GOVERNMENT OF MAHARASHTRA

MAHARASHTRA WATER RESOURCES REGULATORY AUTHORITY (MWRRA)

Technical Manual for Fixing, Regulating and Enforcing the Entitlements in Irrigation Projects (Pilot Basis)

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FOREWORD

The Maharashtra Water Resources Regulatory Authority (MWRRA), set up under an Act in August 2005, is the first of its kind in the country. One of the important functions of the Authority is to determine the distribution of Entitlements for various categories of use and ensure through regulation enforcement of the determined Entitlements. Six projects in the Krishna Basin viz. Kukadi & Ghod (major), Mangi (medium) and Wafgaon, Diwale & Benikre (minor) have been selected initially for fixing and enforcing Entitlements on a pilot basis starting rabi/hot weather season of 2006-07. In this context, the need was felt for a technical manual to assist the project authorities in the various steps involved in the exercise. A draft manual was prepared and got vetted from WALMI. Prof. Pradeep Purandare of that Institute has also made several useful suggestions. The manual has been accordingly revised and is being circulated to all field units engaged in irrigation management. Suggestions for improving the scope and technical contents of the manual are welcome so that it can be improved by the time Entitlements are upscaled to cover other river basins also. At that stage, the Marathi version of the manual will also be brought out so that it can be used by even the junior level staff managing the irrigation system. The Authority is also planning to bring out other such manuals/guidelines to address issues like procedure to be followed by Primary Dispute Resolution Officers in hearing disputes and by the Authority in dealing with appeals.

(Ajit M. Nimbalkar)
Chairman, MWRRA

Mumbai
16th January 2007

TECHNICAL MANUAL

I N D E X

1.0. BACKGROUND

1.1. The MWRRA Act 2005 has inter-alia mandated the Authority to determine the distribution of Entitlements for various categories of use and the equitable distribution of Entitlements of water within each category of use on such terms & conditions as may be prescribed. In consultation with the Water Resources Department of the State Government, the Authority has taken up, to begin with, 6 irrigation projects in the Krishna basin to introduce the concept of Entitlements for about 2 years. Based on the experience and results of the pilot projects, it is proposed to upscale determination of Entitlements first in one basin and thereafter in the whole State in a period of about 6 years.

1.2. The six pilot projects selected are

Major	-	Kukadi, Ghod
Medium	-	Mangi
Minor	-	Wafgaon, Diwale, Benikre.

This technical manual has been prepared to serve as a guidance to the concerned project authorities to

- fix the Entitlements for each of the 3 seasons for each category of use viz. irrigation, domestic drinking water and industrial water supply and the entitlements to the concerned user groups within each category
- monitor the delivery of Entitlement to each category of user within the season through appropriate measuring mechanism.
- keep record of delivery of Entitlement in each rotation.

The Manual also details the regulatory machinery to be in position on behalf of the Authority to verify delivery of Entitlements. Appropriate proformae for the above steps have also been devised.

2.0. DEFINITIONS :

2.1. In this Manual, the following definitions will apply

" Act "	Means Maharashtra Water Resources Regulatory Authority Act 2005.
" Agency "	Means River Basin Agency for the Krishna basin viz. Maharashtra Krishna Valley Development Corporation
" Authority "	Means Maharashtra Water Resources Regulatory Authority.
" Dispute Resolution Officer"	(DRO) means any officer of the rank of CE / SE / EE notified by the State Government to resolve dispute at the primary level on delivery of Entitlements for major / medium / minor projects respectively.
" hot weather irrigation season "	Means the period from 1st March to the end of June in any year.
" Kharif irrigation season "	means the period from 1st July to 14th October in any year
" Mcum "	means million cubic metres
" off take point "	means a point of off take from a system waterway
" period of scarcity "	means any period of water shortage declared by the State Government
" Project Authority "	means the officers under the Water Resources Department to whom the project is assigned for management
"regulated releases"	means any release from the storage system made by the Project Authority excluding releases made ➢ to pass flood waters ➢ to secure the safety of the structure in case of emergency ➢ for domestic purposes in periods of scarcity

"Regulator"	Means a person identified / appointed by the Authority to monitor and verify in the field whether the Entitlement holders have received their due Entitlement.
"rabi irrigation season"	Means period from 15th October to the end of February in any year.
"Water Users"	Means and includes any individual or body corporate or an Association using water from a Government source of irrigation.
"Water Users Association"	Means a Water User's Association formed at the minor level or above, which represents the users of irrigation water from that segment of any project, canal or natural flow or storage system.

Note : Words and expressions used in this manual, but not defined here in; shall have their respective meanings and as assigned to them in the Maharashtra act XVIII of 2005 (MWRRA Act), Maharashtra Act XXIII of 2005 (MMISF Act)

3.0. ENTITLEMENT, BULK WATER ENTITLEMENT, AGGREGATE BULK WATER ENTITLEMENT

3.1. The term ' Entitlement ' means an authorisation either by the Authority or the Agency to use water. Aggregate Bulk Water Entitlement is the designed utilisation of the project in a normal year (75% dependable or 50% dependable as the case may be) and the allocation made out of this aggregate to each category of use viz. irrigation, domestic water supply, industrial water supply is the 'Bulk Water Entitlement'.

3.2. For example, if the design utilisation of a project is 100 units and the allocation made to irrigation, domestic and industrial water supply are respectively 75, 15 & 10, then 100 is the aggregate bulk water entitlement and 75, 15, 10 are the bulk water entitlements to the 3 category of users.

3.3. Further, if the bulk water entitlement to irrigation is allocated as 15, 50 and 10 units to kharif, rabi and hot weather season, then 15, 50 & 10 are quotas i.e. volumetric quantity of water made available to

the irrigation Entitlement holders in each of the 3 seasons. The volume of water out of this guaranteed to be supplied to each user association is the applicable water entitlement. Similarly, if 15 & 10 (Bulk water entitlement for the domestic & industrial water supply) are distributed seasonwise, then this would be quota for the water supply Entitlement holder.

4.0. FIXING OF ENTITLEMENT

4.1. The guiding principle for fixing of Entitlement shall be ensuring of equity among all beneficiaries within each category of use.

4.2. For the 6 pilot projects, unit Entitlement per ha of net CCA shall be worked out by the Authority and the Agency shall work out user wise Entitlement based on actual net CCA.

4.3. For each project, from the approved Project Report and records with Project Authorities, the following information will be noted down.

- design utilisation in kharif, rabi , hot weather
- live, dead, gross storages
- total cultivable command area (CCA)
- evaporation loss (annual, seasonal)
- river losses (if any pick-up weir is below the storage dam)
- river gain (post monsoon flow, return / regeneration flow, if any)
- water allocation to bulk consumers, lift irrigation, pressurised irrigation systems with CCA
- net CCA {total CCA minus CCA on permissible lift (from storage and canal), pressurised irrigation systems sanctioned during project operation}
- water allocation to domestic water supply
- water allocation to industrial water supply
- list of WUA at minor level with name, address, registration number and date, category, minor number , no. of beneficiaries, CCA under each WUA.

4.4. To work out kharif Entitlements, it will be a priori assumed that the hydrology will be that of a normal year, and designed kharif utilisation figure will be used to work out bulk water Entitlement and Entitlement to each WUA following the format prescribed in Annexure 1, which is the same as prescribed in Annexure 5 of statement - 1 in the Rules (2006) for the Maharashtra Management of Irrigation Systems by Farmers Act 2005. However, kharif Entitlement is enforceable only when storage reaches 33% of the design storage.

4.5. The following conveyance efficiencies will be adopted for the main/branch canal & distribution system.

	Lined		Unlined	
	before improve-ment	after improve-ment	before improve-ment	after improve-ment
➢ main/branch canal	0.85	0.95	0.80	0.85
➢ distributary	0.85	0.90	0.80	0.85
➢ minor	0.85	0.90	0.80	0.85

4.6. Depending on the catchment rainfall, the actual flows in the river may be different from that of a normal year as reflected in storage levels in the dam. Depending on the actual 10 daily storage and command rainfall, adjustment in each rotation may be required as under

- Entitlement will be correspondingly increased / decreased if actual storage is more / less than design storage. Releases in second, third rotation will be accordingly adjusted.
- Spillage will be avoided to the extent possible.

4.7. Before the start of the season, Project Authority will convene a meeting of all users and intimate them about Applicable Water

Entitlements and planned rotations. After the Entitlement is fixed, each WUA will indicate to the Project Authority, after discussion in a meeting of the WUA, quantum required in each rotation (normally three in kharif).

4.8. At the beginning of the rabi season (15th October), the available storage is known and based on actual availability, the Entitlements (prescribed unit water use entitlement) for rabi, hot weather will be worked out as per Annexure 2 for each category of use.

4.9. In the event of scarcity, as may be directed by the State Government, the Agency and the Authority shall ensure that the Entitlements (sanctioned water use entitlement) for domestic drinking water and industrial water supply are fully met, in accordance with prioritisation done in State Water Policy for various users (vide para 4 of the Policy) and thereafter the Entitlements for irrigation are reworked out to ensure that each land holders is able to irrigate atleast one acre of land.

4.10. In the event of acute scarcity and with a view to protect standing crops, the Authority may decide on providing 'life saving irrigation' by enforcing a reasonable cut on industrial water supply and domestic water supply so as to avoid economic distress to farmers.

5.0. MONITORING

5.1. The following registers shall be maintained to monitor entitlements

<u>To be maintained by each WUA</u>

1. Annexure 3 (1) - General Proforma for maintaining the register for sanctioned water use entitlement for normal year
2. Annexure 3 (2) - Proforma for maintaining the register for applicable water entitlement
3. Annexure 4 - Gauge Field Book of Water use with (WUA)

4. Annexure 5 (1), 5 (2), 5 (3) — Season wise water use of WUA for the year _____ kharif, rabi and hot weather.
5. Annexure 6 (1), 6 (2) — Proforma for maintaining the register for entitlement and its use.

To be maintained by Project Authority

1. Annexure 3 (1)
2. Annexure 3 (2)
3. Annexure 4
4. Annexure 5 (1) to 5 (3)
5. Annexure 6 (1) & 6 (2)
6. Annexure 7 - Abstract showing Percentage of Entitlement actually received vs. sanctioned to WUA for the year _____
7. Annexure 8 - Register of wells
8. Annexure 9 - Bill of Water charges.
9. Annexure 10 - Receipt of water charges

5.2. The above projectwise proformae (except gauge field book) will be computerised by the Agency and made available to the Authority & WRD.

6.0. REGULATION

6.1. The Authority shall identify one officer in each project at appropriate level as a regulator to test check on delivery of entitlements and sign in the gauge register in token of confirmation of delivery of due supplies. In case of short supplies, the regulator may record accordingly in the register and inform Project Authority (in the prescribed slip), accordingly for making good in subsequent rotation.

6.2. Irrigation shall be done "tail to head".

6.3. Shortfall in supply of due entitlement in one rotation may be made good in the subsequent rotation. However, this will not apply if WUA voluntarily requests for a cut in supplies due to rainfall etc.

6.4. In the event a WUA resorts to unfair practices to over draw supplies beyond the quantity fixed by breaching the minor, the Project Authority may condone the first offence with a warning. Subsequent offences will invite punitive measures as per section 26 of the Act.

6.5. The WUA may decide on similar measures within the association for defaulting members.

7.0. **CALIBRATION AND FLOW MEASUREMENT**

7.1. Measuring Devices (MD) of standard make shall be installed at strategic locations such as head of minor, distributary, branch and main canal from where sanctioned Entitlement is to be given to a water user association. The common types of MD are Weir, Parshall Flume and Cut throat flume where the rate of flow is a function of the head. All these devices give accurate results when constructed, installed and operated properly. The procedure / specifications stipulated by the manufacturer should be adhered to. MD should be installed in straight reaches with tranquil and symmetrical approaching flow. Sand, gravel, sediment and other obstructions can cause unsymmetry.

7.2. All calibration are ideally done at beginning of rabi season. Table below indicates level of responsibility for calibration. In all cases, the date and time of calibration, results, corrective measures/ adjustments done to MD to obtain the rated discharge should be entered in the gauge discharge table enclosed with Annexure 4 of the Entitlement register.

Location of MD	Officer responsible for calibration	Remarks
Head of minor in a major, medium or minor project	SDO	i. Recording to be signed by SDO, SO & WUA representative. ii. 10% or minimum one calibration to be checked by EE
Head of main canal of medium project and branch canal of major & medium projects	EE	iii. Recording to be signed by EE, SDO iv. 10% or minimum one calibration to be checked by SE.
Head of main canal for major project	SE	v. Recording to be signed by SE, EE

7.3. Vigilance and Safety : Care should be taken to see that the Measuring Device is not tampered by any miscreant nor any malpractice done in its operation Watch shall be kept both by WUA and the project authority. If it is found that M.D. is tampered with, action shall be taken as stipulated in the clause 60, 61 and 62 of the Maharashtra Management of Irrigation System by Farmers (MMISF) act XXIII of 2005.

7.4. The gauge discharge table/in volume shall be available with the measurer, Canal Inspector (C.I.), Sectional Officer (S.O.) and also with the concerned WUA.

7.5. Daily reading as stipulated in Annexure-4 of this Technical Manual shall be recorded in the bound “gauge field book of water use” with the dated signature as mentioned in the Annexure 4.

7.6. In addition to above instructions incorporated in the Annexure-3 of the MMISF rule dated 8th June 2006, (now enclosed with this manual as Annexure – 11) shall also be scrupulously followed.

8.0. DISPUTE RESOLUTION

8.1. The State Government shall authorise CE / SE / EE in each Agency as Primary Dispute Resolution Officers (PDRO) for major / medium / minor projects respectively to resolve disputes with regard to the issuance or delivery of Entitlements under the Act (Section 22 (1)).

8.2. In resolving the dispute, the PDRO shall take into account the observations of the Regulator in the gauge register.

8.3. The PDRO shall follow such procedure as may be prescribed by the Authority while hearing the dispute.

8.4. Any person aggrieved by the order of the PDRO may, within 60 days from the date of receipt of such order, prefer an appeal to the Authority.

9.0. GROUND WATER

9.1. The Project Authority shall maintain a register of wells in the command area, beneficiary wise (Annexure 9).

9.2. WUAs shall promote use of ground water to meet the objective of keeping the ground water table in its area of operation within 3 m from the ground level to avoid incidence of salinity and water logging.

10. TARIFF

10.1. The Project Authorities will levy tariff for bulk volumetric supplies to irrigation and water supply as per extent tariff orders of the State Government or as modified from time to time on the recommendation of the Authority.

10.2. The WUA shall collect water charges from the beneficiaries as per section 27 of MMISF Act 2005.

10.3. The Project Authority shall maintain data on water charges, billed & collected, in proformae at Annexure 10.

ANNEXURE-1
(ILLUSTRATIVE EXAMPLE)
Prescribed Unit Water Use Entitlement for Flow Irrigation in Kharif season

1)	Utilisation for Kharif season as per Project report including water required for irrigation, non-irrigation purposes and losses		461 Mm^3
2)	Deduct :- i) Evaporation and other losses like seepage, etc ii) Non-irrigation water requirement from reservoir iii) Non-irrigation water requirement from canal system (4 Mm^3/0.95x0.9) (Refer Table-1) = 4.7 Mm^3 iv) Net river losses in case of storage cum pick weir scheme. v) Water allocation for bulk consumers	 215 Mm^3 14 Mm^3 4.7 Mm^3 Not Applicable 3.0 Mm^3	
	Total deductions :	236.7 Mm^3	
3)	Water available for irrigation in Kharif season at canal head i.e. (1 – 2)		224.3 Mm^3
4)	Deduct from (3) i) Water Allocation for lift irrigation including pressurized irrigation schemes on reservoir ii) Water Allocation at canal head for lift and pressurized irrigation schemes on canal system (5 – 0.95)	 20 Mm^3 5.25 Mm^3	
		25.25 Mm^3	
5)	Net Water available for flow irrigation at the head of WUA (3-4) x efficiency from canal head to minor head (224.3-25.25) x (0.95 x 0.9) (Refer Table-1) = 170.19	170.19 Mm^3	
6)	Net CCA for flow irrigation (Total CCA 2,37.550 ha Deduct: i) CCA on lifts : Reservoir – 21438 ha Canal - 10000 ha --- 31438 ha ii) CCA of bulk Consumers - 100 ha --- Total : 31538 ha Net CCA = 237550 – 31538 = 206012 ha		
7)	Prescribed unit water use entitlement per ha of Net CCA (i.e.5/6) i.e. 170.19 / 206012 = 0.0008 Mm^3 /ha of Net CCA i.e. 800 m^3 /ha of Net CCA		

ANNEXURE-2
(ILLUSTRATIVE EXAMPLE)
Prescribed Unit Water Use Entitlement for Flow Irrigation in Rabi and H.W. season

1)	Utilisation for Rabi and H.W.season - Total utilisation (planned) - Deduct planned utilisation in Kharif	 154.8	 Mm^3 Mm^3
	Net for Rabi and H.W.	154.80	
2)	Deduct from (1) i) Reduction in the live storage due to siltation (assumed) ii) Carry over iii) Net losses from reservoir considering post monsoon flow iv) Net river losses in case of storage cum pick-up weir scheme (Not applicable in this case) v) Non-irrigation requirement from reservoir vi) Non-irrigation requirement from canal system (1.737 / (0.80 x 0.80) = 2.741 vii)Water allocation for bulk consumers (Block system where applicable)	 19.36 35.89 3.749 2.714 13.325	 Mm^3 Mm^3 Mm^3 Mm^3 Mm^3
	Total deductions :	75.038	Mm^3
3)	Water available for irrigation at canal head in Rabi & H.W. seasons i.e. (1 – 2)	79.762	Mm^3
4)	Deduct from (3) i) Water Allocation for lift and pressurized irrigation schemes on reservoir. Lift Drip Total Rabi 6.71 2.90 9.61 Mm^3 Hotweather 0.15 1.35 1.50 Mm^3 Total 6.86 4.25 11.11 Mm^3 ii) Water Allocation at canal head for lift and pressurized irrigation schemes on canal (4.126/0.80) (Refer Table-I) Rabi 3.936 Mm^3 Hotweather 0.15 Mm^3 Total 4.126 Mm^3 iii)Water Allocation for lift and pressurized irrigation schemes on river between dam and pick up weir. (For K.T. Weirs) Rabi Hotweather Total (Within Command) 2.81 4.75 7.56 (Outside Command) 1.97 2.48 4.45 Total 4.78 7.23 12.01	 11.11 5.157 12.01	 Mm^3 Mm^3 Mm^3
		28.277	
5)	Net water available for flow irrigation at head of WUA (79.762 – 28.277) x (0.80 x 0.80) efficiency from canal head to minor head (Refer Table – I) =	32.950	Mm^3
6)	Seasonwise allocation of net water available for flow irrigation Rabi (53%) = 17.464 Mm^3 H.W. (47%) = 15.516 Mm^3	 17.464 15.516	 Mm^3 Mm^3
7)	Net CCA for flow irrigation - Total CCA 32494.00 ha. - Deduct CCA of block Consumers = 1053.00 ha. - Lift on KT Weir = 724.00 ha. - Canal Lift = 1126.00 ha Total Deduction = 2903.00 ha Net CCA 29591.00 ha.		0.00314
8)	Prescribed unit water use entitlement per ha of Net CCA (i.e. 6/7) Rabi 590.18 m^3/ha of Net CCA 17464000/29591 H.W. 524.35 m^3/ha of Net CCA 15516000/29591	 590.18 524.35	 M^3/Ha. M^3/Ha.

Name of Division :

ANNEXURE 3(1)

Ref. – M.W.R.R.A. Act Chapter III Clause 11 (g)

Name of Project :

District :

_____Irrigation Division_____

(Place)

General Proforma for maintaining the register for sanctioned water use entitlement for normal year*

For Irrigation Use

Sr. No.	Name & Address of WUA	Registra-tion No. & Date	Category of WUA flow/lift combined	Minor/ Distri-butory No.	Total area CCA (Ha)	No. of Benefi-ciries	No.& Name of villages benefitted	Normal Sanctioned water use entitlement for Kharif in Mm^3	Normal Sanctioned water use entitlement for Rabi in Mm^3	Normal Sanctioned water use entitlement for Hw in Mm^3	Total entitlement in Mm^3
1	2	3	4	5	6	7	8	9	10	11	12

*Note : Entitlement shown in column 10 & 11 shall be applicable for Design/revised live storage in reservoir full condition

Enclosure : Gauge v. Discharge Table

Name of Division :

ANNEXURE 3 (2)

Ref. – M.W.R.R.A. Act Chapter III Clause 11 (g)

Name of Project :

District :

_____Irrigation Division_____

(Place)

Proforma for maintaining the register for applicable water entitlement

For the Year_____

For Irrigation Use

Sr. No.	Name & Address of WUA	Registra-tion No. & Date	Category of WUA flow/lift combined	Minor/ Distri-butory No.	Total area CCA (Ha)	No. of Benefi-ciries	No.& Name of villages benefitted	Applicable water entitlement for Kharif in Mm^3	Applicable water entitlement for Rabi in Mm^3	Applicable water entitlement for HW in Mm^3	Applicable total entitlement in Mm^3
1	2	3	4	5	6	7	8	9	10	11	12

Note : Applicable Entitlement shown in column 10,11,12 shall be for the reservoir condition as on 15-10 of the year_____

Enclosure : Gauge v. Discharge Table

ANNEXURE 4

Taluka_____

District_____

Gauge field book of water use with (WUA)

Name of Project_____at_____Tal._____Dist._____ _____Irrigation Sub-Division____

For the Year : _____Irrigation Division_____

Rotation Number : 1 / 2 / 3 /_____ For KHARIF / RABI / H.W.

Location of Gauge	Gauge reading timing	Rotation Days	Total Qty.of water supplied during rotation in Tcum	Signature of Authorised represen-tative of WUA	Signature of Department's Authorised represen-tative (with designation)	Remarks
	@ 8.00 hours @ 17.00 hours Average Gauge	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15				
	Qty. supplied per day	Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15	Σ Q			

Tcum = Thousand Cubic Meter

Enclosure :- Gauge vs Discharge Table with the type of measuring device

Name of Division :

ANNEXURE 5(1)

Taluka :

Season wise water use of WUA for the Year_____

Reach Head / Middle / Tail

Name of Project :

District :

Sr. No.	Season	Applicable water Entitlement Tcum	No. of Rotation	Actual Volume supplied in each rotation Tcum	Cumulative Volume Tcum	Remarks of Regulator	Remarks of Project Authority/its representative
1	2	3	4	5	6	7	8
	KHARIF		1 2 3 4				

Note : Figure shown in column (3) will depend on actual reservoir storage available for Kharif season which will be decided by the Project Authority.

Tcum = Thousand Cubic Meter

Name of Division : **ANNEXURE 5 (2)** Taluka :

Season wise water use of WUA for the Year_____

Reach Head / Middle / Tail

Name of Project : District :

Sr. No.	Season	Applicable water Entitlement Tcum	No. of Rotation	Actual Volume supplied in each rotation Tcum	Cumulative Volume Tcum	Remarks of Regulator	Remarks of Project Authority/its representative
1	2	3	4	5	6	7	8
	RABI		1 2 3 4 5				

Note : 1) Figure shown in column (3) will depend on actual reservoir storage available for Rabi season which will be decided by the Project Authority.

2) Water saved in Rabi will be considered in H.W. entitlement with appropriate deduction of losses.

Tcum = Thousand Cubic Meter

Name of Division : **ANNEXURE 5 (3)** Taluka :

Season wise water use of WUA for the Year_____

Reach Head / Middle / Tail

Name of Project : District :

Sr. No.	Season	Applicable water Entitlement Tcum	No. of Rotation	Actual Volume supplied in each rotation Tcum	Cumulative Volume Tcum	Remarks of Regulator	Remarks of Project Authority/its representative
1	2	3	4	5	6	7	8
	HOT WEATHER		1 2 3 4				

Name of Division :

ANNEXURE 6 (1)

Ref. – M.W.R.R.A. Act Chapter III Clause 11 (g)

Name of Project :

Proforma for maintaining the register for entitlement and its use

Name of water use Entity : **for Domestic use**

Utility located @_____Tal._____Dist._____

For the Year :

Entitlement Register No._____

Sr.No.	Name and address of W/S Entity with Registration Number & date	Category of Entity** & population level	Water lifting point***	Sanctioned Water use Entitlement in MLD (Tcum)	Actual utilisation of the Entitlement in MLD (Tcum)
1	2	3	4	5	6

***1) Directly from WRD storage.
2) From river below storage by lift.
3) From canal -
a) having appropriate storage facility.
b) without storage facility.
4) Storage owned by the user.

Encl: Monthly Abstract (Calenderwise) of flow meter

**Category of W/S entity
Municipal Corporation
Municipal Council
Regional/Rural Water Supply Scheme
Village Water Supply Scheme
City/Taluka/Village/Grampanchayat (Group)

Tcum = Thousand Cubic Meter MLD = Million Litres per Day

Name of Division :

ANNEXURE 6 (2)

Ref. – M.W.R.R.A. Act Chapter III Clause 11 (g)

Name of Project :

Proforma for maintaining the register for entitlement and its use

Name of water use Entity : **For Industrial use.**

For the Year: Industry located @_____Tal._____Dist._____

Entitlement R. No._____

Sr. No.	Name and address of Industrial Entity with Registration number & date	Category of Entity(+)	Sanctioned water use Entitlement in MLD (Tcum) Monsoon period(*) Non-Monsoon Period.(@)	Actual utilisation of the Entitlement in MLD (Tcum) Monsoon period Non-Monsoon Period
1	2	3	4	5

(+) Category of Entity : i) Industry in the business of Drinking Water.
ii) Industry other than one above.

(*) Monsoon period – Water Rates for the monsoon period.

(@) Non-Monsoon Period – Water Rates at the Normal rates for the non-monsoon period.

MLD = Million Litres per Day.

Tcum = Thousand cubic meter.

Encl: Monthly Abstract (Calenderwise) of flow meter

Name of Division :

ANNEXURE 7

Taluka :

Abstract showing percentage of entitlement actually received vs. sanctioned to WUA for the year_____

Name of Project :

District :

Sr. No.	WUA in_____	No. of WUA	Applicable water entitlement in Tcum			Actual entitlement received in Tcum			percentage			Total for Year		
1	2	3	4			5			7			8		
			Kh.	Rabi	HW	Kh.	Rabi	HW	Kh.	Rabi	HW	Applicable water entitlement	Actual entitle-ment received	Percentage
	Head reach													
	Middle													
	Tail													

Tcum = Thousand cubic meters
WUA = Water User's Association

ANNEXURE 8

REGISTER OF WELLS

BRANCH No./DISTRIBUTORY No./MINOR No._____ Area of crops on well / Branchwise / Villagewise _____ YEAR _____

AREA _____ Ha

VILLAGE_____

Name of Project_____Tal._____Dist._____

TALUKA_____

Sr. No.	Outlet No.	Name of Beneficiaries	Survey No.	Gut No.	No.of wells	Cash crop area on well									Remarks
						Sugar cane	Banana	Grapes	Pomogranate	Plum (bor) berry	Others	Total	Cereals	Grand Total	
1	2	3	4	5	6	7(a)	7(b)	7(c)	7(d)	7(e)	7(f)	7(g)	7(h)	7(i)	8

ANNEXURE 9

_____ Irrigation Division _____
Volumetric Supply to Water Users' Association

Bill of Water Charges
_____ Irrigation Section, Irrigation Sub-Division _____

Bill No. : **Bill Date:**

Water Users' Association		Season	Year	Entitlement (Tm^3)		Water-Rate (Rs./ Tm^3)	Basic Water Charges in Rs. 6 * 7	Local Fund in Rs. 20% of 8	Penal-ty (**)	Current Assess-ment in Rs. 8+9+10	Pre-vious dues in Rs.	Total Bill in Rs. 11+12
Id	Name			Applica-ble*	Used							
1	2	3	4	5	6	7	8	9	10	11	12	13

Note.-
1) Seasonwise **last dates** for payment of Bill : *Kharif* 1 Feb., *Rabi* 15 May, Hot Weather 15 Oct.
2) five per cent **Concession** [five per cent of Col.8] shall be given if payment of bill is made on or before last date.
3) ten per cent **Surcharge** / year shall be levied for late payment [ten per cent of Col.11]

*In case of Hot Weather Season, Applicable entitlement shall be inclusive of water allowed to carry over to Hot Weather (conditions apply).

** **Penalty** is imposed on Water Users' Association for violation of Maharashtra Management of Farmers Irrigation Systems Act, 2005 and rules thereof as per details specified below.

Sr. No.	Offence / Irregularity	Section of the Act	Rule No.	Penalty Amount (Rs.)
			Total	

Sectional Officer
_____ Irrigation Section

ANNEXURE 10

_____ Irrigation Division _____
Volumetric Supply to Water Users' Association

Receipt of Water Charges
_____ Irrigation Section, Irrigation Sub-Division _____

Bill No. : **Payment Date:** **(in time / late)** **Receipt No.:** **Receipt Date:**

Water Users' Association		Details of Bill						Details of Amount paid				
Id	Name	Basic Water Charges in Rs.	Local Fund	Penalty (Rs.)	Current Assessment	Previous dues in Rs.	Bill Amt. in Rs.	Concession (Rs.) 5% of 8	Surcharge (Rs.) 10% / Year of 8	Revised Bill Amt. Rs.	Amount Paid Rs.	Dues Rs.
1	2	3	4	5	6	7	8	9	10	11	12	13

Note.-
If amount paid is less than Revised Bill Amount, mention / highlight one of the remarks given below:
1) Water Users' Association agrees to pay the complete bill in principle but paid in part because of certain difficulties mentioned in its application.
2) Water Users' Association does not agree to pay Rs. _____ towards _____ for reason mentioned in its application
[Note: If Remark-2 is applicable, fill in the details in the remark]

Sectional Officer
_____ Irrigation Section

ANNEXURE-11

Flow Measurement and its Record

(A) Flow Measurement and its Record:

(i) Copy of record drawing and discharge table of measuring devices shall officially be given to Water Users' Association and kept with Section Officer, Canal Inspector, Guage Karkoon of the Irrigation Department.

(ii) All the dimensions as well as control levels of measuring device as per design be checked before handing over the same to Water Users' Association. If there are any deviations or errors, the same should be rectified.

(iii) Ensure that the device is hydraulically functioning properly (e.g. formation of hydraulic jump, free flow condition, etc.)

(iv) Ensure that guage is accurate and readable.

(v) If measuring device consists of some moving components, they shall be maintained periodically (e.g. oiling, greasing, filling of ink, replacement of data sheets or pens, etc.)

(vi) In case of manual discharge measurements, the guage and discharge measurements shall be taken at least twice in a day (12 hours interval) in the presence of the representatives of the Water Resources Department and Water Users' Association and signed in conformity. The measurements may be recorded in the format as given in Annexure - 4

(vii) In case of automatic measuring device, the result sheets shall be signed by both the agencies. As far as flow meters in pressure pipe lines are concerned, the measurements may be taken once in a day and signed by both the agencies.

(B) Periodic Evaluation of Measuring Devices:

(1) Evaluation of measuring devices in open channel:

The evaluation of measuring devices in open channel shall be done at least once in a year by the Canal Officer or his nominee. Following general procedure may be followed (The specific items to be included in evaluation will depend upon the type of measuring device):

(i) Obtain design drawing and discharge table.

(ii) Before releasing water, take actual dimensions of all components and control levels (e.g. Upstream Canal Bed Level, Downstream Canal Bed Level, hump level/sill level, level of zero of the guage etc.).

(iii) Note down condition of guage chamber (e.g. extent of silting, readability and accuracy of guage plate, functioning of connecting pipes etc.).

(iv) After releasing water observe the hydraulic performance (e.g. formation of hydraulic jump, free flow condition, etc.).

(v) Compare actual dimensions, levels and hydraulic performance with the designed one and if there are any variations or deviation, the same shall be rectified.

(vi) Ensure that discharge table is based on actual dimensions or levels or appropriate discharge coefficients.

(vii) In case of measuring devices provided with automatic recorders, the measurements should be verified with manual measurements (e.g. volume recorded by automatic recorder in a given period be verified by manual measurements). These automatic devices be calibrated periodically from the authorized agencies.

(viii) After evaluation if any deviations or errors are detected, the reasons for the same should be identified and remedial measures be suggested to

bring back the device in proper working condition. This should be brought to the notice of the concerned Water Users' Association. Thereafter the concerned Water Users' Association shall get the same repaired and set right at its own cost within a period of thirty days.

(2) Evaluation of Water meters in pressure pipelines:

As per section 47 of the Act, the responsibility of providing, installing and calibration of water meters for flow measurement in every water lifting device lies with the Lift Irrigation Water Users' Association. The water meters shall have to be as per Bureau of Indian (ISI) standards. The Canal Officer, duly empowered in this behalf, has the powers to inspect and test the water meters. The measurements shall be verified based on discharging capacity of the pump considering suction head, delivery head, head loss in pipe line, horse power of the pump, etc. and running period. This shall be done at least twice in a year. If the meter is found to be defective, the concerned Water Users' Association shall get the same repaired and set right at its own cost within a period of thirty days.

(C) Ascertaining Volume of Water during the period of non-functioning of measuring device:-

Following procedure may be followed to ascertain the volume of water during the period of non-functioning of measuring device.

(1) Open Channels:

The head regulator through which water supply is regulated in open channel, ~~or~~ falls, pipe crossing, if available at convenient location may be calibrated to estimate the discharge. The arrangements for measuring actual water levels at these structures will have to be provided. The

measurements and discharge be recorded as usual i.e. twice in a day and signed by both the agencies.

The period of non-functioning of measuring device shall not be more than thirty days i.e. it shall be repaired and brought into use within thirty days by the concerned Water Users' Association. If the device remains out of order for a period exceeding thirty days, the quantity of water measured using other structures as mentioned earlier shall be increased by twenty five per cent for billing purposes.

(2) Lift Irrigation Schemes:

The discharging capacity of the pump considering minimum suction head, actual delivery head, head losses in the pipe line, horse power of the pump shall be computed. The volume of water pumped may be estimated considering this discharging capacity and average running period per day. This volume may be increased by twenty five per cent as a penalty for not keeping the meter in working condition, if the measuring device is not repaired and brought into use within a period of thirty days**.**