3. Effect of Changing Global Tropospheric Temperature on Asia-Pacific Monsoon Circulation and Rainfall Fields across India (Dr Ashwini Ranade, SWH Division)

The Chairman suggested that the HI Division's study on "Rejuvenation of springs and spring-fed streams in Mid-Himalayan basin using spring sanctuary concept" should come out with clear methodology. On the study presented by Dr Thomas, the Chairman wanted to know what outcomes are expected from the modeling? Er N N Rai (CWC) desired that Interim Report of the EH Division's study on "Development of habitat suitability curves for the aquatic species of western Himalayan streams" be submitted to CWC for reference. TAC noted the status of work programme for the year 2017-18.

ITEM NO. 71.5: Report Proceedings of the Working Group and RCC Meetings

The Member-Secretary briefed about the 46th meeting of the Working Group of NIH, which was held at NIH, Roorkee, during 8-9 Feb., 2018, 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 2017-18 and recommended the proposed work programme for the year 2018-19.

The Chairman desired that salient recommendations of these meetings should be presented in bullet points for each Division/RC. TAC noted the proceedings of the Working Group and RCC meetings. TAC advised NIH to take up the following studies:

1. GIUH-based flood estimation,
2. Computation of consumptive water use by using NDVI
3. Impact of climate change on PMP- a group consisting of members from CWC, NIH and IITM may be formed.

ITEM NO. 71.6: Work Programme for the Year 2018-19

The Member-Secretary briefed about the proposed work programme of the Institute for the year 2018-19, which was discussed during the 46th Working Group meeting 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 2018-19 (Appendix-II).

ITEM NO. 71.7: Major projects and activities of national importance

A brief of the activities carried out under three major sponsored projects, viz. National Hydrology Project (NHP), Integrated Hydrological Studies for Upper Ganga Basin up to Rishikesh (NMSHE), and Neeranchal National Hydrology Project (NNWP), were presented. For the NNWP, Dr Wani advised that while developing DSS-Hydrology the work carried in Karnataka under Sujala Watershed Project may be consulted, which is based on the "LRI" concept.

ITEM NO. 71.8: Reporting Items

Details of the consultancy projects carried out by NIH during the year 2017-2018 were noted by the TAC. The Chairman suggested that the Scheduled Date of Completion of these projects should be mentioned. If the final report has been submitted, the project will be considered completed.

ITEM NO. 71.9: Additional items with permission of the Chair

I. **Data centre and web portal for COSMOS-India Network**

The TAC accorded permission for this activity with an advice that NIH should consider keeping a mirror site at some other location.

II. **Participation in an International Research Project**

TAC accorded permission for participation of Dr Sharad K Jain, Direcor, NIH, as Advisor in the research project entitled "Advancing frequency analysis of nonstationary hydrological extremes for reducing flood risk in a changing climate" funded by The Research Council of Norway for 3-year duration (2018-2021). Er Mathur (CWC) advised to explore if the data of Godavari or Krishna basins could be analyzed in this project.

III. **Organization of a HEPEX Workshop on Flood Forecasting at Roorkee, in 2019**

TAC concurred with the proposal of NIH to organize a Workshop on Flood Forecasting, jointly with HEPEX, to be held in Roorkee (India) in 2019. The Chairman advised to schedule the workshop on a convenient date by avoid conflicts with other major scientific meetings/events in India, US and Europe (e.g., AGU, AMS, EGU). Members from CWC expressed their interest in the workshop. NIH may explore funding support from CWC.

IV. **Signing of MoU with CSIR-NEERI, Nagpur**

TAC appreciated the forthcoming collaboration between NIH and CSIR-NEERI by signing a MOU, outlining the broad contours of collaboration. The MOU was signed in the presence of TAC members.

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

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Appendix-I

LIST OF PARTICIPANTS IN THE 71st MEETING OF TAC OF NIH

1.	Er S Masood Husain, Chairman, CWC, New Delhi	In-chair
2.	Er N K Mathur, Member (D&R), CWC, New Delhi	Member
3.	Er N N Rai, CWC, New Delhi	Rep. CE (HSO)
4.	Dr Sharad K Jain, Director, NIH, Roorkee	Member
5.	Sh K. C. Nayak, Chairman, CGWB, New Delhi	Member
6.	Sh K V Singh, IMD, New Delhi	Rep. DDG(H)
7.	Dr S K Mishra, IIT Roorkee	Rep. IIT Roorkee
8.	Prof K V Jayakumar, NIT Warangal	Member
9.	Sh D K Singh, ICAR-IARI, New Delhi	Rep. Director, WTC
10.	Dr Suhas P Wani, ICRISAT, Hyderabad	Member
11.	Prof Rohit Goyal, MNIT, Jaipur	Member
12.	Sh H J Patel, SE CDO(Hydro) Gandhinagar	Member
13.	Sh Rajeev Baboota, NTPC, Faridabad	Member
14.	Dr Alok Sikka, IWMI, New Delhi	Member
15.	Dr V C Goyal, Sc. G, NIH, Roorkee	Member-Secretary

INVITEES

1. Director (R&D), MoWR, New Delhi
2. Dr Pawan Labhasetwar, NEERI, Nagpur
3. Dr N C Ghosh, Sc. G & Head, GWH Division, NIH, Roorkee
4. Dr Rakesh Kumar, Sc. G & Head, SWH Division, NIH, Roorkee
5. Dr C K Jain, Sc. G & Head, EH Division, NIH, Roorkee
6. Dr Sudhir Kumar, Sc. G & Head, HI Division, NIH, Roorkee
7. Dr Sanjay Jain, Sc. G & Head, WRS Division, NIH, Roorkee
8. Dr J V Tyagi, Sc. G, NIH, Roorkee
9. Dr M K Goel, Sc. G, NIH, Roorkee
10. Dr R P Pandey, Sc. G, NIH, Roorkee
11. Dr T Thomas, Sc. D, RC-Bhopal
12. Dr Ashwini A Ranade, Sc. C, NIH, Roorkee
13. Dr Pradeep Kumar, Sc. C, NIH, Roorkee
14. Dr Jyoti Patil, Sc. C, NIH, Roorkee

Appendix-II

APPROVED WORK PROGRAMME FOR THE YEAR 2018-19

ENVIRONMENTAL HYDROLOGY DIVISION
Work Programme 2018-19

S.No.	Study	Study Team	Duration / Status	Funding
Internal Studies (Cont.)				
1.	Development of Habitat Suitability Curves for the Aquatic Species of Western Himalayan Streams and Assessment of Environmental Flows	Pradeep Kumar (PI) C. K. Jain	3 Years (04/16-03/20)	NIH
Sponsored Projects (Cont.)				
2.	Environmental Assessment of Aquatic Ecosystem of Upper Ganga Basin	C. K. Jain (PI), NIH Manohar Arora, NIH M. K. Sharma, NIH Pradeep Kumar, NIH D. S. Malik, GKU	5 Years (04/16-03/21)	DST (NMSHE) Project Cost: 2.25 Crore
3.	Ground Water Quality Assessment with Special Reference to Sulphate Contamination in Bemetara District of Chhattisgarh State and Ameliorative Measures	M. K. Sharma (PI) C. K. Jain Surjeet Singh Pradeep Kumar **Partner:** WRD, Raipur A. K. Shukla Ashok Verma P. C. Das	3 Years (09/17-08/19)	NHP(Under PDS) Project Cost: 25.4 Lakh
4.	Water Quality Assessment of Southwest Punjab Emphasizing Carcinogenic Contaminants and their Possible Remedial Measures	Rajesh Singh (PI) M. K. Sharma Sumant Kumar Pradeep Kumar **Partner:** Irrigation Department, Punjab	3 Years (09/17-08/20)	NHP (under PDS Project Cost: 65.6 Lakh
Consultancy Projects (ongoing)				
5.	Study on Ash Disposal from Telangana STPP into Mine Void of Medapalli Open Cast Mines	C. K. Jain (PI) Sudhir Kumar Y. R. S. Rao S. D. Khobragade Anupma Sharma M. K. Sharma Pradeep Kumar	15 Months (04/16-06/17)	NTPC Amount Rs. 54.kh Lacs
6.	Downstream Impacts of Water Withdrawal by TTPS from Brahmani River	Pradeep Kumar (PI) C. K. Jain M. K. Sharma	6 Months (02/18-07/18)	NTPC Amount: 20 Lakh.

***Note**: The study on Environmental Assessment of Village Ponds in Uttarakhand and Western UP has been dropped from EHD and merged with RMOD with Dr. Rajesh Singh, Sc. 'C' as one of the members of the study group*

GROUND WATER HYDROLOGY DIVISION
Work Programme 2018-19

S. No.	Project	Project Team	Duration & Status	Funding Source
1. NIH/GWD/NIH/15-19	Peya Jal Suraksha - Development of Six Pilot Riverbank Filtration Demonstrating Schemes in Different Hydrogeological Settings for Sustainable Drinking Water Supply.	N.C. Ghosh (Project Lead), B. Chakraborty, Y.R.S. Rao, Anupma Sharma, Surjeet Singh, Sumant Kumar, Gopal Krishan, Suman Gurjar, Anju Choudhury, Sanjay Mittal, Ram Chandar, Staff of SW Lab	21/2 year (11/15 – 4/18) **Status:** Continuing study. Extended upto 04/2019	MoWR, RD & GR (under Plan Fund)
2. NIH/GWD/BGS/16-20	Ground water fluctuation andconductivity monitoring in Punjab- New evidence of groundwater dynamics in Punjab from high frequency groundwater level and salinity measurements	**From : NIH, Roorkee** Gopal Krishna, (PI), Surjeet Singh, C. P. Kumar, N.C Ghosh **From : BGS, UK** Dr. Dan Lapworth (PI) Prof. Alan MacDonald (project coordinator	03 Years (01/16-11/20)	BGS, UK
3.NIH/GWD/NMSHE/16-20	Study of river - aquifer interactions and ground water potential at selected sites in the upper Ganga basin up to Dabrani.	Surjeet Singh (PI), N.C. Ghosh, R. J. Thayyen, Manohar Arora, Gopal Krishan,	1 year (01/16 – 12/20)	DST (under NMSHE)
4. NIH/GWD/NIH/16-19	Grey Water to Blue Water – Natural Treatment Techniques for Trans-forming Wastewater into Sustainable Useable Water	N.C. Ghosh (Project Leader), Anupma Sharma, Surjeet Singh, Sumant Kumar, Suman Gurjar, Anju Chaudhury, Sanjay Mittal, Ram Chandar	3 years (11/16-10/19) (progress in hold)	NWM, MoWR, RD & GR
5.NIH/GWD/DST/18-20	Future Secular Changes and Remediation of Groundwater Arsenic in the Ganga River Basin-**FAR GANGA**	**NIH-Team:** N. C. Ghosh (Indian Lead) Surjeet Singh; Sumant Kumar; Gopal Krishan; Suman Gurjar **Other Indian partners:** IIT Rke; IIT Khg; & Mahavir Cancer Sansthan, Patna. **UK- Partners:** Prof. David Polya – UK lead; Univ. of Manchester; BGS; Salford University; Univ. of Birmingham.	**3 years** (01/18 – 12/20) .	DST-Newton Bhabha-NERC- India-UK Water Quality Research Programme.
6.NIH/GWD/DST/18-20	Impact of Rainwater Harvesting on Groundwater Quality in India with Specific reference to Fluoride and Micro-pollutants.	**NIH-Team:** Anupma Sharma (Indian Lead); Sumant Kumar; Gopal Krishan; Suman Gurjar and M. K. Sharma **Other Indian partners:**	**3 years** (01/18 – 12/20)	DST-Newton Bhabha-NERC- India-UK Water Quality Research Programme.

		IIT Ropar & IIT Jodhpur. **UK Partner:** Cranfield Univ. Alison Parker – UK Lead; Cranfield University Pablo Campo Moreno, School of Water, Energy and Environment; Cranfield University		
7. NIH/GWHD/PDS/18-21	Ganges Aquifer Management in the context of Monsoon Runoff conservation for sustainable River Ecosystem Services- A Pilot study	Surjeet Singh, (PI), N.C Ghosh, Sudhir Kumar, C. P Kumar, Suman Gujar, Gopal Krishan	04 Years (02/18-02/21)	NHP (under PDS)
8. NIH/GWHD/PDS/18-20	Assessment of impacts of groundwater salinity on regional groundwater resources, current and future situation in Mewat, Haryana – possible remedy and resilience building measures	**NIH, Roorkee, India** Gopal Krishan (PI), N. C. Ghosh, Surjeet Singh, C.P. Kumar. Haryana Irrigation Department Consultants IIT-Roorkee Brijesh Yadav (PI) Sehgal Foundation, Gurgaon Lalit Mohan Sharma	03 years (01/18 12/20)	NHP (under PDS)
9. NIH/GWHD/PDS/18-20	Hydro-geochemical Evolution and Arsenic Occurrence in Aquifer of Central Ganges Basin	Sumant Kumar (PI), N.C. Ghosh, Sudhir Kumar, Rajesh Singh, Gopal Krishan, Anju Chaudhary, Ram Chandar	03 years (01/18 12/20)	NHP (under PDS)
10.NIH/GWD/PDS/18-20	Integrated Management of Water Resources for Quantity and Quality in Upper Yamuna Basin upto Delhi.	NIH Team: Dr. Anupma Sharma (Lead)	05 years (02/18-01/23)	**NHP** Special Project under “Centre of Excellence”
11. NIH/GWD/NIH/18-19	Application for Conjunctive use management of Surface Water and Ground Water in Saryu Nahar Pariyojana, U.P.	Suman Gurjar (PI), Jyoti P. Patil (Co-PI), N.C. Ghosh, Sumant Kumar, Anupma Sharma, Surjeet Singh	1 year (04/18-03/19)	NIH

HYDROLOGICAL INVESTIGATIONS DIVISION
Work Programme 2018-19

SN.	Project Title	Study Team	Duration	Funding
INTERNAL STUDIES:				
1.	Radiocarbon dating of deeper groundwater of Indo-Gangetic Basin	M.S Rao (PI) Sudhir Kumar	3 years (04/16 – 03/19)	NIH
SPONSORED PROJECTS:				
1.	Understanding of hydrological processes in Upper Ganga basin by using isotopic techniques	SD Khobragade Sudhir Kumar SK Verma	5 Years (04/16-03/21)	DST (under NMSHE Project)
2.	Rejuvenation of Springs and Spring-fed Streams in Mid-Himalayan Basin using Spring Sanctuary concept	Sudhir Kumar SD Khobragade	3 Years (06/16 -05/19)	Project with GBPIHED
3.	Dating very old ground waters of deeper aquifers in Ganga Plains, India	MS Rao Sudhir Kumar CK Jain	3 Years (06/16 -05/19)	IAEA under CRP
4.	Integrated Study on groundwater dynamics in the coastal aquifers of West Bengal for sustainable groundwater management	MS Rao Sudhir Kumar	3 ½ year (1/18-6/21)	NHP (under PDS)
5.	Chemical & Isotopic Characterization of Deep Aquifer Groundwater of Middle Ganga Basin	Sudhir Kumar MS Rao	3 ½ year (1/18 – 6/21)	NHP (under PDS)
6.	Development of a comprehensive plan for conservation and sustainable management of Bhimtal and Naukuchiatal lakes, Uttarakhand	SD Khobragade Sudir Kumar	3 Years 18/1)– (20/12	NHP (under PDS)

SURFACE WATER HYDROLOGY DIVISION
Work Programme 2018-19

S.No. & Ref. Code	Title	Study Team	Duration	Funding
SPONSORED STUDIES (ongoing)				
1.NIH/SWHD/NIH/15-18	WaterRAIN-Him: Changes in water Resources and Adaptation options in Indian-Himalayan basins	Archana Sarkar Sanjay K Jain	Ongoing 3 years (1 Jan 2015 to 31 Mar. 2018) **Total Cost: 188000 SEK**	SMHI, Sweden
2.NIH/SWHD/NIH/14-18	Effect of Changing Global Tropospheric Temperature on Asia-Pacific Monsoon Circulation and Rainfall Fields across India	Ashwini Ranade	Ongoing 3.5 years (Oct. 2014 to May 2018) **Total Cost: 12.6 Lac**	DST-SERB
3.NIH/SWHD/NIH/16-20	Hydrological modeling in Alaknanda basin and assessment of climate change impact	A.K. Lohani Sanjay K. Jain Archana Sarkar V.S. Jeyakanthan L.N. Thakural	Ongoing 5 years (Jan. 2016 to Dec. 2020) **Total Cost: 42.296 Lac**	DST under NMSHE
INTERNAL STUDIES (ongoing)				
4.NIH/SWHD/NIH/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 Kumar Jain Shard Kumar Jain	Ongoing 4 years (April 2015 to March 2019	NIH
5.NIH/SWHD/NIH/16-18	Snow cover variability in the Upper Yamuna Basin	Naresh Kumar Manohar Arora Rakesh Kumar	Ongoing 2 years (April 2016 to June 2018)	NIH
6.NIH/SWHD/NIH/17-19	Development and regionalization of unit hydrograph for runoff modeling on Indian catchments	Sushil K. Singh	Ongoing 1 years (April 2017 to March 2019)	NIH
7.NIH/SWHD/NIH/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	Ongoing 4 years (April 2017 to March 2021)	NIH
8.NIH/SWHD/NIH/17-20	Development of regional methods for design flood estimation in Uttarakhand	J.P.Patra Rakesh Kumar Pankaj Mani Sanjay Kumar	Ongoing 3 years (April 2017 to March 2020)	NIH

WATER RESOURCES SYSTEMS DIVISION
Work Programme 2018-19

SN	Title	Study Team	Duration	Funding (Rs. in Lakhs)
		Ongoing Internal Studies		
1.	Catchment scale evaluation of cold-arid cryospheric system Hydrology, Ganglass catchment, Ladakh	Renoj J. Thayyen, S. P. Rai, Sanjay K. Jain Sudhir Kumar	3 years (04/14-09/18)	NIH
2.	Runoff modeling of Shyok River, Karakorum Range	Renoj J.Thayyen Sanjay K.Jain	3 years (12/14-09/18)	NIH
3.	Hydrological process and characterization of Lesser Himalayan Catchments	M. K. Nema Sharad K. Jain Sanjay K. Jain Renoj J.Thayyen P. K. Mishra P. K. Agarwal	5 years (12/14-12/19)	NIH+
		Ongoing Sponsored Studies		
1.	Mass and Energy balance of Phuche and Khardung glaciers, Ladakh range	R.J. Thayyen Farooq Azam P.G. Jose A.P. Dimri	3 years (03/16-02/19)	SERB (65.14)
2.	Development of a project website and hydrological database in Upper Ganga Basin **(Sub-project – 1)**	M. K. Goel M. Arora, A. K. Lohani D. S. Rathore D. Chalisgaonkar A. R. S. Kumar Surjeet Singh P. Mani, A. Sarkar M. K. Nema, P. K. Mishra	5 years (01/16-12/20)	DST (under NMSHE) (52.15)
3.	Real-time snow cover information system for Upper Ganga basin **(Sub-project – 2)**	D. S. Rathore D. Chalisgaonkar V. S. Jeyakanthan L. N. Thakural	5 years (01/16-12/20)	DST (under NMSHE) (48.83)
4.	Glacial Lakes & Glacial Lake Outburst Flood (GLOF) in Western Himalayan Region **(Sub-project – 3)**	Sanjay K. Jain A. K. Lohani Sudhir Kumar P. Thakur (IIRS)	5 years (01/16-12/20)	DST (under NMSHE) (36.79)
5.	Assessment of downstream impact of Gangotri glacier system at Dabrani and future runoff variations under climate change scenarios **(Sub-project – 4)**	Renoj J.Thayyen Sanjay K. Jain Sharad K. Jain S. P. Rai P. K. Mishra M. Arora AP Dimri (JNU)	5 years (01/16-12/20)	DST (under NMSHE) 51.43 (NIH) + 28.29 (JNU)
6.	Observation and modelling of various hydrological processes in a small watershed in Upper Ganga basin **(Sub-project – 5)**	Sharad K. Jain Renoj J.Thayyen Sanjay K. Jain S. P. Rai Surjeet Sing M. K. Nema P. K. Mishra	5 years (01/16-12/20)	DST (under NMSHE) (54.07)

		P. K. Agarwal AP Dimri (JNU)		
7.	Water Census and Hotspot analysis in selected villages in Upper Ganga basin **(Sub-project – 11)**	P. K. Mishra M. K. Nema R. J. Thayyen P. K. Sachan	5 years (01/16-12/20)	DST (under NMSHE) (90.99)
8.	Dynamics of Himalayan Ecosystem and its impact under changing climate scenario-Western Himalaya	Renoj J.Thayyen P. K. Mishra	3 years (03/17-03/19)	NMHS-MoEF (58.76 lakh)
9.	Measurements and Modeling of Evapotranspiration and other Hydrological Processes in Lesser Himalayas	M K Nema Renoj Thayyen Sharad K. Jain Sanjay K. Jain P. K. Mishra AP Dimri (JNU)	3 years (2016-19)	MOES (Rs. 98 Lakh)
10.	Sustaining Himalayan Water Resources in a Changing Climate (SusHi-Wat)	Sanjay K. Jain (PI) Sharad K. Jain CSP Ojha (PI, IITR)	3 years (2016-2019)	MOES-NERC, Newton-Bhabha project (11.59 Lakh)
11.	Design and development of generic Decision Support System-Hydrology platform for Neeranchal Project	D. S. Rathore Deepa Chalisgaonkar Jyoti Patil	2 years (04/17-03/19)	DoLR (NNWP)
New Sponsored Studies				
1.	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)
2.	Seasonal Characterization of Gangotri Glacier melt runoff and simulation of streamflow variation under different climate scenarios	M. Arora Sanjay K. Jain	3 years 2018-2021	NIH/ DST
3.	Water availability analysis of Subarnarekha basin	M. K. Goel D. S. Rathore P. K. Singh P. K. Mishra	1 year 10/17-09/18	MOWR, RD & GR (10.45)

RESEARCH MANAGEMENT AND OUTREACH DIVISION (RMOD)

Work Programme 2018-19

SN	Title of Project/Study	Study Team	Duration	Funding
1	Study on effect of climate change on sediment yield to Pong reservoir	A R Senthil kumar (PI) J V Tyagi, S D Khobragade	Apr 2015-Sep 2018	NIH
2	Effect of climate change on evaporation at point scale	Digamber Singh (PI) A R Senthil Kumar, Manohar Arora	Jun 2014-Jun 2018	NIH
3	Bathymetric survey and water quality monitoring of selected ponds in Bundelkhand region for development of water management plan	Digamber Singh (PI) Omkar Singh, Subhash Kichlu, N R Allaka	Apr 2018-Mar 2020	NIH
4	Conservation of ponds in Ibrahimpur- Masahi Village and performance evaluation of natural treatment system	**NIH**: Omkar Singh (PI) V C Goyal, Digamber Singh, Subhash Kichlu, NR Allaka **IITR**: Himanshu Joshi **CEH**: Laurence Carvalho, Mike Clarke	Apr 2018-Mar 2020	NIH, CEH (UK) & IITR
Sponsored Projects				
1	Vulnerability assessment of identified watersheds in Neeranchal Project States	Jyoti P Patil (PI) + RCs	Jul 2017-Jun 2019	DoLR (under NNWP)
2	Hydrological modelling in Bhagirathi basin up to Tehri dam and assessment of climate change impact	A R Senthil kumar (PI) J. V. Tyagi, M. K. Goel S. D. Khobragade P. C. Nayak, Manohar Arora	Mar 2016-Mar 2021	DST (under NMSHE)
3	Rejuvenation of village ponds for identified villages in Muzaffarnagar and Meerut districts	V C Goyal (PI) Omkar Singh, Digamber Singh, Rajesh Singh, Subhash Kichlu, Rakesh Goel	Apr 2017-Mar 2020	MoWR, RD & GR
4	Development of water allocation plan for a Neeranchal watershed in Chhattisgarh	A R Senthil kumar (PI) T R Nayak, Jyoti P Patil Rajesh Agarwal	Apr 2018-Mar 2020	DoLR (under NNWP)
5	Development of Innovation centre for EcoPrudent Wastewater Solutions	V C Goyal (PI), Jyoti P Patil, Amrendra Bhushan + from NIT Jaipur, IIT Bombay and IRMA Anand	5 Years	DST

REGIONAL CENTRE, BELGAUM
Work Programme 2018-19

SN	Title of Project/Study	Study Team	Duration	Funding
INTERNAL STUDIES				
1	Assessment of Water Resources in Ungauged Catchments of West Flowing Rivers of Karnataka	CMT(PI) & Sc. HRRC	3 years (4/17-3/20)	NIH
2	Climate Change Impact assessment for Jayakwadi Reservoir	BV (PI), and officers from WRD, Govt. Maharashtra)	3 years (01/18-3/21)	NIH
3	Analysis of Spatio-temporal Characteristics of Sediment Carrying Capacity of Rivers of Karnataka State	M K J (PI)	2 Years (4/2018- 3/'20)	NIH
SPONOSRED PROJECTS				
4	Clean and safe drinking water supply to rural community using river bank filtration techniques in hard rock regions of Krishna basin, Karnataka, India.	BKP (PI) & SK	Apr 2016 – Mar 2019	DST
5	Studies on Occurrence, Distribution and Sustainability of Natural Springs for Rural Water Supply in parts of Western Ghats, India	BKP (PI) & Sc. HRRC,	3 years (4/17-3/20)	NHP
6	Hydrological evaluation of existing water conservation/ harvesting structures in selected watersheds of Amravathi and Ahmed Nagar districts, Maharashtra state	CMT (PI)	1 year (10/17-10/18)	DoLR (under NNWP)
7	Water Balance Studies in selected Watersheds of Nalgonda and Mehaboob Nagar Districts of Telangana	M K J (PI)	1 year (10/17-10/18)	DoLR (under NNWP)
8	Impact of Land use/Land cover Changes on Ground water – A Case Study (*submitted for sponsorship from MoES, and is approve in principal and sanction letter awaited*)	BKP & BV	3 years (April 16-March 19)	MoES
CONSULTANCY				
9	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	Karnataka Power Corporation Limited, Govt. of Karnataka

REGIONAL CENTRE, JAMMU
Work Programme 2018-19

No.	Study	Team	Duration	Funding	Status
Internal Studies					
1.	Hydrological Investigation of Natural Water Springs of Baan Ganga watershed in Jammu & Kashmir State	SSRawat P Kumar SP Rai RV Kale*	02 years 11 months (May 2015 to Mar 2018)	NIH	Ongoing/ Extension requested for 06months
2.	Performance evaluation of 2D-VPMM and 2D-explicit schemes for two-dimensional overland flow simulation.	RV Kale MK Goel M. Perumal	12 months (Apr 2017 to Mar 2018)	NIH	Likely to complete by April 2018
3	Hydrologic and hydraulic modeling for floodplain inundation mapping under future climate change scenarios: A case study of Tawi River, India.	RV Kale MK Goel PG Jose SSRawat R Sharma	03 years (Apr 2018 to Mar 2021)	NIH	New proposal
4.	Estimation and Assessment of Hydrological Characteristic of a Western Himalayan river	D Khurana MK Goel PG Jose SSRawat RV Kale	12 months (Apr 2018 to Mar 2019)	NIH	New proposal
5.	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"	SSRawat PG Jose SP Rai RV Kale	04 years (Apr 2017 to Mar 2021)	NHP (69.00 Lakh)	Ongoing
6.	Integrated Studies of Himalayan Cryosphere using Space Based Inputs (ISHC)	PG Jose RJ Thayyen	02 years Sept 2017 to Sept 2019	SAC/ISRO	Ongoing
Consultancy Projects					
1.	Establishment of Silt Observation Post (SOP) in the Baglihar HEP catchment	P Kumar PG Jose SS Rawat	06 months (Mar 2016 to Oct 2016)	Dept. of Soil & Water Conservation, Govt. of Jammu & Kashmir	Ongoing/ Extension upto June 2018

REGIONAL CENTRE, BHOPAL
Work Programme 2018-19

S.No.	Name of the project	Team	Duration	Funding
Sponsored Projects				
1.	Modeling of Tawa Reservoir Catchment and Development of Tawa Reservoir Operation Policy under Climate Change	Shashi P.Indwar (PI) T. Thomas T.R. Nayak R.V. Galkate R.K. Jaiswal N.C. Ghosh Sumat Kumar	3 Years Started in Sept. 2017	PDS (under NHP)
2.	Evaluation of impact of Rabi irrigation in Ganga River sub-basin of Madhya Pradesh	R.V. Galkate (PI) R.K. Jaiswal T.R. Nayak	3 years Started in Nov. 2017	PDS (under NHP)

		T.Thomas Shashi P. Indwar		
3.	Impacts of Upcoming Irrigation Projects and Climate Change on the Droughts and Desertification Scenario for Chambal Basin in Western Madhya Pradesh	T.Thomas (PI) R.V. Galkate R.K. Jaiswal Shashi P.Indwar P.C. Nayak Surjeet Singh B.Venkatesh	4 years Started in 12/2017	PDS (under NHP)
4.	Modelling of Narmada using GWAVA. (International Collaborative Project with CEH Wallingford, UK)	Sanjay Jain (PI) T.Thomas P K Mishra Manish Nema Sharad Jain	2 years Started in 04/2015	World Bank
5.	Revival of Village Ponds through Scientific Interventions in Sagar District	T.Thomas (PI) S.Goyal Vivek Bhatt Jyoti Patil	2 years Started in 09/2017	DST
6.	Development of water allocation plan of a Neeranchal watershed in Chhattisgarh	A.R. Senthil T.R. Nayak Jyoti Patil Rajesh Agrawal	2 years (04/2018—3/2010)	DoLR (under NNWP)
7.	Hydrological evaluation of existing water conservation/ harvesting structures of Jashpur and Kanker districts of Chattisgarh	T.R. Nayak (PI) R.V. Galkate T. Thomas R.K. Jaiswal	2 years (04/18-03/20)	DoLR (under NNWP)
8.	Hydrological evaluation of existing water conservation/ harvesting structures of Dewas and Jabalpur districts of Madhya Pradesh	R.V. Galkate (PI) T.R. Nayak (PI) R.K. Jaiswal T.Thomas	2 years (04/18-03/20)	DoLR (under NNWP)
9.	Hydrological evaluation of existing water conservation/ harvesting structures of Kuchch and Surendra Nagar districts of Gujarat	T.Thomas (PI) R.K. Jaiswal R.V. Galkate T.R. Nayak	2 years (04/18-03/20)	DoLR (under NNWP)
10.	Hydrological evaluation of existing water conservation/ harvesting structures of Jodhpur and Udaipur districts of Rajasthan	R.K. Jaiswal (PI) T.R. Nayak T.Thomas (R.V. Galkate	2 years (04/18-03/20)	DoLR (under NNWP)

REGIONAL CENTRE, KAKINADA
Work Programme 2018-19

S.N.	Title of the Project	Team	Duration (Start date and End date)	Funding
I.	**Internal Studies**			
1	Sedimentation Study of Hirakud Reservoir, Odisha using Optic and Microwave Remote Sensing Technology	V.S. Jeyakanthan(PI) J.V. Tyagi Y.R. Satyaji Rao S.V. Vijaya Kumar R. Venkata Ramana P.C. Nayak	July 2017-March 2020	NHP (under PDS) (Rs.51.19 lakhs) (SP-28/2017-18/PDS-3)
2	Groundwater salinity source identification in Godavari delta, Andhra Pradesh	Y R Satyaji Rao(PI) T Vijay JV Tyagi S V Vijaya Kumar V S Jeyakanthan P C Nayak R V Ramana	Dec.,2017-March 2020	NHP (under PDS) (Rs 61.09 lakhs) (SP-28/2017-2018/PDS-13)
3	Forecasting of Flash flood and Management of East Flowing Rivers of India's sub Zone 4 (A)	R. V. Ramana (PI) Y.R. Satyaji Rao V.S. Jeyakanthan S.V. Vijaya Kumar P.C. Nayak T.Vijaya	Dec.,2017-March 2020	NIH
4	Hydrological Evaluation and Modeling for Water Resources Management in Baitarani basin in Odisha State	Dr. P C Nayak (PI) J.V. Tyagi Y.R. Satyaji Rao S.V. Vijaya Kumar R. Venkata Ramana P.C. Nayak	2018-2023	NHP (under PDS) Total Cost of Project: Rs 2,43,98,352.00
II.	**Sponsored Projects (Ongoing)**			
1.	Hydrological evaluation of existing water conservation/ harvesting structures in identified IWMP watersheds in Chitturu and Ananthapur district (AP)	Y. R. Satyaji Rao R. Venkata Ramana V.S.Jeyakanthan	April 2017-March 2019	DoLR (under NNWP)
2	Hydrological evaluation of existing water conservation/ harvesting structures in identified IWMP watersheds in Pulbani and Khandamal district (Odisha)	Y. R. Satyaji Rao V.S.Jeyakanthan R. Venkata Ramana	April 2017-March 2019	DoLR (under NNWP)
3	River bank Filtration (RBF) studies in coastal alluvium of Andhra Pradesh	Y R Satyaji Rao (Co-PI) T Vijay	April 2016 - March 2019	Under Peya Jal Suraksha Project

CFMS, GUWAHATI
Work Programme 2018-19

S.N.	Title of the Project	Team	Duration	Funding
Internal Studies				
1.NIH/CFMS-G/17-19	Estimation of Runoff for Kulsi River Basin using NRCS Curve Number and Geographic Information System	S. K. Sharma, GulshanTirkey G. Arun	Ongoing, 1 year (04/17 to 03/19)	NIH
2.NIH/CFMS-G/17-19	Evaluation of Ground Water Quality in Shillong – the Capital City of Meghalaya	C. K. Jain M. B. Ritshong S. K. Sharma Babita Sharma	Ongoing, (04/17 to 03/19)	NIH
3.NIH/CFMS-G/17-19	Morphometric Analysis of Kulsi Basin using different Digital Elevation Models (DEMs)	GulshanTirkey S. K. Sharma	Ongoing, (04/17 to 03/19)	NIH
4.NIH/CFMS-G/18-21	Flood Inundation Modelling of Beki River Basin of Assam	S. K. Sharma Rakesh Kumar Pankaj Mani J. P. Patra G. Arun	3years (04/18 to 03/21)	NIH
5.NIH/CFMS-G/18-21	Development of regional methods for design flood estimation for North Brahmaputra Subzone 2 (a)	S. K. Sharma Rakesh Kumar Pankaj Mani J. P. Patra G. Arun	3 years (04/18 to 03/21)	NIH
6.NIH/CFMS-G/18-21	Linear hydrological routing using Satellite precipitation datasets for flood forecasting in parts of Brahmaputra Basin	GulshanTirkey S. K. Sharma Pankaj Mani G. Arun	3 years (04/18 to 03/21)	NIH

CFMS, PATNA
Work Programme 2018-19

S.N.	Title of the Project	Team	Duration	Funding
I.	**Internal Studies**			
1.	Demonstration scheme on Riverbank Filtration in Gangetic plain of Bihar	B. Chakravorty (PI) N. G. Pandey	3 years (02/16-03/19)	NIH
2.	Development of Relationships between Reference Evapotranspiration (ETo) of Penman-Monteith and other Climatological methods	S.R. Kumar (PI)	3 years (04/16-03/19)	NIH
3.	River shifting analysis and flow modelling study of Ganga river from Rishikesh to Anupshahar	Pankaj Mani (PI) Rakesh Kumar, J. P. Patra	3 years (04/16-03/19)	NIH
II.	**Sponsored Projects**			
1.	Water balance estimation in identified watersheds of Ranchi and Dhanbad districts of Jharkhand	B. Chakravorty (PI) N. G. Pandey	2 Years (04/18-03/20)	DoLR (under NNWP)