तृतीय संस्करण जनवरी - मार्च, 2020

जल अनुसंधान

त्रैमासिक समाचार
केन्द्रीय जल और विद्युत अनुसंधान शाला, पुणे

CONTENTS

संदेश

केंद्रीय जल और विद्युत अनुसंधान शाला की त्रैमासिक गतिविधियों और उपलब्धियों का तृतीय अंक प्रस्तुत करते हुए मुझे बड़ी प्रसन्नता हो रही है। केंद्रीय जल और विद्युत अनुसंधान शाला में जनवरी से मार्च 2020 की तिमाही रिपोर्ट के दौरान विभिन्न भेंट / सेमिनार / कार्यशालाएं और बैठकें आयोजित की गई। केंद्रीय जल और विद्युत अनुसंधान शाला को सुबनसिरी लोवर जल विद्युत परियोजना उत्प्लव मार्ग के अनुकूलन और अन्य संरचनाओं के लिए जल विज्ञान प्रतिमान अध्ययन का काम 2002 से सौंपा गया है। NHPC में चल रहे निर्माण कार्य का निरीक्षण करने और बिजली घर टेल पूल के निर्माण के संबंध में सुझाव देने का अनुरोध किया है। अनुसंधान शाला के अधिकारियों ने बांध का दौरा किया और टेल पुल के लेआउट के संबंध में अभिकल्प और परियोजना इंजीनियरों के साथ विस्तृत चर्चा की। पुनातसंगछु-II जल विद्युत परियोजना, भूटान में 3 मार्च, 2016 को अनु प्रवाह सर्ज गैलरी में बड़े पैमाने पर शैलपात हुआ, जिसके परिणाम स्वरुप लगभग 155 मीटर लंबाई (मात्रा द्वारा 54%) अनु प्रवाह सर्ज गैलरी का भाग अप्सर्जित हुआ। स्थिति साइट और अभिन्यास के विशिष्ट विवरणों की स्थलाकृति को समझने के लिए, ड्राफ्ट ट्यूबों के संशोधित अभिन्यास, अनु प्रवाह सर्ज गैलरी की प्रणाली, टेलरेस सुरंग और प्रतिमान में सटीक सिमुलेशन में मदद करने के लिए परियोजना स्थल का दौरा प्रस्तावित था। परियोजना इंजीनियरों के साथ चर्चाओं और साइट का निरीक्षण उपयोगी रहा और भविष्य में या संशोधित टेलरेस प्रणाली के जलीय कामकाज की बेहतर समझ में मदद करेगा। अनुसंधान शाला के वैज्ञानिकों और कर्मचारियों के सदस्यों ने 18 फरवरी से 26 फरवरी 2020 को पोर्ट के सिलटेशन अध्ययन करने हेतु न्यू मंगलोर पोर्ट, कर्नाटक राज्य में फील्ड डाटा संग्रह कार्यक्रम में भाग लिया। बंदरगाह और आस पास के क्षेत्रों में चयनित स्थानों पर ज्वार तथा दो धाराओं के डाटा को एकत्र किया गया। बंदरगाह के उत्तर दक्षिण की ओर समुद्र तट सर्वेक्षण किए गए थे। बंदरगाह क्षेत्रों में चयनित स्थानों पर पानी के नमूने, साथ के नमूने एकत्र किए गए। केंद्रीय जल आयोग (सी डब्ल्यू सी) के तहत, जल शक्ति मंत्रालय ने परियोजना कार्यान्वयन कर्ता के रूप में (C M I S) कार्यान्वयन का कार्य दो साइट विजिट के लिए केंद्रीय जल और विद्युत अनुसंधान शाला को सौंपा। महाराष्ट्र के उत्तर में सतपति और गुजरात राज्य के दक्षिण में नानी दांती-मोतिदन्ति। यह प्रक्रिया तटीय स्थलों पर राष्ट्रीय डाटा बेस के निर्माण और अनुसंधान कार्यों में इस डेटा के आगे / उपयोग के साथ-साथ इन साइटों पर कटाव की समस्याओं के लिए इष्टतम समाधानों पर पहुंचने में सहायक होगी। पोर्ट ऑफ हल्दिया, भारत का चौथा सबसे बड़ा बंदरगाह है और हाल के दिनों में लगभग 43 मिलियन टन कार्गो का रिकार्ड संभाला। हल्दिया डॉक बेसिन में जाने के लिए और अधिक जहाजों को सक्षम करने के दृष्टिकोण के साथ, कोलकाता पोर्ट ट्रस्ट सक्रिय रूप से HIT जल प्रसार/डॉक बेसिन के मौजूदा लॉक गेट को हटाकर और रिवर बैंक को गणित मॉडल के माध्यम से IIT मद्रास द्वारा दी गई सिफारिश के आधार पर खोलने के लिए सक्रिय रुप से विचार कर रहा है। इस संबंध में हल्दिया डॉक का दौरा किया गया।

डॉ. (श्रीमती) व. वि. भोसेकर
निदेशक

Studies for Subansiri Lower Hydroelectric Project Arunachal Pradesh and site visit

A 2000 M.W. Subansiri Lower Hydroelectric Project is being constructed by NHPC in Arunachal Pradesh/ Assam. CWPRS has been entrusted the work of hydraulic model studies for optimisation of spillway and other appurtenant structures of the project since 2002. Based on the studies, more than 15 technical reports have been submitted and major modifications have been suggested in the design and layout of the dam spillway. The Physical and numerical hydraulic model studies for finalising the aerator system for the spillway and layout of tail pool are in progress. Recently, NHPC requested CWPRS team to visit the dam site to inspect the ongoing construction work and make suggestions regarding construction of powerhouse tail pool considering site constraints and results of model studies. In this regard, CWPRS team visited the dam site during 5th and 6th February 2020 and had detailed discussions with design and project engineers regarding finalising the layout of the tail-pool. The major objective of the visit was to understand the site constraints and conducting the model studies considering these constraints so that the project starts functioning within stipulated time period.

Visit to Punatsangchhu-II, H.E. Project, Bhutan

Punatsangchhu-II Hydroelectric Project (PHEP-II) is a run-of-the-river scheme located in Bhutan with installed generation capacity of 1020 (6x170) MW. A downstream surge gallery (DSSG) consisting of big underground cavern has been provided for smooth functioning of the system under various hydraulic transient conditions. A massive rock fall occurred in the DSSG on 3rd March, 2016 which has resulted in abandoning of about 155m length (54% by volume) of DSSG. As a consequence of abandoning large portion of DSSG, the draft tube tunnels were proposed to be realigned and additional surge galleries have been planned to be provided on both sides to compensate the lost volume of DSSG. Since the proposed layout of downstream surge system has become complex, the General Manager (Hydropower) WAPCOS Ltd, desired to conduct Hydraulic model studies for revised layout of draft tube tunnels, downstream surge gallery & Tailrace tunnel and its outfall for ascertaining hydraulic adequacy of tailrace system.

GLIMPSES OF SITE VISIT

Diversion tunnel to divert water

View of Downstream Surge Gallery

Meeting with Managing Director (PHPA) and WAPCOS Officials

Field data collection at New Mangalore Port, Karnataka

CWPRS scientists and staff members participated in field data collection program at New Mangalore Port, Karnataka as a part of siltation studies for the port. The field studies were conducted from February 18th to 26th 2020. During this period round the clock data of tide, currents were collected at selected locations inside the port and at adjacent areas. Beach surveys were conducted on the North and South side of the port. Water samples, bed samples were collected at selected locations in the port areas.

Installation of Pressure Tide Gauge

ADCP installed at - 10 m depth contour

Beach profile survey South of southern breakwater

"Field investigation and mathematical model studies for coastal processes, shoreline changes and associated sediment transport"

National Centre for Coastal Research (NCCR) has sanctioned the basic research project titled "Field investigation and mathematical model studies for coastal processes, shoreline changes and associated sediment transport along Karnataka coast". Under the project field observations for tide, current, bed samples of sand and suspended concentration in the sea water along with the cross-shore profile of the beach to be carried out. One total station and one sieve shaker have been purchased for this purpose. One Research Associate - 1 has also joined her duty. Survey work is to be taken up from the month of April 2020 onward in four locations in Karnataka.

Visit to Haldia Dock Complex and Hydraulic Model Centre, Kolkata

The port of Kolkata comprising Kolkata Dock System and Haldia Dock Complex has navigation problems in the long approach channels. Haldia Port (Latitude 22° 02´ N, Longitude 88° 06´ E) is grouped under the Nomenclature of Kolkata Dock System. It is 104 km downstream of Kolkata & 130 km upstream from Sandheads. The Haldia dock is located on the banks of the Hooghly River off the Bay of Bengal. The lock itself was capable of accommodating drafts up to 13.0 m. The design dredged level inside the dock is 9.5 m and an impounded level of 4.5 m was provided in order to accommodate the above draft requirements. The Port of Haldia is the fourth biggest port in India, and handled a record of about 43 million tons of cargo in the recent past.

With a view to enabling more vessels to get into Haldia Dock Basin, Kolkata Port Trust is actively considering for permanent opening of HDC water spread / Dock Basin by removing existing Lock Gate and adjoining River Bank based on the recommendation given by IIT Madras through Mathematical Model Studies. In this connection, before physical implementation of the said recommendation, KoPT intends to have considered opinion of CWPRS regarding its feasibility based on physical model studies at KoPT's Hydraulic Model Centre at Kolkata.

Since KoPT is already having a physical model set up of the River Hooghly and its Estuary, the aforesaid experiments will be conducted at KoPT's Hydraulic Model Centre at Kolkata. Necessary assistance like proper running of calibrated physical model for observations of current and tide data required for the prediction of Lock opening at HDC will be provided by CWPRS.

Brief note on 115th TAC of FBP

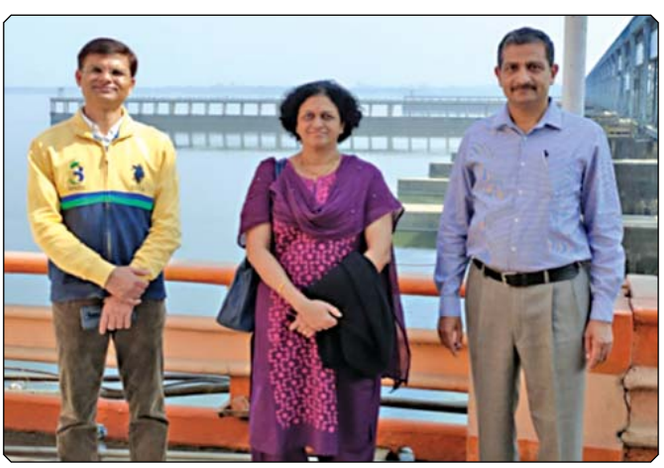
The Technical Advisory Committee meeting and site visit of Farakka Barrage Project (TAC-FBP) was held during 19th to 21st February, 2020 at Farakka, West Bengal. The various erosion prone sites of River Ganga and Farakka Feeder Canal were visited. The meeting of Canal Study Group (CSG), a subgroup of TAC-FBP was held on 20th February, 2020 and the TAC was held on 21st February 2020.

CWPRS was represented by Dr. (Mrs.) V. V. Bhosekar, Director and Dr. R. G. Patil, Scientist E. Dr. (Mrs.) V. V. Bhosekar presented to the TAC about the studies that CWPRS can take up regarding the safety assessment and monitoring of the main barrage spillway structure. Dr. R. G. Patil presented about the morphological behaviour of river downstream of the barrage with specific reference to the erosion prone left bank of River Ganga near Village Parlalpur. A write up in this regard was also submitted to the TAC of FBP. In addition to these issues CWPRS officers took active part in various discussions of the agenda items.

Shri Saibal Ghosh, GM, FBP explaining about the Farakka Barrage

Members of CSG during visit to the erosion prone left bank of Farakka Feeder Canal

Members of the TAC-FBP during visit to the erosion prone left bank of river Ganga near Parlalpur



Visit of members to the head works of Farakka Barrage

Site visit to Arrah-Chapra Road Bridge by CWPRS Officers

S/Shri Kuldeep Malik and N A Sonawane, Scientist-B carried out site inspection of newly constructed Arrah-Chapra road bridge, Bihar on 28.01.2020 and discussed with project authority regarding hydraulic model study data requirement for the same. The study is to be carried out on a physical model to decide requirement, location and alignment of guide bund on the right side of the bridge.

Peshwa Era Water Supply System - The Hydraulic Marvel

Pune, situated on the banks of the Mula and Mutha rivers, is central to the Deccan from both the geographic and political points of view. Strategically located on the trade route that connected the western coastal region and the plateau through a number of passes and ghats, Pune has enjoyed a prominent place on the economic and cultural map of the Deccan since ancient times. During the reign of the Peshwas in the 18th century, the city continued to grow and flourish on the Mutha's right bank. It provided an ideal location for Bajirao Ballal, popularly known as Peshwa Bajirao-I to shift base from Satara and develop Pune as the capital city of the Maratha Empire. Under Peshwa administration, due importance was given to city planning. Water management played a critical role in the development of Pune city. Regular supply of potable and non-potable water was the responsibility of the ruling administration, and was executed in a well engineered manner by the Peshwas. The artificially built underground channels carried water from its source to core parts of the city making it available in every neighbourhood before being dispensed into the river. Two stone masonry dams on Ambhil stream (odha) at different levels were constructed in Katraj around 6 to 8 km away South of the site. The dams accumulated rainwater runoff from the hill slopes and also had fresh water springs in its bed. A gradual drop of more than 100 m existed from the Katraj dam up to the Mutha River. The water percolated into the first pond allowing silt to settle down before flowing into the second pond. It was then carried into an arched masonry aqueduct locally known as Nal/Nahar. The aqueduct, an arched tunnel which was about 2 to 3 m below ground level measured around 80 cm in width and around 2 m in height allowing a person to walk comfortably across its entire length. The water was brought into Shaniwar Wada (the erstwhile Peshwa's residential palace), around 10 km to the North with excess water being carried to the Mutha River. This underground water supply system is considered an engineering marvel as it is totally gravity based system and sluices and channels were cut in such a way that minimal silt or impurities remained and at the same time there was headroom for maintenance to be carried out. Besides Katraj, there were three more aqueducts built by royal dignitaries from the Peshwa's palace. The Bombay Gazetteer 1985 says that the only Katraj aqueduct provided a daily supply of about 26 lakh litres and about 32 lakh liters including all! Not bad considering the city population of the Pune in 18th century. Figures 1 and 2 show the plan of the water supply system and network of aqueducts across old Pune city. Photo 1 shows a typical aqueduct.

Figure 1 : Plan showing the Peshwa water Supply system

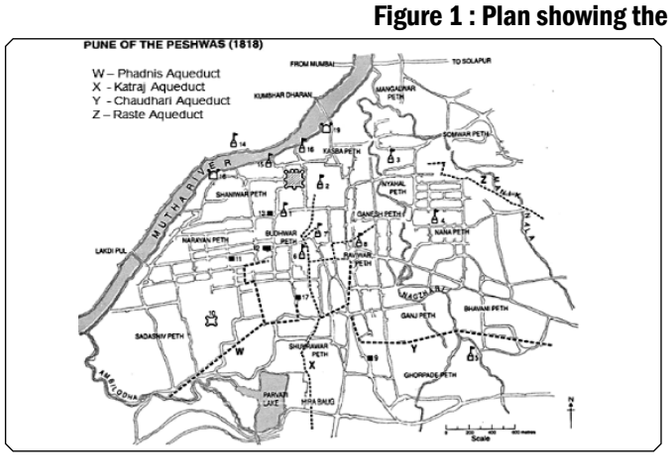


Figure 2 : Network of Aqueducts

Photo 1 : Details of an aqueduct

In 1880, the Pune municipality built a dam on River Mutha creating the Khadakwasla Lake. Katraj water was supplied to Pune's residents whenever the Khadakwasla canals were closed for repairs. In fact, right up to 1915, this water supply system was providing drinking water to old city areas. Interestingly, when the Panshet dam burst in 1961, these wells remained one of the very few sources of potable water! It gradually grew less in importance as Pune grew and Panshet and Varasgaon dams were built.

A 270-year-old Peshwa-era water supply line has been successfully revived by the Pune Municipal Corporation (PMC) recently, in a massive effort to rejuvenate dying gardens and Biodiversity Park atop Taljai Hill. Thus, the longevity and utility of the Katraj and other aqueducts showcase the ancient wisdom and shows that the people of those times were well versed with the topography of the land and had put their ideas to good use.

नांदुर मध्यमेश्वर पिक-अप वियर, जिला-नाशिक का स्थल निरीक्षण

26 फरवरी 2020 को श्री महेंद्र कुमार पवार, वैज्ञानिक 'ई', श्री कुलदीप मलिक, वैज्ञानिक 'बी' एवं कुमारी माधवी गजरे, अनुसन्धान सहायक द्वारा गोदावरी एवं कदवा नदियों के संगम पर 1916 में निर्मित नांदुर मध्यमेश्वर पिक-अप वियर, जिला-नाशिक का स्थल निरीक्षण किया गया। इस परियोजना में वियर के ऊर्ध्व-प्रवाह में उच्च बाढ़ के समय काफी गाँव एवं समीपवर्ती क्षेत्र डूब में आ जाते हैं, जिसके निराकरण हेतु अध्ययन किया जाना है।

"बड़े पम्पिंग स्टेशन के चयन, स्थापना और संचालन पहलुओं" पर एक राष्ट्रीय कार्यशाला

5-7 फरवरी 2020 के दौरान केन्द्रीय जल और विद्युत अनुसंधान शाला में "बड़े पंपिंग स्टेशन के चयन, स्थापना और संचालन पहलुओं" पर एक राष्ट्रीय कार्यशाला का आयोजन किया गया। के.बी.एल., साई संचित, जैन इरिगेशन, एक्वा-मशीनरी, जे.एस.डब्ल्यू एनर्जी इत्यादि जैसे पंप से संबंधित फर्मों से भारी प्रतिसाद मिला। सरकारी संस्थाएं जैसे मेकॉन, पी.एच.ई.डी., सिंचाई विभाग और एल.एंड.टी.,डिजाइन समाधान, अनुप्रभा कंसल्टेंट्स जैसी एजेंसियों ने भाग लिया है।

Lectures at Academic Staff College (ASC–VIT Vellore) and 1 Day workshop on "Water Resource Management" organised by VIT School of Agricultural Innovations and Advanced Learning (VAIAL)

Dr Rolland Andrade, Scientist B based on his subject expertise and work experience of more than 15 yrs in the field of Water resource Management and Sustainable Development of Groundwater, was invited as Key speaker for 2 days Faculty Development Programme (FDP) on "Sustainable Groundwater Development", organised by Academic Staff College (ASC–VIT Vellore) and also as a guest faculty for 1 Day workshop on "Water Resource Management" organised by VIT School of Agricultural Innovations and Advanced Learning(VAIAL). The above mentioned program was held at Vellore institute of Technology (VIT) Vellore during 19th, 20th and 21st February 2020.

Delivering Lecture as Key Faculty (ASC-VIT)

Delivering Lecture as Guest Faculty (VIT-VAIAL)

Meeting with Prof. & Director ASC-VIT Vellore

Field Data Collection Program under Coastal Management Information System (CMIS)

The Central Water Commission (CWC) under Department of Water Resources, River development and Ganga Rejuvenation, Ministry of Jal Shakti as a project implementer assigned the task of CMIS implementation to CWPRS for two sites Viz. Satpati on the North of Maharashtra and Nanidanti-Motidanti on the South of Gujarat state. This process will be helpful in building up the national data base on coastal sites and further use/application of this data in research works and as well arriving at optimal solutions for the problems of erosion at these sites. CWPRS started the works of initial beach survey by establishing Levels with respect to Chart datum at these two sites. Along with beach survey beach samples were also collected and analysed at CWPRS.

Beach Survey at Satpati, Maharashtra

View of Satpati Beach at Low water

Beach Survey at Nanidanti-Motidanti, Gujarat

Collecting soil sample at Nanidanti-Motidanti at low water

दिनांक 4 मार्च, 2020 को आयोजित हिन्दी कार्यशाला की रिपोर्ट

केन्द्रीय जल और विद्युत अनुसंधान शाला, पुणे में कुल 30 कर्मचारियों को हिन्दी में काम करने हेतु प्रेरित करने के उद्देश्य से दिनांक 4 मार्च, 2020 को हिन्दी कार्यशाला आयोजित की गई। आयोजित कार्यशाला के प्रारंभ में श्री उग्रसेन शिवकुमार सिंह, सहायक निदेशक (राजभाषा) ने उपस्थितों का स्वागत करते हुए कार्यशाला का मूल उद्देश्य एवं कार्यशाला से संबंधित रूपरेखा की संक्षिप्त जानकारी दी। कार्यशाला का उद्घाटन डॉ.(श्रीमती) वर्षा भोसेकर, निदेशक, केन्द्रीय जल और विद्युत अनुसंधान शाला, पुणे के कर कमलों द्वारा किया गया। श्री अखिलेश कुमार अग्रवाल, वैज्ञानिक 'ई' एवं राजभाषा अधिकारी उपस्थित थे। कार्यशाला में श्री राजेन्द्र अस्वले, मुख्य प्रशासन अधिकारी, श्री कृष्ण कुमार गुप्ता, भूतपूर्व वैज्ञानिक 'सी' और श्री उग्रसेन सिंह, सहायक निदेशक (राजभाषा) और श्रीमती उमा गंगाधरण, वरिष्ठ हिन्दी अधिकारी, केन्द्रीय जल और विद्युत अनुसंधान शाला, पुणे व्याख्याता के रूप में उपस्थित थे।

Report on celebration of International Woman's Day

International Woman's Day 2020 was celebrated in Central Water and Power Research Station on 9th March, 2020. The Chief Guest on the occasion was Smt. Neelima Sadanand Vartak, Senior Advocate and Additional Govt. Pleader, Pune. She spoke on the subject "Security of Women and Legal Aspects".

गणतंत्र दिवस

दिनांक 26.1.2020 को केन्द्रीय जल और विद्युत अनुसंधान शाला, पुणे में गणतंत्र दिवस आयोजित किया गया। डॉ. (श्रीमती) वर्षा भोसेकर, निदेशक, केन्द्रीय जल और विद्युत अनुसंधान शाला, पुणे ने ध्वजारोहण किया। इस अवसर अनुसंधान शाला के श्री राजेन्द्र अस्वले, मुख्य प्रशासन अधिकारी, वरिष्ठ अधिकारी एवं कर्मचारी उपस्थित थे।

मंत्रालय के अधिकारियों द्वारा राजभाषायी निरीक्षण

जल शक्ति मंत्रालय, नदी विकास और गंगा संरक्षण विभाग, नई दिल्ली के अधिकारियों द्वारा दिनांक 3 जनवरी, 2020 को केन्द्रीय जल और विद्युत अनुसंधान शाला, पुणे का राजभाषा निरीक्षण किया गया। श्रीमती श्रद्धा माथुर, सहायक निदेशक (राजभाषा) तथा श्री संजीत कुमार वर्मा, सहायक अनुभाग अधिकारी मंत्रालय से निरीक्षण करने आए थे।



Automatic Weather Station is being installed at CWPRS

10 m Mast is erected at site to host the weather sensors.
Following sensor are installed to monitor the weather parameters:

Sr.No.	Sensor installed	Height from Ground
1	Temperature Sensor with Weather Shield	2 Meter
2	Humidity with Weather Shield	2 Meter
3	Cup Anemometer (Wind Speed Sensor)	10 Meter
4	Wind Vane	10 Meter
5	Ultrasonic Wind Speed	10 Meter
6	Ultrasonic Wind Direction	10 Meter
7	TBRG 0.2 (Tipping Bucket Rain Gauge)	0.5 Meter
8	TBRG 0.5 (Tipping Bucket Rain Gauge)	0.5 Meter
9	Solar Radiation Sensor	3 Meter

Lighting arrestor is installed on the top of the tower and earthling rod is installed at ground.

All above sensor are connected to Data Logger. Data Logger is recording all these parameters in internal memory and simultaneously the data is being sent to Server. Sampling Rate of Data Recording is set is 1 min to 15 mins.

सेवा निवृत्ति

अ क्र	नाम	पदनाम	प्रभाग का नाम	सेवा निवृत्ति की तिथि
1.	श्रीमती स्नेहल नगरकर	ग्रंथालय तथा सूचना सहायक	ग्रंथालय तथा सूचना प्रणाली	10.01.2020
2.	श्री नंदकिशोर बिपिनचंद्र वर्शिकर	वैज्ञानिक 'बी'	कंपन प्रौद्योगिकी	31.01.2020
3.	श्रीमती अलका धोंडीराम मालुसरे	बहु कार्य कर्मचारी वृंद	ग्रंथालय तथा सूचना प्रणाली	31.01.2020
4.	श्री किशोर बी. नागले	अधीक्षक	प्रशासन	31.01.2020
5.	श्री तानाजी आण्णा भगत	बहु कार्य कर्मचारी वृंद	उत्प्लव मार्ग तथा उर्जा क्षयकारक	29.02.2020
6.	श्रीमती प्रभा एस मेनन	सहायक लेखा अधिकारी	निर्माण तथा क्रय कक्ष	29.02.2020
7.	श्री अनिलकुमार बाप्ते	प्रारूपकार श्रेणी- I	उत्प्लव मार्ग तथा उर्जा क्षयकारक	11.03.2020
8.	श्री एस. वी. हुलसुलकर	प्रयोगशाला सहायक-II	बिल अनुभाग	31.03.2020
9.	श्री एस. पी. नाखले	शिल्पकार 'क'	पम्पस	31.03.2020

पुस्तक डाक / Book Post

प्रेषक / From :
प्रशासन / Admin.
केन्द्रीय जल और विद्युत अनुसंधान शाला /
Central Water and Power Research Station,
खडकवासला / Khadakwasla,
पुणे - 411024 / Pune - 411024.

सेवा में, / To,

100 years and beyond ... 1916-2016

Central Water and Power Research Station
Khadakwasla, Pune - 411 024
Govt. of India
Ministry of Jal Shakti,
Department of Water Resources,
River Development and Ganga Rejuvenation

• वेबसाइट : www:cwprs.gov.in • दूरध्वनि : 020-2410 3200, 2410 3852 • फैक्स : 020-24381004 • ई-मेल : director@cwprs.gov.in