



सत्यमेव जयते

भारत सरकार

जल शक्ति मंत्रालय

जल संसाधन, नदी विकास और गंगा संरक्षण विभाग

GOVERNMENT OF INDIA

MINISTRY OF JAL SHAKTI

DEPARTMENT OF WATER RESOURCES,
RIVER DEVELOPMENT & GANGA REJUVENATION

100 years and beyond ...



केन्द्रीय जल और विद्युत अनुसंधान शाला

खडकवासला, सिंहगड रोड, पुणे ४११०२४

CENTRAL WATER AND POWER RESEARCH STATION

Khadakwasla, Sinhgad Road, Pune 411024

VISION

To be a world-class centre of excellence in hydraulic engineering research and allied areas; which is responsive to changing global scenario, and need for sustaining and enhancing excellence in providing technological solutions for optimal and safe design of water resources structures

MISSION

- **To meet the country's need for basic & applied research in water resources, power sector and coastal engineering with world-class standards**
- **To develop competence in deployment of latest technologies by networking with the top institutions globally, to meet the future needs for development of water resources projects in the country effectively**
- **To disseminate information, build skills and knowledge for capacity-building and mass awareness for optimization of available water resources**

MAJOR FUNCTIONS

- **Undertaking specific research studies relating to development of water resources, power and coastal projects**
- **Consultancy and advisory services to Central and State Governments, private sector and other countries**
- **Disseminating research findings and promoting/assisting research activities in other organizations concerned with water resources projects Contributions to Bureau of Indian Standards and International Standards Organization**
- **Carrying out basic and applied research to support the specific studies Contribution towards advancements in technology through participation in various committees at National and State Levels**



One should take proper managerial actions to use and conserve water from mountains, wells, rivers and also rain water for various purposes.

Atharva Veda. 19.2.1

Civilizations have grown with the pace of how well water resources were harnessed to meet the demands of water and power. Central Water and Power Research Station, set up initially as a "Special Irrigation Cell" in June, 1916 by the then Bombay Presidency, has continued to serve for 100 years by catering to the research and development needs for evolving safe and economical planning and design of water resources structures, river engineering, hydropower generation, and coastal engineering projects fulfilling the mandate of 'Service to the Nation through Research'.

Just like a river acquires depth over time and contributes to making its surroundings lush and productive, the CWPRS has also grown from strength to strength over the hundred years of its existence. Almost all important irrigation, hydropower, water supply, navigation and ports projects have imprints of this institution. Owing to its receptivity towards incorporating new technology with the changing times, the CWPRS's journey has continued ceaselessly over a century, earning it the stature of a world-class water and power research institution.

Considering the infrastructure and expertise available, CWPRS has been identified under 'World Bank aided National Hydrology Project', as a Nodal Agency for providing overall guidance on hydro-meteorological and water quality equipments selection, commissioning and quality control to all States/Union Territories. CWPRS has been actively engaged in carrying out studies for rehabilitation of dams to improve the safety and operational performance of selected existing dams under 'Dam Rehabilitation and Improvement Project' (DRIP). The Coastal Management Information System (CMIS) scheme at CWPRS aims at collection of field observed data at two sites; one each in Maharashtra and Gujarat state, in the near shore and coastal area for evolving long term plan and coastal protection measures. In the Centenary Year, CWPRS has also opened new divisions for undertaking systematic studies on River Rejuvenation, and Disaster Management Planning.

With a vast pool of highly qualified and experienced scientists and excellent infrastructure facilities, CWPRS rededicates itself to fulfill its mandate to provide optimum solutions for meeting Sustainable Development Goals in the changing climate scenario.

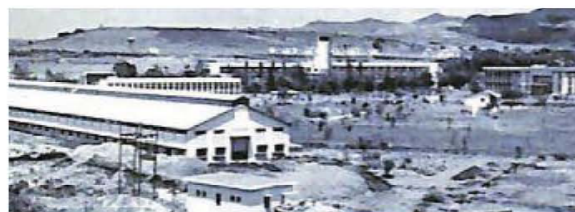




CWPRS campus near Khadakwasla Dam, Pune (1951)



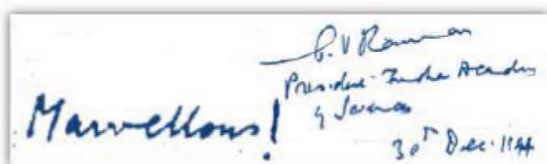
Founder Director, Sir C. C. Inglis at CWPRS (1953)



CWPRS campus at present location (1975)



First President of India, Dr. Rajendra Prasad at CWPRS (1954)



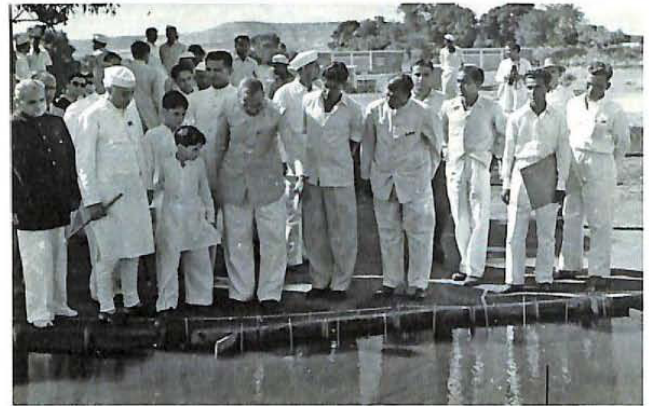
Remark by Nobel Laureate Dr. C. V. Raman (1944)



Hydraulic study of Neera Right Bank Canal (1928)



***First Vice-President, Sarvepalli Radhakrishnan
at CWPRS (1954)***



***First Prime Minister of India, Pandit Jawaharlal Nehru
inaugurated Ship Testing Tank at CWPRS (1955)***



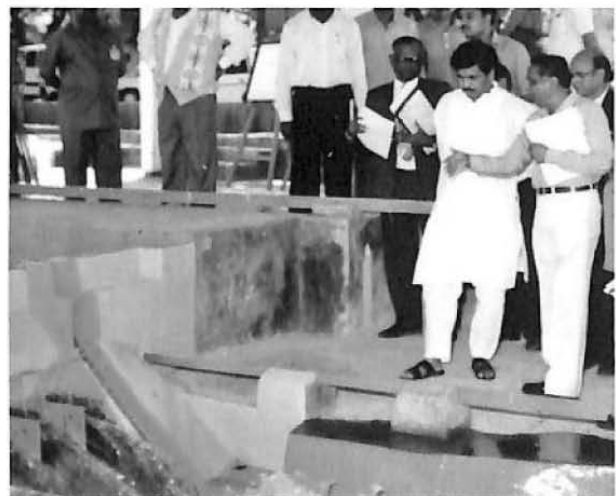
***Nikita Khrushchev, Prime Minister of then
USSR, at CWPRS (1955)***



***Then Minister for Railways, Lal Bahadur Shastri
at CWPRS (1954)***



***Then Prime Minister of India,
Indira Gandhi (1976)***



***Then Minister for Water Resources,
Pramod Mahajan (1999)***



*CWPRS study on Tehri Dam for
Shaft Spillway*



*Physical model of Mumbai and
Jawaharlal Nehru Port*



Physical model of Tapovan Vishnugad Hydropower Project

Studies & Projects



*CWPRS conducted
hydraulic model studies
for layout of reclamation
for Changi Airport at
Singapore Port*

*Hydraulic model studies for
Tala Project in Bhutan*





RIVER ENGINEERING

- Studies related to Flood Control, Hydraulic Analysis and Prototype Testing of Structures
- Studies about Bridges, Barrages, Weirs, River Training-Diversion and Morphological Changes



Yamuna Channelisation Model



Permeable Porcupine Spur

RIVER AND RESERVOIR SYSTEMS MODELLING

- Meteorological and Applied Hydrological Studies
- Physico-Chemical Methods for Water Quality and Surface Water Hydraulics



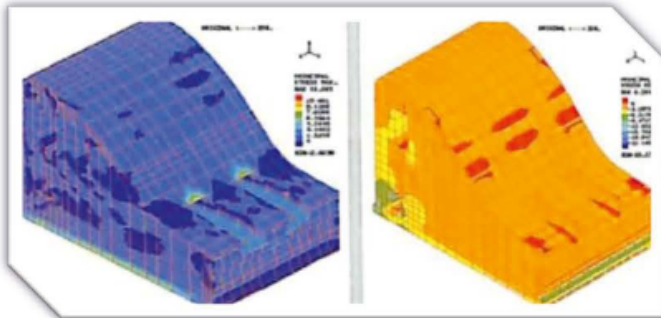
Reservoir sedimentation through SRS technique for Girna reservoir



Analysis of water quality in reservoir

FOUNDATIONS AND STRUCTURES

- Deals with Properties of Foundations and Structural Materials using laboratory and field tests as well as mathematical modelling



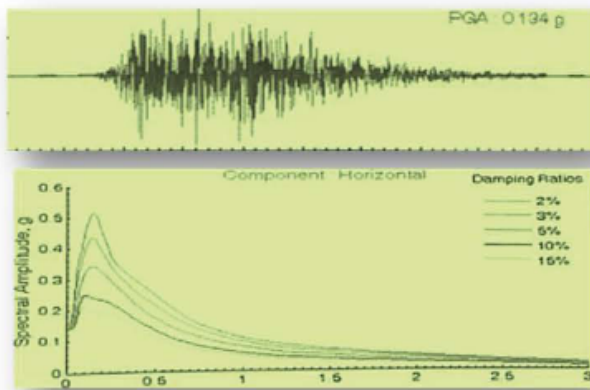
Maximum and Minimum Principal Stress Distribution, in Block 25, Garudeshwar Weir



Geosynthetic Tensile Testing Machine

APPLIED EARTH SCIENCES

- Studies related to Geophysics, Earthquake Engineering, Tracer Hydrology, Hydrogeology and Vibration Technology
- Studies for foundation evaluation, seismic design parameters for major projects



Site specific Design Accelerogram and Design Response Spectra

Vibration Studies for Indira Sagar Hydro Power Project, Madhya Pradesh



Current Meter Rating Trolley

INSTRUMENTATION CALIBRATION AND TESTING SERVICES

- Development of Hydraulic Instruments
- Services for calibration and testing of various Flowmeters, Current Meters and Pumps
- Bathymetry Surveys





Mumbai and Jawaharlal Nehru Port

- More than 190 physical/mathematical model studies for Mumbai and JN ports
- Proper alignment of navigational channel effected the reduced siltation in channel
- Predication of siltation in harbour helped in effective planning for dredging
- Finalization of JN port layout and its smooth operability



- Mumbai Port model extended with Panvel Creek and five rivers to study flow patterns for the proposed international airport
- Estimation of safe-grade elevation for international airport area

Sardar Sarovar Dam Project

- Optimization of layout of spillway
- Design of energy dissipators-sloping- cum- horizontal apron for main spillway & ski-jump bucket for auxiliary spillways
- Estimation of hydrodynamic bending moments, pullout and uplift forces on spillway basin floor, divide walls and training walls
- Various stages of construction studied on comprehensive and sectional model
- Evolved suitable design of low level hump through model studies



Chilika Lake

- Mathematical model studies for restoration of the lake salinity vis-a-vis eco-system by effecting the tidal exchange through single inlet and double inlet system of the Lake
- Study to identify the location for straight cut and assess its effect
- Hydrodynamics & salinity flux computations before & after proposed straight cut
- Study of impact of Naraj barrage on Chilika Lake
- Stabilization of inlets and impact on salinity due to opening of new mouth



Double Inlet (2010)

River Yamuna

- River channelisation to improve flow conditions and create extra land
- Studies of feasibility, alignment and width, effect on existing structures
- Studies for bridges for location, alignment, flow conditions, adequacy of water way, scour, protection measures, guide bunds, afflux
- Studies for Lok Nayak Setu, Delhi-NOIDA Bridge
- Studies for Metro Rail bridges
- Replacement of 120 year old Rail-Cum-Road Bridge



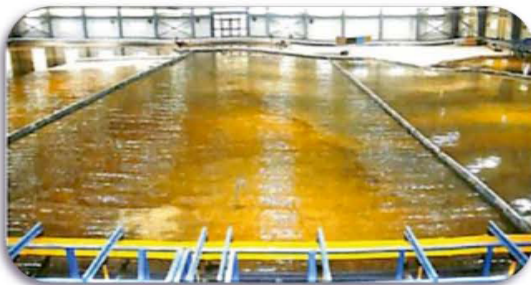
Physical model of river Yamuna



Layout planning of proposed Signature Bridge on River Yamuna

CAPABILITIES & FACILITIES

- A premier research institute in hydraulics and allied areas in water and power sector
- Multidisciplinary expertise to provide R&D solutions to the problems associated with water resources, power and coastal projects
- Close association with all major River Valley Projects, Port Developments, and other Organizations
- UN Recognized Regional Laboratory for Economic and Social Commission for Asia and the Pacific (ESCAP) since 1971
- Serves three major sectors
 - Water Resources
 - Hydro Power
 - Ports and Waterways
- Applied research to provide sound and economic solutions for
 - River Engineering
 - Reservoir and Appurtenant Structures
 - River and Reservoir System Modelling
 - Coastal Engineering
 - Earth Sciences
 - Foundation and Structures
 - Instrumentation, Testing & Calibration Facility
- Applied Research through physical and mathematical modelling; field and laboratory investigations
- Calibration of flow meters and current meters
- Excellent Infrastructure: 490 acres of land, adjacent to Khadakwasla Dam, separate substation for uninterrupted power supply, latest equipments and expert human resources
- 700 KW Solar Power Plant



Multipurpose wave basin with RSWG facility



Remote Sensing Centre



Random Sea Wave Generating Flume

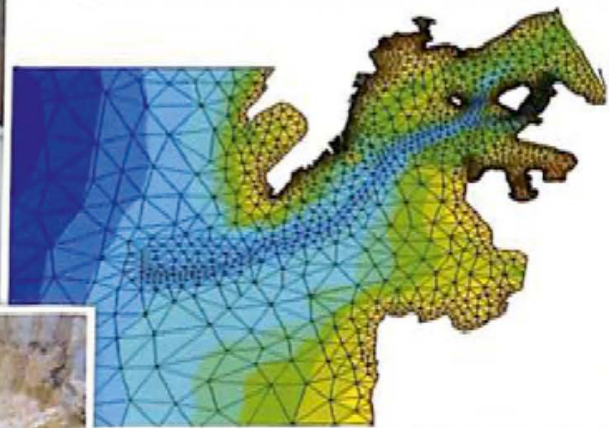


Library

METHODOLOGIES FOR STUDIES



Physical Model Studies



Mathematical Model Studies



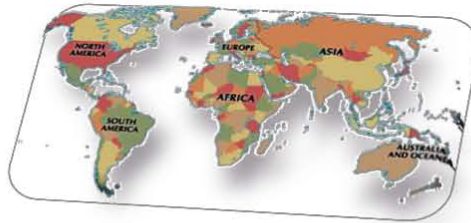
Field Studies



Laboratory Studies

SERVICES OFFERED ABROAD

- **Afghanistan**
- **Bangladesh**
- **Bhutan**
- **Egypt**
- **Ethiopia**
- **Kampuchea**
- **Indonesia**
- **Iran**
- **Iraq**
- **Libya**
- **Malaysia**



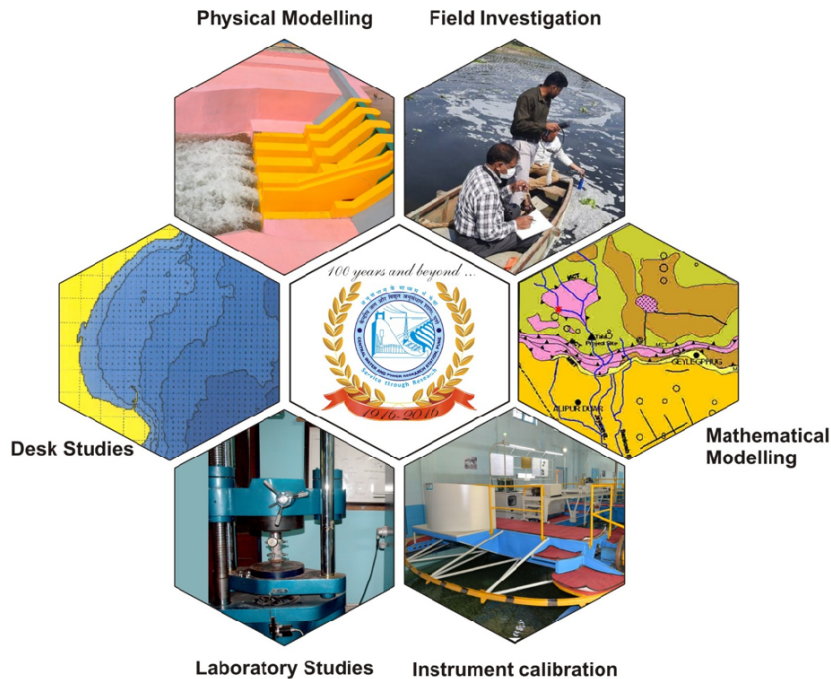
- **Maldives**
- **Myanmar**
- **Mozambique**
- **Nepal**
- **Philippines**
- **Singapore**
- **Tanzania**
- **Thailand**
- **Togo/Benin**
- **Vietnam**
- **Zambia**

CENTRAL WATER AND POWER RESEARCH STATION

CWPRS established in 1916, is a premier national hydraulic research institute. Since 1971, the institute is recognised as UN Regional Laboratory for ESCAP. CWPRS caters to R & D needs of the country by providing hydraulically sound and economically viable solutions in the field of water resources, energy and water borne transport including coastal and harbor engineering.

Area of Research

- › River Hydraulics and Flood Control
- › Reservoir & Appurtenant Structures
- › Hydraulic Structures
- › Hydraulic Instrumentation
- › Disaster Management & Planning
- › Environmental Studies
- › Ports and Harbours
- › Coastal Protection
- › Ship Hydrodynamics
- › Foundation Engineering
- › Earth Sciences
- › Hydraulic Machinery



Major Functions

- › Undertaking specific research studies relating to development of water resources, power and coastal projects
- › Consultancy and advisory services to Central and State Governments, private sector and other countries
- › Disseminating research findings and promoting/assisting research activities in other organizations concerned with water resources projects
- › Contributions to Bureau of Indian Standards and International Standards Organization
- › Carrying out basic and applied research to support the specific studies
- › Contribution towards advancements in technology through participation in various committees at National and State Levels



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