

**AGENDA AND AGENDA NOTES
74th MEETING OF THE
TECHNICAL ADVISORY COMMITTEE (TAC)
OF NIH**

**15th December 2020
AT 1100 Hrs
NIH, Roorkee**



**NATIONAL INSTITUTE OF HYDROLOGY
ROORKEE-247667**

AGENDA AND AGENDA NOTES FOR THE 74th MEETING OF THE TAC OF NIH

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ITEM # 74.1**Opening Remarks by the Chairman****ITEM # 74.2****Confirmation of the minutes of 73rd meeting of the TAC**

The 73rd meeting of the TAC was held at Roorkee on Dec. 17, 2019. The minutes of the meeting were circulated to all the members and invitees vide email dated Jan.13, 2020. A copy of the minutes of the 73rd meeting of TAC is given in **Appendix-74.2.1[Page # 1 (Vol.-II)]**. Since no comments were received from the members on the circulated minutes, the minutes may please be confirmed.

ITEM # 74.3:**Action taken on the decisions/ recommendations in the previous meeting**

Under Item#73.3 of the minutes of previous meeting, Shri Rajeev Baboota from NHPC made some queries and offered suggestions. The ATR is as follows:

S N	Query/Suggestion	Action Taken
1	A study for Teesta basin, i.e. ‘Snow and glacier contribution and impact of climate change in Teesta basin, Eastern Himalaya’ is under progress in NIH. Shri Baboota desired that NHPC may be associated as one of the partners in the study. He also said that the data available with NHPC can be shared to carry out this study.	The study ‘Snow and glacier contribution and impact of climate change in Teesta basin, Eastern Himalaya’ has been sanctioned to NIH by National Mission on Himalayan Studies (NMHS). A letter was sent to NMHS for inclusion of NHPC as partner in the study. Approval from NMHS was obtained for association of NHPC without any financial liability. The data available with NHPC was shared with NIH for this study.
	Shri Baboota stated that they are facing difficulties in discharge measurement in Himalayan basins by use of AWLR. There is no foolproof method for the measurement of velocity in Himalayana region. He requested that a robust method can be suggested for measurement of velocity in such conditions. Director, NIH informed that one such study is proposed by NIH and IITR under NHP.	For some reasons, the said study could not be taken up by NIH.
	Shri Baboota wanted to know about any study on the water availability under climate change in Himalayan basins because changes in water availability will affect power generation. NIH has already carried out one such study for Chenab basin. Similar type of studies can be carried out for other basins.	A study ‘Snow and glacier contribution and impact of climate change in Teesta basin, Eastern Himalaya’ is already under progress. A new study “Impacts of glacier and climate change on runoff for selected basins of Himalayan region” has been undertaken as per the work program of 2020-2021. In this study, runoff and water availability study for four Himalayan Basins Viz. Baspa, Parbati, Lachung and Subansiri.

ITEM # 74.4: Status of the work programme for the year 2019-20

List of Completed studies during 2019-20:

S.No.	Title of the Study	PI	Division	Internal/ Sponsored
1.	Development of Habitat Suitability Curves for the Aquatic Species of Western Himalayan Streams and Assessment of Environmental Flows	Dr. Pradeep Kumar	EHD	Internal
2.	Improving our understanding of aquifer systems of Sunderban	Dr Gopal Krishan	GWHD	Sponsored
3.	Peya Jal Suraksha - Development of Six Pilot Riverbank Filtration Demonstrating Schemes in Different Hydrogeological Settings for Sustainable Drinking Water Supply	Dr. Surjeet Singh	GWHD	Sponsored
4.	Environmental Flow Assessment for Yamuna River from Hathnikund Barrage to Okhla Barrage	Dr. Anupma Sharma	GWHD	Sponsored
5.	Rejuvenation of Springs and Spring-fed Streams in Mid-Himalayan Basin using Spring Sanctuary concept	Dr. Sudhir Kumar	HID	Sponsored
6.	Development of regional methods for design flood estimation in Uttarakhand	Dr.J.P. Patra	SWHD	Internal
7.	Development of window based software for Flood Estimation	Smt. Deepa Chalisgaonkar	WRSD	Internal
8.	NIH_Basin – A WINDOWS Based Model for Water Resources Assessment in a River Basin	Dr. MK Goel	WRSD	Internal
9.	Catchment scale evaluation of cold-arid cryospheric system Hydrology, Ganglass catchment, Ladakh	Dr. Renoj J. Thayyen	WRSD	Internal
10.	Hydrological Processes and Characterization of Lesser Himalayan Catchments	Dr. M K Nema	WRSD	Internal
11.	Vulnerability assessment of identified watersheds in Chhattisgarh	Dr. Jyoti P Patil	RMOD	Sponsored
12.	Basin Futures: Case study of Maner River Basin, report submitted to CSIRO, Australia	Dr. Jyoti P Patil	RMOD	Sponsored
13.	Study on effect of climate change on sediment yield to Pong reservoir	Dr.AR Senthilkumar	RMOD	Internal
14.	Action research on IWRM plan for Water security in identified villages of Western U.P. (Rejuvenation of identified village ponds in Muzaffarnagar and Meerut districts)	Dr. VC Goyal	RMOD	Sponsored
15.	Revival of village ponds through scientific Interventions in Sagar District	Dr. T Thomas	RC, Bhopal	Sponsored
16.	“River Bank Filtration (RBF) studies in coastal alluvium of Andhra Pradesh”, under Peya Jal Suraksha Project	Dr. Y R Satyaji Rao	RC, Kakinada	Sponsored
17.	Hydrological Investigation of Natural Water Springs of Baanganga watershed in Jammu & Kashmir State	Dr. S S Rawat	RC, Jammu	Internal
18.	Integrated Study of Himalayan Cryosphere using Space Based Inputs	Dr. P G Jose	RC, Jammu	Sponsored

ITEM # 74.5: Report of proceedings of the Working Group and RCC Meetings

The 50th meeting of the Working Group of NIH was held during 20-21 August 2020 in VC mode. The Working Group considered the status of the work programme for the year 2020-21 under two categories: (i) internally funded projects, and (ii) sponsored/consultancy projects. The approved minutes of the 50th meeting of the NIH Working Group are given in **Appendix 74.5.1 [Page # 355 (Vol.-II)]**.

General comments/suggestions by the members during the 50th meeting of WG are as follows:

- Suggested use of newly developed software to verify results of studies earlier conducted by NIH.
- NIH scientists should think beyond RCPs
- For Henva experimental station, suggested extensive characterization using hydromet, chemical and isotopic studies
- NIH should take up urban flooding studies
- Create databank at NIH, and provide a link for data availability

Comments/suggestions on specific studies are incorporated in the Work Program tables.

RCC meetings

DRC, Kakinada -	29th RCC – 03 Sept., 2020
CFMS, Patna–	19th RCC – 09 Sept., 2020
CIHRC, Bhopal-	18th RCC – 02 Sept., 2020
HRRC, Belagavi-	30th RCC – 26 Aug., 2020
WHRC, Jammu -	24th RCC – 25 Aug., 2020
CFMS, Guwahati –	15th RCC – 01 Sept., 2020

The TAC may please note the proceedings of the meetings of the Working Group and RCC.

ITEM # 74.6: Work Programme for the year 2020-21

The approved Work Programme of the Divisions at the Headquarters and RC/CFMS of the Institute for the year 2020-21 is given in the tables below, and details are provided in **Appendix 74.6.1 [Page # 23 (Vol.-II)]**:

1. Environmental Hydrology Division
2. Ground Water Hydrology Division
3. Hydrological Investigation Division
4. Surface Water Hydrology Division
5. Water Resources Systems Division
6. Research Management & Outreach Division
7. Regional Centre, Belagavi
8. Regional Centre, Jammu
9. Regional Centre, Bhopal
10. Regional Centre, Kakinada
11. Centre for Flood Management Studies, Guwahati
12. Centre for Flood Management Studies, Patna

ENVIRONMENTAL HYDROLOGY DIVISION

RECOMMENDED WORK PROGRAMME FOR THE YEAR 2020-21

SN	Study	Study Team	Duration/Status
Sponsored Projects (Ongoing)			
1.	Environmental Assessment of Aquatic Ecosystem of Upper Ganga Basin	M. K. Sharma(PI) Manohar Arora Pradeep Kumar Rajesh Singh D. S. Malik (GKU)	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 Partner: WRD, Raipur, CGWB, Raipur	3 Years (09/17-08/20) Sponsored by: NHP-PDS Project Cost: Rs. 25.4 Lakh Status: In-progress <i>Request Extension 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 Partner: Irrigation Department, Punjab	3 Years (09/17-08/20) Sponsored by: NHP-PDS Project Cost: Rs. 65.6 Lakh Status: In-progress <i>Request Extension 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 Partner: CGWB (Delhi unit)	3 Years (11/19 – 10/22) Project cost: Rs. 76.10 Lakh Sponsored by: NHP-PDS Status: In-progress
Internal Study (Ongoing)			
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
Internal Study (New)			
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	3 Years (07/20-06/23) Project cost: Rs. 20.24 Lakh Sponsored by: Internal Status: New Project

		Rajesh Singh	
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

RECOMMENDED WORK PROGRAM FOR THE YEAR 2020-21

S. No.	Project	Project Team	Duration & Status	Funding Source
Internal Studies				
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) <i>Status: New Study</i>	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
Sponsored Projects				
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, IITK, 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
Consultancy Projects				
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

RECOMMENDED WORK PROGRAMME FOR THE YEAR 2020-2021

S. N.	Project Title	Study Team	Duration	Status
<u>INTERNAL STUDIES:</u>				
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, (UUHF, 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>
<u>SPONSORED PROJECTS:</u>				
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) Ext. 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

S. N.	Project Title	Study Team	Duration	Status
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 change 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

RECOMMENDED WORK PROGRAM FOR THE YEAR 2020-21

ONGOING STUDIES (SPONSORED)			
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)
ONGOING STUDIES (INTERNAL)			
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/18-20	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 up to 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)

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

RECOMMENDED WORK PROGRAMME FOR THE YEAR 2020-2021

SN	Title	Study Team	Duration	Funding (Rs. Lakh)
Ongoing Internal Studies				
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)	

Ongoing Sponsored Studies				
1.	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; 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 (Sub-project – 2)	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 (Sub-project – 3)	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 variations under climate change scenarios (Sub-project – 4)	Renoj J. Thayyen; Sanjay K. Jain; Sharad K. Jain (Retd.) P. K. Mishra; M. Arora; AP Dimri (JNU)	5 years (01/16-12/20)	DST 86.1 (NIH) + 73.2 (JNU)
5.	Observation and modelling of various hydrological processes in a small watershed in Upper Ganga basin (Sub-project – 5)	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 (Sub-project – 11)	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)

New Internal/ Sponsored Studies				
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)

RECOMMENDED WORK PROGRAM FOR THE YEAR 2020-21

SN	Title of Project/Study	Funding	Study Team	Duration	Status
Internal Study					
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
Sponsored Projects					
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', under aegis of INC-IHP (proposal approved by Director, NIH)	Nov. 2020	Virtual training	Youth and YPs associated with WR Assessment & Management	V C Goyal, Jyoti P Patil, Amrendra Bhushan, 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 Sambare, N R Alakka
4	Awareness program on Ecohydrology for Wetland Conservation	Feb./ Mar. 2021	NIH Roorkee	Research scholars, and PG students	Rohit Sambare, 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

RECOMMENDED WORK PROGRAM FOR THE YEAR 2020-21

SNo.	Title of the Study	Study Group	Duration	Status
Internal R & D Studies				
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 officers from WRD, Govt. Maharashtra)	3 years (05/18-9/21)	Ongoing
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
Sponsored Projects				
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

Consultancy Projects				
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)
Training Workshop				
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
 BV : B.Venkatesh, Scientist F
 CMT : Chandramohan T., Scientist D
 NV : N Varadarajan, PRA

SK : Sudhir Kumar, Scientist G
 BKP : Purandara, Scientist F
 MKJ : Mathew K. Jose, Scientist D
 CK : Chandra Kumar S., SRA

WESTERN HIMALAYAN REGIONAL CENTRE, JAMMU

RECOMMENDED WORK PROGRAM FOR THE YEAR 2020-21

S. No.	Title of Study	Team	Duration	Remarks
Internal Studies				
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	02 Years (Sept 2019 - Sept 2021)	Ongoing

S. No.	Title of Study	Team	Duration	Remarks
		P. G. Jose		
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
PDS under National Hydrology Project (NHP) at NIH				
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
Externally funded R & D Studies				
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

RECOMMENDED WORK PROGRAM FOR THE YEAR 2020-21

Sl. No	Name of the project	Duration	Status (Period)	PI
Ongoing Studies				
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
Proposed New Studies				
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

RECOMMENDED WORK PROGRAM FOR THE YEAR 2020-21

S. No	Title of the Project	Team	Duration (Start date and End date)	Funding
I. Internal R & D Studies				
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)
II. Sponsored Projects (Ongoing (7))				
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

RECOMMENDED WORK PROGRAM FOR THE YEAR 2020-21

Sl.No	Title	Study Group	Duration (Month/Year)	Remarks
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	GulshanTurkey, S. K. Sharma, P. Mani, G.Arun	3 years (4/18 to 3/21)	Internal

	Basin			
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. Tirkey 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 GulshanTirkey 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. Tirkey, S. K. Sharma, A. K. Lohani, G. Arun,	3 years (4/20-3/23)	Internal New Study

CENTRE FOR FLOOD MANAGEMENT STUDIES, PATNA

RECOMMENDED WORK PROGRAM FOR THE YEAR 2020-21

SI	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)

The list of research papers published by the scientists and scientific staff of the Institute during Dec. 2019 – Mar.2020 & Apr. – Sept. 2020 is given in **Appendix 74.4.2 [Page # 330 (Vol.-II)]**. The list of workshops/training courses/seminar/symposia organized during Dec. 2019 – Sept.2020 is given in **Appendix 74.4.3 [Page # 348 (Vol.-II)]**. The progress of laboratory work done during Dec. 2019 – Sept. 2020 is given in **Appendix 74.4.4 [Page # 351 (Vol.-II)]**.

S.No.	Item	Published/Accepted Dec.2019-Mar.2020	Published/Accepted Apr.-Sept.2020
1	International Journal	38	26
2	National Journal	10	8
3	International Conference/ Seminar	52	8
4	National Conference/ Seminar	50	1
5	Books/Chapters	18	4
	Total	168	47

S.No.	Item	Total
1.	Workshops/Training Courses organised	27

The TAC may please consider the progress and status of the Work Programme of the Divisions and RC/CFMS of NIH for the year 2020-21.

ITEM # 74.7: Major projects and activities of national importance:

National Hydrology Project (NHP)

National Institute of Hydrology (NIH) is participating in NHP as one of the central agencies. There are a total of 47 implementing agencies (IAs) including eight central agencies (MoWR, RD&GR; CWC, CGWB, NIH, CPCB, SoI, NRSC and CWPRS), 37 state-level agencies and two river basin organizations (RBO) under NHP. Keeping in view the NHP objectives and initiatives, NIH is involved in the following activities of NHP:

- Demand driven research through Purpose Driven Studies (PDS)
- Training and Capacity building
- Centre of Excellence for Hydrological modeling
- Decision Support System (DSS)

Purpose Driven Studies (PDS)

One of the main focuses of NHP is Research and Development (R & D) in the form of Purpose Driven Studies (PDSs). Considering the peculiarities and large variation in the nature of problems associated with water resources planning and development, the issues involved in research related to particular region and specific project, the NHP is sponsoring research proposals of applied nature along with basic and action research. The research activities of such nature are implemented through R & D Section of NHP which is located at NIH. PDSs are related to specific issues of water management problems identified within the area of operation of implementing agencies and of public concern. The main role of R&D Section is to coordinate these research activities and to review and monitor the progress of the PDSs. In the first R&D session, 26 project proposals were presented by IAs and these are in the process of approval/revision.

Training and Capacity Building

NIH has been assigned with the important task of planning and organizing the training programmes for capacity building of the IAs under NHP. The main objective of the training and capacity building activities is to create, enhance and develop capacity in IAs at desired level to plan, implement and operate water resources schemes. The NHP training section is involved in identifying the training needs and preparation of annual training programs in relevant areas in consultation with various implementing agencies. Four training courses have been organised in different areas of hydrology and water resources under NHP.

Centre of Excellence for Hydrologic Modelling (CEHM)

Developing a “Centre of Excellence for Hydrologic Modelling” and giving leadership to the Country in hydrologic modelling services is one of the four major tasks assigned to NIH under the NHP. We plan this centre to become knowledge repositories in hydrological processes understanding, advanced tools and techniques, advancement taking place from time-to time globally on hydrological research, tools and techniques to respond to the India’s hydrologic modelling services. The hydrologic modelling services strive to make India self reliance in water management tools and techniques to help decision making on movement, availability, fate and quantity and quality management of both surface and sub-surface water. Three studies on application of different models have been initiated in CEHM. A status report on the Hydrologic modelling has been prepared.

Decision Support System (DSS) Studies

Decision Support System (DSS) component is essential for up-gradation and maintenance of DSS software developed and implemented in the pilot basins of nine state agencies during HP-II project. New applications of DSS in other basins have been considered in association with states data centers and their planning and design departments. These activities would ensure the sustainability of DSS software in state implementing agencies and its utilization for planning various water resources activities.

National Mission for Sustaining the Himalayan Ecosystem (NMSHE)

The National Mission for Sustaining the Himalayan Ecosystem (NMSHE) is one of the eight missions under the National Action Plan on Climate Change (NAPCC).

NMSHE is a multi-pronged, cross-cutting mission across various sectors. It contributes to the sustainable development of the country by enhancing the understanding of climate change, its likely impacts and adaptation actions required for the Himalayas- a region on which a significant proportion of India’s population depends for sustenance.

NMSHE seeks to facilitate formulation of appropriate policy measures and time-bound action programmes to sustain ecological resilience and ensure the continued provisions of key ecosystem services in the Himalayas. NMSHE intends to evolve suitable management and policy measures for sustaining and safeguarding the Himalayan ecosystem along with developing capacities at the national level to continuously assess its health status.

Recognizing the importance of scientific and technological inputs required for sustaining the fragile Himalayan Ecosystem, the Ministry of Science and Technology has been given the nodal responsibility of coordinating this mission. However, the mission involves valuable cooperation of Indian Himalayan States, the Planning Commission and the Ministry of Environment, Forests and Climate Change to achieve its goals.

Innovation Centre for Eco-Prudent Wastewater Solutions (IC-EcoWS)

The project ‘Innovation Centre for Eco-Prudent Wastewater Solutions (IC-EcoWS)’ is funded by Department of Science & Technology (DST), Government of India. The National Institute of Hydrology (NIH) Roorkee is the leading institute for implementation of this project, in collaboration with the project partners from Indian Institute of Technology Bombay (IITB), Malaviya National Institute of Technology (MNIT), Jaipur and Institute of Rural Management Anand (IRMA), Ahmedabad.

The Centre is expected to provide a unique opportunity of exploring the vast potential of NTS in Indian conditions, and shall deliver the full spectrum of research, innovation, development of business model, capacity building, outreach and dissemination activities. The emerging concept of a Circular Economy in the field of wastewater treatment and reuse will also be explored at the Centre. It will also play a catalytic role to propagate and promote the NTS for a variety of applications in India, and help in promoting the concept of IWRM Planning in India.

ITEM # 74.8: Reporting Items:

LIST OF ONGOING CONSULTANCY PROJECTS IN NIH (As on 24.10.2020)

S. No.	Project Title	Project No.	Sponsoring Agency	Div/RC	Tenure	Principal Investigator
1.	Water availability study based on Hydrological investigation & rainfall runoff modelling of Upper Hindon Basin	CS-176/2019-19/GWH	Up Irrigation Saharanpur	GWHD	---	Dr Anupma Sharma
2.	Hydrological Studies of two operational Hydro projects in Himachal Pradesh	CS-177/2019-19/WRS	JSW HE ltd	WRSD	6 months after first payment	Dr Sanjay Jain, Sc G
3.	Assessment of Saline & Fresh water zones in Faridkot, Fazika and Muktsar districts of Malwa Region of Punjab	CS-178/2019-20/GWH	Department of Agriculture, Punjab	GWHD	6 months	Dr Gopal Krishna, Sc C
4.	Planning of Rainwater Harvesting work at IIT Indore	CS-179/2019-19/RC(BH)	CPWD, IIT Indore	RC (BH)	2 months	Dr Ravi Galkate, Sc E
5.	Water Availability Study at Hiraikund Barrage- Pre and Post Construction of 3 multipurpose projects in Upper Yamuna Basin	CS-180/2019-20/WRS	UJVNL Dehradun	WRSD	Six months	Dr M K Goel Sc G
6.	Vetting of Hydrology of Nawatha Barrage Major Lift Irrigation Project	CS-181/2019-19/RC(BH)	EE, WRD Burhanpur	RC (BH)	1 months	Dr Rahul Jaiswal, Sc D
7.	Flood routing in the reach between Rajghat and Matatila dam in Betwa River basin for the proposed Dhurwara dam project	CS-182/2019-20/WRS	IWRD Govt of UP	WRSD	Five months	Dr M K Goel Sc G
8.	Hydro-geological study of Goindwal Sahib Area of Tarn Taran Distt Punjab	CS-183/2019-20/GWH	GVK Power Ltd Tarn Taran Punjab	GWHD	Six months	Dr Surjeet Singh, Sc E
9.	Preparation of Report on Hydrology of Kalasanala and Bhanduranala Diversion Scheme for Drinking Water Supply in KKhanpur Taluka, Belgaum, Karnataka	CS-184/2019-20/RC-BE	EE, KNNL, Kalasa Project Div, Khanpur	HRRC Belgaum	6 months	Dr B Venkatesh, SC F
10.	Hydrogeological Study for Assessment of Impact of Mining on Bearma River and other water bodies in the study area and its mitigation plan at S.M.P.I. limestone mine area at village Kolkarhiya, Pawai Tehsil Panna Distt MP	Cs-185/2019-20/HID	M/s Springway Mining Pvt Ltd Damoh MP	HID	Four months	Dr Sudhir Kumar, Scientist G
11.	Vetting of Hydrology of Kanera Lift Irrigation Project	Cs-186/2019-20/RCBH	EE, WRD, Bhind	RCBH	Two Month	Dr Rahul Jaiswal, Sc D
12.	Hydro-geological studies in and around "Redi Iron Ore Mine" (Patni Mine) of M/S Minerals & Metals located at Village Redi, Taluka Vengurla, District Sindhudrug, Maharashtra	CS-187/2020-21/RC(Belagavi)	M/S Minerals & Metals (Patni Mines), Maharashtra	RC-Belagavi	Twelve(12) months	Dr. B.K. Purendra, Sc.-F

13.	Hydro-geological studies in and around "Redi Iron Ore Mine" (Block I) of M/S Gogte Minerals, located at Village Redi, Taluka Vengurla, District Sindhudrug, Maharashtra	CS-188/2020-21/RC(Belagavi)	M/S Gogte Minerals, 146, Tilakwadi, Belgaum-590006	RC-Belagavi	Twelve(12) months	Dr. B.K. Purendra, Sc.-F
14.	Dam Break Analysis of Bakreswar Dam	CS-189/2020-20/WRS	West Bengal Power Development Corporation Ltd. (Bakreswar Thermal Power Project)	WRS Div.	8 months (starting March, 2020)	Dr. Sanjay K. Jain, SC.-G & Head, SWHD
15.	Hydrological Review(Design Flood) study of 30 Priority Dams for DRIP-2 in Maharashtra	CS-190/2020-20/SWH	Dam Safety Organization Nashik, Maharashtra	SWH Div.	3 months (starting from March, 2020)	Dr. Rakesh Kumar, SC.-G & Head SWHD
16.	Estimation of economic losses in real terms per hectare basis due to forest fire in Uttarakhand and Madhya Pradesh	CS-191/2020-22/EHD	Indian Council of Forestry Research and Education Dehradun	EHD Div.	2 Years (starting from March, 2020)	Dr. J.V. Tyagi, SC. G
17.	Hydrogeological Study for Proposed Cement Plant & Mining Lease Area of Jaykaycem (Central) Ltd. In Panna District	CS-192/2020-20/RC(BH)	Jaykaycem(Central) Ltd., Kanpur	RC-Bhopal	6 months(Starting from March)	Dr.R.K. Jaiswal, Sc.-D
18.	Estimation of Revised Capacity and Sedimentation Using Bathymetric Survey of Tigra Dam, Gwalior (MP)	CS-193/2020-20/RC(BH)	Water Resources Department, Harsi Jal Sansthan Sambhag, Dabra (M.P.)	RC-Bhopal	6 months(Starting from March)	Dr.R.K. Jaiswal, Sc.-D
19.	Detection of the Leakage Sources and suggested Measures for Repairs, Renovation & Strengthening for Tigra Dam, Gwalior (MP)	CS-194/2020-20/RC(BH)	Water Resources Department, Harsi Jal Sansthan Sambhag, Dabra (M.P.)	RC-Bhopal	6 months(Starting from March)	Sh.R.V Galkate, Sc.-E
20.	Study of various Possible Scenarios for Understanding the Long-term effect of en-route canal irrigation for Mahandi- Godavari Link	CS-195/2020-21/WRS	National Water Development Agency, New Delhi	WRS		Dr.Manmohan Kr Goel, Sc. G
21.	Hydrological Study of Tanda Thermal Power Plant Stage –II (2x660MW)	CS-196/2020-21/HID	NTPC Ltd.,	HID	9 months	Dr Sudhir Kumar Sc G
22.	Hydrological Study at NTPC Kudgi	CS-197/2020-21/HID	NTPC Ltd.	HID	12 months	Dr Sudhir Kumar Sc G
23.	Identification of sources of seepage in the villages surrounding the Ash Dykes of Khargone STPP	CS-198/2020-20/HID	NTPC Ltd.	HID	3 months	Dr Sudhir Kumar Sc G

24.	Evaluation of Permeability of Soil under Coal Stockpile Yard at NTPC Kudgi (3x800MW)	CS-199/2020-20/HID	NTPC Ltd.	HID	1 month	Dr Sudhir Kumar Sc G
25.	Preparation of Emergency Action Plan (EAP) and flood inundation map for Rakasakoppa Dam	CS-200/2020-20/RC(Belagavi)	KUWS &D Borad, Belagavi	RC-Belagavi	06 Months	Dr B Venkatesh, SC F
26.	Preparation of Flood Management Plan (FMP) and Channel Depth calculation for Unkal Nala, Huballi	CS-201/2020-20/RC (Belagavi)	Managing Director, HDSCL, Hubballi	RC-Belagavi	06 Months	Dr B Venkatesh, SC F
27.	Review of Hydrogeology to assess Impact of NTPC Mouda on surface water and ground regime (especially around ash dyke (St-I & II) and propose specific measures	CS-202/2020-22/HID	NTPC Limited, SSC WR1, Surat	HID	24 Months	Dr Sudhir Kumar Sc G
28.	Area Drainage Study For Khavda Hybrid Renewable Power Project in Kutchh Region	CS-203/2020-20/EHD	Adani Green Energy Limited, Ahmedabad	EHD	04 Months	Dr. Rajendra P. Pandey Sc G
29.	Risk Assessment Study for Earthen Reservoir at Nachna & Township for Rajasthan Refinery cum Petrochemical of HPCL Rajasthan Refinery Limited (HRRL)	CS-204/2020-20/RC (Patna)	HPCL Rajasthan Refinery Limited (HRRL)	RC-Patna	05 Months	Dr. Pankaj Mani, Sc F
30.	Glacial lake outburst flood (GLOF) study of Maneri Dam	CS-205/2020-21/WRS	Executive Engineer (Civil) M.B.-I, Maneri, Uttarkashi - 249194	WRS	03 Months	Dr. Manohar Arora, Sc E

ITEM # 74.9: Any other item with permission of the Chair