

# Assessment of functionality status of household tap connections in rural areas (2020-21)

**State report**

**Andhra Pradesh**



**Submitted to:**  
National Jal Jeevan Mission  
Department of Drinking Water and Sanitation  
Ministry of Jal Shakti

**Report prepared by:**  
NIELSEN (INDIA) PRIVATE LIMITED

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## **1. Introduction**

Announced in 2019, the Jal Jeevan Mission – Har Ghar Jal (JJM – HGJ) is implemented by Department of Drinking Water and Sanitation (DDWS), Ministry of Jal Shakti in partnership with States/ UTs. JJM aims to provide a Functional Household Tap Connection (FHTC) to every rural home in the country by 2024. A household tap connection is said to be functional when the tap water supply is of adequate quantity (minimum 55 lpcd) and prescribed quality (as per BIS:10500) on regular and long-term basis. Further, JJM seeks to promote holistic management of local water sources and not just provide tap water connections.

The DDWS had engaged Nielsen (India) Private Limited to undertake 'Functionality Assessment' of household tap connections. The assessment covered household tap connections in 6,992 villages across 704 districts from 31 States/ UTs. The survey was undertaken in November – December 2020.

## **2. Objectives of the study**

The main objectives were an assessment of Functionality of Household Tap Connections (FHTCs) under JJM on various parameters; ascertaining, in the form of data, on-ground progress of JJM in terms of adequate quantity of prescribed quality of drinking water supplied to rural households on regular basis; and engaging with Gram Panchayats and/ or its sub-committees of the sample villages and soliciting their feedbacks and recommendations for improving the programme implementation; and to suggest measures for mid-course correction for improvement in functionality of household tap connections.

## **3. Approach and Methodology**

The approach followed was to assess the functionality of household tap connections (within premises) and in-village drinking water supply infrastructure. The selection of sample villages was from the JJM-Integrated Management Information System (IMIS) data-base of villages having at least 15 household tap connections. In each sample village, the largest PWS scheme was sampled. The survey was planned as in-person Computer Aided Personal Interview (CAPI) survey, and included an on-ground assessment of the functionality of sample PWS schemes and tap connections attached to the same. The survey included measurement of the quantity of water received at the household level through the tap connection, as well as water testing to check whether the quality of the drinking water is as per the BIS standards, using Field Test Kits (FTKs) and H<sub>2</sub>S vials. The study also collected supply side information, including assessment of the quantity of water supplied by the scheme, operation and maintenance arrangements, availability and functionality of scheme level infrastructure and the aspects related to source and system sustainability.

A sample of 10 villages from every district in the State were selected following probability proportionate to size (PPS) systematic random sampling method ensuring due representation of SC/ SC majority villages as well as quality-affected villages. In each selected village, households for the survey were selected at head end, middle and tail end of the selected piped water supply network. In Andhra Pradesh the survey was conducted in 1806 households from 130 villages in 13 districts.

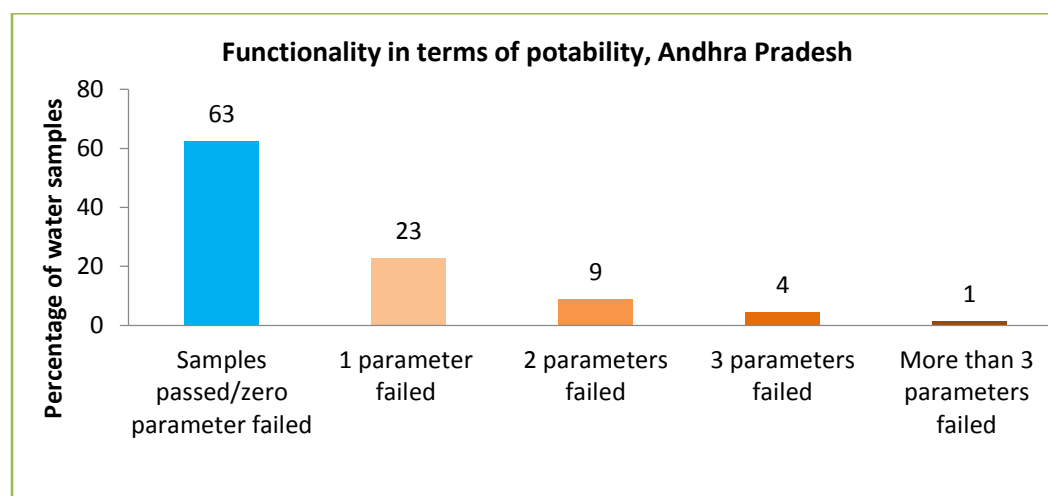
#### 4. Key Findings

SL.	INDICATOR	Andhra Pradesh	India
<b>Household level</b>			
1	Average household size	4.4	5.6
2	Percent of households using FHTC for drinking purpose	63.0	88.9
3	Percentage of households reported working tap connections (supply at least one day in last 7 days)	95.1	93.6
4	Number of water supply days in a usual week		
4a	1 – 2 days	6.4	7.6
4b	3 – 4 days	11.2	10.4
4c	5 – 6 days	1.6	1.5
4d	7 days	80.8	80.5
5	Number of water supply days in the last week		
5a	0 days	1.4	2.4
5b	1 – 2 days	7.0	9.7
5c	3 – 4 days	14.7	14.8
5d	5 – 6 days	3.2	4.9
5e	7 days	73.8	68.1
6	Percentage of households reporting reliability of water supply days	90.3	86.5
7	Percentage of households reporting tap connections functioning continuously for more than 15 days in a month for last 12 months	89.8	84.6
8	Average number of times water is supplied on the days of supply		
8a	1 time	71.8	56.6
8b	2 times	17.5	28.2
8c	3 times	0.9	6.1
8d	4 times/24 hours	9.8	9.1
9	Percentage of households reporting reliability of supply for different supply timings	87.7	84.3
10	Percentage of households reporting adequate water pressure for different supply timings		
10a	Morning	81.7	80.1
10b	Afternoon	80.8	84.6
10c	Evening	80.6	84.8
11	Percentage of households reported paying water tariff – separately or along with other taxes	69.5	52.8
12	Percentage of households reported receiving 55 lpcd or more	90.7	83.5
13	Percentage of households having potable water *	62.5	61.3
14	Percentage of households reporting regularity of supply	90.8	87.2
15	Percentage of households reporting functional tap connections	49.5	47.8
<b>Village level</b>			
16	Percentage villages having functional water and sanitation committees	52.3	48.5
17	Percentage of functional schemes in the sample villages considering all schemes (supplying water any day in the last 7 days)	92.8	86.0

SL.	INDICATOR	Andhra Pradesh	India
18	Percentage of in-village schemes having O&M undertaken by village water and sanitation committee or by Panchayat	97.1	83.1
19	Percentage of sample schemes reported having faced challenges in the last one year		
19a	Inadequate infrastructure	47.2	40.2
19b	Poor water availability at the source	56.9	33.0
19c	Poor maintenance	52.8	46.2
19d	Natural calamity	50.0	63.4
20	Percentage of schemes reporting measure to improve source sustainability	78.5	59.9
21	Number of sample villages found with no scheme (defunct/under construction/not handed over/not constructed)	1	751

Figures 1, 2 and 3 depicts the functionality aspects of the household tap connections in Andhra Pradesh. Figure 1 presents the details of the potability aspects – the proportion of samples which have qualified as per all 13-15 parameters, as well as the proportion of sample which have failed due to one/two/three/more than three parameters.

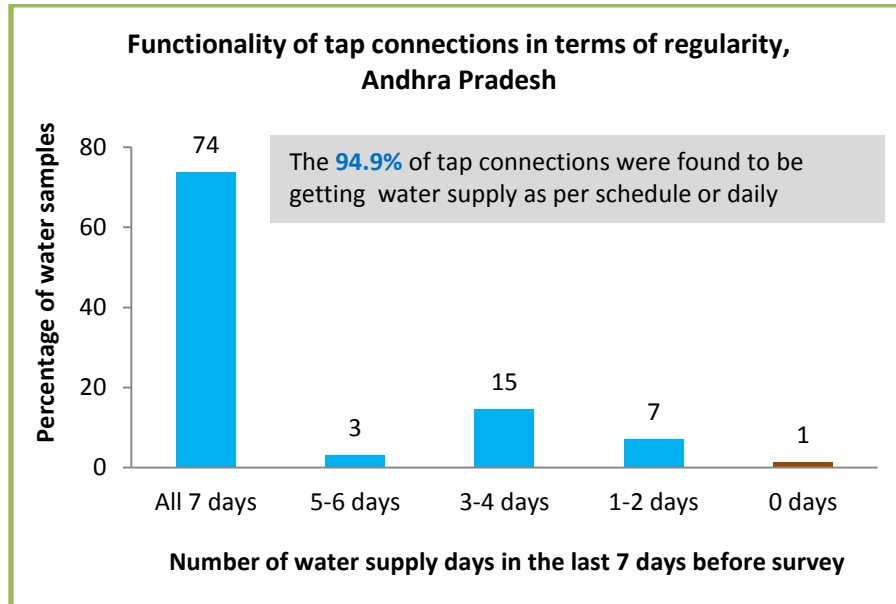
**Fig 1: Functionality of the household tap connection in terms of potability - Andhra Pradesh**



**Base: Households with water quality testing done, N: 136**

Figure 2 presents functionality in terms of regularity, and presents the water supply situation in the last 7 days (before survey date). This includes information on the proportion of taps supplying water on all 7 days, 5-6 days, 3-4 days, 1-2 days and zero days in the last 7 days. As not all schemes are planned to supply water daily, the information of the proportion of taps supplying water daily or as per the water supply schedule is also presented.

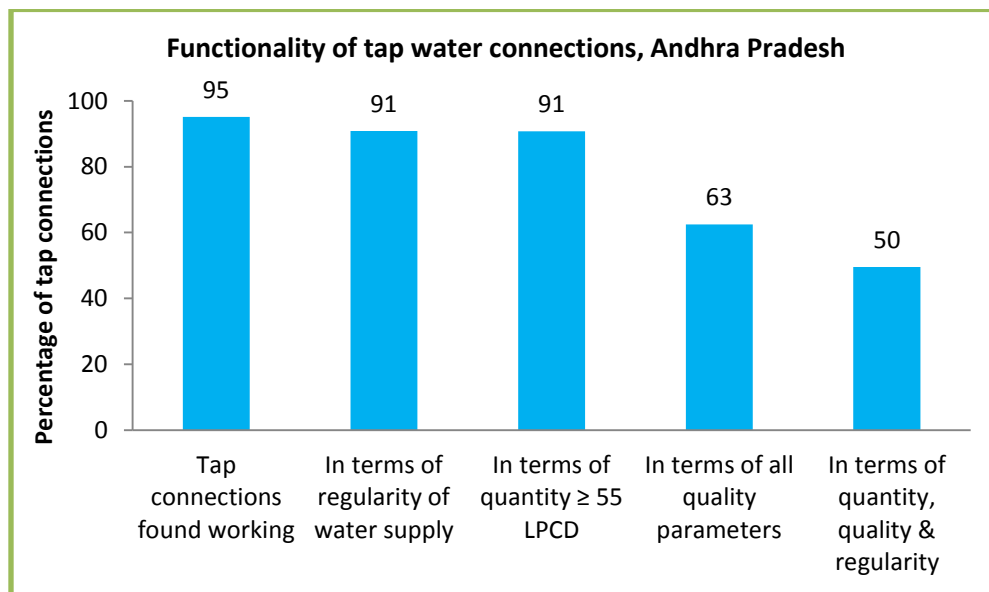
**Fig 2: Functionality of the household tap connection in terms of regularity - Andhra Pradesh**



**Base: All Households, N: 1806**

Figure 3, presents the summary situation of the working tap connections (defined as supplying water atleast on one day in the last 7 days), the functionality in terms of the proportion of tap connections which have qualified regularity, quantity, quality parameters, and the proportion which have qualified all 3 parameters.

**Fig 3: Overall functionality of the household tap connection - Andhra Pradesh**

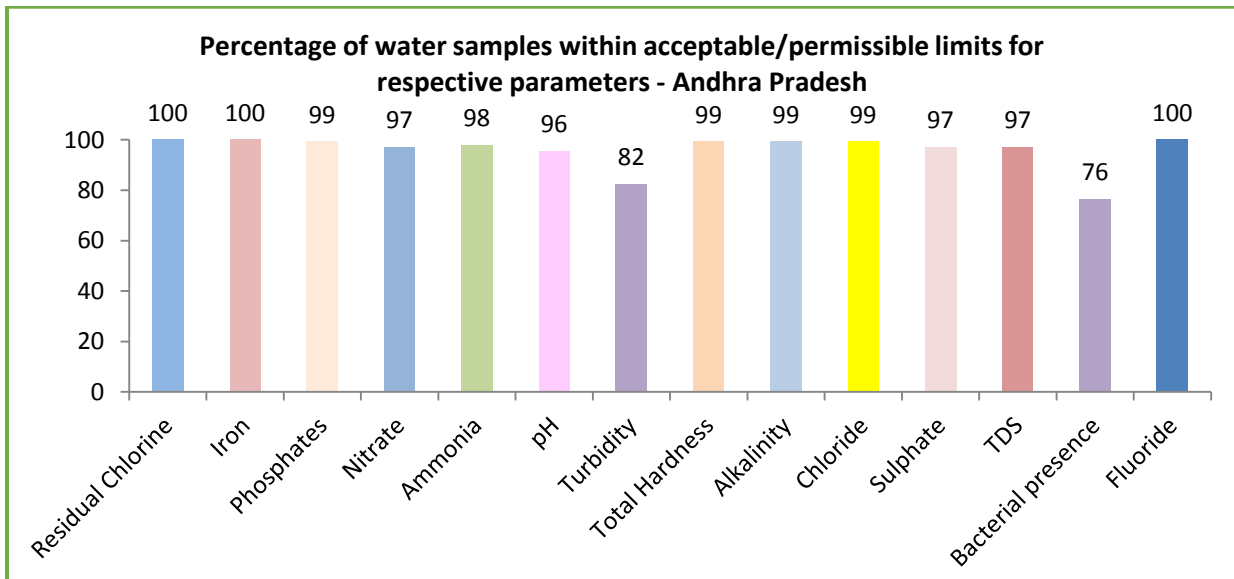


**Base: Total count of tap connections considered for functionality assessment, N: 1745**

A total of 136 water samples were tested as per BIS: 10,500 standards for all 13 parameters. Of these samples, 4 samples included testing for Fluoride. All the water samples were taken from a randomly selected head end household of selected sample PWS schemes in the sample villages of Andhra Pradesh – one sample for each of separate water sources in the village. The figure below shows the proportion of samples in which different parameters were found within acceptable/permisible limits.

As can be seen, almost all the samples (98% or more) had Residual Chlorine, Iron, Phosphates, Ammonia, Chloride, Total Hardness, Alkalinity and Fluoride within acceptable/permisible limits. The key water quality issues were Bacteriological (total coliform) presence in 24 percent of the water samples, and Turbidity (18%). In the case of Fluoride, all samples tested in fluoride affected villages were within the permisible limit.

**Fig 4: Percentage of water samples within acceptable/permisible limits for respective parameters – Andhra Pradesh**



**Pic 1: Household survey being undertaken in one of the villages in Andhra Pradesh**



**Pic 2: Water quality sample testing being undertaken in a village in Andhra Pradesh**



## 5. Conclusions

Andhra Pradesh has performed comparatively well in the functionality assessment (49.5%) as compared with the national average. Ninety-one percent of the households were estimated to be supplied with regular water and receiving 55 lpcd or more water. However, the proportion of households receiving potable water is less - about 63 percent. Since the tap connections considered to be functional were as per the JJM guidelines of including adequate quantity (55 lpcd or more), potability (as per BIS:10500 standards) and regularity of water supply (all days or as per the water supply schedule), the reason that a lower proportion of households had functional tap connections is mostly due to the lower proportion of households having a combination of regularity and potability (53.1% households having adequate quantity and potable water; 52.4% households having potable water received on a regular basis; while 84.7% households had adequate quantity of water supply on a regular basis).

The main issues with the samples which were not found potable were bacteriological presence, as well turbidity being above permissible limits.

For four-fifth (80.8%) of the schemes water supply was scheduled as daily supply but there seems to be variation from the schedule. A much lower proportion of those reporting a usual daily water supply (81%), has reported receiving water supply on a daily basis in the last 7 days (74%). Seventy two percent of the households have reported being supplied water once a day, and a tenth of them reported supply of four times or 24 hours supply. While 90 percent of the households have reported a reliability of water supply timings, around four-fifth of the households surveyed reported adequate water pressure.

However, despite good quality water supply service delivery, the fact two-third of the households (69.5%) have reported paying water tariff somewhat a concern. As per the JJM guidelines, the State Government needs to ensure 100% fund requirement for operation and maintenance of the schemes are met by the Agency responsible for water supply provision to function as a utility.



Slightly more than a half of the villages (52.5%) have reported having water and sanitation committees – of these villages, almost all the water and sanitation committees were actually taking responsibility for operation and maintenance activities of the PWS schemes. As reported by the communities ‘poor maintenance’, ‘Poor water availability at source’ and ‘natural calamities’ were the main challenges faced by the schemes. Slightly more than three-fourth of the schemes had taken any initiatives for source sustainability is encouraging.

**Annexures to this report includes:**

- List of village with no scheme/defunct schemes/under construction is placed as Annexure 1,
- List of villages with schemes supplying only through tap stand/stand posts is placed as Annexure 2,
- List of villages where 15 FHTCs were not found is placed as Annexure 3,
- Indicative proportion of functional tap connections by districts is placed as Annexure 4, and
- List of villages where samples failed for given quality parameter is placed as Annexure 5

**Annexure 1: List of village with no scheme/defunct schemes/under construction**

S. No	District Name	Block Name	Panchayat Name	Village Name	Name Of Largest Scheme In The Village	Type	Status Of The Scheme	Remarks
1.	Srikakulam (01)	Palasa (32)	Allukola(04)	Allukola (011 )	Augumentation of Allukola	SVS	Scheme is defunct	No individual tap connections in the village and habitation and also the scheme is not working since past 2 months

**Annexure 2: List of villages with schemes supplying only through tap stand**

S.No	District name	Block name	Panchayat name	Village name	Name of largest scheme in the village	Type	Remarks
1.	Prakasam (08)	Pullalacheruvu(02)	I.T.Varam(15)	I.T.Varam(019 )	Providing CPWS Scheme to Pullalacheruvu and 43 Other Habitations in Prakasam District	MVS	No FHTC. Water supply through tap stand only
2.	Srikakulam(01)	Kotturu(15)	Parapuram(33)	Parapuram(025)	CPWS Scheme to Kottur Mandal in Srikakulam District	MVS	No FHTC. Water supply through tap stand only
3.	Srikakulam(01)	Tekkali(27)	Pathanowpada(08)	Pathanowpada(019 )	CPWS to Tekkali and Other Habs	MVS	No FHTC. Water supply through tap stand only
4.	Visakhapatnam (03)	Anakapalli(33)	Bowluvada(12)	Bowluvada(013)	CPWS Scheme to Raiwada and Other Habitations	MVS	No FHTC. Water supply through tap stand only
5.	Visakhapatnam (03)	Arakuvalley (05)	Madagada(09)	Nandiguda(080 )	SVS to Champaguda	SVS	No FHTC. Water supply through tap stand only
6.	Vizianagara m (02)	Gantyada(29)	Kotaribilli(32)	Kotaribilli(040 )	Gosthani D.W Project	MVS	28 public tap stands
7.	Vizianagara m (02)	Kottavalasa (34)	Santapalem (19)	Santapalem(023 )	Providing NSVS to Relli Kompalu, H/O. Santapalem	SVS	No FHTC. Water supply through tap stand only
8.	Vizianagara m (02)	Mentada(18)	Gurla(29)	Gurlathammirajupeta(036 )	CPWS Scheme to 10 Habitations Including G.T.Peta in Vizianagaram District	MVS	No FHTC. Water supply through tap stand only

**Annexure 3: List of villages where 15 FHTCs were not found**

S. No	District name	Block name	Panchayat name	Village name	Name of largest scheme in the village	Type
1.	Kurnool (13)	Peapully (48)	Burugula (25)	Burugula (019 )	Providing drinking water facility to MPPS at Seethammathanda (V) of Peapully (M)	SVS

**Annexure 4: Indicative proportion of functional tap connections by districts**

S.No.	Districts	Percentage Functional Taps
1.	Anantapur (12)	0.0
2.	Chittoor (10)	11.2
3.	East Godavari (04)	91.9
4.	Guntur (07)	38.7
5.	Kadapa (11)	49.3
6.	Krishna (06)	74.0
7.	Kurnool (13)	24.8
8.	Nellore (09)	57.7
9.	Prakasam (08)	78.5
10.	Srikakulam (01)	45.4
11.	Visakhapatnam (03)	78.0
12.	Vizianagaram (02)	61.9
13.	West Godavari (05)	42.7

**Annexure 5: List of villages where samples failed for given quality parameter**

S.No.	District name	Block name	Gram panchayat name	Village name
<b>Villages with failed water samples for Turbidity test</b>				
1.	Anantapur(12)	Bukkapatnam (50)	Madirebailu Thanda(13)	Kothakota(008 )
2.	Anantapur(12)	Garladinne (13)	Kalluru R.S.(06)	Kalluru Agravaram(005 )
3.	Anantapur(12)	Hindupur (57)	Pulakunta(07)	Pulakunta(07)
4.	Anantapur(12)	Narpala (27)	B.Pappur(15)	B.Pappuru(011 )
5.	Anantapur(12)	Putlur (28)	Kadavakal(15)	Kadavakal(010 )
6.	Anantapur(12)	Settur (21)	Kanukur(11)	Mulakaledu(007 )
7.	Chittoor(10)	Bangarupalem (57)	Sankaranthipalle(15)	Beripalle(010 )
8.	Chittoor(10)	Nimmanapalle (34)	Reddivaripalle(02)	Reddivaripalle(003 )
9.	Chittoor(10)	Renigunta(12)	Vedullacheruvu(07)	Vedullacheruvu(009 )
10.	Chittoor(10)	Renigunta(12)	Renigunta(10)	Thukivakam(015 )
11.	Chittoor(10)	Satyavedu(18)	Irugulam(09)	Irugulam(012 )
12.	Krishna(06)	Kaikaluru(48)	Vinjaram(22)	Vinjaram(020 )

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S.No.	District name	Block name	Gram panchayat name	Village name
13.	Kurnool(13)	Adoni (23)	Ballekal(13)	Ballekal(015 )
14.	Kurnool(13)	C.Belagal (05)	Polakal(08)	Polakal(006 )
15.	Kurnool(13)	Gonegandla (20)	Chinnamarriveedu(03 )	Alwala(002 )
16.	Kurnool(13)	Orvakal (17)	Nannur(01)	Nannur(001 )
17.	Nellore(09)	Allur (15)	Singapet(02)	Singa Pet(002 )
18.	Nellore(09)	Bogole (06)	Bogole(06)	Bogole(004 )
19.	Nellore(09)	Buchireddy Palem (18)	Buchireddy Palem(03)	Vavveru(002 )
20.	Nellore(09)	Venkatachalam (30)	Kasumuru(03)	Kasumuru(003 )
21.	Vizianagaram(02 )	Vepada(31)	Vepada(08)	Vepada(010 )
22.	West Godavari(05)	Eluru(23)	Chataparru(08)	Chataparru(009 )
23.	West Godavari(05)	Ganapavaram(26)	Ardhavaram(07)	Ardhavaram(009 )
24.	West Godavari(05)	Palakoderu(37)	Garagaparru(02)	Garagaparru(002 )
<b>Villages with failed water samples for pH test</b>				
1.	Anantapur(12)	Chilamathur (55)	Kodur(06)	Kodur(012 )
2.	Guntur(07)	Vemuru(31)	Penumarru(16)	Penumarru(013 )
3.	Guntur(07)	Vemuru(31)	Peravali Palem(11)	Peravali Palem(008 )
4.	Kurnool(13)	Orvakal (17)	Nannur(01)	Nannur(001 )
5.	Nellore(09)	Bogole (06)	Bogole(06)	Bogole(004 )
6.	Nellore(09)	Venkatachalam (30)	Kasumuru(03)	Kasumuru(003 )
<b>Villages with failed water samples for Total Hardness test</b>				
1.	Krishna(06)	Vissannapeta(14)	Lambadi Thanda	Chandrupatla(006 )
<b>Villages with failed water samples for Total Alkalinity test</b>				
1.	West Godavari(05)	Nidadavole(17)	Singavaram(16)	Singavaram(018 )
<b>Villages with failed water samples for Chloride test</b>				
1.	Chittoor(10)	Nimmanapalle (34)	Reddivaripalle(02)	Reddivaripalle(003 )
<b>Villages with failed water samples for Ammonia test</b>				
1.	Chittoor(10)	Renigunta(12)	Renigunta(10)	Thukivakam(015 )
2.	Kurnool(13)	Kallur (18)	Chinna Tekur(14)	Chinna Tekur(013 )
3.	Nellore(09)	Buchireddy Palem (18)	Buchireddy Palem(03)	Vavveru(002 )
<b>Villages with failed water samples for Phosphate test</b>				
1.	Guntur(07)	Sattenapalli(15)	Kattamuru(06)	Kattamuru(004 )
<b>Villages with failed water samples for Nitrate test</b>				
2.	Anantapur(12)	Uravakonda (15)	Lathavaram(12)	Lathavaram(012 )

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S.No.	District name	Block name	Gram panchayat name	Village name
3.	Nellore(09)	Allur (15)	Singapet(02)	Singa Pet(002 )
4.	Nellore(09)	Buchireddy Palem (18)	Buchireddy Palem(03)	Vavveru(002 )
5.	Nellore(09)	Venkatachalam (30)	Kasumuru(03)	Kasumuru(003 )
<b>Villages with failed water samples for Sulphate test</b>				
1.	Anantapur(12)	Chilamathur (55)	Kodur(06)	Kodur(012 )
2.	Anantapur(12)	Hindupur (57)	Pulakunta(07)	Pulakunta(07)
3.	Anantapur(12)	Kudair (14)	Marutla(03)	Marutla(002 )
4.	Anantapur(12)	Uravakonda (15)	Lathavaram(12)	Lathavaram(012 )
<b>Villages with failed water samples for Total Dissolved Solids test</b>				
1.	Chittoor(10)	Nimmanapalle (34)	Reddivaripalle(02)	Reddivaripalle(003 )
2.	Krishna(06)	Vissannapeta(14)	Lambadi Thanda	Chandrupatla(006 )
3.	Vizianagaram(02 )	Kottavalasa(34)	Santapalem(19)	Santapalem(023 )
4.	West Godavari(05)	Chintalapudi(09)	Mallayagudem(14)	Mallayagudem(024 )
<b>Villages with failed water samples for Bacteriological present/ absence test using H2S vials</b>				
1.	Anantapur(12)	Anantapur (25)	Rajiv Colony(18)	Anantapur-Rural(014)
2.	Anantapur(12)	Bukkapatnam (50)	Madirebailu Thanda(13)	Kothakota(008 )
3.	Anantapur(12)	Chilamathur (55)	Kodur(06)	Kodur(012 )
4.	Anantapur(12)	Garladinne (13)	Kalluru R.S.(06)	Kalluru Agrapharam(005 )
5.	Anantapur(12)	Hindupur (57)	Pulakunta(07)	Pulakunta(07)
6.	Anantapur(12)	Kudair (14)	Marutla(03)	Marutla(002 )
7.	Anantapur(12)	Narpala (27)	B.Pappur(15)	B.Pappuru(011 )
8.	Anantapur(12)	Putlur (28)	Kadavakal(15)	Kadavakal(010 )
9.	Anantapur(12)	Settur (21)	Kanukur(11)	Mulakaledu(007 )
10.	Anantapur(12)	Uravakonda (15)	Lathavaram(12)	Lathavaram(012 )
11.	Chittoor(10)	Bangarupalem (57)	Sankaranthipalle(15)	Beripalle(010 )
12.	Chittoor(10)	Molakalacheruvu (03)	Kalvapalle(02)	Kalvapalle(003 )
13.	Chittoor(10)	Molakalacheruvu (03)	Gudupalle(01)	Gudupalle(002 )
14.	Chittoor(10)	Nimmanapalle (34)	Reddivaripalle(02)	Reddivaripalle(003 )
15.	Chittoor(10)	Thavanampalle (53)	Mallakunta(02)	Mallakunta(002 )
16.	Guntur(07)	Edlapadu(37)	Thimmapuram(12)	Thimmapuram(009 )
17.	Guntur(07)	Vatticherukuru(35)	Mutluru(15)	Mutluru(012 )
18.	Kadapa(11)	B. Kodur (08)	Mekavaripalli(10)	Moolavaripalli(022)
19.	Kadapa(11)	Chinthakommadinne(32 )	Kolumulapalli(12)	Kolumulapalli(020 )
20.	Kadapa(11)	Jammalamadugu (16)	P.Bommepalli(07)	P.Bommepalli(010 )
21.	Kadapa(11)	Porumamilla (10)	Ganugapanta(18)	Rowthupalli(028)

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S.No.	District name	Block name	Gram panchayat name	Village name
22.	Kadapa(11)	Pullampet (45)	Kothapeta(13)	Kommanavaripalli(015 )
23.	Kurnool(13)	C.Belagal (05)	Polakal(08)	Polakal(006 )
24.	Kurnool(13)	Gonegandla (20)	Chinnamarriveedu(03 )	Alwala(002 )
25.	Kurnool(13)	Kosigi (02)	Sajjalagudem(10)	Sajjalagudem(016 )
26.	Nellore(09)	Allur (15)	Singapet(02)	Singa Pet(002 )
27.	Nellore(09)	Bogole (06)	Bogole(06)	Bogole(004 )
28.	Nellore(09)	Buchireddy Palem (18)	Buchireddy Palem(03)	Vavveru(002 )
29.	Prakasam(08)	Kurichedu(04)	Avulamanda(04)	Avulamanda(005 )
30.	Srikakulam(01)	G.Sigadam(05)	Chettupodilam(25)	Chettupodilam(033 )
31.	Srikakulam(01)	Ponduru(09)	Ponduru(10)	Ponduru(012 )
32.	Vizianagaram(02 )	Jami(33)	Alamanda(25)	Alamanda(028 )