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THE ANDHRA PRADESH GAZETTE

PUBLISHED BY AUTHORITY

PART VII EXTRAORDINARY

No.32 AMARAVATI, FRIDAY, OCTOBER 10, 2025 **G.634**

NOTIFICATIONS BY GOVERNMENT

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PANCHAYAT RAJ & RURAL DEVELOPMENT DEPARTMENT

(RWS.II)

RURAL WATER SUPPLY & SANITATION DEPARTMENT- "OPERATION AND MAINTENANCE OF DRINKING WATER SUPPLY SCHEMES (RURAL) IN ANDHRA PRADESH" FORMULATED IN ACCORDANCE WITH THE GUIDELINES OF NJJM- NOTIFICATION OF POLICY.

[G.O.Ms.No.83, Panchayat Raj & Rural Development (RWS.II), 22nd September, 2025.]

NOTIFICATION

The Government of Andhra Pradesh hereby publish the policy on ''Operation and Maintenance of Drinking Water Supply Schemes (Rural) in Andhra Pradesh" formulated in accordance with the guidelines of National Jal Jeevan Mission (NJJM).

The O&M policy is appended to the Notification along with Annexures I to IV.

Annexure I: SOP for O&M of drinking water supply schemes.

Annexure II: Plan for Information, Education and Communication (IEC) and Social & Behaviour Change Communication (SBCC).

Annexure III: Plan for implementation, Capacity building, Finance, Monitoring and PRI readiness.

Annexure IV: SOP for Scheme automation, Service level agreement and real time monitoring of drinking water supply schemes in rural areas.

The Commissioner, PR&RD Department and the Engineer-in-Chief, RWS&S shall take necessary action to implement the O&M policy within the time lines stipulated in the policy.

This order issues with the concurrence of the Finance department, vide their U.O. No. 2879479/ FIN01-FMU0PC(PRRD)/84/2025-FMU- PRRDRWS, Dated: 18.09.2025.

A copy of this order is available on the internet and can be accessed at the address– http://www.ap.gov.in/goir.

SHASHI BHUSHAN KUMAR,
Principal Secretary to Government.

GOVERNMENT OF ANDHRA PRADESH

PANCHAYAT RAJ & RURAL DEVELOPMENT DEPARTMENT

OPERATION AND MAINTENANCE POLICY

FOR

RURAL DRINKING WATER SUPPLY SCHEMES

IN

ANDHRA PRADESH

(Appended to G.O.MS.NO.83, Dated:22.09.2025)

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Operation and Maintenance Policy
For
Rural drinking water supply schemes in Andhra Pradesh

1. BACKGROUND

National Jal Jeevan Mission (NJJM) mandates a set of 19 integral points to be incorporated in Operation and Maintenance (O&M) of Drinking Water Supply Scheme. The mission mandates the states to notify the O&M policy by March 2025 to ensure a sustained and reliable supply of 55 LPCD of quality drinking water through Functional Household Tap Connections (FHTCs).

This document outlines the operation and maintenance policy (hereafter called O&M Policy), which builds on and strengthens the framework established by Government Order No. 2290 dated 20-12-2012. In order to further enhance service delivery, governance, and cost recovery, the Rural Water Supply and Sanitation (RWS&S) and Panchayat Raj & Rural Development (PR&RD) Departments, in collaboration with agencies such as Swachh Andhra Corporation (SAC) and the Society for Elimination of Rural Poverty (SERP), have developed an updated O&M policy.

The policy will apply to the entire rural drinking water systems including Multi Village Water Supply Schemes (MVS), and Single Village Schemes (SVS) and In-Village Distribution Network (IVDN), covering those that are in planning, implementation, or operation, including the Sri Satya Sai Drinking Water Supply Schemes.

The Operation and Maintenance (O&M) Policy aims to ensure sustainable and reliable rural drinking water service delivery to every household in Andhra Pradesh. It is designed to enhance service quality, optimize resource utilization, and promote transparent, accountable governance through Panchayati Raj Institutions (PRIs).

2. OVERVIEW OF RURAL WATER SUPPLY INFRASTRUCTURE

The rural water supply sector holds critical importance in Andhra Pradesh, where approximately 70.80% of the population resides in rural areas. The sector's relevance is further underscored by challenges such as recurring droughts and floods, climate change, declining groundwater levels, and reduced per capita water availability. These challenges call for a paradigm shift from a

predominantly infrastructure-focused approach to one that emphasizes service delivery, decentralized governance, and robust policy and regulatory frameworks.

State Profile: Key Demographic and Administrative Details

Geographical and Administrative Snapshot

- No of Districts : 26
- No of Constituencies : 175
- No of Rural Constituencies : 158
- No of Manda ls : 679
- No of Rural Mandals : 659
- No of Gram Panchayats : 13,326
- No of Habitations : 48,349

Rural Demographics (as of 01.04.2024)

- Total Population : 538.43 lakhs
- Rural Population : 381.24 lakhs (70.80%)
- Plain Population : 282.40 lakhs
- SC population (7896 Habs) : 71.90 lakhs
- ST population (9930 Habs) : 26.94 lakhs

Rural Drinking Water Infrastructure

In rural Andhra Pradesh, water supply is primarily ensured through Single Village Schemes (SVS), Multi Village Schemes (MVS), and a large network of Hand Pumps, all of which play a critical role in meeting household-level drinking water needs. Both SVS and MVS utilize an In-Village Distribution Network (IVDN) to ensure last-mile connectivity and service delivery.

Infrastructure Overview:

- Multi Village Schemes (MVS): 549
- Single Village Schemes (SVS): 53,024
- Hand Pumps (HPs): 2,00,101

Scheme Typology and Governance Mechanism

Single Village Schemes (SVS): SVS source water from sustainable local sources such as bore wells, infiltration wells, or open wells. Designed with minimal infrastructure, these schemes supply water within a single village or Gram Panchayat. They are managed directly by the Gram Panchayat, with

operational support from the Village Water and Sanitation Committee (VWSC) and local water operators.

Multi Village Schemes (MVS): MVS are designed to serve multiple habitations by sourcing water from dependable surface sources, typically rivers. Water is transported through gravity or pumping mechanisms over long distances. These capital-intensive schemes are managed by the Zilla Praja Parishads (ZPPs) in close coordination with the respective Gram Panchayats, which are responsible for intra-village operations and maintenance through the IVDN.

Hand Pumps (HPs): Widely used across rural areas, hand pumps are maintained by the Mandal Praja Parishads (MPPs), the intermediary tier of the Panchayati Raj Institutions (PRIs).

In addition to maintenance responsibilities, MPPs also allocate funds from their General Funds and Finance Commission grants to support the operation and maintenance of SVS and MVS, wherever required. These allocations are planned through their Annual Action Plans, ensuring sustainability of services.

3. KEY CHALLENGES

Problems experienced by rural water supply sector include groundwater mismanagement, depletion, seasonal water shortages, financial difficulties, institutional problems, inadequate human resources, lack of sector coordination, insufficient community involvement, inadequate operation and maintenance, lack of willingness to pay for the services, lack of hygiene education, poor water quality, and insufficient information and communication.

The State also has an insight that infrastructure and asset-based approach to provide drinking water supply is not sufficient to achieve sustainable services. Infrastructure in rural water supply sector should be accompanied with comprehensive policy on operation and maintenance. With increasing demand on freshwater on one side and the resource base being finite on the other hand, there is an urgent need for ‘water discipline’ by all stakeholders. Operation & Maintenance measures must be taken along with legal, policy and regulatory mechanisms as well as institutional architecture in the rural water supply sector. The O&M policy is a long-felt need and will enhance capacity of sector stakeholders for sustainable operation and maintenance.

4. EXISTING O&M POLICY

The O&M policy being adopted by the Government is based on the instructions issued in GO.Rt.No.2290 Dated.20-12-2012 of PR&RD (RWS 1) Department. As per the said instructions, the O&M policy envisaged by the Government assigns the responsibility of O&M as follows:

i. **Single Village Schemes (SVS):** GPs through Village Water Supply and Sanitation Committees (VWSCs).

ii. **Multi Village Schemes (MVS):**
   a) In-village infrastructure of MVS: GPs through Village Water Supply and Sanitation Committees (VWSCs)
   b) Transmission network comprising Head Works, balancing reservoirs, intermediate sumps, pumping and gravity mains: Zilla Praja Parishads concerned through Service Providers.
   c) Satya Sai Drinking Water Supply Projects: A separate 10 membered autonomous committee headed by District Collector, SE, RWS&S, Irrigation, Member from Satya Sai Trust etc.,

iii. The RWS&S Department provides technical assistance to the GPs and ZPPs for operation and maintenance of SVS and MVS respectively.

The Finance Commission grants released by the Government are being utilised for O&M of both SVS and MVS apart from GP/MPP/ZPP general funds. The GoAP also releases funds if the Finance Commission grants available with PRIs are not sufficient to take up O&M.

The revised uniform O&M Policy for Single Village Schemes (SVS) and Multi Village Schemes (MVS) is formulated as mentioned hereunder with the following salient features to have a comprehensive policy in alignment with the guidelines issued by NJJM with in the legal framework and rules in vogue governing the subject matter.

5. NEED FOR O&M POLICY

Andhra Pradesh, with 48,349 rural habitations and a population of 38.1 million, faces challenges in providing safe, adequate, and sustainable water supply. Key issues include suboptimal service levels (below 55 LPCD), infrastructure gaps, and vulnerability due to droughts and groundwater depletion. These are further compounded by limited institutional capacity, poor community engagement, fragmented financing, and weak O&M systems.

Despite significant investments in SVSs and MVSs, an asset-centric approach alone has not ensured long-term reliability. A comprehensive O&M policy is thus necessary to protect these investments and enhance system performance, underpinned by strong regulatory, institutional, and financial frameworks.

With groundwater sources becoming less viable, the state is prioritizing surface water-based MVSs, aligning with the Jal Jeevan Mission's goal of universal FHTC coverage by 2028 (currently 73.38%). The O&M policy will focus on strengthening systems at the GP and district levels through cost recovery, bulk water metering in MVSs, and institutional capacity-building for professional service delivery.

An O&M policy is essential for sustained rural water supply. By focusing on water sources, infrastructure, financing, human resources, and governance, it will enhance reliability and efficiency. This policy directly supports Jal Jeevan Mission objectives by managing risks and ensuring consistent, quality service, building stakeholder capacity for long-term water security.

The overall goal of the O&M policy is to enhance the functionality, reliability, and sustainability of rural water supply systems, fostering a resilient water infrastructure for rural communities in Andhra Pradesh.

6. OBJECTIVE

The primary objective of this policy is to ensure the sustainable and reliable provision of drinking water to rural communities in Andhra Pradesh through effective operation and maintenance (O&M) of water supply systems. Specifically, the policy aims to:

- Promote the sustainable management and responsible use of water resources, fostering climate-resilient and community-managed water infrastructure across the state.
- Strengthen the institutional framework of Panchayat Raj Institutions mandated with the O&M of water supply schemes to ensure effective and efficient service delivery.
- Implement effective O&M practices to minimize infrastructure wear and tear and extend asset lifespan.
- Ensure equitable and consistent access to safe drinking water for all rural communities.
- Establish clear O&M protocols with well-defined roles and responsibilities for all stakeholders.

- Deliver efficient, accountable, and sustainable water supply services.

The guiding principles for implementing the new O&M policy are:

- Ensuring the self-sustainability of water supply schemes.
- Promoting water conservation and the systematic implementation of metering systems.
- Ensuring consistent water quality standards and assurance.
- Enhancing service delivery and increasing consumer satisfaction.
- Encouraging active community participation in water management.
- Empowering Panchayat Raj Institutions to manage the O&M tasks.
- Enhance system sustainability through source protection, technology adoption, and institutional coordination.

7. SCOPE

This Policy framework formulated for O&M of Drinking Water supply schemes approved and adopted by the Government of Andhra Pradesh is applicable to all Drinking Water supply schemes located in Rural areas of Andhra Pradesh. The policy includes various aspects of operation and maintenance, about water resources, infrastructural assets and equipment including ***water purification plants (RO Plants)***, institutional arrangements, human resource management, capacity building, IEC, financial systems and cost recovery.

The local Gram Panchayats are entrusted with the O&M responsibility of SVS and IVDN *with the technical support of RWS&S, whereas* the responsibility to maintain MVS is shared *among* the Zilla Praja Parishad **(from the bulk water supply unit to the village point)** and the respective Gram Panchayats **(from village point to the households)** *supplied with water either by themselves or through service providers as decided by ZPP concerned with the technical services provided by RWS&S Department.*

The policy also covers the roles and responsibilities of all stakeholders Departments namely Rural Water Supply and Sanitation (RWS&S), Panchayat Raj & Rural Development (PR&RD) and the agencies such as Swachh Andhra Corporation (SAC), Society for Elimination for Rural Poverty (SERP), etc.

"Operation refers to timely and daily operation of the components of a Water Supply system such as head works, treatment plant, machinery and equipment,

conveying mains, service reservoirs and distribution system etc., effectively by various technical personnel, as a routine function."

"Maintenance is defined as the act of keeping the structures, plants, machinery and equipment and other facilities in an optimum working order. Maintenance includes preventive /routine maintenance and also breakdown maintenance. However, replacements.

Handing-over operations:

When handing over Rural Water Supply (RWS) Schemes, the RWS&S department should follow a structured approach to ensure continuity and efficiency on the following key issues.

1. **Institutional Mechanism**: Shall ensure coordination among State Water and Sanitation Mission (SWSM), District Water and Sanitation Mission (DWSM), and Gram Panchayat and its Functional Committee for Natural resources management/ Zilla Praja Parishad and its Standing Committee (vii).
2. **Documentation & Records:** The Engineers of RWS&S Department should handover detailed records of infrastructure, financials, operational procedures, and maintenance schedules to the ZPs and GPs concerned.
3. **Stakeholder Coordination**: Shall engage local governance bodies, technical teams, and community representatives to ensure ownership and accountability.
4. **Asset Management**: Shall Conduct a thorough assessment of infrastructure, including pipelines, treatment plants, and storage facilities before handing over.
5. **Community Participation:** Shall **e**ncourage local governance structures to take an active role in monitoring and decision-making by the communities.

8. LEGAL AND INSTITUTIONAL FRAMEWORK

8.1 Legal basis: The Operation & Maintenance (O&M) Policy for rural water supply schemes in Andhra Pradesh is grounded in the legal and institutional framework established by the Government of Andhra Pradesh and is guided by national constitutional provisions. The legal foundation for the Operation and

Maintenance (O&M) of rural water supply schemes in Andhra Pradesh is rooted in the following frameworks:

Consequent on 73rd Amendment to the Constitution in 1992, a new part (Part IX) namely "**Panchayats"** was added to the Constitution. This included the new "**Eleventh Schedule**" which contains 29 subjects devolved to the Panchayats. Under this Schedule, the subject Drinking Water is listed at serial no. 11 and Sanitation is listed at serial no. 23. In accordance with these Constitutional provisions and in accordance with Andhra Pradesh Panchayat Raj Act (APPR Act 1994), a 3-tier system of Local Governance i.e., at the Village level (Gram Panchayat), Block level (Mandal Praja Parishad) and at District level (Zilla Praja Parishad) is in existence in the Rural areas of Andhra Pradesh.

As per the Act, the responsibility of operation and maintenance of all RWS assets lies with GPs ***as all the water works and water supply assets are vested in the Gram Panchayats under Section 80***. In addition, the Government have devolved certain powers and functions to the Panchayat Raj Institutions in respect of Rural Water Supply Department as given below vide G. O. No. 569 PR&RD(RWS-I) Department, Dated:22.12.2007.

The Panchayat Raj Institutions to strive for system improvements and foster better relations between the stakeholders and service departments and take steps to achieve convergence of schemes / activities for filling the gaps in delivery of services efficiently. As per the activity mapping exercise undertaken by the State Government, the roles and responsibilities entrusted to the three tiers of Panchayat Raj Institutions on Rural Water Supply as ordered in the G.O. 569 are given below:

Zilla Praja Parishad	Mandal Praja Parishad	Gram Panchayat
1. Participation in planning of CPWS Scheme. **2.** Maintenance of CPWS Schemes / Multi Village Schemes (MVS) 3. Review the water testing reports and Monitor the Quality	1. Participation in planning of water supply schemes covering more than one Gram Panchayat. 2. Review and monitor the maintenance of Hand pumps, PWS Schemes and distribution of grant as per planning. 3. Providing and	1. Identify schemes and locations, through the involvement of Gram Sabha & Gram Panchayat. 2. Operation and Maintenance of single village schemes 3. Regular chlorination of open wells and treat

Zilla Praja Parishad	Mandal Praja Parishad	Gram Panchayat
of Drinking Water 4. Arrange Training Programmes, Seminars and IEC activities on Health, Hygiene and Safe Drinking Water. 5. Review the activities of District Water and Sanitation Mission.	entrustment of Transportation and hiring of wells for Drinking Water. 4. Review the water testing reports and Monitor the Quality of Drinking Water	water and cleaning of OHSR 4. Ensure proper distribution of water to all locations of households in its villages. 5. Monitoring and Surveillance of quality of water 6. Take up the works relating to laying of pipelines for drinking water supply in the village 7. Promote Household connections 8. Formation of water and sanitation committee and levy and collect the user charges.

Andhra Pradesh Water, Land and Trees Act, 2002 (AP WALTA): Promotes water conservation and regulates ground and surface water use, prioritizing drinking water as the first charge on reservoir sources (Andhra Pradesh State Water Policy, 2008).

The Andhra Pradesh State Water Policy, 2008 is issued to ensure the comprehensive multi-sectoral planning, development and management of the State's water resources, and effective, efficient, equitable and sustainable service deliveries for various water uses. As per the policy, drinking water is the first charge on reservoir sources.

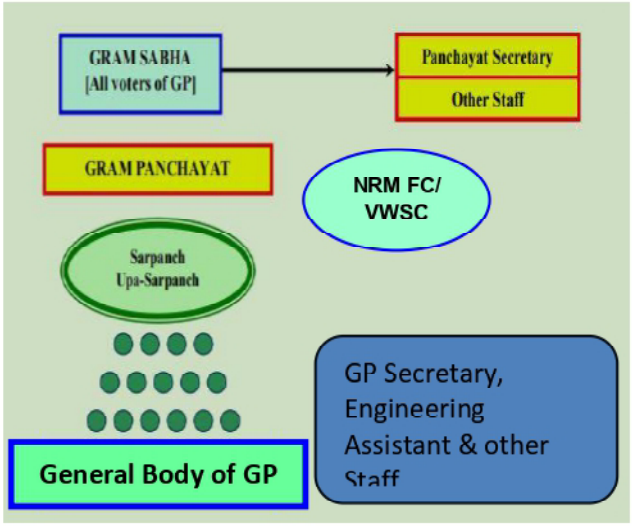
Key Government Orders: The State have legal and regulatory framework for effective Operation and Maintenance.

SNO	Legal Frame work	Government Orders
1	GPs are responsible for drinking water supply	PR Act 1994 section 45 (1) (viii), 80 and 81
2	Statutory committee to oversee operation and maintenance of SVS is Gram Panchayat Functional Committee for natural resources management	This committee is formed under section 40 of Andhra Pradesh Panchayat Raj Act 1994 to strengthen the local bodies. The Government in G.O.M.S.No.74 Dated.04-06-2003 of PR&RD (Pts. IV) Dept., prescribed the composition of committee
3	Statutory committee to oversee operation and maintenance of MVS is Zilla Parishad Works Committee (Standing Committee-VII).	sub section 1 of section 268 read with sub section 4 of section 187 of AP Panchayat Raj Act 1994.
4	Preparation of Bye-laws for collection of user charges.	As per G.O.Ms.No.434, PR&RD and Relief (Mandal I) Dt.15th, July, 1994, the Gram Panchayat/Mandal Parishad/Zilla Parishad may make Bye-laws not inconsistent with the act, or with any other law for the time being in force. No Bye-law shall have effect until the same has been approved by the commissioner, PR/Zilla Parishad/ Government respectively. Penalization provisions shall be made part of the Bye-laws and penalties as listed in Schedule III & IV of the APPAR Act.
5	Sufficiency of funds	As per G.O.Ms.No.18 Dt.24-03-2017, for drinking water emergencies, 12% of General Funds of Zilla Praja Parishad/Mandal Praja-Parishad are allocated. As per G.O.Ms.No.19 Dt.24-03-2017, for drinking water emergencies, 15% of General Funds are allocated. As per PR act 1994, (section 71) and G.O.Ms.No.97, PR&RD, Dt: 14.03.2002 GP can impose Special tax to maintain the scheme self-sufficiently. The GP can provide tap connection and can collect Private Tap Fee. 30% of Finance Commission grants shall be utilised for drinking water and sanitation. **Mandal Praja Parishads (MPPs) can also contribute funds from their General Funds and Finance Commission grants towards O&M of SVS and MVS besides the Hand pumps maintenance.** **The RWS&S Department will pool-up and utilize all**

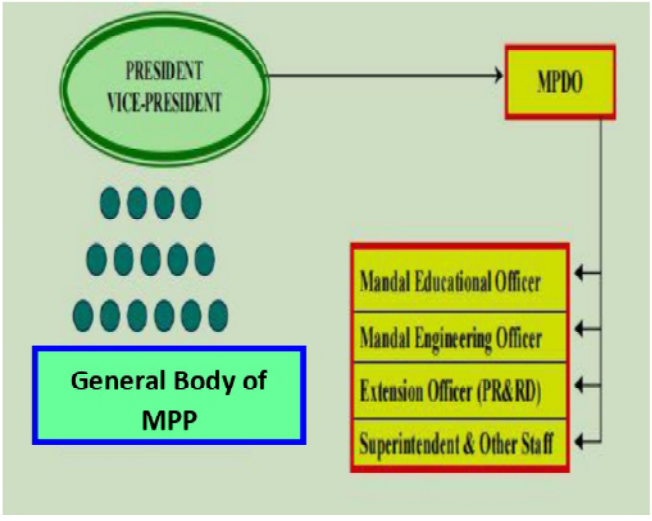
SNO	Legal Frame work	Government Orders
		relevant funds intended for O&M of Water Supply Schemes, if any, directly released to the RWS&S Department by the Government of India and by the State Government from time to time. The Department will spend such funds for O&M after obtaining necessary consent/approval of the respective PRIs through their resolutions.
6	Swachh Andhra Corporation (SAC)	The funds available with the SAC for Grey Water management and other sanitation activities shall be utilized under this policy.
7	Social Audit	As per PR act 1994, the GP is empowered to perform social audit (Community Monitoring) through Gram Sabha.
8	a) Replacement/ Retrofitting of defunct schemes. b) Augmentation of existing schemes	Government will review the working conditions of all SVS and MVS from time to time and prepare Action Plan for timely replacement/ retrofitting of defunct schemes and augmentation of existing schemes in consultation with Gram Panchayat in respect of SVS and ZPPs in respect of MVS.

8.2 Institutional Setup: The overall governance and management of drinking water supply in the rural areas of the state shall be implemented through institutions/ organizations at three different levels—State, District and Village level. The nature of institution for management of the scheme at the local level would be decided by the nature of water supply scheme, i.e., whether SVS or MVS.

A. PRIs Setup

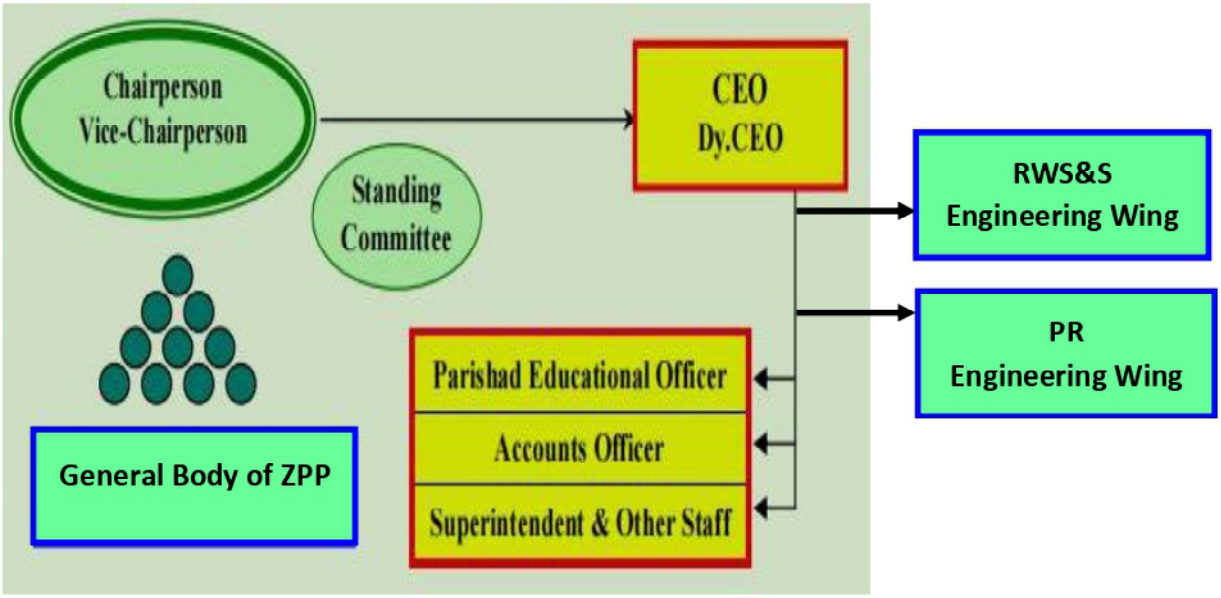


Gram Panchayat

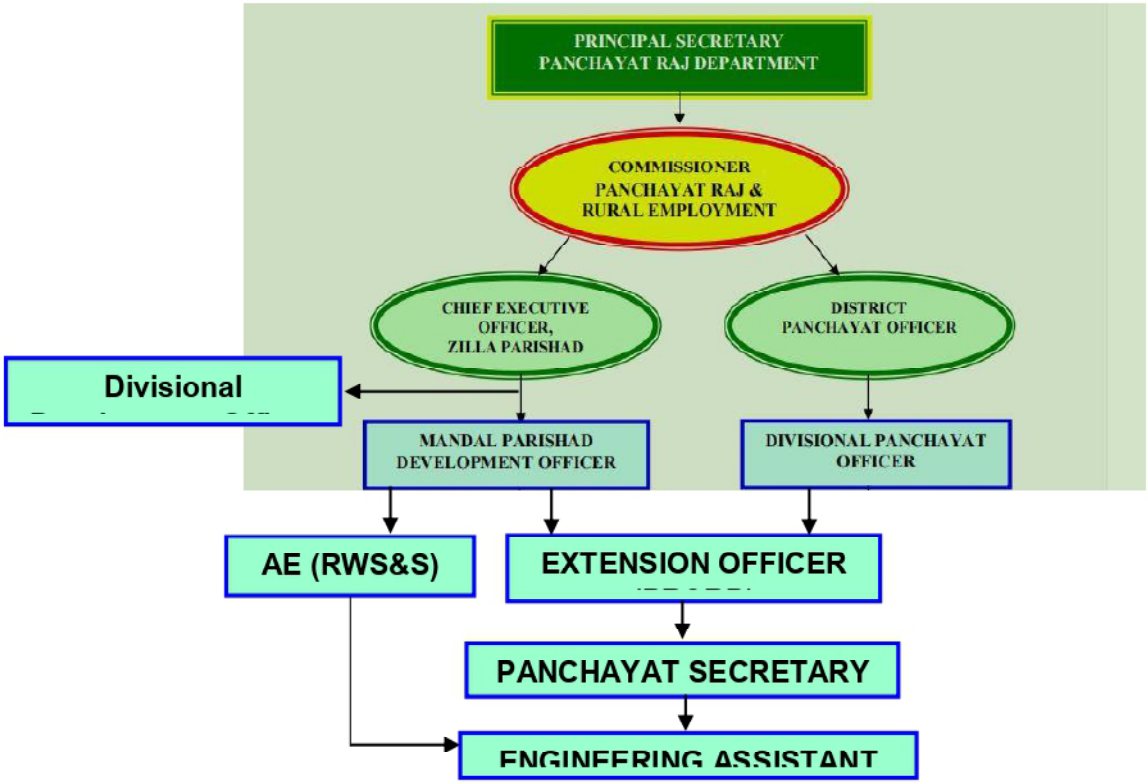


Mandal Praja Parishad

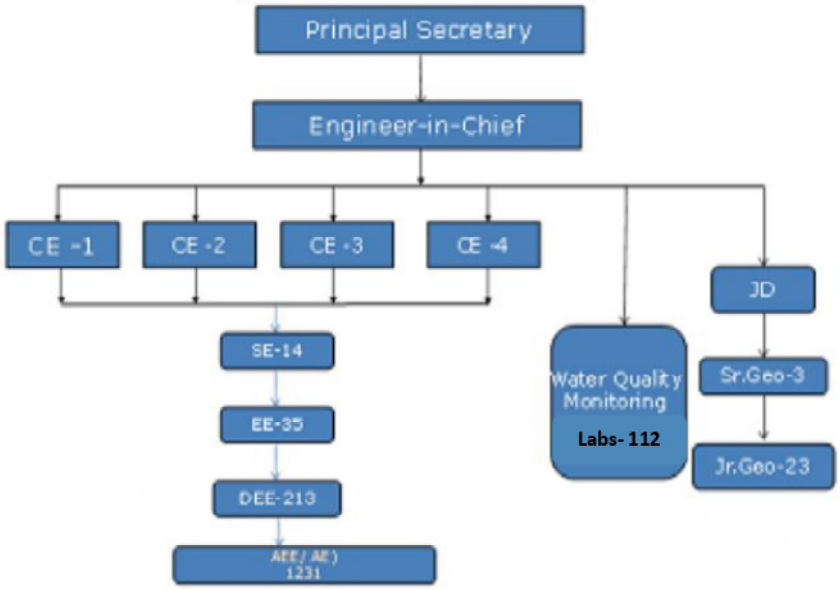
ZILLA PRAJA PARISHAD



B. ORGANISATION SETUP of PR&RD Department



C. ORGANISATION SETUP of RWS & S Department



D. Institutional Arrangements

a) State Level: State Water and Sanitation Mission (SWSM):

The State Water and Sanitation Mission (SWSM) is the Apex committee constituted at State level of under the chairmanship of Chief Secretary of AP with Principal Secretary of PR&RD and RWS&S as its Member Secretary. This Committee will be the overall in-charge and shall perform functions as per guidelines of Government of India, state rules, guidelines and policy etc., or any other programmes in vogue from time to time.

b) District Level: District Water and Sanitation Mission (DWSM):

(i) The District Water and Sanitation Mission (DWSM) constituted at the district level and headed by District Collector along with Members from line Departments who are stakeholders. DWSM will consider and recommend Administrative Approval of the in-village water supply schemes, protection and preservation plan of village water sources, grey water management, preventing water bodies/ sources from pollution, etc. Further, the DWSM will prepare district Annual Action plan in consultation with people's representatives such as MP/ MLAs/ Chairperson of Zilla Praja Parishad.

(ii) **Zilla Praja Parishad and its Standing Committees: Standing Committee (vii)** of ZPP will review the Drinking Water situation in the rural areas of the district and formulate & implement plans including O&M of water supply schemes.

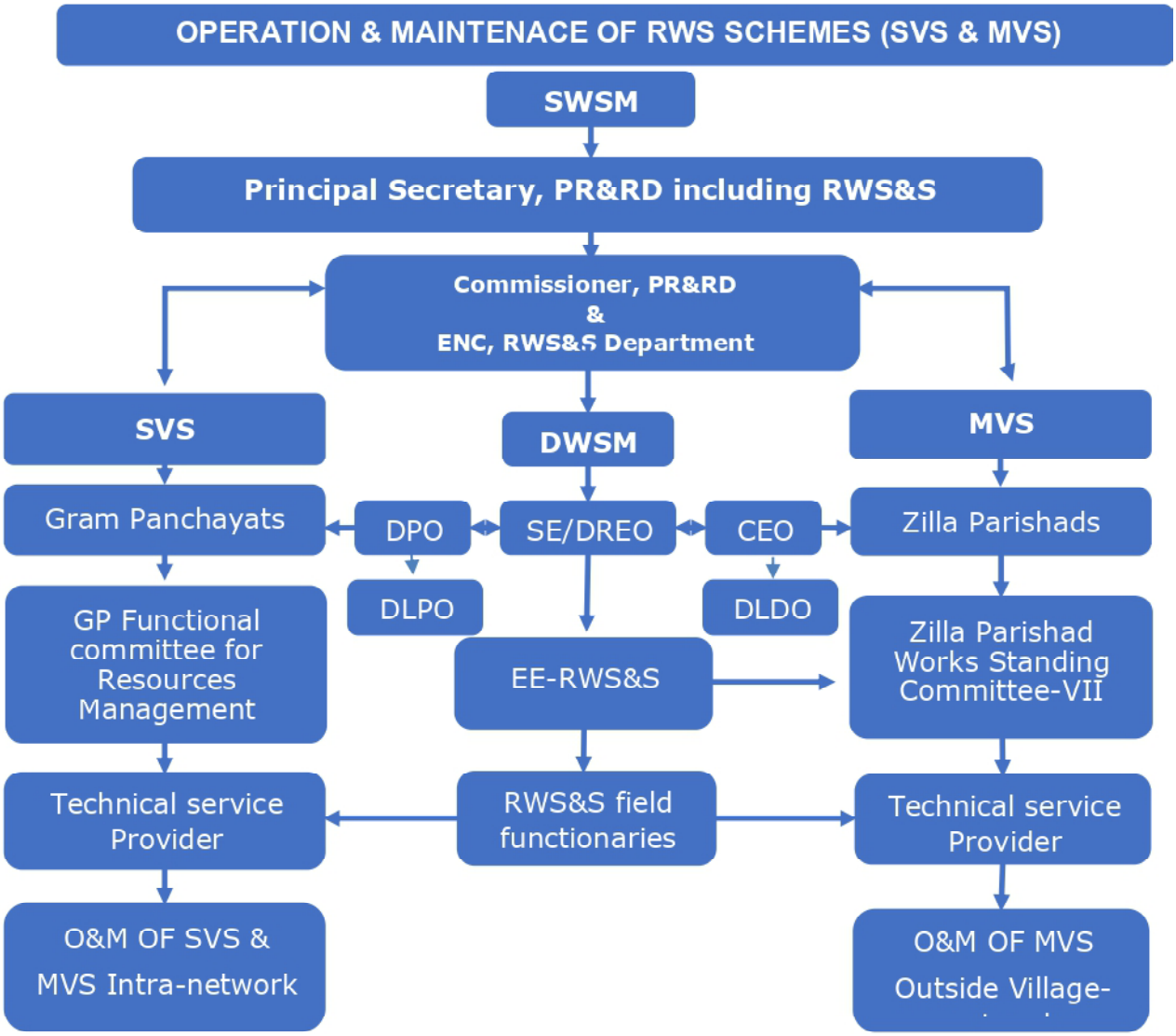
c) **Mandal Praja Parishads (MPPs)** contribute to the O&M of Hand pumps as their primary responsibility and also contribute to O&M of SVS and MVS wherever necessary with the consent of respective Gram Panchayat for SVS and ZPP for MVS from their available funds.

d) ***Village Level:***

(i) Gram Panchayat and its Functional Committee for Natural resources management *will look after overall water management including schemes and water resources*

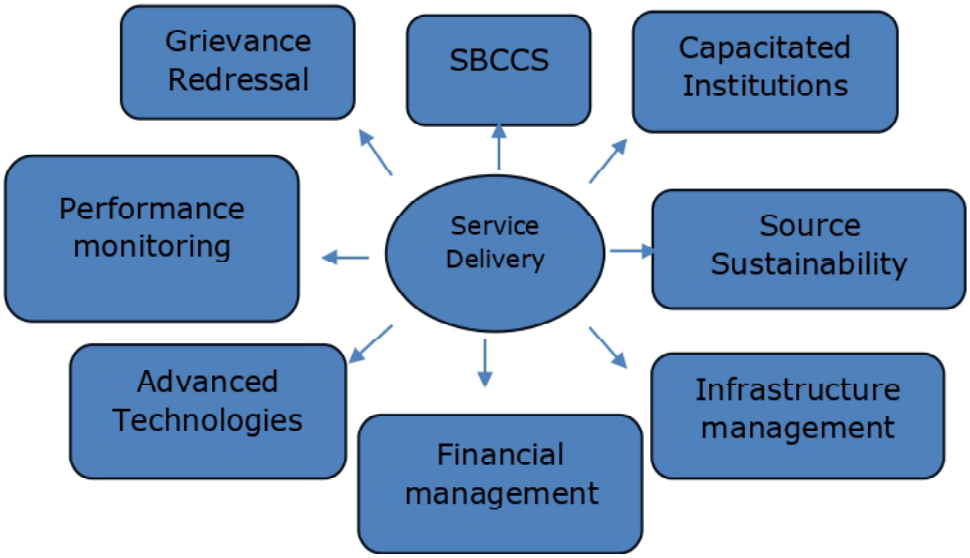
(ii) Village Water and Sanitation Committee (VWSC): *According to JJM guidelines the sub-committee of GP i.e., the Functional Committee will act as the VWSC/Paani Samithi/User Group and function as a legal entity.*

The VWSCs existing and functioning in the Gram Panchayat are subsumed into the Functional committee of Gram Panchayat, as such there will be a single committee for Water Sanitation at Gram Panchayat Level.



9. OPERATION & MAINTENANCE FRAMEWORK

The Operation and Maintenance (O&M) framework for Single Village Schemes (SVS) and Multi Village Schemes (MVS) in Andhra Pradesh is designed to ensure sustainable, reliable, and equitable water supply in alignment with the National Jal Jeevan Mission (NJJM) guidelines and the legal framework of the Andhra Pradesh Panchayat Raj Act, 1994 (APPR Act). The framework establishes clear responsibilities, service standards, and financial mechanisms to achieve 55 liters per capita per day (LPCD) of potable water and 100% Functional Household Tap Connections (FHTCs) by 2028. The O&M framework are shown in the figure below.



The O&M Model of water supply Schemes is divided into two parts i.e., PART-A deals with Single Village Schemes (SVS) and Intra-village network of Multi Village Schemes. PART-B deals with Multi Village Schemes (MVS) up to village point. Additionally, Part -C provides O&M of RO plants.

PART-A: OPERATION AND MAINTENANCE OF SINGLE VILLAGE SCHEMES AND IN-VILLAGE DISTRIBUTION NETWORK

The stakeholders of SVS are

- Gram Panchayat (GP)
- Functional Committee for natural resources management of GP.
- Mandal Praja Parishad

- PR&RD Department.
- RWS&S Department.
- Water Resources Department (for surface Water)
- Energy Department (for un interrupted power supply)
- Households

The Operation and Maintenance of Single Village Schemes and intra-village network of Multi Village Schemes located in a village is entrusted to the "Gram Panchayat" concerned as per APPR Act, 1994. The "Functional Committee for Natural Resources Management (NRM)" constituted in the GP is responsible for overall water management in the village. The VWSC constituted as per JJM guidelines is subsumed into functional committee of GP.

The Natural Resource Management (NRM) committee is formed under section 40 of Andhra Pradesh Panchayat Raj Act 1994 for the purpose of sharing the work of the Gram Panchayat and to improve its service delivery efficiency in drinking water supply matters. The Government in G.O.M.S.No.174 Dated.04-06-2003 of PR&RD (Pts. IV) Dept., prescribed the composition of committee as follows:

a) Composition of "Gram Panchayat Functional Committee for natural resources management":

Position	For Plain areas
Chairman	Sarpanch, Gram Panchayat
Members	• At least 1 ward member and maximum of 5 ward members. (At least 1 ward member shall be from SC/ST/BC/Woman Category) • MPTC of GP • 2 Leaders of women self-help groups • 2 Persons having expertise on the subject • Cutting edge level functionaries of line departments and agencies working at the panchayat level like Anganwadi workers, MPHA(F), MPHA(M), Multi-Purpose Extension Officers of Agricultural Department, Head Masters of local schools, and any other functionaries. • Chairpersons of existing committees like NSS/School Education Committee/VO/Water Shed Committee/WUA

Member Convener	Panchayat Secretary of Gram Panchayat concerned.

(b) Roles and Responsibilities of Gram Panchayat Functional Committee for natural resources management/ VWSC

a) Manage water works and ensure that Single Village Schemes and intra village network of Multi Village Schemes are hygienically maintained.
b) Take up steps to conserve surface and ground water and prevent overflowing of useful water into drains.
c) Attend desilting of tanks.
d) Undertake water conservation measures such as construction of check dams, percolation tanks wherever feasible.
e) Keep a check on drilling of bore wells in consultation with ground water department to avoid depletion of ground water acquihires.
f) See that drinking water storage tanks are cleaned regularly.

(c) Bye-laws on Drinking Water Supply by Gram Panchayats

The GP is empowered to formulate **Bye-laws** under Section 270 of the Andhra Pradesh Panchayat Raj Act 1994. The timeline for making byelaws by GPs is not more than 45 days after notification of policy.

As per G.O.Ms.No.434, PR&RD and Relief (Mandal I) Dt.15th, July, 1994, the Gram Panchayat/Mandal Praja Parishad/Zilla Praja Parishad may make Bye-laws not inconsistent with the act, or with any other law for the time being in force. No Bye-law shall have effect until the same has been approved by the Commissioner, PR /Zilla Praja Parishad/ Government respectively. The Bye-laws will address the following aspects of O&M of SVS.

i. Time schedule for drinking water supply on daily basis
ii. Prior intimation system to the Public in case of emergencies
iii. Entrustment of Scheme to NRM FC/ SHGs/ VOs/ Private Operator
iv. Closing of Pit Taps and unauthorized connections.
v. Water Quality Testing by Field Test Kits.
vi. Decide the categorization of water supply and sizes of the tap connection
vii. Decide tariff (user charges) for water supply to households.

- **Water Tariff based on volumetric consumption**

The Gram Panchayat and its Functional Committee for Natural resources

management shall fix tariff based on volumetric consumption and cost recovery principles and will follow IBT (Incremental Block Tariff) model. Committee shall implement water tariff on its consumer categories, offering 55litres/Household/month at a basic price and thereafter, introduce incremental block tariff. The committee may fix the tariff in such a way to recover cost of operation and maintenance, whether schemes are metered or non- metered.

In case bulk water is supplied through MVS to village by the ZP, the user charges shall be paid to the respective ZP towards O&M charges by the GP concerned.

The committee will follow a monthly cycle for billing and collection.

i. Purchase or Procurement of materials required for undertaking minor repairs for the scheme.
ii. Undertake collection of water charges, unless it is specifically delegated to the Private Operator.
iii. Timelines for collection and payment of Fee/ tax etc.
iv. Identification & Registration of the Private Operator for making payments etc., if the work is entrusted.
v. Supervision and Monitoring of the scheme and Private Operator's work, if entrusted.
vi. Regular payments for power supply charges of the scheme and Energy Audit
vii. Verification method of the scheme and all records, registers and water analysis reports.
viii. Imposing penalties for various types of lapses.
ix. Responsibilities of HH and GP in post natural calamities and also during epidemic conditions.
x. Treatment method of waste water released from the RO Plants

(d) RWS&S Department:

The Engineering staff of RWS&S Department including the Engineering Assistants working at village level are the technical staff **responsible** in terms of providing technical support for O&M of SVS and Intra village network of Multi Village Schemes.

Delegation of powers on technical sanction as per GO.Ms.No.41 Dt.24-05-2018 of Water Resources Reforms (Dept).

a. Up to Rs. 40.00 lakhs by respective Executive Engineers, RWS&S.
b. Above Rs. 40.00 lakhs and up to 2.00 crores by respective Superintending Engineers, RWS&S.
c. Above Rs. 2.00cr by Chief Engineer, (O&M), RWS&S.

(e) Financial Sustainability & Powers of GP

The operation and maintenance cost includes monthly electricity bill, operator wages, purchase of chemicals, repairs and replacements, nominal upgradation, monthly scheme expenditure and other miscellaneous items. For effective O&M of SVS there are statutory provisions made available for Gram Panchayats to mobilize funds and utilize the same for O&M under the APPR Act.

i. Own Source Revenue (OSR) of GPs available for O&M of SVS:

The GP is responsible for drinking water supply and source sustainability as per the provisions of APPR Act 1994 ***within the limits of its funds*** (sections 45 (1) (viii), 80 and 81). As such, wherever there is shortage of financial resources at Gram Panchayat, after duly exploring all available funding sources mentioned here under, the Gram Panchayat shall submit necessary proposals to Government through DWSM and SWSM duly routing through Commissioner, PR&RD and ENC, RWS&S to bridge the gap of funds, if any.

The assets and properties pertaining to SVS are vested in Gram Panchayat and hence the O&M function is also entrusted to it. Hence it is the duty of the Gram Panchayat to make adequate provisions for regular O&M of the scheme. The drinking water supply assets must be protected by the Gram Panchayat as per G.O. Ms. No. 188, PR&RD Dept., Dt.21. 07.2011.

With the above view, Government issued orders in G.O. Ms. No. 19, PR&RD Dept., Dt. 24.03.2017 for GPs duly allocating certain funds for drinking water. The GPs can utilize 15% of their general funds towards supply of drinking water.

The GPs are also permitted to formulate Bye-laws and collect user charges to meet the gap in the funds required for O&M. In order to fill the gap in the funds, Private Tap connection Fees shall be arrived and collected from the HHs. The Private Tap fee shall be calculated per month and collected.

As per APPR act 1994, (Section 71) GP can impose a Special tax for revenue generation. According to G.O.Ms.No.97, PR&RD, Dt: 14.03.2002, every Gram Panchayat may levy user charges (Special tax) annually for providing street lighting, pucca drainage and Drinking water supply.

The charges shall be worked out in the manner that cost of the operating and maintaining the above said amenities will be distributed among all the households which are utilizing the service on the approximate or estimated costs of the work in respect of which the tax is proposed to be levied and the amount of tax likely to be realized per year.

The Gram Panchayat in consultation with the Gram Sabha shall pass a resolution in a meeting specially convened for the purpose or otherwise and supported by not less than one half of the sanctioned strength of the Gram Panchayat specifying the purpose for which, the rate at which, and the period for which the user charges is to be collected; The receipts out of these user charges shall have to be earmarked and shall be used for the purpose for which the said user charges are levied.

The fixation of Tap Fee and User Charges (Special Tax) will be on self-sufficiency basis safeguarding the interests of the vulnerable sections.

As per APPR act 1994, (Section 51), and G.O.Ms.No. 102, PR&RD, Dt: 03.11.2015, the Gram Panchayat/Mandal Praja Parishad/Zilla Praja Parishad can accept the donations from the public. There is also a provision to inscribe the name of the donor if the donation is at a minimum 50% of the estimated cost.

Under P4 policy adopted by Government of Andhra Pradesh recently, there is ample opportunity to muster funds for O&M of Drinking Water supply Schemes from Donors /Philanthropists/ NRIs and others including CSR Funds

ii. **Finance Commission Grants available for O&M of SVS:**

In addition to OSR, 30% of Central Finance Commission Grants can be utilized for O&M. The 15th Finance Commission allocation to PRIs are made as basic and tied Grants

1. Basic (untied) Grant (40%).
2. Tied Grant (60%) –

- 50% for Sanitation &
- 50% for Drinking Water (it amounts to 30% of total FFC grant).

The 15th Finance Commission Grants for each financial year will be distributed among Panchayat Raj institutions in the ratio of 70:20:10 for Gram Panchayats (70%), Mandal Praja Parishads (20%) and Zilla Praja Parishads (10%) respectively.

The expenditure items are Wages to operators, additional bore wells, new motors, Reservoirs cleaning, pipelines repair, taps maintenance, Purchase of spares, for purchase of bleaching powder for chlorination, etc., for drinking water. The payment of power bills for SVS by Gram Panchayats has become a burden beyond their payment capability in the recent years. The State Government is coming to the rescue of the PRIs in dealing with this burden in the needy cases.

(f) Entrustment:

The Gram Panchayat is delegated with the powers for according administrative sanction to works vide G.O.Ms. No. 20, Dt. 06.03.2025 of PR&RD Department.

a) Up to Rs. 5.00 Lakhs by Gram Panchayat (General body)
b) Above Rs. 5.00 Lakhs & Up to Rs. 10.00 Lakhs by Divisional Panchayat Officer
c) Above Rs. 10.00 Lakhs by District Collector (PW)

The Gram Panchayat through its functional committee shall take up the O&M of SVS and intra-village network of MVS on its own. If necessary, by engaging the *services of the* Self-Help Groups (SHGs) or Village Organisations (VOs) by the GP concerned.

As per D. O. No. G-11011/11/2023-JJM-I-DDWS Dt.08-07-2025 of NJJM, Dept., of Drinking Water and Sanitation, the GPs shall also have an option for engaging the services of Primary Agricultural Credit Societies (PACS) and other societies in O&M of rural piped water supply schemes and also to encompass similar support extended to women SHGs and other agencies.

As the Village level water works are vested with Gram Panchayat, the O&M of the water works at village level shall be the responsibility of the Gram Panchayat concerned, and it should not be outsourced or transferred to any other agencies or service providers.

Regarding execution of water supply related works & repairs the following GOs shall be followed:

- According to G. O. Ms. No. 441, PR&RD Dept., Dt. 10.12.2002, the Gram Panchayat shall invite tenders for every work relating to water supply scheme, if the estimated cost exceeds Rs. 50,000/-
- As per G.O.Ms. No. 198, PR&RD Dept., Dt. 03.06.2005 and G.O.Ms. No. 10, PR&RD Dept., Dt. 10.01.2006, works costing up to Rs. 05.00 Lakhs can be entrusted to the Works Committee/ Self-Help Groups or any service provider at the village level. If the work is entrusted to Self-Help Groups or any service provider, the GP shall undertake an agreement as per bye-laws and rules in force.

The interested local Self-Help Groups, Youth Organisations, VOs shall be trained for Operation and Maintenance of Single Village Schemes to facilitate people's participation.

(g) Roles and Responsibilities of SHGs or VOs, (wherever necessary and whenever entrusted with the approval of the GP concerned as a special case)

a) To provide all routine maintenance, periodic maintenance, breakdown maintenance, preventive maintenance, staffing and providing labour for operating the water supply and distribution assets, investigation, engineering, procurement, delivery, installation and other activities incidental to the O&M of SVS. Detailed services to be performed by the Service Providers.
b) To maintain service levels as mentioned in the Agreement
c) Rectification of all consumer grievances and complaints
d) Maintain Tank wise log abstract of water supplied to the village
e) Maintain records and accounts provide reports and other information required from time to time
f) Undertake all such activities that will enable him/ her to successfully discharge his/ her function under the agreement

PART-B: OPERATION AND MAINTENANCE OF MULTI VILLAGE SCHEMES INCLUDING SRI SATYA SAI PROJECTS:

The stakeholders of MVS are

- Zilla Praja Parishad (ZPPs)
- Standing Committee -VII of ZPP.
- Mandal Praja Parishad

- PR&RD Department.
- RWS&S Department.
- Water Resources Department (for surface Water)
- Energy Department (for uninterrupted power supply)
- Gram Panchayat
- Households in Rural Areas

The O&M of transmission network of Multi Village Schemes which includes intake structures, Head Works, pumping and gravity mains and other infrastructure up to Village point shall be done by the "**Works Standing Committee of Zilla Praja Parishad"** formed through elections as per G.O. Ms. No. 238, PR&RD Dept., Dt. 20.04.1995 under Section 187 of the AP Panchayat Raj Act 1994.

a) Composition of "Zilla Parishad Works Standing Committee-VII"

Position	Members Composition
ZP Chair Person	Chairperson of the Committee
Members	Number of Members of the standing committee = Total ZP Members divided by Seven (One member should be from SC/ ST/Women)
Invitee	District Collector
Convenor	Chief Executive Officer

The meetings of the standing committee shall be attended by all the Officers connected with Rural Water Supply including the Engineering Officers. The standing committee should take up field visits to the sites of MVS at regular intervals and supervise the functioning of the schemes. ZPPs should make necessary logistical arrangements to facilitate field visits by the Standing Committee to MVS locations.

(b) Roles and Responsibilities of Zilla Parishads through Works Standing Committee -VII.

This Standing committee of works (vii) shall perform the powers and functions mentioned under Section 192 and as per G.O. Ms. No. 438, PR&RD Dept., Dt. 16.07.1994 and other relevant rules pertaining to Rural Water Supply.

i. The subjects entrusted to the standing committee VII are Communications, rural water supply, power and irrigation.
ii. The standing Committee shall

- Watch the progress of implementation of the works and schemes of the Zilla Praja Parishad relate to the subjects assigned to them.
- Secure the execution of plans, projects, schemes or other works either solely relating to the individual Mandals or common to two or more Mandals in the district.

iii. The Standing Committee have the power to make Bye-laws, as per provisions made in the Andhra Pradesh Panchayat Raj Act 1994 the ZPP is empowered to formulate Bye-laws under Section 259 of the Act.

(c) Bye-laws on Drinking Water Supply by Zilla Praja Parishads

As per G.O.Ms.No.434, PR&RD and Relief (Mandal I) Dt.15th, July, 1994, the Zilla Praja Parishad may make Bye-laws not inconsistent with the act, or with any other law for the time being in force. No Bye-law shall have effect until the same has been approved by the Commissioner, PR /Zilla Praja Parishad/ Government respectively. The timeline for making byelaws by ZPs is not more than 45 days after notification of policy.

The standing committee of works of Zilla Praja Parishad formulates the Bye-laws for the Operation and Maintenance of transmission network of Multi Village Schemes which includes intake structures, Head Works, pumping and gravity pipelines and other infrastructure up to village level. The Bye-laws will address the following aspects of O&M of MVS.

a) Closing of Pit Taps.
b) Water Quality Monitoring by field test kits.
c) Decide tariff for water supply.
d) Ensure the materials availability for undertaking repairs for the scheme.
e) Collection of bulk water charges
f) Supervision and Monitoring of the Private Operator's work.
g) Verify village-wise water supplied by the Private Operator.
h) Payment to the Private Operator from money collected by users or ZP's resources.
i) Make payments for power supply charges of the scheme.
j) Verification method of the Water Supply and Distribution Assets at least once in every three months.

(d) <u>RWS Department: (RWS&S)</u>

The Engineering Officers of RWS&S Department working in the district including the Engineering Assistants working at Village level are the technical

staff **responsible** in terms of providing technical support for O&M of MVS and other water supply projects.

Delegation of powers on technical sanction as per GO.Ms.No.41 Dt.24-05-2018 of Water Resources Reforms (Dept).

(a) Up to Rs. 40.00 lakhs by respective Executive Engineers, RWS&S.
(b) Above Rs. 40.00 lakhs and up to 2.00 crores by respective Superintending Engineers, RWS&S.
(c) Above Rs. 2.00cr by Chief Engineer, (O&M), RWS&S.

The RWS&S Department may provide inputs to the Zilla Praja Parishad for

- State level policy making, planning, managing finances, monitoring.
- Deciding a policy for bulk tariffs for O&M of CPWS schemes.

The RWS&S Department shall supervise private operators' Operation and Maintenance, monitor quantity and quality Work done by the service provider and recommend payments to the Zilla Praja Parishads based on service delivery.

(e) Financial Sustainability & Powers of ZPP

The operation and maintenance cost includes monthly electricity bill, operator wages, purchase of chemicals, repairs and replacements, nominal upgradation, monthly scheme expenditure and other miscellaneous items. In case of large MVS, the bulk water supply chain also involves the scope of financial resources at a suitable rate depending on the coverage pattern, with respect to infrastructure to cater to the need of the command area. While evolving the rate of such bulk water supply, the cost of production of treated water will have to be evaluated considering the financial involvement in the respective MVS for this purpose.

For effective O&M of MVS, there are statutory provisions made available for Zilla Praja Parishads for financial sustainability in the PR Act.

(i) Own Source Revenue (OSR) of ZPPs available for O&M of MVS:

The assets and properties pertaining to MVS from bulk water supply unit and distribution lines up to village point are vested in Zilla Praja Parishads and hence the O&M function is also entrusted to it. Hence it is the duty of the ZPP to make adequate provisions for regular O&M of the scheme.

Accordingly, Government issued rules in G.O.Ms.No. 18, PR&RD Dept., Dt. 24.03.2017 for MPPs & ZPPs respectively, duly allocating certain funds for

drinking water. The Mandal / Zilla Praja Parishad can utilize 12% of their general funds towards supply of drinking water.

As per APPR act 1994, (Section 51), and G.O.Ms.No. 102, PR&RD, Dt: 03.11.2015, the Gram Panchayat/Mandal Praja Parishad/Zilla Praja Parishad can accept the donations from the public. There is also a provision to inscribe the name of the donor if the donation is at a minimum 50% of the estimated cost.

Under P4 policy adopted by Government of Andhra Pradesh recently, there is ample opportunity to muster funds for O&M of Drinking Water supply Schemes from Donors /Philanthropists/ NRIs and others including CSR Funds.

The ZPPs are also permitted to formulate Bye-laws for collecting revenue whenever water is supplied from the respective MVS to Urban Local Bodies and commercial establishments.

(ii) Finance Commission Grants available for O&M of SVS:

In addition, 30% of Central Finance Commission Grants can be utilized. The 15th Finance Commission allocation to PRIs are made as basic and tied Grants

1. Basic (untied) Grant (40%).
2. Tied Grant (60%) –
    - 50% for Sanitation
    - 50% for Drinking Water (it amounts to 30% of total FFC Grant).

The 15th Finance Commission Grants for each financial year will be distributed among Panchayat Raj institutions in the ratio of 70:20:10 for Gram Panchayats (70%), Mandal Praja Parishads (20%) and Zilla Praja Parishads (10%) respectively.

After exploring all available funding sources mentioned above, the ZPP shall submit necessary proposals to Government through DWSM and SWSM duly routing through Commissioner, PR&RD and ENC, RWS&S to bridge the gap if any.

The expenditure items are Wages to operators, additional bore wells, new motors, Reservoirs cleaning, pipelines repair, taps maintenance, Purchase of spares, for purchase of bleaching powder for chlorination, etc., for drinking water. The payment of power bills for MVS by ZPPs has become a burden beyond their payment capability. The State Government is coming to the rescue of the PRIs in dealing with this burden.

The Financial resources available with Zilla Praja Parishads (*for meeting the O&M costs of MVS*) are known and the allocations for drinking water supply are prescribed under the rules explained above. Wherever there is shortage of financial resources at ZPP level to maintain MVS, the ZPP concerned after duly exploring all available funding sources mentioned above, shall submit necessary proposals to Government (through DWSM and SWSM duly routing through Commissioner, PR&RD and ENC, RWS&S) to bridge the gap of funds, if any.

(f) Entrustment:

The ZPP is delegated with the powers for according administrative sanction to works vide G.O.Ms. No. 20, Dt. 06.03.2025 of PR&RD Department.

a) Up to Rs. 10.00 Lakhs by ZPP Standing Committee
b) Above Rs. 10.00 lakhs & Up to Rs. 25.00 lakhs by Zilla Praja Parishad (General body)
c) Above Rs. 25.00 Lakhs by Government.

According to G. O. Ms. No. 589, PR&RD Dept., Dt. 29.09.1989, G.O.Ms. No. 477, PR&RD Dept., Dt. 12.11.1998 and G.O.Ms. No. 195, PR&RD Dept., Dt. 10.05.1995 the ZPPs shall invite tenders for every work, if the estimated cost exceeds Rs. 50,000/-. However, as per G.O.Ms. No. 198, PR&RD Dept., Dt. 03.06.2005 and G.O.Ms. No. 10, PR&RD Dept., Dt. 10.01.2006, works costing up to Rs. 05.00 Lakhs can be entrusted to the Works Committee/ Self-Help Groups or any service provider. If the work is entrusted to Self-Help Groups or any service provider, the ZPP shall undertake an agreement as per bye-laws and rules in force.

The agreement between the Panchayat Raj Institutions and the O&M contractor wherever necessary will be based on the standard Model communicated by Engineer-in-Chief, RWS&S and shall cover service levels required to be maintained and its monitoring mechanism in addition to customer grievance redressal mechanism.

- **(h) Roles and Responsibilities of the Service Provider wherever engaged with the approval of ZPP:**

i. To provide all routine maintenance, periodic maintenance, breakdown maintenance, preventive maintenance, staffing and providing labour for operating the water supply and distribution assets, investigation, engineering, procurement, delivery, installation and other activities

incidental to the Operation and Maintenance of MVS. Detailed services to be performed by the Private operators.

ii. To maintain service levels as mentioned in the Agreement
iii. Rectification of all consumer grievances and complaints
iv. Maintain village-wise log abstract of water supplied to the village
v. Maintain records and accounts provide reports and other information required from time to time
vi. Undertake all such activities that will enable him to successfully discharge his function under the agreement.

PART C: OPERATION AND MAINTENANCE OF REVERSE OSMOSIS (RO) PLANTS

The Government of Andhra Pradesh provided Reverse Osmosis (R.O) Plants as standalone drinking water supply facilities on pilot as well as regular basis in certain rural areas and some of the RO Plants have completed their Defect Liability Period of 5 years and now require regular Operation and Maintenance. Under this policy it is specified that:

O&M of Reverse Osmosis (RO) plants covering single GP:

(a) The Operation and Maintenance of R.O Plants covering single GP shall be taken up by the Gram Panchayat through its "Functional Committee for Natural resources management".

(b) The formulation of bye-laws, funds utilisation, Operation and Maintenance, roles responsibilities etc., for ROs shall be similar to the process as described in SVS (Part-A) covering single GP.

(c) Wherever necessary and feasible, the Gram Panchayat concerned may consider on merits to entrust the O&M responsibility of RO Plants to local Philanthropists/ NGOs/ Trusts etc., working on non-profitable basis.

O&M of Reverse Osmosis (RO) plants (Hub & Spoke Model) covering multiple GPs:

(a) The Operation and Maintenance of R.O Plants covering multiple GPs shall be taken up by the Zilla Parishads through the respective through its **"Works Standing Committee-VII".** The Operation and

Maintenance of the RDUs (Remote Dispensary Units) is the responsibility of the MVS concerned where they are constructed.

(b) The formulation of bye-laws, funds utilisation, Operation and Maintenance, roles responsibilities etc., shall be as described in MVS for R.O shall be similar to the process as described in MVS (Part-B) covering multiple GPs.

(c) Wherever necessary and feasible, the ZPP concerned may consider on merits to entrust the O&M responsibility of RO Plants to local Philanthropists/ NGOs/ Trusts etc., working on non-profitable basis and to the service provider on contract basis.

Compliance with NGT guidelines (TDS restrictions)

NGT Guidelines for RO Plants in India (BEFORE THE NATIONAL GREEN TRIBUNAL, PRINCIPAL BENCH, NEW DELHI, (By Video Conferencing), Original Application No. 134/2015, (I.A. No. 142/2021 & I.A. No. 143/2021)

- Restriction on RO Usage in Areas with TDS below 500 mg/L.
- As per NGT order, RO should not be used in areas where groundwater TDS is within the safe limit.

10. SERVICE DELIVERY AND UTILITITY DEVELOPMENT APPROACH

The policy shall focus on service delivery rather than mere infrastructure creation. ***"It aims to provide 55 litres per capita per day (lpcd) of potable water to every rural household through Functional Household Tap Connections (FHTCs), as well as water for public institutions like schools, Anganwadis, health centres, etc."***

10.1 Service Delivery parameters:

Sr. No	Service Delivery Parameter	Standard
1	Reliability	Daily
2	Quantity	55 LPCD
3	Quality	As per BIS 10500 :2012 standards
4.	Pressure	more than 6 meters
5	Coverage	100% households

10.2 **Maintenance protocols:**

i. Preparation of plan for operation and maintenance.
ii. Periodic Maintenance Tasks and Check lists. (Daily/Monthly/Yearly/pre and post monsoon checks/special checks etc): civil pump sets and electrical works.
iii. Providing system staff for Operation and Maintenance.
iv. Maintaining records such as equipment, expenditure etc.
v. Regular supervision of the Operation and Maintenance.
vi. Establishing a sound financial management system.

To provide information on status of Water supply and the condition of the scheme (including maintenance position), a comprehensive O&M monitoring software tool will be adopted. The Engineer-in-Chief, RWS&S shall get this tool developed.

11. INFRASTRUCTURE MAINTENANCE FOR ZERO LEAKAGE AND CONTINUOUS SCHEDULE OF SUPPLY

The Gram Panchayat through its functional committee with the assistance of Engineering Assistant shall oversee the infrastructure maintenance for zero leakage and continuous schedule of supply.

i. All the infrastructures like WTPs, Pipelines, Sumps, etc., are designed to serve 30 years. Some of the components like Pipelines, Storage reservoirs etc., are prone to damage due to various reasons viz. corrosion, leakages caused during repair works. Revamping works shall be taken up in the Multi Village Schemes / Single Village Schemes that has outlived its designed life period in which a reduction in yield of sources or a decrease in the efficiency of pump sets and damages in pipelines, valves, etc. are encountered.
ii. A detailed record of breakdowns and leaks occurred and repaired shall be maintained so that more vulnerable leaks could be identified and special measure to repair/ replacement could be undertaken.
iii. If any silt content noticed, the bore should be flushed and the submersible motors erected in sedimentary bores should be removed, serviced and re- erected. Problems noticed in the motor should be analysed and noted in the logbook for future study.

iv. Slot portion of all sedimentary bore wells should be flushed and cleaned using special type air blower for removal of silt deposit at least once in two years.
v. Dry running of the pumps should be avoided.
vi. Pumps should be operated only within the recommended Head range.
vii. Operation of all Scour valves in the Pumping /Gravity main should be done periodically.
viii. Leak detection surveys should be undertaken particularly for bursting of pipes and leaky joints, when the difference in quantity of water produced and water supplied is more than 15% i.e., loss of water due to leakage.
ix. A regular schedule of inspection and servicing of valves including air and scour valves should be carried out and the same followed scrupulously.
x. In case of MS pipes, anticorrosive painting must be done at least once in five years for pipes and at least once in two years for appurtenances such as sluice valve, scour valve, air valves etc.,
xi. The standard operating procedures are essential to identify what local operators can do in terms of routine O&M related to water sources, conveying, pumping, storage, treatment, and distribution.
xii. Service improvement plans to set out future investments to ensure improved service delivery: It is important to define management and service delivery improvements and actions to improve accounting, billing and revenue collection.

12. DEFECT LIABILITY PERIOD: PROVIDING LONGER DURATION OF MAINTENANCE PERIODS IN CONSTRUCTION AND MAINTENANCE CONTRACTS

To have effective maintenance and viability, the defect liability period of at least 5 years for SVS and 10 years for MVS on their completion, in the agreements shall be followed.

The RWS&S Department shall assess the working conditions of all SVS, IVDN and MVS periodically and submit necessary proposals well in advance to Government for timely replacement and retrofitting of defective or defunct schemes in consultation with respective Gram Panchayats and Zilla Praja Parishads.

13. WATER QUALITY MANAGEMENT

i. Water supplied is potable only when it adheres to the standards specified as per IS 10500:2012 and its amendments from time to time.

ii. Water to be drawn from sustainable sources and after appropriate treatment, supply safe drinking water by pumping the water up to respective OHSRs and up to FHTCs at Household level respectively.

iii. The water supplied from the source to FHTCs shall be free from contamination with necessary disinfection by chlorination.

iv. In the case of Water Treatment Plant, the Surface water shall involve pre-chlorination & post chlorination based on the characteristics of the raw water/clear water without any dilution.

v. The disinfection shall be done at an appropriate quantity so as to maintain 0.20 ppm at the FHTCs.

vi. Complete records of bacteriological and chemical analysis test report of water from sources to FHTCs, Schools, Anganwadis and Public institutions should be maintained. Bacteriological and chemical analysis test shall be done for all the sources during pre and post monsoon period.

vii. Preventing external pollution by properly protecting the ventilators, manhole openings and over flow pipes in water storage structures, sumps, OHSRs, etc., should be monitored.

viii. Periodical cleaning of reservoirs, sumps/OHSRs should be done once in a fortnight and at least once in a month. The general cleanliness in and around the reservoirs, sumps/OHTs should be maintained. Access control measures shall be established in all storage structures to prevent access to unauthorized persons.

ix. Water quality shall be tested through the distributed Field Test Kits in the village panchayats. 5 Self Help Group members in each Village Panchayat have been trained to test 8 water quality parameters using Field Test Kits and the details shall be updated in WQMIS for comprehensive monitoring also shall be displayed at Gram Panchayat.

x. Residual Chlorine content in the water will be tested by Engineering Assistant for every filling of the service reservoir. The Medical & Health department will also conduct biological water test once in a week.

xi. Regular monitoring of water quality shall be done by Engineering Assistant and Panchayat Secretary through testing of water samples, at all water sources, FHTCs, Schools, Anganwadis and Public institutions using Field

Testing Kits and it shall be ensured across all panchayats and cases of contamination should be notified in WQMIS. The services of trained SHGs can also be utilized to conduct water testing under the monitoring of Gram Panchayat.

xii. In case of quality aspects not meeting established standards, immediate remedial action shall be taken to enable the beneficiaries to get potable water supply.

xiii. The cost towards operation and maintenance of Water Quality laboratories i.e., chemicals, manpower, reviving the O&M of equipment shall be met out from the collection of water charges for SVS/MVS and collection of user charges from the Panchayats / collection of water sample testing charges from any general, public/ private entity.

14. WATER SOURCE SUSTAINABILITY & GREY WATER MANAGEMENT

The Gram Panchayat Functional Committee for natural resources management under the overall control and supervision of Gram Panchayat concerned and with the technical support of RWS&S Department shall oversee the water source sustainability and Grey Water Management aspects like:

i. Take up steps to conserve surface and ground water and prevent overflowing of useful water into drains.

ii. Attend desilting of tanks.

iii. Undertake water conservation measures such as construction of check dams, percolation tanks wherever feasible.

iv. Keep a check on drilling of bore wells in consultation with ground water department to avoid depletion of ground water acquihires

v. Whenever any government department like Water Resource Department, Agricultural Engineering Department and Rural Development and Panchayat Raj Department is planning to construct any artificial recharge structures / Augmenting water resource like Micro/Mini/Mega Check dams/Weirs, Recharge pits, Rainwater harvesting structures, etc, preference shall be given to the areas which can augment water sources.

vi. The water conservation measures taken up under MGNREGS and Watersheds development programme should be focused on ground water recharge that supports the drinking water sources in the Gram Panchayats. PR &RD and RWS&S Department should workout a

convergence action plan in this regard and implement it duly involving the Gram Panchayats. The water conservation works taken up under MGNREGS shall form part of Gram Panchayat Development Plans (GPDP) prepared by the Gram Panchayats.

vii. District recharge plans prepared by CGWB based on National Aquifer mapping (NAQUIM) studies, will be taken into account while implementing Artificial Recharge Schemes (ARS).

viii. Standard Operating Procedure (SOP) on "Sustainability of Ground Water Sources" prepared by CGWB, Ministry of Jal Shakti (MoJS) is to be followed while implementation.

ix. Drilling of observation wells with Digital Water Level Recorders (DWLR) will be taken up around the major MVS schemes so that impact assessment can be carried out.

x. In addition to regular monitoring, impact assessment of major MVS for source sustainability will be done yearly by involving local people through participatory approach for ensuring source sustainability.

xi. Protection of sources like borewells, open wells must be done using suitable fencing arrangement, similarly, bore pits shall be provided for reducing the source contamination.

xii. During the lean period, necessary flow diversion channels leading- to Infiltration wells/ Collector wells shall be made to sustain the water supply.

xiii. The yield of individual head works like borewells / Infiltration wells/ Collector Wells/ Collection wells/ Open Wells, etc. shall be monitored by the field engineer concerned regularly.

xiv. The Engineering Assistant at Village level is the technical person responsible for carrying out periodical water quality tests and alerts the Gram Panchayat regularly to supply quality water in the Gram Panchayat concerned. The Gram Panchayat shall provide all necessary support to the Engineering Assistant to carryout Water quality tests

xv. Once the yield of the well is drawn down to below 50% of the required yield, attention shall be given to such head works and necessary rectification measures like flushing of borewells/ flushing of radial arms in Collector wells/ cleaning of surface of porous media in Infiltration wells/ deepening of open wells or an alternative arrangement, may be made.

xvi. Necessary Hydro-geological survey shall be conducted for reason of reduced yield and to substantiate the existing head works by the RWS&S Department.

xvii. By providing necessary storage structures such as sub surface dykes, check dams, barrages for SVS and artificial rainwater recharge structures at the areas of sources/Head works of SVS, Sustainability of the source for an uninterrupted and designed quantity of water supply shall be attained.

xviii. A water safety plan consists sanitary surveying the water supply system from source to storage /treatment to distribution to households shall be taken up yearly by the RWS&S Department duly involving respective committees to identify sources/causes of contamination and corresponding operational control measures to reduce the risks.

xix. Grey water management schemes should be well planned within the village depending on the soil type, soak-pit in every household will be a preferable option for the disposal and management of grey water.

xx. Grey water should be drained and collected at a place and may be disposed in the natural drain or after treatment, can be used for irrigation. Funds from Swachh Bharat Mission (Gramin) can be used for treatment and re-use and Swachh Andhra Corporation (SAC) will make available all necessary resources in this regard.

xxi. In a village, road and drains should be constructed side - by - side for the smooth flow of grey water. Grey water should be disposed of in a soak-pit and not in pond or water bodies directly. Villagers can plant fruit bearing saplings near soak pits so that they will not only help in maintaining the aesthetics but also bear fruits in future

15. SANCTION OF O & M ESTIMATES WITHIN A TIMEFRAME

i. The RWS&S Divisions (Engineering Wing at the district level including Superintendent Engineer / Executive Engineer) will be responsible for designing and implementing the SVS with the approval of GPs and MVS with the approval of ZPPs as per existing norms.

ii. O & M estimates to be prepared in 2 parts viz., (1) System Maintenance and (ii) Power Charges by end of December for according administrative sanction for the next financial year.

iii. Review & sanction by the Z.P (Standing committee and General body) and Gram Panchayat General Body by January end.

iv. Tender process and entrustment by March-end.
v. Preparation of uniform tender schedules with specific conditions (including reporting formats to be maintained) on quality, quantity, minimum wages, minimum qualification for operators including penal conditions

16. TECHNOLOGY AND INNOVATION

The state will leverage technology and local innovations to address water availability and quality challenges, optimizing infrastructure, investment, and operating costs to ensure safe, affordable drinking water. O&M for solar systems, community purification plants, and reject management will also be prioritized.

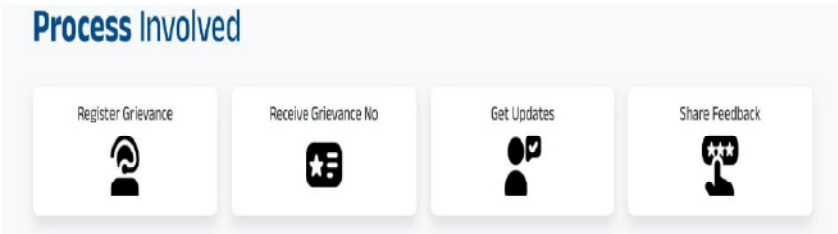
The key areas:

a) Water Purification: Use in-line chlorination and RO plants, with on-site testing via Field Test Kits by Functional committees/SHGs.
b) Infrastructure Management: Deploy IoT sensors for leak detection, pressure monitoring (>6 meters), and automated pumps/valves; use solar-powered systems for reliability.
c) Metering and Monitoring: Install water meters for usage tracking and SCADA/IoT for real-time system oversight; use GIS for source mapping and expansion planning.
d) Digital Tools: Implement mobile apps for billing, grievance redressal, and asset management, integrated with UPI and MIS.
e) GIS/ satellite map-based tools for system expansion planning, water budget estimation etc.

17. GRIEVANCE REDRESSAL MECHANISM

The State has “Public Grievance System (PGRS)” is a universal grievance redressal helpline that allows citizens to raise issues directly to the Chief Minister’s office.

I. Register individual or household level grievances
II. Follow up on the status of a registered grievance
III. Enquire about Government services and schemes.



(i) Local Mechanism:

i. The commissioner Panchayat Raj and Engineer-in-Chief, RWS&S shall take necessary action for establishing the Grievance cell at state level and the district level of respective GPs, MPPs, ZPs and RWS&S offices with toll free numbers and they shall record all the calls /emails in a register.

ii. The compliant shall be communicated to the officials concerned to take necessary action.

iii. After the rectification is made, reply shall be communicated to the public and the compliant may be closed in the register.

iv. An online system shall be developed by Commissioner Panchayat Raj and Engineer-in-Chief, RWS&S for reporting and issue of redressal to the reporter.

(ii) Contact Persons for Grievances:

I	State Level	Commissioner PR&RD and Chief Engineer (O&M) RWS&S
II	District Level	District Collector, Chief Executive Officer, ZPP, District Panchayat Officer, Superintending Engineer, DREO
III	Mandal Level	MPDO, EO (PR&RD), AE/AEE RWS&S
IV	GP Level	Panchayat Secretary & Engineering Assistant of GP Concerned.

18. EMERGENCY RESPONSE AND DISASTER RESILIENCE

(a) Mitigation measures by PRIs:

i. Sand mining within 500 m radius around the head works at Riverbed location of MVS/SVS shall be strictly prohibited.

ii. The sand removed portion near the Infiltration Wells / collector wells should be filled up by sand.

iii. The exposed cable and connecting main should be fully covered with sand in the riverbed. Proper Anchoring arrangements of connecting main & electric cables shall be made.

iv. Flood protection arrangements should be made around pump house and sump, so that no flood water enters into pump room and

sumps. Especially the above flood protection arrangements should be done in the low-lying areas in which the head works is located.

v. Pump sets and other electro mechanical items should be lifted, to avoid submergence of equipment in water.

vi. It should be ensured that the pipes and jointing materials required for attending the pipeline damage works during flood should be immediately arranged in the event of flood occurs.

vii. During drought, flow diversion in river, flushing of bore wells & Radial arms of Collector well, cleaning of surface of porous media in Infiltration wells, deepening of open wells, shall be done to augment required water from the existing head works.

viii. Breakdown of the System: For any immediate trouble shooting in SVS / MVS, the contact number and address of the local Officer-in-Charge may be published to the people. The contact number and address must be updated then and there.

(b) Emergency handling for SVS/ MVS:

The PRI bodies identify situations or events, locations that could trigger an emergency condition or disaster and require immediate action to protect life and property.

(c) Emergency Action Plan:

The PRI bodies shall:

I. Set out the procedures to be followed in this connection sequentially to mitigate the effects of the disaster.

II. Identify primary and auxiliary communications systems, both internal (within the Department) and external (between Department and Public, outside entities.

(d) Adaptation measures:

The PRI bodies shall:

i. Ensure the working condition of Diesel Generators and adequate stock of Diesel for running the Diesel Generators.

ii. If Diesel Generators are not available, make necessary arrangements, for hiring of Diesel Generators. The Vendors' address with their contact number shall be readily available.

iii. Fill the sumps and OHTs to its maximum capacity whenever situation warrants in order to combat scarcity because of power failure.

iv. Cleaning and disinfection activities to be carried out during Disaster
v. Ensure covering of all the Air vents in sumps and OHTs with mosquito nets *to* prevent entry and breeding of mosquitoes.
vi. Create awareness among the public not to use the contaminated water through social media, News Paper, Electronic media in case of any contamination of water. Also, arrange to supply potable water from other sources.
vii. Ensure adequate quantity of bleaching powder for disinfection activities. Action should be taken to maintain the residual chlorine level at supply points.
viii. Avoid stagnation of wastewater at all infrastructures related to water supply to avoid cross contamination.
ix. Involve functional committees in emergency situations on par with officials.

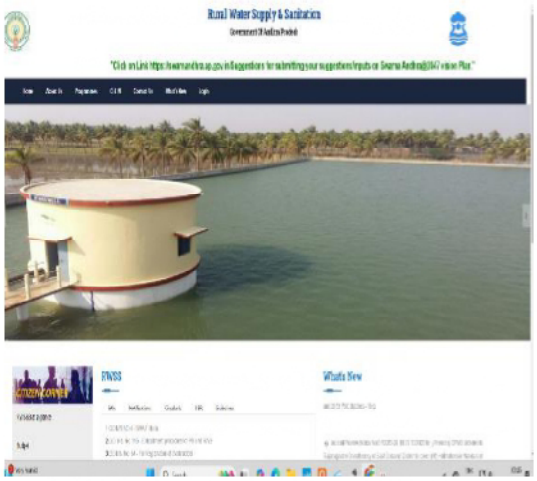
(e)Post disaster activities:

i. Necessary rectification works for revamping of Head works, pipelines, storage tanks, sumps, electro mechanical components, shall be carried out.
ii. Coordinate with various departments of state Govt. such as, Power, Irrigation & Water Resources and Health etc. for immediate restoration.
iii. Contingent plan shall be evolved to face adverse disasters like drought, floods and other natural calamities,

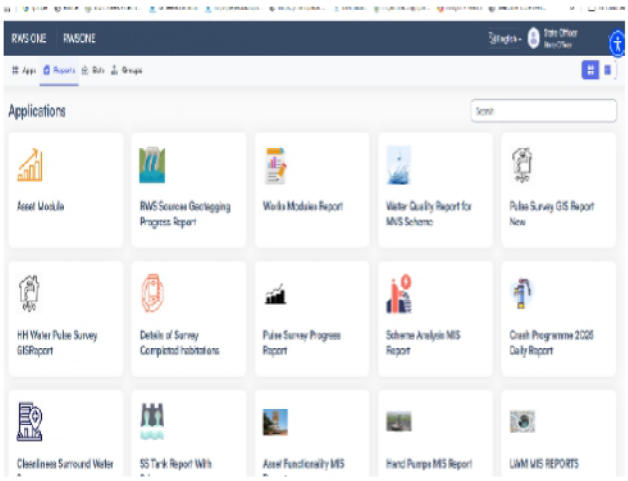
19. MONITORING AND EVALUATION

19.1 Asset and Inventory Management:

i. The RWS&S Department has an official website named as "WATERSOFT" (rws.ap.gov.in) for asset management maintained by state NIC. The up-dation of RWS assets will be made once in a year.
ii. The department also developed 'RWS ONE' app for assessing the functionality of assets, data collection and inventory management for effective operation and maintenance of RWS assets. The assessment of functionality of FHTCs is also being assessed periodically through the APP to improve the service delivery.



WATER-SOFT WEBSITE



RWS-ONE APP

19.2 Centralized Monitoring Systems (Command and Control Centre)

i. Centralized Monitoring system shall be established using Internet of Things (IoT) and SCADA for monitoring the water supply in a phased manner.

ii. Operation and Maintenance of water supply schemes involve monitoring the levels in service reservoirs, pressures and flows in pipelines and operation of pump sets for effective service delivery.

iii. The Internet of Things (IoT) for collection of data with the help of network devices capable of sensing and collecting information and sharing them on cloud to access by stakeholders and deployment of Supervisory Control and Data Acquisition (SCADA) for control of all operations/parameters for effective service delivery will be implemented in all RWS schemes in a phased manner. In the schemes newly executed, SCADA and IoT are made mandatory.

19.3 Distribution management:

i. The RWS&S department will strengthen the existing software-based Management Information System to monitor SVSs and MVSs across the State. The objective of MIS will be to establish a scientific data base on MVS, SVS and IVDN to monitor operation and maintenance for improved sustainable service. Following will be key features of the proposed MIS.

- **Software to support MIS:** Android Apps along with Web

based applications for creating baseline, operation and maintenance activities as well as for Billing and Collection will be established in consultation with Commissioner, Panchayat Raj and Rural Development. The Water Supply unit in Zilla Praja Parishads shall be strengthened to monitor MVS effectively.

- **Data Collection:** Collection of Baseline & Operational Data of Water Supply Schemes along with data on Contracts and the hierarchy of RWSS Department will be available. Operational data will be collected as per protocols monthly.

ii. Geo-coordinated data on schemes and assets and real time data on operations to be made available. Data Analysis and Interpretation, Dashboard, EIS and Data Analysis will form part of the MIS.

19.4 Social Audit and community monitoring:

As per the Andhra Pradesh Panchayat Raj Act, 1994, Gram Panchayats are empowered to conduct Social Audits with community participation. These audits must cover all aspects, including the operation and maintenance (O&M) of water supply systems. Findings should be publicly displayed and discussed in the Gram Sabha. Based on the findings, action plans should be revised to ensure efficient service delivery and cost-effectiveness. The audit process may adopt models from MGNREGS and other established systems, with adaptations based on local experience.

20. HUMAN RESOURCE AND CAPACITY BUILDING

a) The DWSM of respective district facilitate capacity building of RWSS Department Engineers, Service Providers, consultants, NGOs/ISAs and other sector stakeholders together with people's representatives at the three tier PRIs, officials of PRIs and GP based Waterman/Pump Operators, by preparing appropriate training modules, scheduling training events and supporting training programmes with resource persons and knowledge.

b) The guidelines issued by the NJJM for training of Nal Jal Mitra to create opportunities for sustainable employment at village level for the local people required for operation and maintenance of water supply schemes.

c) GP shall mobilize community for achieving 100% FHTCs, habitual payment of O&M (water) tariff, disciplined use of treated water and metered consumption of water at the consumer levels.

d) The PR&RD Department shall prepare a calendar every year for capacity building of stakeholders

e) **Improved facilities for Field Engineers**

- The Department shall ensure to provide basic amenities like, communication, transportation, etc. to enable them to associate with community and PRIs for effective service delivery. It may also be required to have software facilities to review and plan O&M of all the facilities and to render timely advise and to overcome the bottlenecks.
- The SWSM at state level headed by the Principal Secretary, PR&RD of the State and Drinking Water and Sanitation Mission (DWSM) at District Level by the District Collector provide necessary support in all aspects for strengthening O&M policy from time to time.

21. PENAL PROVISIONS

As per APPR act 1994, (Sections 80-125, 270 and Schedules III & IV) GP can impose penalties for various defaults and violations. The GP shall finalise penal charges by framing Bye-laws.

The GP shall provide FHTCs to all households duly accessing all necessary support under JJM and other relevant schemes. The GP take steps for time bound provision of household connections to all the rural households subject to availability of water. Rural households will be saturated with FHTCs in a phased manner by providing tap connections in all ongoing programmes including Jal Jeevan Mission.

All illegal connections to be regularized by fitting suitable ferrule.

In post saturation of JJM, the new users if any, shall apply for tap connection to the Gram Panchayat concerned in the prescribed form. After 5 working days the consumer can install the connection in the presence of GP personnel. There shall be no connection fee. However, the consumer to bear the connection charges as per the approved material including road cutting charges. It will be the responsibility of the Engineering-Assistant concerned to utilize the approved materials for providing the tap connection.

Penalties:

I. **Penalty for installation of illegal connection**

The GP shall regularize all illegal connections in a stipulated time by installing a ferrule during saturation phase. If any user installs an illegal connection the GP shall impose a fine as decided by it as per the penal provisions of APPR Act 1994 and Bye-laws.

II. **Penalty for installation of booster pump (Private Motors):**

Installation of booster pump directly on pipeline causes loss of pressure and affects equitable distribution of water to the end users. Installation of pump directly on the pipeline shall be strictly prohibited and liable for imposing fine as per Bye-laws besides removing the pump.

III. **Penalty for non-repair of water connection:**

The leakages if any in the water supply connection inside the house of a consumer to be repaired by them within 24 hours failing which the connection will be disconnected.

IV. **Disconnection for non-payment of dues:**

The Gram Panchayat shall make best efforts to collect monthly tariff from the consumers. However, in case consumer fails to pay the outstanding dues for first half-year, the consumer may be issued a final notice giving 21 days of time to pay the outstanding amount failing which the connection may be disconnected.

V. **Cost of disconnection due to tariff due or during penal connection:**

It shall be initially borne from the user fee collected but will be treated as outstanding fee against the consumer in case the consumer applies for reconnection.

VI. **Fee for reconnection of disconnected connection:**

Any consumer where the house connection is disconnected shall be allowed to reinstall the connection if pays the outstanding charges and reconnection amount as decided as reconnection fee. The cost of reconnection shall be borne by the consumer.

VII. **Penalty for Insanitary conditions around the FHTCs & Pit Taps:**

The HH shall maintain clean and hygienic conditions around the FHTC. The FHTC shall be at least one feet height over the ground. If fails to do

so, the HH will be liable for the penalty imposed by the Gram Panchayat until it is rectified.

VIII. **Penalty for deviating the Bye-laws:**

If any HH fails to follow/ obey the Bye-laws notified by the GP, they are liable for penalization as per the Bye-laws and Act provisions mentioned in Schedule III and IV and other recovery procedures prescribed under APPR Act, 1994 and rules.

22. POLICY REVIEW AND AMENDMENTS

This policy framework is a dynamic document that can be modified from time to time for addressing emerging issues based on best practices and learning during its implementation by the Government.

The Commissioner of PR&RD and the Engineer-in-Chief of RWS&S will finalize comprehensive guidelines addressing all relevant issues, for the implementation of the O&M policy in both SVS and MVS, within 45 days of the approval and issuance of this policy by the Government.

SHASHI BHUSHAN KUMAR
PRINCIPAL SECRETARY TO GOVERNMENT

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18. G.O.Ms.No.20, PR&RD, Dt: 06.03.2025 (Powers delegated to accord administrative sanction by ZPPs)
19. Jal Jeevan Mission operational guidelines.
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ANNEXURE I: SOP TEMPLATE FOR O&M OF DRINKING WATER SUPPLY SCHEMES

Appropriate operation and maintenance (O&M) management of water supply schemes is essential for the designed service delivery of safe water throughout the designed life of the scheme. Lack of proper O&M management adversely affects service delivery and consumer satisfaction. Inappropriate O&M may lead to the following adverse effects:

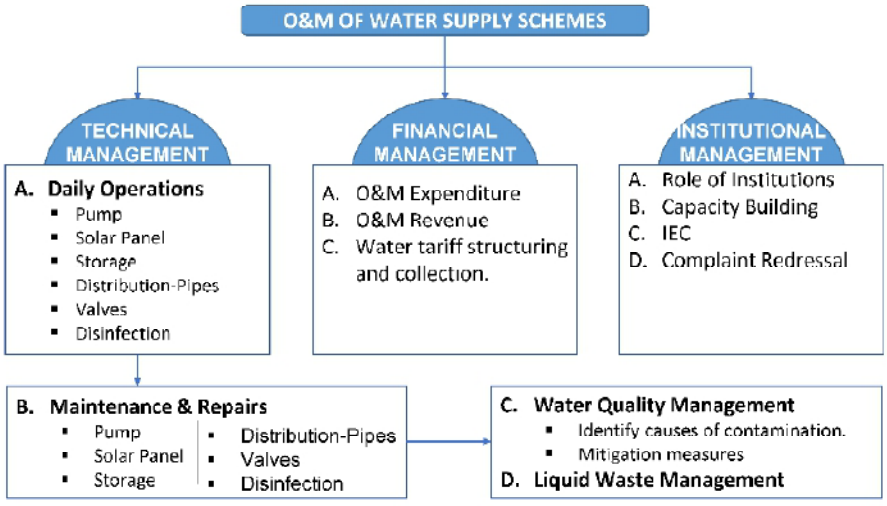
i. People may lose faith in the government water supply system. Water supply may be irregular, inadequate, or of inferior quality.
ii. People may become reluctant to pay water bills/water cess.
iii. Tariff recovery may not be as planned.
iv. Non-availability of adequate funds for O&M may lead to deterioration of service delivery, subsequently resulting in dysfunctional systems.
v. Inadequate service delivery may lead to adverse health impacts and morbidity. People, mainly women, may be compelled to fetch drinking water from distant sources.

1. Components of O&M of water supply facilities:

i. Technical management,
ii. Financial management,
iii. Institutional management.

The above three aspects are interlinked, and 'community participation' is the fulcrum.

(i) Technical management:



A. Daily operation comprises operation of pumps, storage and distribution system including pipelines and valves, tap stands, disinfection, and solar panels in case of solar pumps.

B. The purpose of maintenance is to:

1. Ensure that all civil works (sources, pump rooms, etc.), machinery, and equipment (pumps, valves, switches, etc.) are in optimal running condition.
2. Preventive maintenance to avoid operational failure/problems through timely repairs, etc.

C. Bacteriological tests must be performed at least once in 6 months and chemical contamination tests once a year (SoS). It is the responsibility of the Functional Committee/GP to provide safe and disinfected water to the village community.

D. Following key actions may be taken up for liquid waste management, especially greywater management:

i. Public awareness events, including training, demonstrations, workshops, etc.
ii. Proper drainage arrangements at public stand posts and house connections either through kitchen gardens or soak pits.
iii. Taps on the stand posts, household connections, and taps should remain closed when not in use to prevent wastage of water.
iv. Proper drainage and disposal arrangements should be an essential criterion for sanctioning a house connection.
v. Wastewater should be connected to main gutters/surface drains, and regular cleaning of surface drains is necessary.
vi. Maintenance and repair work of existing surface drains and construction of new surface drains should be carried out through various public schemes.

(ii) **Financial management**

GP/ Functional Committee, along with the community, have to prepare the budget for their water supply scheme. This is a simple documentation of expenditure items and sources of revenue (mainly through community and GP contributions). First, the expenditure is calculated, following which the GP contribution is decided. The balance amount can be obtained from user

charges or water tariffs. Following is the reference template that may be used to calculate water tariffs.

S No	Details	Expenditure Details	Estimated Expenditure
A	**Operations expenditure**		
1	Water staff expenditure Note:-Depending upon scope and size of water services, area to be served, the number of staff may be worked out	No. of staff x Monthly salary 12 months	Rs. ----------
2	Electricity bill Units used x Pumping hours x0.75 Note:- Depending on pump HP, currently 25Rs/Hp/ month may be adopted as a basis. This rate shall be updated every year by respective District O&M Cell.	a. Annual fixed expenditure depending upon pump HP = Pump HP x (rate/ Hp/Month) x 12 months	Rs. ----------
		b. Annual Expenditure depending upon unit consumption (Rate/unit) = Annual unit consumption x (Rate/unit)	Rs. ----------
		2 =(a+b) = Total	Rs. ----------
3	Chemicals: Bleaching powder Note:- Depending on daily water use, Calculate based on: 5gm of bleaching powder (approx.) for 1000 litre water. Total expenditure of bleaching may be calculated based on regular dosing, usage in tank Cleaning, water channels, WTP structures and other cleaning.	Annual expenditure on bleaching powder=Total required quantity of powder X Rate/Kg	Rs. ----------

S No	Details	Expenditure Details	Estimated Expenditure
4	Water sample testing charges Conveyance charges	a. Bacteriological tests =No. of samples/year x rate/sample	Rs. ----------
		b. Chemical tests= No. of samples/year x rate/sample	Rs. ----------
5	Water Committee Office (stationary, logbooks, misc.)	Monthly expenditure x 12 months	Rs. ----------
Total of A	**Operation cost(1+2+3+4+5)**		**Rs. ----------**
B.	**Maintenance& repair (M&R) expenditure**		
6	Routine M&R (for pipeline leakage repairing, valve repairing, pump motor repairing, tap repairing, colouring, miscellaneous expenditure) In case of multiple schemes	M&R=capital cost of water supply scheme x 1.5%	Rs. ----------
7	M&R expenditure for water sources Note: According to Departmental Schedule of Rates (DSR)/government rates. Expenditure for source maintenance is Rs.1000/- for Hand pump, Rs. 5000/- for bore well and Rs. 1000/- for open wells. However, factor the rates as per actual rates in respective locations / villages.	a. Hand pump M&R expenditure = no of hand pumps x annuanal maintenance cost	Rs. ----------
		b. Bore well M&R expenditure = No of Bore wells x annual maintenance cost	Rs. ----------
		c. Open well M&R expenditure = No of Bore wells x annual maintenance cost	Rs. ----------
		7= (a+b+c)= total	Rs. ----------
8	Reserve fund for any major repairs	Reserve fund = 20% of sum of (1 to 7)	Rs. ----------

S No	Details	Expenditure Details	Estimated Expenditure
Total of B	**Total M &R expenditure**	**Sum of (6 to 8)**	**Rs. ----------**
9	Total Operation and M & R	(A+B)	Rs. ----------
C.	**Income**		**Estimated Income**
10	GP contribution	To be Decided by GP	Rs. ----------
11	Contribution to be collected from users	Total expenditure (row9)- GP contribution (row 10)	Rs. ----------
12	Assuming. 90% as billing efficiency, and 80% recovery of water tariff from the billed amount	Water tariff collection = (Community contribution as per row 11) x (1/0.90)x (1/0.80)	Rs. ----------
13	Water tariff rate:	Total water tariff collection as per row12/ number of consumers	Rs. ----------

Note: This is only a model template. The estimate shall be prepared as per rates approved from time to time and as per latest guidelines issued by the competent authority.

(iii) Institutional management:

For efficient O&M and implementation of the scheme, the capacity of functional committee/GP and village water personnel shall be strengthened. The following tools shall also be used for monitoring the implementation.

Complaint register:

Functional Committee/GP may maintain a complaint register in which the date-wise details of the complaints are recorded and which is seen daily. If there is a specific complaint, it may be brought this to the notice of the water personnel for timely redressal. Oral complaints, if any, may also be recorded in the complaint register.

Sample of typical complaint register:

Complaint Date & Time	Complainer and location	Details of complaint	Entry by the waterman	Complaint redressal (date and time)	Remarks

Role of functional committee regarding complaints:

To ensure that all complaints from the village community are addressed properly, and the functional committee representatives shall follow up the issues regularly.

(iv) Guidelines for Operation and Maintenance Cost:

Periodical Maintenace of CPWS Schemes:

S. No	Period	For Scheme Costing Rs. 0 Crores to 10 Crores	For Scheme Costing Rs. 10 Crores and up to 50 Crores	For Scheme Costing Rs. 50 Crores and up to 100 Crores	For Scheme Costing Rs. 100 Crores and above 600 Crores
1	For 5 years periodical Maintenance: Replacement of all valves inside pump house, Spares of Transformers, Renewal of media	0.3% of Project cost +6% Growth rate for every year (Max Rs. 4.02lakhs)	0.15% of Project cost +6% Growth rate for every year (Max Rs. 10.05lakhs)	0.10% of Project cost +6% Growth rate for every year (Max Rs. 13.40lakhs)	0.10% of Project cost +6% Growth rate for every year (Max Rs. 80.40lakhs)
2	For 10 years periodical Maintenance: - Replacement of filter media, valves inside pump house, Spares of Transformer and Air valves in pipeline	0.4% of Project cost +6% Growth rate for every year (Max Rs. 7.16lakhs)	0.20% of Project cost +6% Growth rate for every year (Max Rs. 17.90lakhs)	0.20% of Project cost +6% Growth rate for every year (Max Rs. 35.80lakhs)	0.15% of Project cost +6% Growth rate for every year (Max Rs. 161.10lakhs)
3	For 15 years periodical Maintenance: - Replacement of Filter Media, valves inside pump house, Spares of Transformer and pump sets	1.00% of Project cost +6% Growth rate for every year (Max Rs. 24.00lakhs)	1.00% of Project cost +6% Growth rate for every year (Max Rs. 120.00lakhs)	1.00% of Project cost +6% Growth rate for every year (Max Rs. 240.00lakhs)	1.00% of Project cost +6% Growth rate for every year (Max Rs 1440.00lakhs)

(v) Activities for Operation and Maintenance of Drinking Water Supply Schemes:

S. No	Workmen	Daily	Weekly
1	Pump Operator	Check for water level. Minimum level above the foot valve should be 1.5 times the dia of foot valve. If level is less, fill the sump up to required level and start the pump.	Cleaning of Pumps, Motors, Panel boards, Transformers, Sub-stations etc.,
		Check for inflow. Ensure sufficient inflow is available to maintain the required water level.	
		Suction valve to be in open position.	
		Delivery valve should be in closed position and bypass to sump to be in open position.	
		Remove air pockets by opening the air release valve.	
		Check the voltage in 3 phases. The range of voltage for pumping is 380-460V. And the allowable maximum phase difference is 12V. If the voltage parameters are not in the above set range, do not start the pump.	
		Switch on the capacitor if voltage is below 440V.	
		Record the water level at the sump every one hour.	
		Checking of Voltage, Amps and pressure gauge for every one hour.	
		Maintaining the pump daily Logbook at the pump house as per the standard format.	
		Recording the power disturbances as per the standard format	
		Recording the APSEB Meter reading LT/HT as per the standard format.	
		Housekeeping at the pump house	
		Earth pit Watering	

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ANNEXURE II: PLAN FOR INFORMATION, EDUCATION AND COMMUNICATION) IEC AND SOCIAL AND BEHAVIOUR CHANGE COMMUNICATION (SBCC)

Activities under IEC/SBCC are:

- **Inter-personal communication:** Household visits by Volunteers and Community Organizers.
- **Print materials:** brochures, leaflets
- **Cadre of Water Campaigners in the GP:** ASHA workers, Anganwadi workers, Water operators, ANMs, Retired officials &Teachers, Pump and Valve Operators, Plumbers and Meter Readers.
- **Media (outdoor publicity):** Wall writing/ wall paintings, Flex boards/ banners, Hoardings, Posters, Street theatre/play/ kalajatha, Campaign vans, Films &documentaries, Exhibitions, Melas / group meetings, Song &drama activities.
- **Mass Media:** Print Media: Newspaper, reports & advertisements, Electronic Media: Television, advertisements, Radio Jingles, and events.
- **Social Media:** Facebook, YouTube, WhatsApp, Messenger, Instagram, Twitter.

  The plan for the activities will be prepared by the Commissioner, PR&RD and Engineer-in-Chief, RWS&S combinedly and seek approval from competent authorities before March of every year to implement the same in the next financial year.

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ANNEXURE III: PLAN FOR IMPLEMENTATION, CAPACITY BUILDING, FINANCE, MONITORING AND PRI READINESS

1. **Implementation plan:**

(I) Operational plan with timelines **(Annual Cycle)**

Phase	Activities	Annual Calendar
Planning	Annual O&M Plan preparation, budgeting, contract renewals	Jan–Mar
Pre-Monsoon Readiness	Infrastructure inspection, preventive maintenance	Apr–May
Monsoon Monitoring	Water quality surveillance, emergency response	Jun–Sep
Post-Monsoon Repairs	Damage assessment, corrective maintenance	Oct–Nov
Review& Reporting	Performance audit, community feedback	Dec

(II) **Capacity Building Plan**:

Level	Stakeholders	Training Focus	Frequency
State	Commissioner, PR&RD& RWS&S	Policy orientation, MIS, contract mgmt.	Bi-annually
District	DPO/CEO,SE/DREO of RWS&S, lab staff	Water quality, asset management, grievance redressal.	Quarterly
Mandal	MDO/AE or AEE, RWS&S	Operation and Maintenance	Quarterly

Level	Stakeholders	Training Focus	Frequency
GP	Engineering Assistant, Panchayat staff, VWSCs, operators	Metering, chlorination, leak detection, billing	Quarterly
Community	SHGs, youth, women plumbers	Water conservation, hygiene, tariff awareness	Quarterly

(III) Standard Operating Procedures (SOPs):

a. Infrastructure Maintenance shall consist Daily logbook entries for pump hours, leakages, and chlorination, Weekly inspection of OHTs, pipelines, valves and Monthly preventive maintenance checklists will be followed as per standard Manuals and procedures
b. Water Quality Monitoring as per JJM protocol shall be followed.
c. For Financial Management (where applicable) shall consist Meter-based billing, Monthly collection reports and Annual tariff revision based on O&M cost recovery
d. The Grievance Redressal shall be 24x7 helpline at GP level, Escalation matrix from GP to and State and Monthly grievance resolution reports through PGRS.
e. The Internal Coordination Mechanism shall be:

Coordination Level	Stakeholders	Mechanism
State	RWS&S, Finance, Energy Dept.	Monthly inter-departmental review by state level officers concerned
District	ZP, RDWSD, Contractors	District Water and Sanitation Committee meetings
Mandal	AEE/AE RWS&S, GP Secretaries	Fortnightly O&M review by mandal level officers
Village	VWSC, SHGs, Operator	Weekly logbook review & feedback by Engineering Assistant.

2. Financial plan:

Out of the total rural population of 381.24 lakh, the population covered under MVS is 40% (152.50 lakh) and SVS is 60% (228.74 lakh). It is presumed that the user charges per person per year for MVS and SVS fixed @ Rs.320 and Rs.240 will amount a cost recovery of Rs.488 crores and Rs.548.97 crores respectively.

a) Allocation of 15th Finance Commission Grants for O&M of CPWS Schemes:

Estimated O&M Cost of CPWS Schemes	:	Rs.517.69 crores
Funds allocated under 15th Finance Commission for 25-26	:	Rs.2099.00 crores
Untied Grant (40%)	:	Rs.839.60 crores
Tied Grant (60%)	:	Rs.1259.40 crores

The Distribution of Tied Grant shall be Rs.125.94 crores for ZP (10%), Rs.251.88 crores for MPP (20%) and Rs.881.58 crores for GP (70%)

Analysis of sufficiency of Funds:

SNO	Description	O&M of SVS	O&M of MVS
1	Estimated amount required for O&M	Rs. 1031.42 Crores (29,469 SVS @ Rs.3.50lakh for O&M of each SVS)	Rs.648.87 crores (including satyasai schemes Rs.130.18 Cr)
2	Expected revenue from user charges	Rs. 548.97 crores	Rs.488 crores
3	Gap of Funds	Rs. 1031.42 – 548.97 : Rs.482.45crores	Rs. 648.87-488.00 : Rs.160.87 crores
4	Balance amount after utilization of 50 % of finance commission grants	(50% of allocated funds under Finance commission grants i.e., 50% of 881.58 crores i.e., 440.70 crores) Rs.482.45 crores-440.70=Rs.41.75 crores	50% of allocated funds under Finance commission grants i.e., 50% of 125.94 crores i.e., 62.97

SNO	Description	O&M of SVS	O&M of MVS
			crores. Rs.160.87-62.97= Rs.97.90crores
5	Government support required	**Rs.41.75 crores**	**Rs. 97.90 Crores.**

As per the O&M policy, the responsibility of fixing and collecting O&M charges is vested with the GP Functional committee in case of SVS and standing committee VII of ZP in case of MVS by formulating the byelaws to attain self-sustainability respectively.

3. Monitoring framework:

(I) Single Village Schemes (SVS)

Parameters:

SNO	Description	Frequency	Responsibility
1	Technical inspection of water source, pumps, and distribution network	Monthly	Engineering Assistant Concerned
2	Water quality testing and community feedback sessions	Quarterly	GP and laboratory personnel concerned.
3	Capacity Building	Annually	GP concerned
4	Infrastructure audit and financial review	Annually	Engineering Assistant/GP Secretary

The Key Performance Indicators (KPIs) shall be fixed based on:

S.No	Description	Parameter	Percentage
1	Water Supply	Fixed Payment	50%
2	Water Quantity Compliance (55 LPCD)	% of Quantity	25% of 100%

S.No	Description	Parameter	Percentage
3	Water Quality Compliance Four water quality parameters to be tested at Village level OHT: (i) Colour (Hazen units, Max); (ii) pH- value, (iii) Turbidity in NTU, and (iv) Free Residual chlorine-mg/l, *Min*.	% of Quality	25% of 100%

Escalation Protocol for Noncompliance

Issue	Initial Response	Escalation Level	Final Action
Water Quality Failure	GP functional committee/Panchayat	District Lab	Source remediation
Infrastructure Breakdown	Local Operator	RWS&S Engineer	O&M Agency/GP intervention
Financial Irregularity	Panchayat Audit	DLPO/Competent authority	Suspension of funds

(II) Multi Village Schemes (MVS)

Parameters:

SNO	Description	Frequency	Responsibility
1	Reporting system and data review by RWS&S	Monthly	AEE/AE, RWS&S Concerned
2	Bulk water consumption and tariff reconciliation	Quarterly	ZP concerned
3	Capacity building and training	Annually	ZP concerned
4	Full system performance	Annually	RWS&S

Key Performance Indicators (KPIs)

SNO	Description	Parameter	Percentage
1	Water Supply	Fixed Payment	50%
2	Water Quantity Compliance	% of Quantity	25% of 100%
3	Water Quality Compliance 17 parameters to be tested at WTP lab by Contractor daily.	% of Quality	25% of 100%

Escalation Protocol for Noncompliance

Issue	Initial Response	Escalation Level	Final Action
Repair Alert	O&M Contractor	Executive Engineer, RWS&S	Emergency maintenance
Tariff Discrepancy	Billing Clerk	Chief Executive Officer/ZP	Audit and recovery
KPI Breach	MIS	ZP/CEO	Contract review or termination

3. <u>PRI Readiness:</u>

As per 73rd Amendment to the Constitution in 1992, the responsibility of operation and maintenance of all RWS assets lies with GPs *as all the water works and water supply assets are vested in the Gram Panchayats under Section 80*. Therefore, under clause no: 8 of O&M policy, the PRI institutional framework has been clearly defined. The Secretary and Engineering Assistant at GP level, Extension Officer, PR&RD at Mandal level, District Panchayat Officer, Chief Executive Officer and RWS&S Department at District level and Commissioner, PR&RD and Engineer-in-Chief, RWS&S stat level oversight the complete framework of Operation and Maintenance of drinking water supply schemes in the state. The systemic and periodic reviews and ownership felt by the communities by way of contributing user charges further strengthen the policy and thus sustainability in operations.

As per D. O. No. G-11011/11/2023-JJM-I-DDWS Dt.08-07-2025 of NJJM, Dept., of Drinking Water and Sanitation vide reference 5th cited, the GPs shall also have an option for engaging the services of Primary Agricultural Credit Societies (PACS) and other societies in O&M of rural piped water supply schemes and also to encompass similar support extended to women SHGs and

other agencies. This clause has been incorporated under clause (f) of Part-A: Operation and Maintenance of Single Village Schemes and In-Village Distribution Network of O&M Policy.

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ANNEXURE IV: STANDARD OPERATING PROCEDURE FOR SCHEME AUTOMATION, SERVICE LEVEL AGREEMENT, REAL TIME MONITORING OF DRINKING WATER SUPPLY SCHEMES IN RURAL AREAS FOR OPERATION AND MAINTENANCE POLICY

1. Scheme Automation

1.1 Objective

The objective of this SOP is to ensure sustainable, reliable, and safe drinking water supply in rural areas by integrating automation technologies with improved operation and maintenance practices. Every household shall be provided with 55 litres per capita per day (lpcd), while the quality of water shall conform to BIS 10500:2012 standards.

1.2 Scope

This SOP is applicable to all single-village and multi-village rural water supply schemes dependent on both ground water and surface water sources. It covers schemes operated manually as well as those using modern systems such as IoT devices, SCADA applications, smart sensors, automated dosing units and other automation tools.

1.3 Institutional Responsibilities

The Gram Panchayats and Zilla Parishads are functional institutions are responsible for regular operation and maintenance of schemes, to fix user charges & tariff collection and resolving grievance through functional committees for Single Village and Multi Village Schemes respectively.

Pump operators are responsible for daily running of pumps, inspections and attending the minor operational issues of pump sets.

The Rural Water Supply and Sanitation Department extend technical assistance, particularly for major repairs, water quality testing and upkeep of automation systems.

System integrators and automation equipment vendors ensure the functioning of IoT and SCADA equipment through regular maintenance and calibration under annual maintenance contracts. Communities and users are expected to be involved and make responsible use of water, report problems and actively participate in the scheme reviews.

1.4 Automation Components and Management

Automation for quantity management is achieved through flow meters to measure discharge, pumping rate and water supplied, level sensors to monitor

sump and overhead tank levels, and pressure sensors to detect leakages or pipeline bursts.

Pump runtime loggers help track daily pumping hours and energy use, while household-level smart meters, to enable equitable distribution and detection of losses.

For quality management, online chlorine analysers continuously measure residual chlorine, turbidity sensors assess the performance of filtration units, and pH, TDS and conductivity sensors detect contamination or operational deficiencies.

All critical deviations generate automated alerts, allowing quick corrective action. For system automation the above equipment shall be incorporated wherever necessary to optimize the system maintenance and service delivery.

1.5 Levels of Automation

Automation is recommended at different scales.

- In single-village schemes covering up to 1000 population, basic **IoT controllers** for pumping and inline chlorination are proposed.
- For populations between 1000 and 5000, **IoT-based flow meters**, water level controllers and automated reporting are added.
- Larger single-village schemes adopt extended **IoT with multiple flow and pressure sensors**.
- In multi-village schemes serving up to 25,000 people, **limited SCADA** is recommended, with remote terminal units at pumping stations and reservoirs, GSM/GPRS-based data transmission and basic dashboards.
- Multi-village schemes above 25,000 population shall operate with **full SCADA**, incorporating PLC/RTU units, central dashboards, alarms, historical data storage, GIS integration and remote monitoring with adequate power back-up.

1.6 Expected Outcomes

The scheme automation SOP ensures a reliable and equitable rural water supply, minimizes breakdowns through predictive maintenance, and enhances transparency through dashboards and active community participation.

2. Service Level Agreement

2.1 Objective

The Service Level Agreement (SLA) defines the responsibilities of Gram Panchayats, Zilla Parishads and the RWS&S Department in operating and maintaining rural water supply schemes.

It seeks to ensure every rural household receives 55 lpcd of potable water daily with pressure above six meters, quality conforming to BIS 10500:2012 standards, and hundred percent coverage.

2.2 Gram Panchayat Responsibilities

The Gram Panchayat oversees the activities of the functional O&M committee, engages service providers, and maintains in-village infrastructure.

It supplies potable water at prescribed service levels, conducts water quality testing as per standard protocols and maintains records of quantity supplied through flow meters.

The GP collects user charges, a part of which is shared with the Zilla Parishad in case of bulk supply, and prepares byelaws for scheme maintenance, including timelines for attending repairs and penalties for violations as per the O&M policy.

Timelines to ensure service delivery:

- OHSRs cleaning : Fortnightly
- Sump Wells : Quarterly
- Monitoring of Residual Chlorination: Daily
- Water Quality Monitoring : As per SOP of Water Quality
- Pump set Repair : Within 48 hours
- Arresting pipeline leakages:
  Up to 300mm diameter :24 hours
  Above 300mm diameter:48 hours
- Replacement of pipelines : In-village up to 100m length: 3 days
- Providing tap connection : not more than 7 days
- Restoration of water supply post disaster conditions like floods, damaged pipelines etc., : 48 hours
- Collection of user charges : Monthly
- Grievance redressal : As per PGRS of Govt. of AP

2.3 Zilla Parishad Responsibilities

The Zilla Parishad maintains infrastructure up to the village level, particularly in multi-village schemes, and ensures regular bulk water supply to connected Gram Panchayats.

It carries out water quality testing and confirms quantities supplied through flow meters. It raises and collects user charges from GPs for bulk supply, maintains spares and pumping equipment, and attends to repairs within stipulated timelines as prescribed below.

- OHBRs cleaning : Fortnightly
- Sump Wells : Quarterly
- Monitoring of Residual Chlorination: Daily
- Water Quality Monitoring : As per SOP of Water Quality
- Pump set Repair : Within 48 hours
- Arresting pipeline leakage :
  Up to 300mm diameter :24 hours
  Above 300mm diameter:48 hours
- Replacement of pipelines : In-village up to 100m length: 3 days
- Providing tap connection : not more than 7 days
- Restoration of water supply post disaster conditions like floods, damaged pipelines etc., : 48 hours
- Collection of user charges : Monthly
- Grievance redressal : As per PGRS of Govt. of AP

2.4 RWS&S Department Responsibilities

The RWS&S Department provides technical support at the state and district up to GP level for maintenance of rural water supply schemes, assists the PRIs wherever intervention is required in supply of drinking water.

RWS&S Department provides infrastructure support, ensures proper maintenance of bulk water meters and prepares standard formats for collection of data on consumption and scheme performance.

The SLA thus establishes accountability at each level, enabling transparent, reliable and sustainable water service delivery.

3. Real-Time Monitoring

3.1 Objective

The objective of real-time monitoring is to establish a uniform field-ready procedure for continuous assessment of water quantity, quality, system functionality and sustainability across rural drinking water schemes, thereby ensuring compliance with JJM service standards.

3.2 Scope and Responsibilities

The SOP applies to all single-village and multi-village piped water supply schemes. Functional committees of Gram Panchayats and Zilla Parishads are responsible for verifying daily supply status and basic water quality checks.

Pump operators maintain daily operational logs, while the Engineering Assistant of the GP validates IoT or SCADA data, conducts weekly inspections and carries out random household checks.

The District O&M Cell undertakes monthly reviews, consolidates data from GPs and escalates unresolved issues. At the state level, the Command Control Centre “CCC” integrates IoT/SCADA data, analyses dashboards and ensures compliance with JJM MIS.

3.3 Parameters and Procedures

Quantity is tracked through flow meter readings at source and distribution points, supported by household verification of service levels.

Quality is assured by chlorine analysers at overhead tanks, pH and turbidity sensors, and periodic laboratory testing with results uploaded to the dashboard. System performance is assessed through monitoring of pumping hours, energy consumption, tank levels and leak detection.

Consumer service delivery is gauged by water metering, household coverage ratios, grievance records and adherence to a minimum system uptime of ninety-five percent. Source sustainability is evaluated using groundwater level loggers and rainfall recharge data.

Daily monitoring by the pump operator includes logging pumping hours, discharge and chlorine dosing checks.

Weekly monitoring by the Engineering Assistant verifies dashboard data, inspects pipelines and checks household service delivery.

District-level consolidation is carried out monthly, while the state analyses deviations and initiates corrective audits.

3.4 Tools, Reporting and Corrective Action

IoT devices, SCADA dashboards, JJM-IMIS, GIS mapping and mobile applications are used for real-time monitoring.

Service delivery is reported using a color-coded system as:

Green indicates compliance, yellow indicates minor deviations requiring rectification within twenty-four hours. Red indicates breakdown or contamination requiring immediate escalation and emergency tanker supply.

Records are maintained through daily O&M logbooks, weekly inspection reports, monthly dashboard reviews and annual Water Safety Plan reviews.

Preventive actions include quarterly servicing of pumps, routine flushing of pipelines and regular cleaning of tanks. Corrective measures such as leak repairs, pump fault rectification and chlorination adjustments are taken immediately, while annual performance evaluations with the Gram Sabha ensure long-term improvements.

The Engineer-in-Chief, RWS&S, Vijayawada and Commissioner, PR&RD shall take necessary action to implement this SOP duly examining the physical and financial implications within a time frame of 6 months after notification of policy

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APPENDIX-1: FOR SCHEME AUTOMATION

Quantity Management:

SNO	Description	Manual functions	Automated System
1	Source Sustainability	Annual source yield testing, recharge measures, prevent over-extraction.	IoT flow meters track abstraction; alerts on overuse or falling yield.
	Responsibility: ZP, GP & RWS&S Department		**Responsibility:** System Integrator under AMC
2	Pumping & Supply	Operate pumps as per design schedule. Maintain pumping logbook (run hours, units consumed, volume supplied).	Auto-start/stop pumps using water level sensors in tanks. Protection systems (dry run, overload, voltage fluctuations). SCADA dashboard for daily water pumped and supplied.
	Responsibility: ZP& GP through Service Provider		**Responsibility:** System Integrator under AMC
3	Storage & Distribution	OHT cleaning once in 15 days or as required. Weekly inspection of valves and leakages or as required.	Ultrasonic level sensors for monitoring of water levels in storage reservoirs. Pressure sensors for equitable supply. Leak detection via flow-imbalance alerts.
	Responsibility: ZP& GP through Service Provider		**Responsibility:** System Integrator under AMC
4	Preventive Maintenance	Monthly lubrication or as required, annual desilting of intake wells, periodic replacement of parts as per protocols.	Predictive maintenance based on motor run-hours and analytics.
	Responsibility: Service Provider		

Quality Management:

SNO	Description	Manual functions	Automated System
1	Source Protection	Sanitary protection zone, fencing, prevent wastewater contamination.	Online water quality sensors at source to detect contamination in real time.
	Responsibility: ZP/ GP & RWS&S Dept		**Responsibility:** System Integrator under AMC
2	Treatment & Disinfection	i)Regular chlorination ensuring 0.2–0.5 mg/L residual chlorine. ii)Filter backwashing (weekly), desludging (monthly/quarterly) as required	Smart dosing pumps linked to flow meters for auto-chlorination. Automatic filter backwash triggered by turbidity or pressure sensors.
	Responsibility: ZP/ GP through Service Provider		**Responsibility:** System Integrator under AMC
3	Water Quality Monitoring	i) Residual chlorine check at storage structures daily and once in a month at delivery points and institutions. ii) pH, TDS, turbidity twice a year at storage structures and at ground water sources. iii) pH, TDS, turbidity 4 times a year at Surface water sources. iv) Turbidity once in a month at delivery points and institutions. v) Bacteriological testing once in a week at WTUs. vi) Bacteriological testing at storage units twice a year. vii) Bacteriological testing once in a month at delivery points and institutions.	Continuous monitoring of pH, turbidity, chlorine, ORP via IoT sensors. Automatic alerts (SMS /WhatsApp) if standards deviate. Cloud-based water quality dashboard for transparency.
	Responsibility: ZP/ GP through FTKs and water quality labs.		**Responsibility:** System Integrator under AMC

SNO	Description	Manual functions	Automated System
4	Emergency Protocols		
	Pump Failure:	Immediate repair by local mechanic; report to RWS&S within 24 hrs.	Auto-alert to Operator/ Engineer; backup pump auto-starts.
	Responsibility: ZP/ GP through Service Provider		**Responsibility:** System Integrator under AMC
	Contamination	i)Stop supply of water and flush pipelines, take up super-chlorination.	Auto-trigger chlorination boost, shutoff valves, instant alerts.
	Responsibility: ZP/ GP through Service Provider and water quality lab personnel	ii)Alternative water supply may be arranged through tankers as per protocol.	**Responsibility:** System Integrator under AMC
	Acute Shortage/ Drought	activate alternate sources, deploy tankers as per standard operating procedures through mobile App tracking system	Flow-based rationing, priority supply to schools/PHCs, alerts on low yield.
	Responsibility: GP and RWS&S Department		**Responsibility:** System Integrator under AMC
5	Community Participation	i.) Collection of user charges for O&M cost recovery. ii.) Training of local operators on both manual and automated systems. iii.) Mobile app / SMS alerts on supply timings and water quality. iv.) Quarterly Gram Sabha reviews on water supply performance or as and when required.	Mobile app / SMS alerts on supply timings and water quality.
	Responsibility: Functional committees of GPs and ZPs.		**Responsibility:** System Integrator under AMC

SNO	Description	Manual functions	Automated System
6	Monitoring & Reporting	i)**Daily:** Pumping & supply logbook. ii)**Monthly:** O&M report (supply, breakdowns, quality). iii)**Annually:** Source sustainability review & infrastructure audit.	**Daily:** Auto-generated SCADA reports on supply & quality . **Weekly:** VWSC review of sensor data trends. **Monthly:** District-level review of O&M & automation efficiency . **Annually:** Independent audit of automation system
	Responsibility: Functional committees of GPs and ZPs.		**Responsibility:** System Integrator under AMC

APPENDIX 2: FOR SCHEME AUTOMATION

Scheme automated Systems:

SNO	Type of scheme	Population Coverage	Automation proposed	Automated parameters
1	SVS	1000 and below	IoT	Pump controller and inline chlorination, automated report generation
2	SVS	Above 1000 and up to 5000	IoT	Pump controller, inline chlorination, Flow meters with IoT sensors, ultrasonic water level controller in storage reservoirs, automated report generation
3	SVS	Above 5000	IoT	Pump controller, inline chlorination, Flow meters with IoT sensors, ultrasonic water level controller in storage reservoirs and flow sensors, automated report generation
4	MVS	Up to 25000	Limited SCADA	• RTUs installed at pump houses, overhead tanks, and borewells to collect data • Basic PLCs Control pumps and valves based on predefined logic • Flow & Pressure Sensors to monitor water distribution and detect leaks or blockages • Water Level Sensors to track tank levels to prevent overflow or dry-run conditions • GSM/GPRS Modems to Transmit data to central dashboard using mobile networks • Central Dashboard to Visualize data, generate alerts, and enable remote control • Solar Power Units to power remote RTUs in off-grid locations
5	MVS	above 25000	Full SCADA	• No human intervention in operations. • Comprehensive SCADA with Command Control

<table>
<tr><th>SNO</th><th>Type of scheme</th><th>Population Coverage</th><th>Automation proposed</th><th>Automated parameters</th></tr>
<tr><td></td><td></td><td></td><td></td><td>
<table>
<tr><th>Component</th><th>Functionality</th></tr>
<tr><td>PLC/RTU Units</td><td>Local control at pump stations, tanks, and treatment plants</td></tr>
<tr><td>Sensors</td><td>Measure flow, pressure, water levels, turbidity, pH, chlorine, etc.</td></tr>
<tr><td>Operations</td><td>Automated valves</td></tr>
<tr><td>Communication Network</td><td>GSM/GPRS, RF, or fiber for data transmission from field to control center.</td></tr>
<tr><td>SCADA Software Platform</td><td>Central dashboard for visualization, control, alerts, and analytics</td></tr>
<tr><td>Data Historian & Alarms</td><td>Store historical data, generate alerts for faults or anomalies</td></tr>
<tr><td>Remote Access & Mobile App</td><td>Enable operators to monitor and control systems from anywhere</td></tr>
<tr><td>Power Backup Systems</td><td>Ensure uninterrupted operation in remote areas</td></tr>
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APPENDIX 3:

SOP FOR WATER QUALITY MONITORING IN RURAL WATER SUPPLY SCHEMES.

Introduction:

Water Quality Monitoring & Surveillance is crucial for ensuring safe drinking water, investigating disease outbreaks, and controlling waterborne diseases during epidemics. Water testing determines water safety at sources, within distribution systems, and at consumer endpoints.

Drinking water quality monitoring is conducted by RWS Departments, while surveillance at the grassroots level is managed by GPs/Rural communities. The Rural Water Supply and Sanitation Department oversees water quality monitoring through laboratory tests of samples from sources, distribution, and end-users.

The Jal Jeevan Mission in Andhra Pradesh aims to provide safe drinking water to rural areas, supported by 112 strategically located water testing laboratories. These labs test for 15 key water quality parameters, following National Jal Jeevan Mission guidelines to ensure public health and safety.

1. Water Sources

Surface water sources such as rivers, summer storage tanks, springs, and reservoirs, along with groundwater sources, constitute the primary drinking water supplies. Water contains natural contaminants derived from native rocks and minerals through which it traverses, as well as microorganisms and chemicals introduced by anthropogenic activities at varying concentrations.

To monitor surface and groundwater quality, samples should be collected at regular intervals to ensure no significant changes in quality occur between sampling times. Streams are continually exposed to diverse forces and environmental changes, which result in variations in their chemical water quality.

2. Standard Operating Procedure for Collection and Testing of Water Samples:

2.1 Surface water source

Surface water source include water from Rivers, Summer Storage tanks, springs and reservoirs etc. The water sample should be collected and tested for chemical parameters.

Sample Collection:

1. The yearly calendar for Collection & Testing of Water Sample shall be displayed in the web portal and G.P. Office such that the periodicity will not be missed.
2. The Field Assistant of the Water quality monitoring Laboratory will collect the water sample (One Liter) in the virgin Jerry Can at the intake point / Jack well as per the Schedule (four times a year at equal intervals). The date of the

sample collection should be same for every quarter for a particular source, so as to compare the data.

3. The Field Assistant will enter the details of the samples (viz., Source Code, Location, Geo coordinates) in the web portal through mobile app using his login credentials, forward the same to Chemist and handover the sample to the Water Testing Laboratory.

Laboratory Testing:

4. On receipt of the sample the Chemist will verify the sample details in the web portal and test the Chemical parameters (1.Colour, 2.Odour, 3.pH, 4.Turbidity, 5.Total Dissolved solids, 6.Total Hardness, 7.Total Alkalinity, 8.Nitrate, 9.Sulphate, 10.Chloride, 11.Fluoride and 12.Iron) as per the prescribed Standard Methods of BIS within the turnover time.
5. The Chemist will upload the test results of the samples (in the prescribed Test Report form) in the Web portal and forward to District level consultant (WQM)
6. The District level consultant (WQM) will verify the correctness of the test results and approve the Test results. In case of discrepancy, he will revert the test report to the concerned Chemist for retesting.
7. The approved test report of the sample will be published in the Web portal and is accessible to the general public/VWSC/EA/AE at the Citizen Corner in the JJM Dashboard.

2.2 Ground water source:

Ground water sources include Shallow bore wells/ Deep Bore wells/Infiltration well/open wells etc. which are the water sources for the most of the rural water supply schemes. The ground water sources generally not subject to treatment unless they are quality effected. The sample should be taken at a convenient location either at bore well or before the inlet of the storage structure/ Sump/OHSR.

Sample Collection:

1. The yearly calendar for Collection & Testing of Water Sample shall be displayed in the web portal and G.P. Office such that the periodicity will not be missed.
2. The Field Assistant of the Water quality monitoring Laboratory will collect the water sample (One Liter in the virgin Jerry Can for chemical parameters and *250 ml in a sterilized Glass bottle kept in ice cool box to maintain 6 -10 °C for bacteriological)*. The date of the sample collection should be same for every half year for a particular source, so as to compare the data.
3. The Field Assistant will enter the details of the samples (viz., Source Code,

Location, Geo coordinates) in the web portal through mobile app using his login credentials, forward the same to Chemist/Micro Biologist and handover the samples to the Water Testing Laboratory.

Laboratory Testing (Chemical):

4. On receipt of the sample the Chemist will verify the sample details in the web portal and test the Chemical parameters (1. pH, 2. Turbidity, 3. Total Dissolved solids, 4. Total Hardness, 5. Total Alkalinity, 6.Nitrate, 7. Sulphate, 8. Chloride,
9. Fluoride and 10. Iron) as per the prescribed Standard Methods of BIS within the turnover time.
5. The Chemist will upload the test results of the samples (in the prescribed Test Report form) in the Web portal and forward to District level consultant (WQM)

Laboratory Testing (Bacteriological):

6. On receipt of the sample the Microbiologist will verify the sample details in the web portal and test the bacteriological parameters (1.Total coliforms and 2. Fecal Coliforms/ Thermo tolerant coliforms) as per the prescribed Standard Methods of BIS.
7. The Microbiologist will upload the test results of the samples (in the prescribed Test Report form) in the Web portal and forward to District level consultant (WQM)
8. The District level consultant (WQM) will verify the correctness of the test results (both chemical & Bacteriological) and approve the Test results. In case of discrepancy, he will revert the test report to the concerned chemist/microbiologist for retesting.
9. The approved test report of the sample will be published in the Web portal and is accessible to the general public/VWSC/EA/AE at the Citizen Corner in the JJM Dashboard.
10. The Engineering Assistant will display the test report in the notice board of the Gram panchayat to create awareness in general public on quality of the drinking water being supplied to the village.
11. In case of bacteriological contamination identified, it will be alerted immediately through SMS from the Web portal to the Concerned Member Secretary DWSC & Superintending Engineer, AEE/AE of RWS&S Dept., Engineering Assistant of the concerned Village and VWSC Members to their registered mobile numbers.

2.3 Water Treatment Plants (WTPs):

For surface water sources, water treatment involves aeration, coagulation, flocculation, sedimentation, filtration, and disinfection. The ground water source is presumed to be protected, and requires treatment when quality effected.

It is imperative for every Water Treatment Plant to establish an in-house laboratory that is either recognized/ accredited by NABL to test basic parameters like pH, Turbidity, Total Hardness, Total Alkalinity, Nitrate, Chloride, Sulphate, Free Residual Chlorine and Total Dissolved Solids. The lab technician must maintain the electronic records of sample collection, testing procedures, laboratory results of parameters tested, contamination reported, and remedial actions taken at the water treatment plant. The test results shall be onboarded in JJM-WQMIS.

Sample Collection Calendar:

1. The calendar for testing of chemical parameters (daily), Bacteriological parameters (weekly) and Metals (monthly) shall be published in the web portal and displayed at WTP and concerned G.P. Offices.

2. The Lab technician shall collect the water sample at inlet and out let of Water Treatment Plant for testing chemical parameters and at out let of Water Treatment Plant for testing Bacteriological parameters and metals.

Inhouse Laboratory Testing (Chemical):

3. The Lab technician will test the Chemical parameters (1. pH, 2. Turbidity, 3. Total Hardness, 4. Total Alkalinity, 5. Nitrate, 6. Chloride, 7. Sulphate, 8. Free Residual Chlorine and 9. Total Dissolved solids) as per the prescribed Standard Methods of BIS on daily basis and enter the test results in the Web portal.

Laboratory Testing (Bacteriological):

4. The Lab technician will test the bacteriological parameters (1.Total coliforms and 2. Fecal Coliforms/ Thermotolerant coliforms) as per the prescribed Standard Methods of BIS on weekly basis and enter the test results in the Web portal.

Laboratory Testing (Metals):

5. The Lab technician will test the metals present in water as per the prescribed Standard Methods of BIS on monthly basis and enter the test results in the Web portal.
6. The test reports of chemical, Bacteriological and metals published in the Web portal are accessible to the general public/VWSC/EA/AE at the Citizen Corner in the JJM Dashboard.
7. The Engineering Assistant will display the test reports in the notice board of the Gram panchayat to create awareness in general public on quality of the drinking water being supplied to the village.

2.4 Storage structures:

Storage structures include clear water sumps, OHSRs, GLSRs etc.

Sample Collection:

1. The yearly calendar for Collection & Testing of Water Sample shall be published in the web portal and displayed at G.P. Office such that the periodicity will be followed.
2. The Field Assistant of the Water quality monitoring Laboratory will collect the water sample at the outlet of the storage structure before distribution (One Liter in the virgin Jerry Can for chemical parameters and *250 ml in a sterilized Glass bottle kept in ice cool box to maintain 6 -10 ◦C for bacteriological)*. The date of the sample collection should be same for every half year for a particular storage structure, so as to compare the data.
3. The Field Assistant will enter the details of the samples (viz., Source Code, Location, Geo coordinates) in the web portal through mobile app using his login credentials, forward the same to Chemist/Microbiologist and handover the samples to the Water Testing Laboratory.

Laboratory Testing (Chemical):

4. On receipt of the sample the Chemist will verify the sample details in the web portal and test the Chemical parameters (1. pH, 2. Turbidity, 3. Total Dissolved solids, 4. Total Hardness, 5. Total Alkalinity, 6.Nitrate, 7. Sulphate, 8. Chloride,
   9. Fluoride and 10. Iron) as per the prescribed Standard Methods of BIS within the turnover time.
5. The Chemist will upload the test results of the samples (in the prescribed Test Report form) in the Web portal and forward to District level consultant (WQM)

Laboratory Testing (Bacteriological):

6. On receipt of the sample the Microbiologist will verify the sample details in the web portal and test the bacteriological parameters (1.Total coliforms and 2. Fecal Coliforms/ Thermotolerant coliforms) as per the prescribed Standard Methods of BIS.
7. The Microbiologist will upload the test results of the samples (in the prescribed Test Report form) in the Web portal and forward to District level consultant (WQM)
8. The District level consultant (WQM) will verify the correctness of the test results (both chemical & Bacteriological) and approve the Test results. In case of discrepancy, he will revert the test report to the concerned chemist/microbiologist for retesting.
9. The approved test report of the sample will be published in the Web portal and is accessible to the general public/VWSC/EA/AE at the Citizen Corner in the JJM Dashboard.
10. The Engineering Assistant will display the test report in the notice board of

the Gram panchayat to create awareness in general public on quality of the drinking water being supplied to the village.

11. In case of bacteriological contamination identified, it will be alerted immediately through SMS from the Web portal to the Concerned Member Secretary DWSC & Superintending Engineer, AEE/AE of RWS&S Dept., Engineering Assistant of the concerned Village and VWSC Members to their registered mobile numbers.

2.5 Delivery points (Household level/ Schools and Anganwadi Centers (AWCs):

Sample Collection:

1. The monthly calendar for Collection & Testing of chemical parameters of Water Sample shall be published in the web portal and displayed at G.P/School/Anganwadi centers such that the periodicity will be followed.
2. The half yearly calendar for Collection & Testing of Bacteriological parameters of Water Sample shall be displayed in the web portal and G.P. Office such that the periodicity will be followed.TK testing (Chemical)
3. The Engineering Assistants / VWSC members (who are trained on the Water Quality Monitoring and usage of field Test kits) will collect the water sample at the house hold taps (delivery points) preferably one from the nearest 10 households and one from the farthest 10 households in the village and Schools including residential schools & Anganwadi Centers (drinking water tap or mid- day meal kitchen) as per schedule for chemical
4. Engineering Assistants / VWSC members will test the Chemical parameters (Turbidity and Free Residual Chlorine) and will enter the test results of the samples in the Web portal.

Laboratory Testing (Bacteriological):

5. The Field Assistant of the Water quality monitoring Laboratory will collect the water sample (*250 ml in a sterilized Glass bottle kept in ice cool box to maintain 6 -10 ºC for bacteriological) at the house hold taps (delivery points) preferably one from the nearest 10 households and one from the farthest 10 households in the village and Schools including residential schools & Anganwadi Centers (drinking water tap or mid-day meal kitchen) as per schedule* The date of the sample collection should be same for every half year for a particular source, so as to compare the data.
6. The Field Assistant will enter the details of the samples (viz., Source Code, Location, Geo coordinates) in the web portal through mobile app using his login credentials, forward the same to Micro Biologist and handover the samples to the Water Testing Laboratory
7. On receipt of the sample the Microbiologist will verify the sample details in

the web portal and test the bacteriological parameters (1.Total coliforms and 2. Fecal Coliforms/ Thermotolerant coliforms) as per the prescribed Standard Methods of BIS.

8. The Microbiologist will upload the test results of the samples (in the prescribed Test Report form) in the Web portal and forward to District level consultant (WQM)
9. The District level consultant (WQM) will verify the correctness of the test results and approve the results. In case of discrepancy, he will revert the test report to the concerned microbiologist for retesting.
10. The approved test report of the sample will be published in the Web portal and is accessible to the general public/VWSC/EA/AE at the Citizen Corner in the JJM Dashboard.
11. The Engineering Assistant will display the test report in the notice board of the Gram panchayat/Schools/Anganwadi centers to create awareness in general public on quality of the drinking water.
12. In case of bacteriological contamination identified, it will be alerted immediately through SMS from the Web portal to the Concerned Member Secretary DWSC & Superintending Engineer, AEE/AE of RWS&S Dept., Engineering Assistant of the concerned Village and VWSC Members to their registered mobile numbers.

3. Turnaround Time of testing:

The turnaround time for lab testing is from sample receipt to report finalization. Chemical tests take about 48 hours, while bacteriological tests take around 72 hours.

4. Remedial Action on Contamination:

4.1. Bacteriological contamination:

1. In case of bacteriological contamination identified, it will be alerted immediately through SMS from the Web portal to the Concerned Member Secretary DWSC & Superintending Engineer, AEE/AE of RWS&S Dept., Engineering Assistant of the concerned Village and VWSC Members to their registered mobile numbers.
2. Immediate action will be taken within 24 hours, including disinfection and notification of test results to authorities and affected communities for closure of the contaminated source.
3. Safe drinking water will be provided through tankers (8-10 LPCD) until the piped supply is restored.
4. Emergency measures such as cleaning OHSRs, checking pipe leaks, and chlorination will be implemented.
5. The sample will be retested from the same sources within 7 days after remedial action. If found safe, the water supply will be restored.

4.2. Chemical Contamination:

1. All basic and area-specific chemical parameters (e.g., Total Dissolved Solids, Fluoride, Nitrate, Iron) will be tested before selecting sources for PWS schemes. These parameters must comply with the Drinking Water Specification IS 10500: 2012.
2. Other than RWS scheme sources (Hand pumps and others) is found to be chemically contaminated, it must be immediately discontinued and marked with a red **"X"** to indicate it is unsuitable for drinking.

5. Institutional Framework for Roles and Responsibilities

Effective water quality monitoring relies on communication, coordination, and collaboration. Managing water supply entails multi-disciplinary efforts and working with various stakeholders. Sharing and discussing water quality results ensure accountability and informed decision-making. This chapter outlines a framework for developing a water quality monitoring program, including clear objectives, data sharing, report compilation, and evaluation to enhance the program.

Role and responsibility of various institutions to assure water quality:

5.1. Role of SWSM

1. The Executive Committee of the SWSM should finalize the parameters to be included in the water quality monitoring & surveillance activities, frequency of testing, location of testing, etc.
2. *To* ensure a safe water supply, the health department should present data on waterborne disease incidence to assess risks and the severity of disease burdens. Immediate sharing of outbreak information with water supply departments via a common dashboard is essential.
3. Additionally, laboratories should receive comprehensive guidance, financial support, and human resources to maintain sustainable and safe drinking water for all.

5.2. Role of DWSM:

1. A regular DWSM meeting must be held quarterly with an agenda focused on water quality monitoring and surveillance activities.
2. The district level consultant (WQM) should present a report on water monitoring and surveillance activities for review, covering these key points:

- Number of water samples tested in the last three months;
- Number of samples found contaminated for chemical and bacteriological parameters;
- Remedial measures taken against contaminated samples;

- If remedial action is pending, reasons for the delay and timelines for completion;
- Status and review of lab consumables, and availability of FTKs.

3. A representative from the Department of Health and Family Welfare, as well as the lab in-charge from district-level laboratories, should attend district-level meetings. Information regarding the occurrence of waterborne diseases should be shared during these meetings.
4. In the event of an increase in waterborne diseases, health officials should collaborate with officials from the Rural Water Supply Department or Public Health Engineering Department (PHED) to expand water testing in the affected areas and implement necessary remedial actions.

5.3. Role of Gram Panchayat and/ or it's sub-committee

1. It is recommended that information about the collection of water samples and the results of laboratory testing be shared with the Gram Panchayat and/or its sub-committee and the community.
2. The Gram Panchayat and/or its sub-committee should share the water quality testing results through FTK/Lab by writing them on public boards in each village, preferably at the panchayat office, and updating them regularly by a sample collector or Gram Panchayat and/or its sub-committee member.
3. Ensuring that results are easily accessible to households receiving tap water, if necessary.
4. The Gram Panchayat and/or its sub-committee members should encourage water quality testing of samples from schools and AWCs for residual chlorine and turbidity by secondary, senior secondary, and higher senior secondary students. Students may also participate in monthly testing of water from FHTCs in the village and other locations.
5. Efforts should be made to communicate the test results via 'SMS' to stakeholders in the Gram Panchayat and/or its sub-committee (VWSC), confirming sample collection and the safety status of the collected samples.

6. Undertaking campaign to raise awareness about water quality testing:

6.1. School Level Campaign:

States should involve senior and higher secondary school students in learning about water quality and encourage them to test it on September 18th, World Water Monitoring Day.

6.2. State Level Campaign:

- Conduct annual state-wide campaigns on the importance of water quality and the dangers of contaminated water, especially during high-risk seasons for waterborne diseases.

- Promote regular cleaning of household drinking water tanks to prevent contamination.

7. Training and capacity building of communities:

Regular training sessions and capacity building for Field Test Kit (FTK) users and interested individuals are essential to maintain water quality, understand results, and take remedial action.

FORM – 1

SAMPLE COLLECTION FORM

1. **Location of the source**:
   District:
   Mandal:
   Gram Panchayat:
   Village:
   Habitation:
   Source Code:
2. **Type of Source:**
3. **Water Sample collected from:**

   Surface Water source/ Ground Water Source/ Water Treatment Plant/ OHSR/ GLSR/ Cistern/ House hold tap/ School/ Anganwadi Centre/ others.

4. **Location of the Water Sample:**
   Geo coordinates of the sample location:

   Latitude:

   Longitude:
5. **Schedule of the Sample Collection :**
   Weekly/ monthly/ quarterly and half yearly

6. **Date of Collection:**

7. **Date of next Collection:**

8. **Sample Collection for Testing :**

   Chemical Parameters/ Bacteriological parameters/ All parameters

9. **Laboratory Name:**

Submit

FORM – 2
LIST OF BASIC WATER QUALITY PARAMETERS

Sl. No.	Water Quality parameters	Drinking water standards as per IS 10500:2012		
		Units	Acceptable Limit	Permissible limit
1	pH	----	6.5-8.5	No Relaxation
2	Colour	Hazen	5	15
3	Turbidity	NTU	1	5
4	Odour	----	Agreeable	Agreeable
5	Total Dissolved Solids	mg./Lit.	500	2000
6	Total alkalinity	mg./Lit.	200	600
7	Total Hardness	mg./Lit.	200	600
8	Fluoride	mg./Lit.	1	1.5
9	Chloride	mg./Lit.	250	1000
10	Nitrate	mg./Lit.	45	No Relaxation
11	Sulphate	mg./Lit.	200	400
12	Iron	mg./Lit.	1	No Relaxation
13	Residual Free Chlorine	mg./Lit.	0.2	1
14	Total Coliform Bacteria	Shall not be detectable in any 100 ml. sample		
15	E. Coli Thermo tolerant coliform bacteria	Shall not be detectable in any 100 ml. sample		

FORM – 3
WATER ANALYSIS TEST REPORT

Sample Received From :

Location of the sample :

Test Report ID No :

Date of Collection : **Date of Receipt :**

Date of Analysis : **Date of issue of Test Report :**

Sl. No.	Test Parameters	Units	Measurement Method	Equipment used	As per IS (10500 - 2012)		Test results	Remarks
					Acceptable Limit	Permissible Limit		
1	pH	-	Electro metric method	pH meter	6.5-8.5	No Relaxation		
2	Colour	Hazen	Colorimetric	Colorimeter	5	15		
3	Turbidity	NTU	Turbidimetric method	Turbidity meter	1	5		
4	Odour	-			Agreeable	Agreeable		
5	Total Dissolved Solids	mg/L	Electro metric method	TDS/ Electrical Conductivity meter	500	2000		
6	Total alkalinity (as Ca Co3)	mg/L	Acid - base Titration	Glassware	200	600		
7	Total Hardness (as Ca Co3)	mg/L	Complexometric Titration	Glassware	200	600		
8	Fluoride (as F)	mg/L	Ion Selective Electrode method	ISE meter	1	1.5		
9	Chloride (as Cl)	mg/L	Argentometric method		250	1000		
10	Nitrate (as No3)	mg/L	Spectro-photometric method	UV- Visible Spectro-photometer	45	No Relaxation		
11	Sulphate (as SO4)	mg/L	Spectro-photometric method	UV- Visible Spectro-photometer	200	400		
12	Iron (as Fe)	mg/L	Spectro-photometric method	UV- Visible Spectro-photometer	1	No Relaxation		
13	Residual Free Chlorine	mg/L	Colour comparison method	Chloroscope	0.2	1		
14	Total Coliform Bacteria	CFU/ 100 ml	Membrane Filtration method	Membrane Filtration Assembly	Shall not be detectable in any 100 ml. sample			
15	E.Coli Thermotolerant coliform bacteria	CFU/ 100 ml	Membrane Filtration method	Membrane Filtration Assembly	Shall not be detectable in any 100 ml. sample			

Submit

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