GOVERNMENT OF TELANGANA

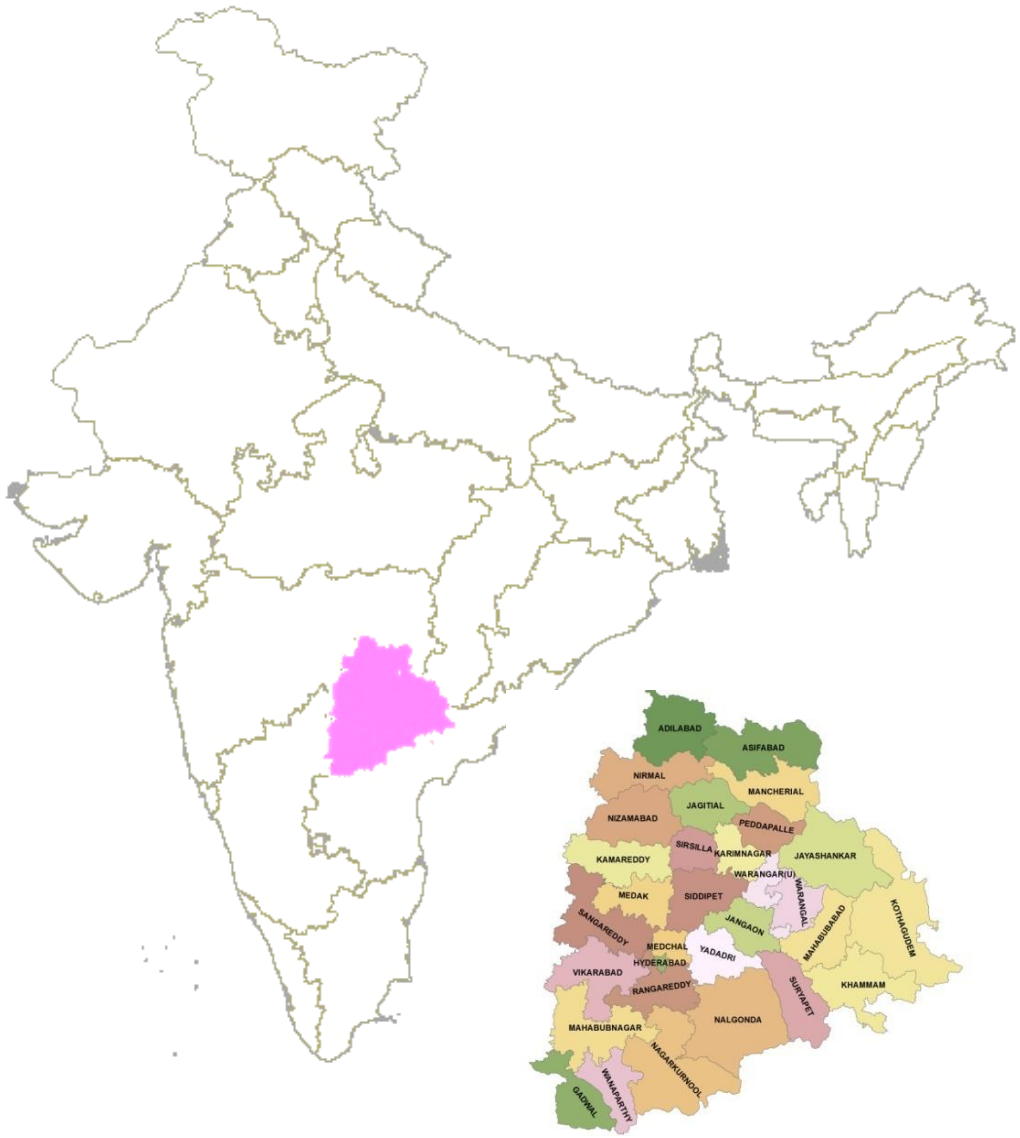
MISSION BHAGIRATHA DEPARTMENT

మిషన్ భగీరథ
ఇంటింటికీ తాగునీరు, ఇల్లాలి కష్టాలు తీరు

Foundation laid by Hon'ble CM at Choutuppal on 08.06.2015

Hon'ble PM commissioned Gajwel scheme on 07.08.2016

Piped Water Supply to All – Mission Bhagiratha



TELANGANA- At a Glance

Districts	32
Mandals	540
Gram Panchayats	12,755
Villages	10,472
Rural Habitations	24,042
SC Dominated Habitations	1700
ST Dominated Habitations	9823
Rural Population (Lakhs)	208.71
SC Population(Lakhs)	39.24
ST Population (Lakhs)	29.78

Need of 'Mission Bhagiratha'

➢ Infrastructure and supply (Before Mission)

- Single Village Schemes (PWS) : 17,340
- Multi Village Schemes (CPWSS) : 168
- Only 33 % households have tap connections

➢ Quality Issues/Chronic drought conditions-scarcity of drinking water

- Every alternative year, the state is facing drought situation.
- Deficit rainfall in 6 years during last decade.
- Due to over exploitation, the ground water table depleted and quality effected
- Depletion of Ground water – by more than 2 metres in last 10 years
- 82% Drinking water Schemes dependent on Ground Water sources
- Water quality issues-excess fluoride(1043 habs),nitrates(163 habs),TDS(187 habs)
- Transportation to about 15% habitations in Summer

➢ Productivity loss due to time spent on fetching water

➢ Loss of human lives due to water borne diseases

➢ GOI (NRDWP guidelines) – to shift from Ground water to perennial surface sources

Objective

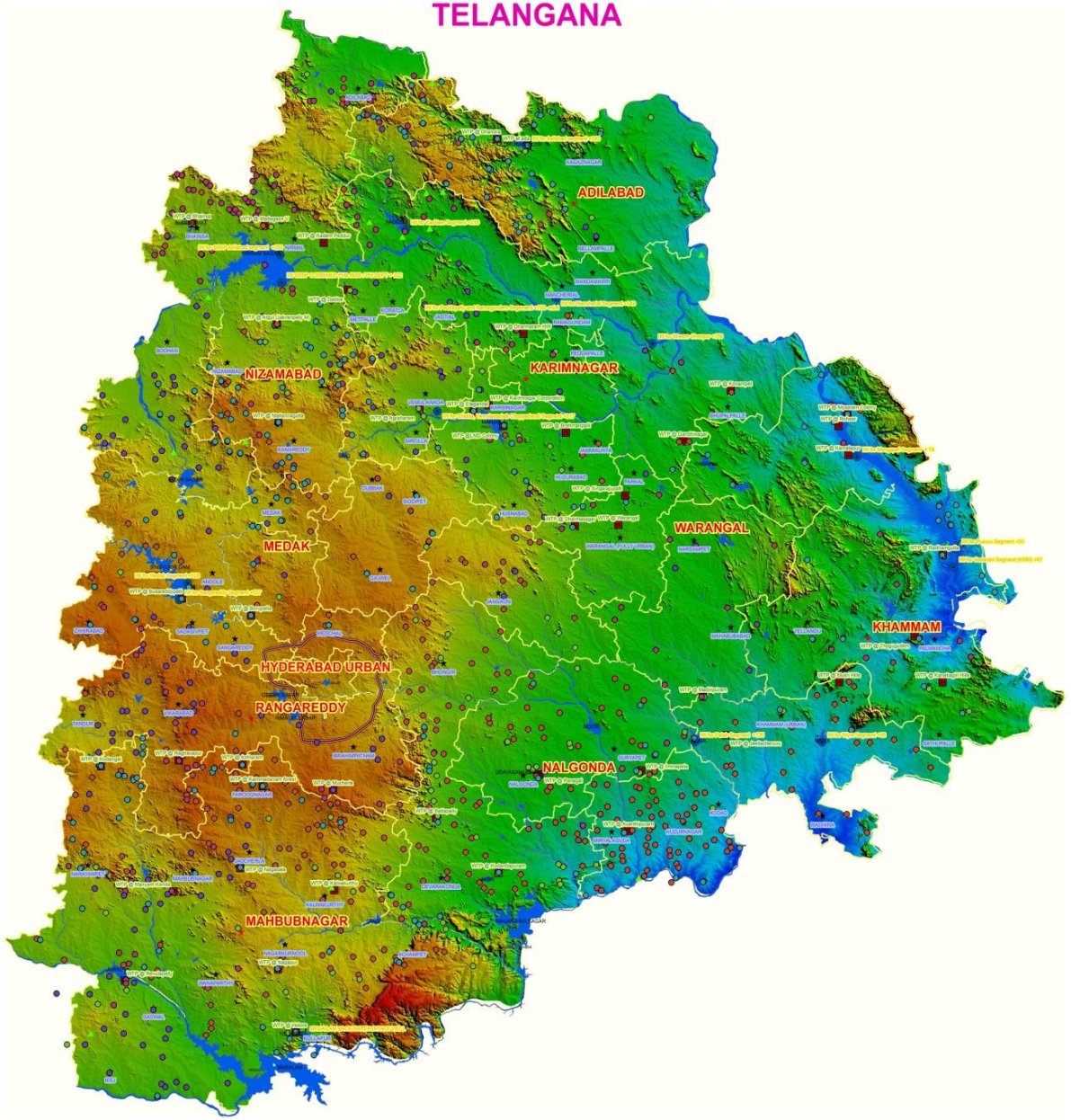
- To supply surface treated water to all the rural habitations and Urban Local Bodies other than GHMC and its surrounding habitations within ORR

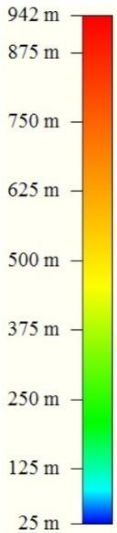
- Per Capita Supply
  - ✓ 100 LPCD (litres per capita per day) for rural areas
  - ✓ 135 LPCD for Municipalities
  - ✓ 150 LPCD for Municipal Corporations

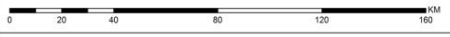
- Up to 10 % of the total designed demand is proposed for Bulk Supply to Industries/Institutes/ Commercial Establishments

- To provide free household tap connection to each household in all the rural habitations.

MISSION BHAGIRATHA PROJECT
TELANGANA





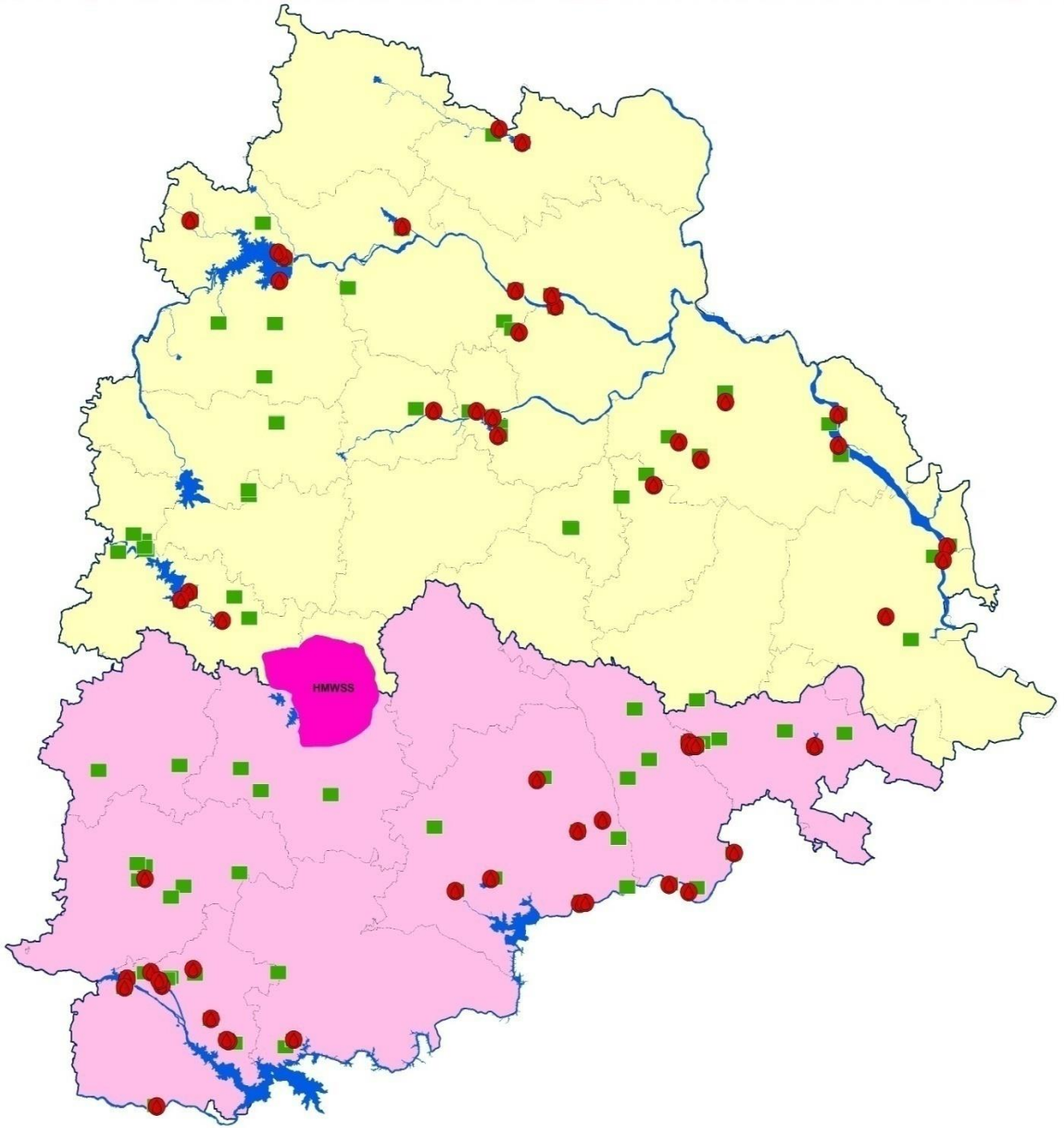


Legend

STRUCTURES

- BPT
- GLBR
- OHBR
- PHOUSE
- SUMP
- DISTRICT HEADQUARTERS
- MUNCIPALITIES
- INTAKE WELL
- WATER TREATMENT PLANT
- RESERVOIRS
- OUTER RINGROAD
- BOUNDARY

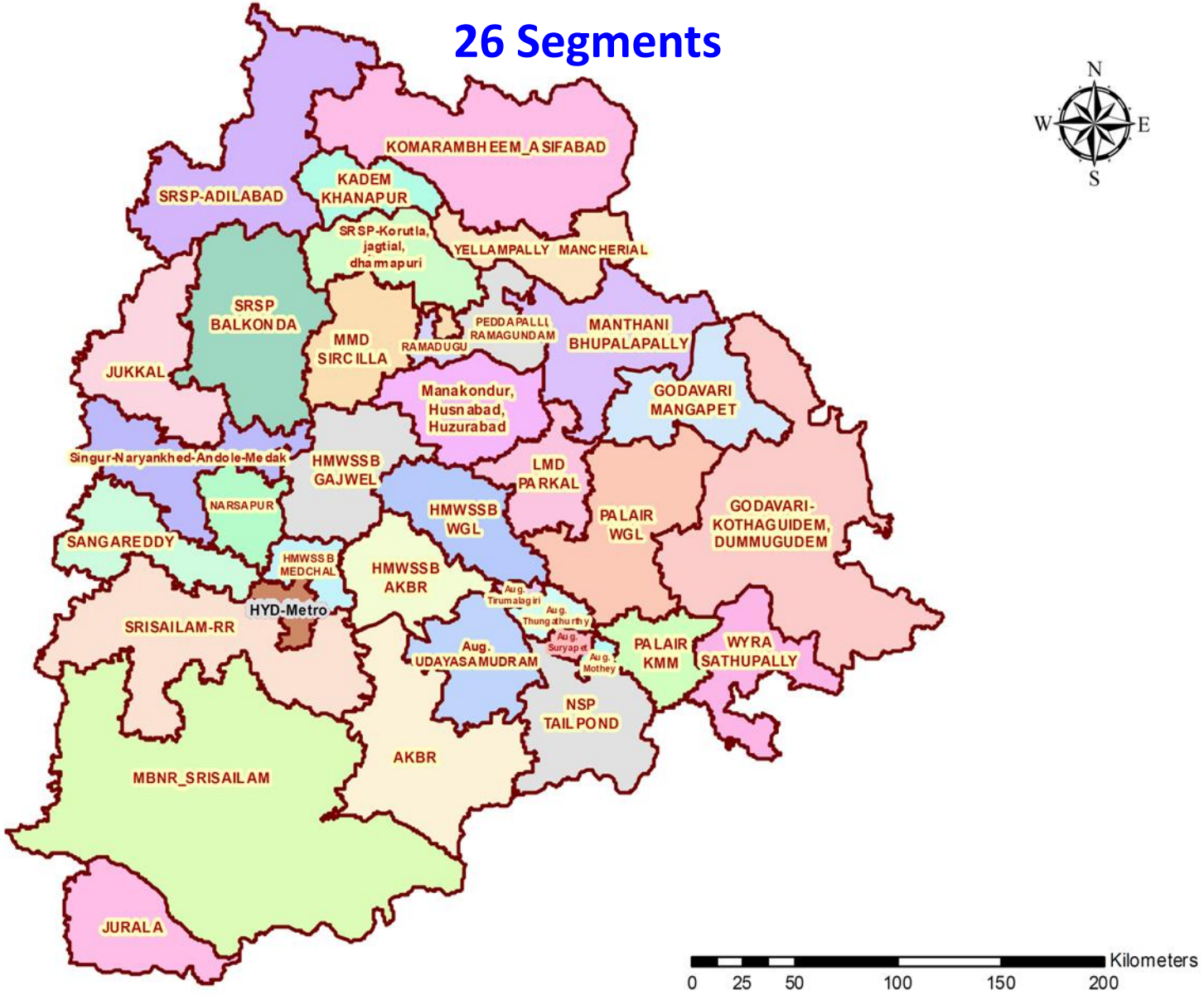
COVERAGE UNDER KRISHNA AND GODAVARI RIVER BASINS



Mission Bhagiratha- Planning

- The project is divided into 26 major segments/34 sub segments based on the topography and proximity/availability of raw water from the source to cover the rural habitations and ULBs within the boundary.
- All Raw Water Sources for the 26 Major Segments/34 Sub Segments were identified and quantum water to be drawn from each source
- Necessary permissions from the I&CAD department were obtained for drawl of raw water from the identified sources.
- Location of WTPs were indentified and transmission network was planned based on the detailed survey duly integrating the feasible existing infrastructure
- In village infrastructure requirement like OHSRs, Distribution pipelines and household connections were planned in phased manner duly integrating the existing infrastructure
- Estimates are prepared in phased manner and proposals submitted to the Government for administrative sanction.

MISSION BHAGIRATHA PROJECT-TELANGANA



PRINICIPLE OF DESIGN

It is an *end-to-end design solution*, planned to meet all requirements up to 2048. It relies on treating surface water from major rivers, Godavari (53 tmc) and Krishna (32 tmc). For all the surface water bodies a reserve is maintained, for drinking water purpose, by fixing MINIMUM DRAW DOWN LEVELS (MDDL) and monitored regularly. The fundamental principle inbuilt into its design, is that *water is to be conveyed by gravity(98%)*, reducing the capex & maintenance cost to lift pumps.

STAGES TO REACH HOUSEHOLD

Main stages involved are:

- ✓ Sourcing water, through Intake Wells, from major rivers or reservoirs fed by these rivers
- ✓ Purifying the raw water in nearby Water Treatment Plant (WTP)
- ✓ Pump treated water to Over Head Balancing Reservoirs (OHBRs) at the highest points
- ✓ Transmit from highest point through secondary pipeline network to all the OHSRs located in habitations by gravity
- ✓ Distribute to each household through a modern, rationalized intra village network by providing tap connection to each household

Typical methodology

STRATEGY

State Initiatives

- Government intention of water supply to each household was declared during September 2014 in a meeting
- Series of meetings were conducted at planning stage of the schemes during 2014 & 2015
- General guidelines for the project was issued from time to time based on the meetings conducted by Chief Secretary, Hon'ble CM and Hon'ble Ministers
- Telangana Drinking Water Supply Corporation Limited (TDWSCL) formed under the chairmanship of Hon'ble CM during February 2015.
- The department was reorganized during February 2015 duly sanctioning 1718 Additional posts to implement the project.
- Right of User (RoU) Act brought in for laying of pipelines in Private land during Feb 2015
- WAPCOS was engaged as third party quality control and monitoring Consultant for Grid works

Hon'ble Chief Minister of Telangana Addressing All Water Supply Engineers on Govt. Vision on 10.09.2014

INSTITUTIONAL SETUP

- Mission Bhagiratha declared as Flagship programme
- Effective coordination mechanism put in place at both State and district levels.
- Separate wings were created within the department i.e 1) Bulk Supply and 2) Intra Village works 3) V&QC
- Retired Chief Engineers/Superintending Engineers, District Forest Officers were engaged for utilising their expertise in the field
- Experts within the department were identified and developed GIS/MIS websites
- Regular Trainings were given to the staff to adopt new techniques like utilizing new software EPANET, WATERGEMS, KY-PIPE etc and also in modern survey equipment
- MoU with NIC, Telangana for development of web GIS application

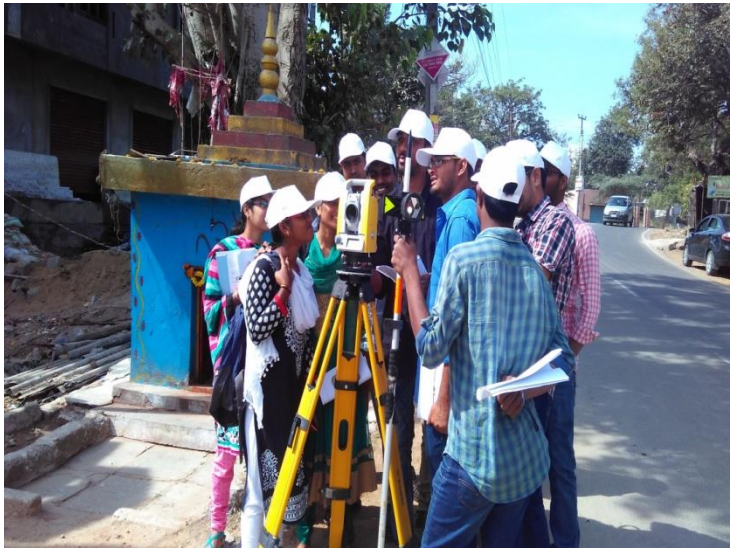
MEETING WITH MANUFACTURERS

24.10.2014

DGPS /TOTAL STATION - TRAINING

DGPS Survey training at Karimnagar

Total Station Survey training at Medak



TRAINING TO AEEs/AEs

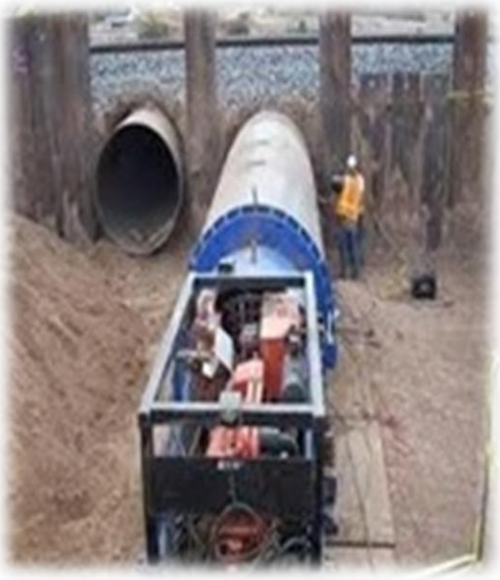
Critical Items & Bottle necks

- Critical items were identified in the project which will take more time were started in the 1st instance such as Intake Wells and WTPs
- Land acquisition was done much in advance and majority part government land were used
- Joint coordination meetings were conducted at highest level in the planning stage of the project to sort out the issues related to forest clearances, railway track crossings, Right of way along the National Highways , State High Ways, Local Roads
- Right of User (RoU) Act brought for laying of pipelines in Private Land

Service crossings

❖**Service crossings (Total) - 13901 Nos**

- ➢Railway crossings 242
- ➢NH crossings 560
- ➢R&B crossings 4526
- ➢PR Road crossings 6953
- ➢Canal crossings 1453
- ➢River/Riverlet crossings 167



Implementation

Administrative Sanctions

- Administrative sanctions were accorded by the Government based on the proposals from the Department from time to time for Grid works and intra village works
- Grid administrative sanctions were accorded (Total Rs.37886.53 Cr)in three phases for certain segments based on the planning
  - ✓ **Phase-1 : Intake structures, Raw water mains, WTPs and pumping system**
  - ✓ **Phase2 : Balance WTPs and entire transmission system**
  - ✓ **Phase-3 : Augmentation of Supply to existing Segments**
- Intra Village administrative sanctions were accorded (Total Rs.8674.07 cr)in several phases, Mandal as a unit for construction of OHSRs, Distribution pipelines and providing household connections
- Separate administrative sanctions were also accorded (Rs. 25.08 Cr) for isolated habitations where the surface water supply is not feasible for construction of solar pumping system, distribution of pipeline and house connections.

FUNDS MOBILIZATION

- For implementing a massive project with huge financial outlay and in order to provide safe and sustainable drinking water to the people of the State in a strict time frame, mobilising the resources outside the budget has become necessary which will not only bring immense social benefits to masses but also avoid any possible cost over run in the project
  - HUDCO Loan
  - NABARD Loan
  - Commercial Banks Loan
  - State Government Budgetary support
  - GOI-NRDWP NWQSM Project

Monitoring Tools

- Divisional level video conference system was established before commencement of the project for review and monitoring on weekly basis
- Mobile Apps, GIS and MIS developed for monitoring the progress and asset management
- Geo tagging of all assets including tap connections with CAN in process
- Monthly review meetings used to be conducted by the Hon'ble CM/Hon'ble Minister/ Chief Secretary during the implementation where the concerned Ses/EEs to present the progress with the latest progress photos

VIDEO CONFERENCE

BEST PRACTICES IN IMPLEMENTATION

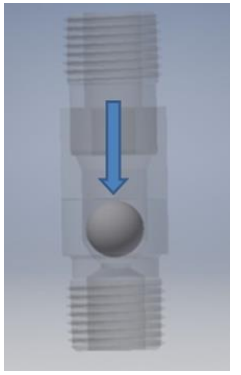
- Taken up in Saturation mode
- All feasible existing infra structure integrated
- Avoiding usage of non sustainable pipe materials like GRP and AC
- No mobilization advance to Agencies
- Sick firms were avoided by introducing CDR clause
- Incentives to the Agencies for early completion
- Coordination Meetings with manufacturers before commencement to meet the demand
- Continuous Funds Flow maintained for early completion
- Telangana State Remote Sensing Application Centre(TRAC) MAPS were utilised for preparation of preliminary network plans
- DGPS Survey was conducted to save the time for pipeline route
- Software like EPANET/WATER GEMS were utilised for network analysis

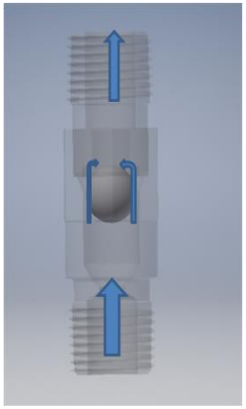
FLOW CONTROL VALVE

➢ Flow control valves are being installed with a design flow of 5 LPM at house hold connection point. Flow control valve also disables drawing excess water through pumps by the individuals.

➢ The required capacity of OHSRs, i.e 50% of the demand, are being constructed duly integrating the existing OHSRs which are in good condition.

➢All the estimates are prepared based on Standard Schedule of Rates(SSR) approved by the State Government





RESULTS OF FCVs

Water Reaching up to 1st Floor of the House me flow

Measuring the Flow from Taps

Execution & Commissioning

❖ Grid Infrastructure Created

- ✓ Intake Wells (Nos) - 19
- ✓ WTPs (Nos) - 50
- ✓ Pipeline (KM) - 55,441
- ✓ The 26 Segments/34 Sub Segments are commissioned in phased manner from 2017 till 2022.
- ✓ Total 23,839 habitations and 121 ULBs are being covered with bulk treated water supply.

❖ Intra Village Infrastructure Created

- ✓ OHSR - 19,560
- ✓ Pipeline(KM) - 67,314
- ✓ House Connections - 59.51 lakhs

DEVELOPMENT OF UTILITIES

In a record-time of 3 years the TDWSC created the following infrastructure:

❖ Intake wells:

Total	**72**
• New	19
• Existing integrated	53

❖ Water Treatment Plants:

		Total Capacity
Total	**121**	**4,109** MLD
• New	50	3,349 MLD
• Existing integrated	71	760 MLD

❖ OHBRs/BPTs:

		Total Capacity
Total	**897**	**1,00,730** KL
• New	577	74,540 KL
• Existing integrated	307	26,190 KL

❖GLBRs:

		Total Capacity
Total	**190**	**1,07,350** KL
• New	153	96,070 KL
• Existing integrated	42	11,280 KL

❖ Sumps:

		Total Capacity
Total	**711**	**9,00,150** KL
• New	594	7,40,850 KL
• Existing integrated	200	1,59,300 KL

❖Pipelines:

Total	**1.50**	Lakh Kms
• New	1.12	Lakh Kms
• Existing integrated	0.38	Lakh Kms

❖ Village OHSRs:

		Total Capacity
Total	**37,002**	**15,32,690** KL
• New	19,560	7,24,600 KL
• Existing integrated	17,442	8,08,090 KL

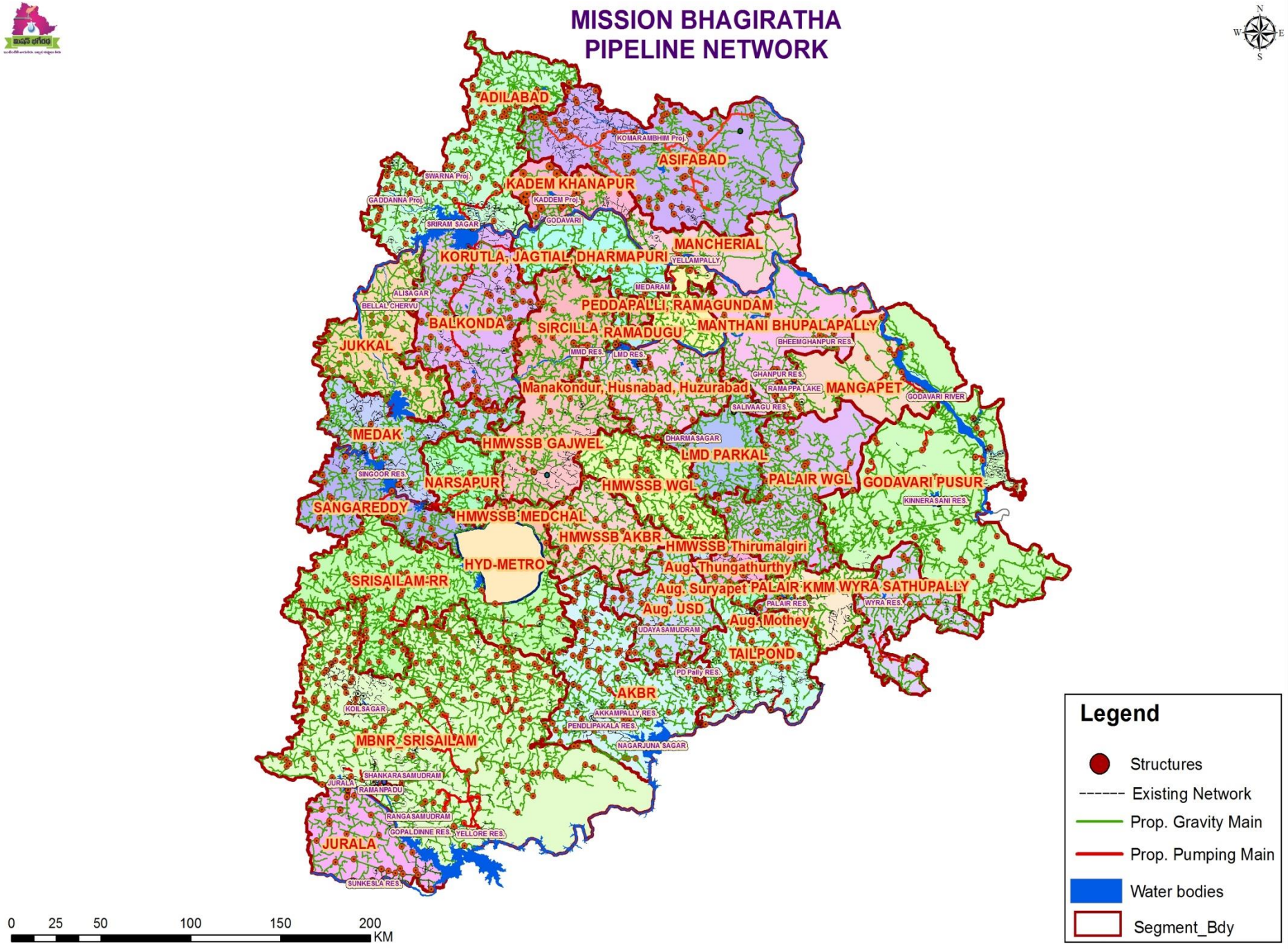
❖ Power required: 187 MW

- **HT Connections** **164**
  - 220 KV 2
  - 33 KV 42
  - 11 KV 120
- **LT Connections** **253**

❖ Pump sets:

		Total Capacity
Total	**1,128**	**2,48,086** KW
• LT	916	1,71,856 KW
• HT	212	76,230 KW

MISSION BHAGIRATHA
PIPELINE NETWORK



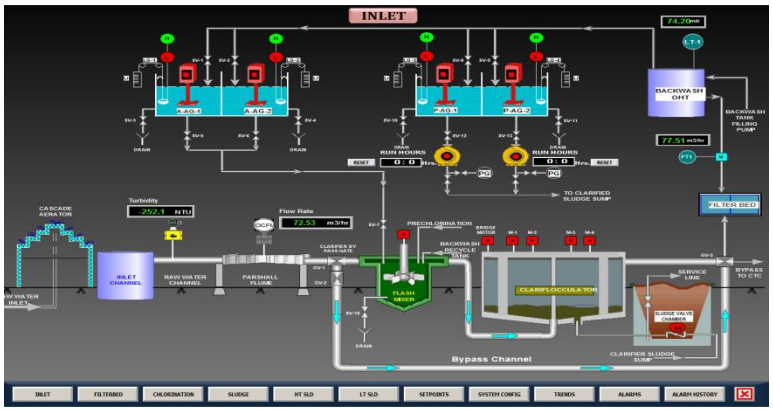
INFRASTRUCTURE SUSTAINABILITY

SOURCE SUSTAINABILITY

- All the Surface water sources selected are major Reservoirs/Balancing Reservoirs fed by either Godavari or Krishna River/Canal
- Top priority given for drinking water, Minimum Draw Down Level (MDDL) in each reservoir fixed by Govt. based on the annual water requirement.
- Daily water levels are being monitored by Mission Bhagiratha Department
- Majority of the reservoirs interlinked with Major Lift Irrigation Schemes(Kaleswaram, Palamuru, Seetharama etc.) to make it more sustainable

Water Treatment

- Rapid Sand Filtration Technology
  - ✓ Operation - 23.5 Hours
  - ✓ Recycling of Back Wash Water - 3 % savings
- Establishing Water Quality Laboratories with adequate manpower
- SCADA System
  - ✓Monitoring Inflows and outflows of treated water
  - ✓ Automated back wash system
  - ✓Effective chemical dosing



Pipe Policy

- The pipe policy for the project has been set based on the CPHEEO Guidelines and local terrain conditions

✓ Transmission Lines - Mild Steel, Ductile Iron, BWSCP, PCCP and HDPE

✓ Intra-Village Lines - HDPE and PVC

DEFECT LIABILITY

- As part of the contract conditions, the defect liability period for all civil and pipelines is 5 years from the date of commissioning.
- Defect Liability period for the Electro – Mechanical works is 10 years from the date of commissioning.
- The Agency/Contractor who executed the works has to operate & Maintain the infrastructure for 10 years from the date of commissioning.

Quality Control

- Vendor Registration was done to encourage best Manufacturers
- Pre-Delivery inspection was conducted jointly by the representative of the Department, WAPCOS and Agency for all the materials such as pipes, valves, pumps, motors etc.,
- A third party vetting & quality control Agency (WAPCOS) was engaged to submit an independent QC inspection report

SERVICE DELIVERY

- Log sheets signed by the Gram Sarpanch is uploaded online to ensure the bulk supply
- By weekly meetings are conducted to ensure all the service reservoirs/habitations are covered with bulk supply without missing
- Stabilization programme being conducted to ensure all the intra village works are completed to meet the standards
- GP resolution is being obtained for 100% household functionary tap
- Contact No of the concerned Engineers being displayed at GP office to contact for any grievances

MISSION BHAGIRATHA DAILY WATER SUPPLY LOG BOOK

Mandal Name: Devarakadra | **Habitation Name:** Bollaram | **Population (2011/2020):** 1818/1953

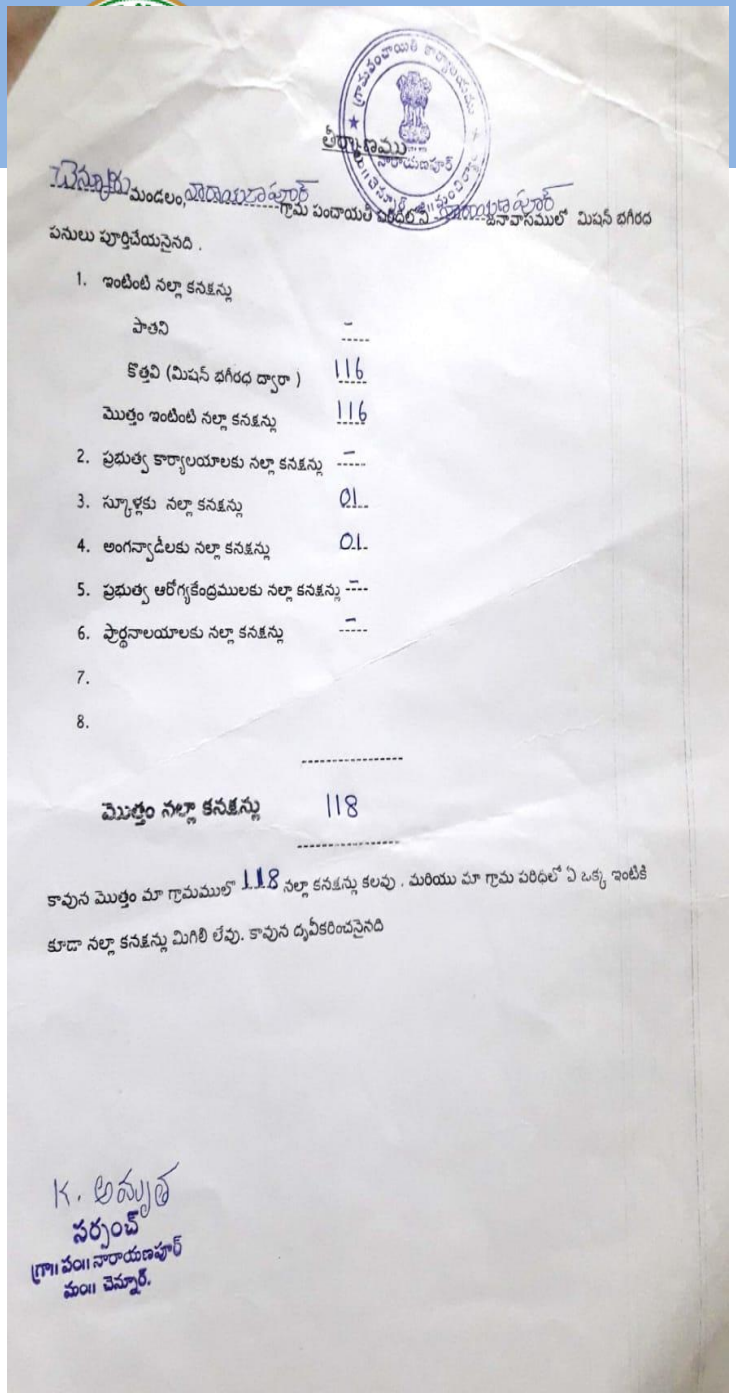
Grampanchayat Name: Bollaram | **Sarpanch Name:** Laxmamma | **Cell No:** 9849278038

Secretary Name: Rakesh | **Cell No:** 9700049595

Date (Sunday to Saturday)	OHSR 1		OHSR 2		OHSR 3		OHSR 4		Signatures			Counter sign by AEE
	Location : Village Entrance		Location : Village Entrance		Location : Village Entrance		Location : SC Colony					
	Capacity in KL: 40		Capacity in KL: 40		Capacity in KL: 10		Capacity in KL: 30					
	No of Households: 139		No of Households: 143		No of Households: 33		No of Households: 111					
	Total demand (KL) under OHSR as per households in KL: 55.60		Total demand (KL) under OHSR as per households in KL: 57.20		Total demand (KL) under OHSR as per households in KL: 13.20		Total demand (KL) under OHSR as per households in KL: 44.40					
	1st filling in KL	2nd filling in KL	1st filling in KL	2nd filling in KL	1st filling in KL	2nd filling in KL	1st filling in KL	2nd filling in KL	Waterman	Secretary	Sarpanch	
1	13/12	40	20	40	20	10	5	30	15				
2	14/12	40	20	40	20	10	5	30	15				
3	15/12	40	—	40	—	10	—	30	—				
4	16/12	40	20	40	20	10	5	30	15				
5	17/12	40	20	40	20	10	5	30	15				
6	18/12	40	20	40	20	10	5	30	15				
7	19/12	40	20	40	20	10	5	30	15				

DY EXECUTIVE ENGINEER
MB GRID SD MBNR

Verified by
O/o EXECUTIVE ENGINEER
MB GRID DIVISION MBNR



చెన్నూరు మండలం, నారాయణపూర్ గ్రామ పంచాయతీ పరిధిలోని నారాయణపూర్ జనావాసములో మిషన్ భగీరథ పనులు పూర్తిచేయనైనది .

1. ఇంటింటి నల్లా కనెక్షన్లు
   - పాతని -
   - కొత్తవి (మిషన్ భగీరథ ద్వారా) 116
   - మొత్తం ఇంటింటి నల్లా కనెక్షన్లు 116
2. ప్రభుత్వ కార్యాలయాలకు నల్లా కనెక్షన్లు -
3. స్కూళ్లకు నల్లా కనెక్షన్లు 01
4. అంగన్వాడీలకు నల్లా కనెక్షన్లు 01
5. ప్రభుత్వ ఆరోగ్యకేంద్రములకు నల్లా కనెక్షన్లు -
6. ప్రార్థనాలయాలకు నల్లా కనెక్షన్లు -
7.
8.

మొత్తం నల్లా కనెక్షన్లు 118

కావున మొత్తం మా గ్రామములో 118 నల్లా కనెక్షన్లు కలవు . మరియు మా గ్రామ పరిధిలో ఏ ఒక్క ఇంటికి కూడా నల్లా కనెక్షన్లు మిగిలి లేవు. కావున ధృవీకరించనైనది

K. అమృత
సర్పంచ్
గ్రా॥ పం॥ నారాయణపూర్
మం॥ చెన్నూర్.

GP RESOLUTION

This is to resolve that the Mission Bhagiratha works are completed In Narayanapur Habitation of Narayanapur Gram Panchayath, Chennur Mandal, Mancherial district

1. Household Connections given:
   - i. Existing Household Connections : 0
   - ii. New Household Connections : 116
   - Total Household Connections : 116
2. Government Office/Buildings : 0
3. Schools : 1
4. Anganwadis : 1
5. Government Hospitals/PHCs : 0
6. Religious Places : 0

Total Tap Connections : 118

Thus, in Narayanpur Habitation, there are 118 household tap connections and there are no balance left over households without tap connections. Hence the same is certified.

Signature of Sarpanch with GP seal

Dr. Sunil.KR.BARNWAL, Secretary to CM, Jarkhand tastes MB tap water at Gajwel during Dec 2019

Sri. Ravi Kanth, HUDCO CMD Tastes the MB tap Water at Pothireddypallygudem of PAPally(M) during Dec 2019

Dr.Tamilisai Soundararajan, Hon’ble Governor,Telangana - inaugurating tap at Mulugu

O&M WORKSHOPS

COMMUNITY INVOLVEMENT

- Trainings were imparted to Gram Sarpanches, village secretaries, Anganwadi Workers and village Watermen
- Awareness programme being organised at WTP level involving public representatives and village watermen to explain about quality of water being produced.
- Health hazards of consuming R.O water is explained as part of trainings and awareness programme

WORKSHOPS at Village Level

Warangal (U)

Medak

Mahabubnagar

Suryapet

By Sri. Y. Dayaker Rao, Hon'ble Minister ,PR&RD

AWARENESS CAMPS

Bommarasipet(M)

Jagitiyal(M)

Darmasagar(M)

Peddapally (M)

AWARENESS CAMPS

BADRADRI-KOTHAGUDEM

ADILABAD

AWARENESS CAMPS

Kuppanagar(V), Jarasangam(M), Sangareddy

Kothamalgora(V), Mahabubnagar

Nerodigonda (V), Yapalguda(M), Adilabad

Govindpur (V), Bheempur (M), Adilabad

AWARENESS CAMPS

At ZP Meeting, Khmmam

Nargudem (V), Kattangur(M), Nalgonda

Adraspally (V), MC Pally(M), Medchal

Revulapally (V), Shankerpally(M), RR

Jal Jeevan Mission -Har Ghar Jal

- Jal Jeevan Mission(JJM) has been launched by GOI, to enable every household in villages to have Functional Household Tap Connection(FHTC) by 2024
- Operational Guidelines were issued in December 2019
- Supply to Houses – 55 lpcd (Surface Water/Ground Water)
- Funding : Central 50% and State 50% other than Himalayan, North Eastern States and Union Territories

Intake wells

Palair segment

55m x 12m x 14m Intake well

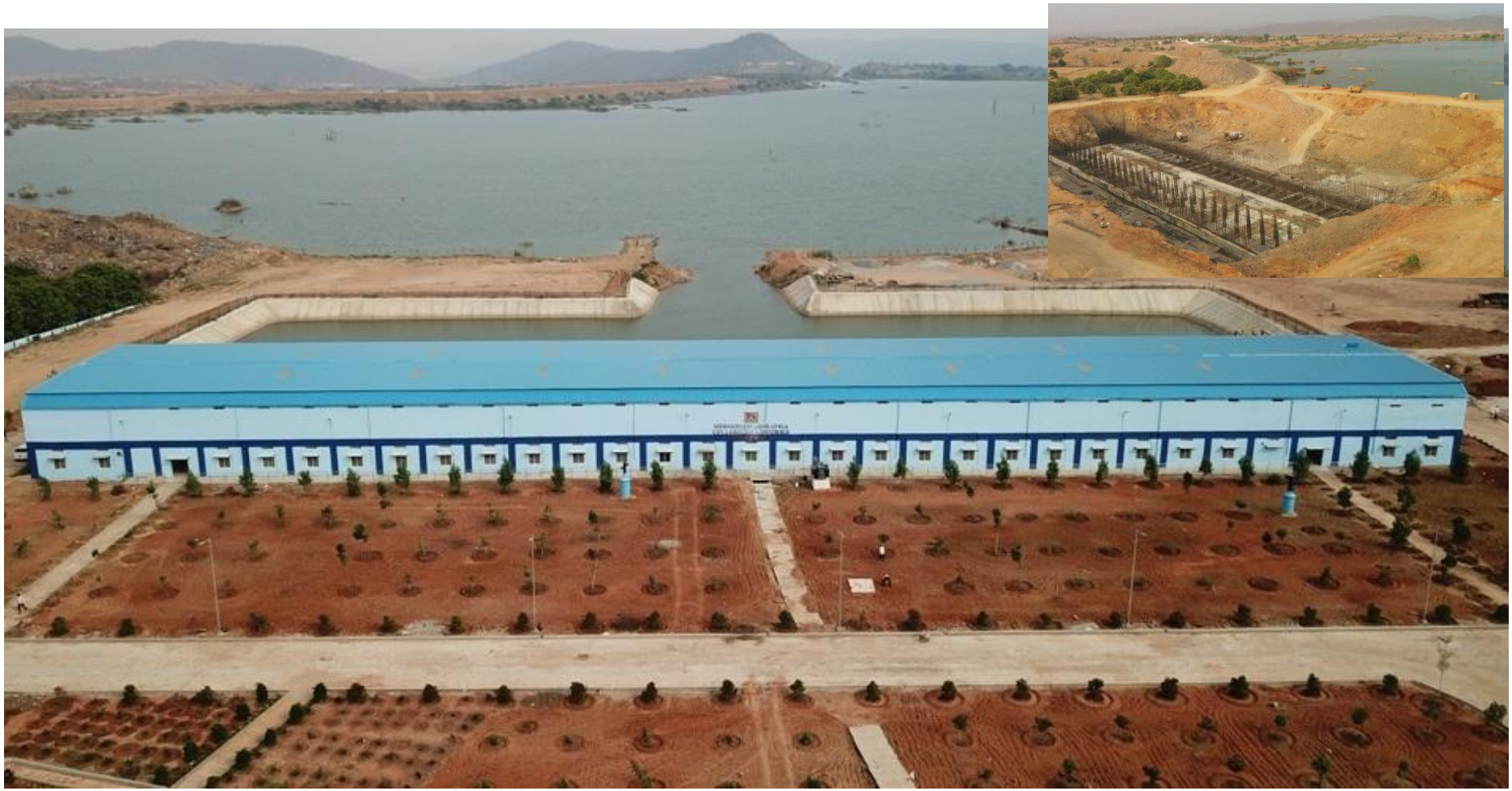
Singur Medak segment

30m x 12m Intake well at Singur reservoir near Peddareddipet

Yellore Segment

130.25 x 36m Intake Well at Yellore

Srisailam capacity: 215.8 TMC ; Dead storage : 53.85 TMC
Annual requirement: 9 TMC ; Habs covered: 4469 (3088 MBNR+1381 RR)



Yellore Segment

130.25 x 36m Intake Well at Yellore

Srisailam capacity: 215.8 TMC ; Dead storage : 53.85 TMC
Annual requirement: 9 TMC ; Habs covered: 4469 (3088 MBNR+1381 RR)

Yellore Segment

LMD Parkal segment

Intake well @ Chali vagu

Pusuru sub segment – Khammam Dist

8m dia Intake at Godavari Pusuru (Wazeedu mandal)

Wyra segment – Khammam Dist

Intake well @ Wyra Reservoir

Intake at Dummugudem

Treatment Plants

Jurala Segment

70 MLD WTP @ Jurala

Peddapally Ramagundam segment

160 MLD WTP @ Murmur

Srisailam segment

135 MLD @ Raghavapur

Singur Jukkal Segment

145 MLD WTP @ Peddareddy pet

LMD MHH Segment

125 MLD WTP @ LMD colony

Palair segment

90 MLD WTP @ Jeellacheruvu

Singur Medak segment

90 MLD WTP at Peddareddipet

Yellore Segment

31 MLD WTP @ Yellore

Structures & Pipelines

HMWSSB Gajwel segment

550 KL & 150 Kl OHBRs @Komatibanda

14000 KL GLBR@Komatibanda

HMWSSB -Warangal segment

1800 KL OHBR @ komaravelly

SRSP Adilabad segment

AKBR segment -GLBRs on Gollakonda hillock

LMD Parkal segment -GLBRs on Ramappa hillock

MHH segment -GLBRs on Porandla hillock

Yellore Segment

2.4 mtrs dia MS Pipe line

Yellore Segment

SRSP Balkonda segment

Pumpsets @ Mallannagutta WTP

Srisailam segment

120 KL @ Shabad

1000 KL OHBR@ Rakamcherla

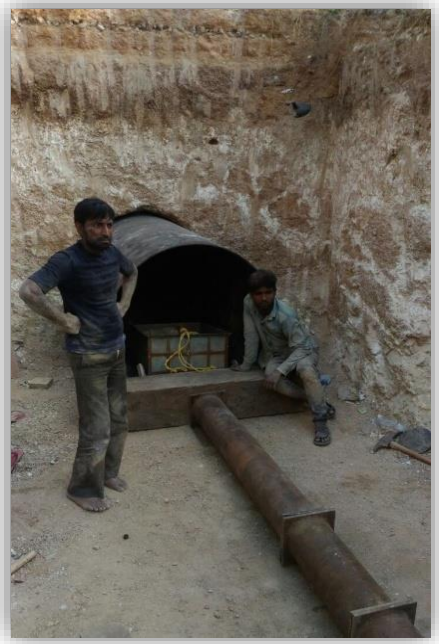
Electrical Sub stations

Railway crossings

Railway crossing executed with Horizontal drilling by jack pushing method

Railway crossing @ Vangapally

Canal & Highway crossings



Canal Crossing in Yellore Segment

Intra Village system-OHSRs

OHSR at G+2 Colony

40KL OHSR at Gurralapadu

HMWSSB Gajwel segment

Last mile connectivity at Bhadrachalam tribal areas

Excavation for Pipeline laying in Agriculture fields of Hon'ble CM at Yerravally, Medak dist as per ROU act

Inspection of Bhagiratha Works by H.E Governor and Hon'ble Chief Minister

THANK YOU