

# Verification Report for

Project : Hasnapur Earthen Dam, Storage and Water Supply Project Activity Junagadh, Gujarat, India.

UCR Project ID : 304

Name of Verifier	SQAC Certification Pvt. Ltd.					
Date of Issue	June 30, 2023					
Project Proponent	Junagadh Municipal Corporation, Water Works Division,					
	Junagadh, Gujarat					
UCR Project Aggregator	Gram Vikas Trust, Gujarat, India.					
Work carried by	Mr. Santosh Nair					
Work reviewed by	Mr. Praful Shinganapurkar					

#### Summary:

SQAC Certification Pvt. Ltd. has performed verification of the "Hasnapur Earthen Dam, Storage and Water Supply Project Activity Junagadh, Gujarat, India". Junagadh Municipal Corporation is the project proponent (PP), which maintains the project activity and ensures that safe drinking water (SDW) is supplied to the residents within the Junagadh city area limit. The project activity is a man-made construction structure involving a large catchment area that conserves and stores excess rainwater for future requirements in the Junagadh city of Gujarat. The project activity fulfills the UCR RoU requirements for "measures undertaken for conservation and storage of excess surface water for future requirements."

The project activity meets the following UN SDG's:



Verification for the period: 01/01/2014 to 31/12/2022.

Accredited by 5 Jupiter House, Callera Park, Aldermaston, Reading Berkshire RG7 8NN, United Kingdom (UK). India Office: Off. No. 4, Fifth Floor, Buildmore Business Park, New Canca Bypass Road, Khorlim, Mapusa, Goa – 403 507 Web: www.sqac.in Email: info@sqac.in Tel: 7219716786 / 87



In our opinion, the total RoU's over the crediting / verification period stated in the Project Concept Note and Monitoring Report, PCNMR submitted to SQAC are found to be correct and in line with the UCR guidelines.

The verification was done remotely by way of video calls / verification, phone calls and submission of documents for verification through emails.

SQAC is able to certify that the RoU's from Hasnapur Earthen Dam, Storage and Water Supply Project Activity Junagadh, Gujarat, India (UCR ID – 304) for the period 01/01/2014 to 31/12/2022 amounts to **9000000** RoUs

#### Detailed Verification Report:

The project activity is pre-approved under the UCR RoU program for the following scope:

• Scope 2 (Measures for conservation and storage of excess surface water for future requirements.)

#### Purpose:

The project activity Hasnapur Earthen Dam, Storage and Water Supply Project Activity Junagadh, Gujarat, India, is a man-made construction structure involving a large catchment area that conserves and stores excess rainwater for future requirements in the Junagadh city of State: Gujarat. The project activity fulfils the UCR RoU requirements for "measures undertaken for conservation and storage of excess surface water for future requirements." The project activity achieves universal and equitable access to safe and affordable drinking water for all. The project activity ensures sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity. The project activity protects and restores water-related ecosystems, including surrounding forests in the area.

Project Name	Hasnapur Earthen Dam, Storage and Water Supply Project Activity Junagadh, Gujarat, India.
UCR Scope	RoU Scope 2
Catchment Area	8.86 sq. miles
Reservoir	Area: 420.4 acres
	Capacity (FSL): 324 million Ft <sup>3</sup>
Type of Structure	Earthen Dam
Length (ft)	1201
Top Width (ft)	16
Height (ft)	75
Base Width (ft)	400



Commissioning	1964
Purpose	Rainwater runoff storage and water supply
Average Rainfall	42 inches
Run off Coefficient	30.00%
Evaporation and absorption	270 million ft <sup>3</sup>
losses	
Replenishment	260 million ft <sup>3</sup>
Catchment Capacity	324 million ft <sup>3</sup>
Net Storage for SDW	270 million ft <sup>3</sup>
Waste Weir Type	Одее Туре
RoU Crediting Period	01/01/2014 - 31/12/2022 (Both Days Inclusive)
Total RoUs Generated for	9,000,000 RoUs (1 RoU = 1000 litres)
the Crediting Period	

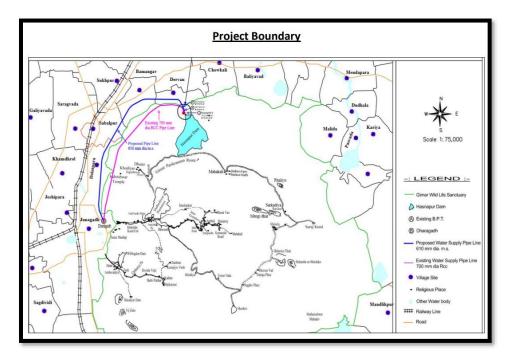
JUNAGADH WATCH	SCRAME	(145)
APPENDIX	CONTRACTOR CONTRACTOR CONTRACTOR	
HASNAFUR RES	BRANDIR.	
T. ONDERALI-		
1.Catchment Area.		8.86 Miles.
2.Avecage Annual Rainfal	ц.	42 Inches.
3. Bun Off Coefficient.		30%
W.Replenishment.		260M.Oft.
II.AZSERVOIRt-		
5.Area at F.J.L.(R.L.3%	5.00).	420.4Acres.
6.Ospacity at F.S.L.(R.)	L.396.00)	324 N.Oft.
7.Copecity at.sill of o	utlet.(R.L.362.00).	22.5 M.Crt.
S.Evaporation and absorp		53.10M.Crt.
9.Net storage available	for water supply.	270. M.dft.
III.BARTHERI DAMI-		
10.Lenght.		1201.Feet.
Leverste H.L.		395:00
12.H.F.L. R.L.		403.00
13.Top of Dan R.L.		410.00
14.Top widht of Dam.		16 Feet.
15.Maximum height.	1	79 Pest.
16.Maximum base width.		400 Baet.
17.Glopas 1.Upstream.	2:1 Upto H.F.L.	( 403.00)
	3.1 Below H.F.L.R.L.	( 403.00)
2. Downstream.	2:1 Upto R.L.	380.00
18. Top of pitching 19.Free Board.	wil Below R.L.	380.00 407.00 7 Feet.
IT. WASTS JEIRI		
20.1ype. High coeffic	lent ogee type weir.	(0 = 3.98)
21.Langth.		200 Feet.
22. Maximum Flood Disch	arga.	17.2300usat
23.Plood depth.		2

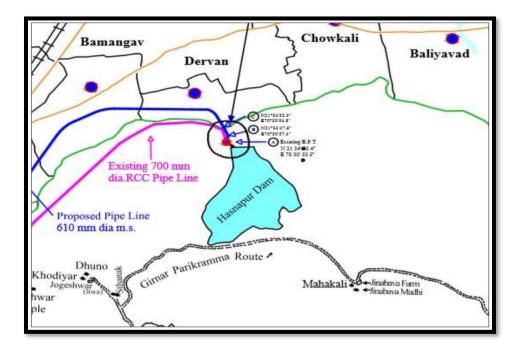
		snapur Dam Water Su	ppiy Scheme
General		Salient Feature	
- Conten			8.86 Sq.Miles
		2 Avg. Annual Rain Fall	800 mm
1 Reservoir	Ja .	S PURCH Cheffiniant	30 %
		RL RL	148.13 Mtrs.
		A HAL RL	150 26 Mtrs
		3 Intake Level RL	137.76 Mtrs.
		4 Top of Dam RL	152.40 Mtrs.
		5 Sub mergence at H.F.L.	418.00 Acres
		6 Live storage	8.194 M.Cum
		7 Dead storage	0.209 M.Cum
		8 Capacity at F.S.L. 9 Free Board	8 403 M.Cum
3 Earthen Dam	14		2 10 Mtrs.
		Length of Earthen Dam	
		) Left bank	170.38 Mtrs.
		) Right bank	164.28 Mtrs.
		Maximum hight	
	4	) Left bank	22.25 Mtrs.
	D	Right bank	18.90 Mtrs.
	- C)	Top Width	4 85 Mtrs.
		Slope Left bank	
	aj		
		Up stream	3 to 1
		Down Stream	2.5 to 1 with 1.50 Mtr. width of berm at 6.00 Mtr intervals
	b)	Right bank	
		Up stream	3 to 1
		Down Stream	2 to 1 with 1.50 Mtr. width of berm
4 Waste weir			at 6.00 Mtr intervals.
- Maste weir		Туре	Clear overfall of Ogee shape
	21	ength of Waste weir	62.18 Mtrs.
		Maximum designed flood	14734 Cusec
	C	lischarge (As per Inglis)	
	4 F	lood depth	2.10 Mtrs.
		rest of weir RL	148 13 Mtrs
		laximum height above the bed	17.67 Mtrs.
		aximum height above the bed	11.07 MUS.
San and the second	Fi	oundation	23.77 Mtrs.
Intake Well	:- 1 In	take Well level RL	137.76 Mtrs.
	2 Si	I of the outlet pipes RL	131.06 Mtrs.
		a of the C.I. Flanged pipe	27.00 Inch - C.I. "B" Class Pipe
		of C I. Sluice Gate	and monthout broass Pipe
		ve - 600 mm dia	5.00 M
and the second s	var	ve - ovo min ula	5.00 Nos.

The project activity, Hasnapur Earthen Dam, Storage and Water Supply Project Activity Junagadh, Gujarat, India, is a man-made earthen dam / earth fill dam / earth dam / embankment dam is the main source of water for Junagadh city. It is built up by compacting successive layers of earth, using the most impervious materials to form a core and placing more permeable substances on the upstream and downstream sides. A facing of crushed stone prevents erosion by wind or rain, and an ample spillway, usually of concrete, to protect against catastrophic washout should water overtop the dam.



Compared with concrete, soils and rock fragments lack strength, are much more permeable, and possess less resistance to deterioration and disturbance by flowing water. These disadvantages are compensated for by a much lower cost and by the ability of earth fill to adapt to deformation caused by movements in the dam foundation. This assumes, of course, sufficient usable soil or rock-fill is available near the dam site. Earth fill is often quite economical, provided that a suitable "borrow" area can be utilized close to the construction site.









INO.         Identificant           1	2 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	ayor namirya hrufaria helo(l) uhedia oyadam	Operated & Maintained by 4 Gont of Ga, Gont of Ga,	Longitude of dam 5 70-45 E 71-11 E 70-46 E 70-46 E 70-46 E 73-23 E 71-33 E 71-25 E	Latitude of dam 6 22-34 N 21-57N 22-14 N 23-26 N 23-23+F347 N 23-24 N 23-24 N 23-24 N 23-24 N 23-24 N 23-24 N 23-24 N 21-59 N	7 1961 1961 1961 1961 1961 1961 1961 196	River Basin 8	River 9 Local Stream Derni Local Stream Futzar Local Stream Local Stream Phot Local River Phot Local River Vahela	Nearest City 10 Dechiya Tankara Babara Kalavad Rapar Abdasa Rapar Tappar Naiya Balasinor	Seismic zone 11 IV IV IV V V V V V V V V	Type of dam 12 TE TE/PG TE TE/PG TE TE TE TE TE TE TE TE	15.00 25.41 13.91 17.00 21.50 14.14	Length of dam (m ) 14 2021.34 4023.00 190.00 1932.00 883.00 888.00 888.00 878.00 1421.00 960.00	Volume content of dam (10 <sup>3</sup> m <sup>3</sup> ) 15 880.76 567.00 529.00 825.00 108.00 1240.00 699.53 429.00	Gross Storage capacity (10 <sup>3</sup> m <sup>2</sup> ) 16 2940.00 22174.00 1570.00 11360.00 2420.00 3506.00 8250.00 2303.00 1120.00	Reservoir Area (10 <sup>3</sup> m <sup>3</sup> ) 1157.00 5504.00 4370.00 797.00	Storage           capacity           (10 <sup>3</sup> m <sup>3</sup> )           18           2510.00           22100.00           1252.00           11220.00           2420.00           3283.00           8250.00           2020.00	Purpose 19 1 1 1 1 1 1 1 1 1 1 1 1 1	Designed Spillway capacity (m 3 /sec) 20 456.53 1225.00 203.00 1274.00 245.00 541.00 1445.00 304.50
121         GJ04I           122         GJ04N           123         GJ04N           124         GJ04N           125         GJ04N           126         GJ04N           127         GJ04N           128         GJ04N           129         GJ04N           120         GJ04N           121         GJ04N           122         GJ04N           130         GJ04L           131         GJ04L           132         GJ04N           133         GJ04L           134         GJ04L           135         GJ04L           136         GJ04L           137         GJ04N           138         GJ04L	NLLH0123         Ded           MMH0124         Den           MMH0125         Dho           MMH0126         Fuiz           MMH0126         Fuiz           MalLH0127         Jadi           MMH0128         Kod           MMH0128         Kod           MLH0130         Pho           MLH0131         Bhi           MalLH0132         Din           MalLH0133         Dhn           MalLH0133         Dhn           MalLH0135         Gui           MalLH0135         Gui           MalLH0135         Gui           MalLH0135         Gui           MalLH0135         Gui           MalLH0135         Kor	edhia emi I hobiyara dawas dawas doli evesa tot amirya hot hot amirya hotania helo(1) uhedia oyadam	Govt of Guj, Govt of Guj,	70-45 E 71-11 E 70-17 E 70-46 E 69-44 E 73-23 E 71-33 E 71-25 E	22-34 N 21-57N 22-14 N 23-28 N 23-23+F347 N 23-24 N 23-04 N 21-44N	1961 1961 1961 1961 1961 1961 1961 1961	8	Demi Local Stream Fulzar Local River Local Stream Local River Phot Local River Vahela	Dedhiya Tankara Babara Kalavad Rapar Abdasa Rapar Tappar Naliya	N N V V V V V V	TE TEIPG TE TEIPG TE TE TE TE TE TE	12.97 17.00 15.00 25.41 13.91 17.00 21.50 14.14	2021.34 4023.00 190.00 1932.00 883.00 808.00 878.00 1421.00	860.76 567.00 529.00 825.00 108.00 1240.00 699.53	2940.00 22174.00 1579.00 11360.00 2420.00 3506.00 8250.00 2303.00	1157.00 5504.00 4370.00	2510.00 22100.00 1252.00 11220.00 2420.00 3283.00 8250.00 2020.00	1	456.53 1225.00 203.00 1274.00 245.00 541.00 1445.00
122 G.004 123 G.004 124 G.004 125 G.004 125 G.004 126 G.004 127 G.004 129 G.004 129 G.004 130 G.004 131 G.004 131 G.004 133 G.004 135 G.004 136 G.004 137 G.004 138 G.004 139 G.004	MMH0124 Den MMH0125 Dho MMH0126 Fulz MMH0126 Fulz MALH0127 Jad MMH0128 Kod MMH0128 Kod MALH0130 Pho MALH0131 Väy MALH0133 Dhn MALH0133 Dhn MALH0135 Gut MMH0136 Koy MALH0137 Kun	emi I hobiyara Azar I dawas doli evasa not ayor nufaria helo(I) uhedia oyadam	Govt of Guj, Govt of Guj,	71-11 E 70-17 E 70-46 E 69-44 E 73-23 E 71-33 E 71-25 E	21-57N 22-14 N 23-26 N 23-23+F347 N 23-24 N 21-44N	1961 1961 1961 1961 1961 1961 1961 1961		Demi Local Stream Fulzar Local River Local Stream Local River Phot Local River Vahela	Tankara Babara Kalavad Rapar Abdasa Rapar Tappar Naliya	V V V V V V	TEIPG TE TEIPG TE TE TE TE TE	17.00 15.00 25.41 13.91 17.00 21.50 14.14	4023.00 190.00 1932.00 883.00 808.00 878.00 1421.00	567.00 529.00 825.00 108.00 1240.00 699.53	22174.00 1579.00 11360.00 2420.00 3506.00 8250.00 2303.00	5504.00 4370.00	22100.00 1252.00 11220.00 2420.00 3283.00 8250.00 2020.00	1	1225.00 203.00 1274.00 245.00 541.00 1445.00
12         Guoth           124         Guoth           125         Guoth           126         Guoth           127         Guoth           128         Guoth           129         Guoth           120         Guoth           121         Guoth           122         Guoth           130         Guoth           131         Guoth           132         Guoth           133         Guoth           134         Guoth           135         Guoth           136         Guoth           137         Guoth           138         Guoth           138         Guoth	MANH-0125 Dho MANH-0126 Fulz AMAH-0128 Fulz AuLH-0127 Jad MaLH-0127 Jad MaLH-0129 Mav MaLH-0130 Pho MaLH-0133 Dhn MALH-0133 Dhn AMH-0134 Ghu MaLH-0135 Guh MaLH-0135 Koy	hobiyara dizar l dawas odoli evasa odoli evasa amirya hamirya helio(I) uhedia oyadam	Govt of Guj, Govt of Guj,	71-11 E 70-17 E 70-46 E 69-44 E 73-23 E 71-33 E 71-25 E	21-57N 22-14 N 23-26 N 23-23+F347 N 23-24 N 21-44N	1961 1961 1961 1961 1961 1961 1961 1962 1962		Local Stream Fulzar Local River Local Stream Local River Phot Local River Vahela	Babara Kalavad Rapar Abdasa Rapar Tappar Naliya	V V V V V V	TE TE/PG TE TE TE TE TE	15.00 25.41 13.91 17.00 21.50 14.14	190.00 1932.00 883.00 808.00 878.00 1421.00	529.00 825.00 108.00 1240.00 699.53	1579.00 11360.00 2420.00 3506.00 8250.00 2303.00	4370.00	1252.00 11220.00 2420.00 3283.00 8250.00 2020.00	1 1 1 1 1 1	203.00 1274.00 245.00 541.00 1445.00
124         G,00M           125         G,04U           126         G,04H           126         G,04H           127         G,04H           128         G,04H           129         G,04H           129         G,04H           129         G,04H           130         G,04H           131         G,04H           132         G,04H           133         G,04H           134         G,04H           135         G,04H           136         G,04H           137         G,04H           138         G,04H	4MH0126 Fulz 4LH0127 Jad 4MH0128 Kod 4MH0129 Mev 4LH0130 Pho 4LH0131 Vay 4LH0131 Dhn 4MH0134 Ghe 4LH0135 Guh 4MH0136 Koy 4LH0137 Kun	Jizar I dawas odoli evasa not syor naminya hufania helo(I) uhedia oyadam	Gont of Gui, Gont of Gui,	70-17 E 70-46 E 69-44 E 73-23 E 71-33 E 71-25 E	22-14 N 23-26 N 23-23+F347 N 23-04 N 21-44N	1961 1961 1961 1961 1961 1961 1962 1962		Fulzar Local River Local Stream Local River Phot Local River Vahela	Kalavad Rapar Abdasa Rapar Tappar Naliya	V V V V V	TE/PG TE TE TE TE TE	25.41 13.91 17.00 21.50 14.14	1932.00 883.00 808.00 878.00 1421.00	825.00 108.00 1240.00 699.53	11360.00 2420.00 3506.00 8250.00 2303.00		11220.00 2420.00 3283.00 8250.00 2020.00	1 1 1 1	1274.00 245.00 541.00 1445.00
125         GJUML           126         GJUML           127         GJUML           128         GJUML           129         GJUML           129         GJUML           120         GJUML           130         GJUML           131         GJUML           132         GJUML           133         GJUML           134         GJUML           135         GJUML           136         GJUML           137         GJUML           138         GJUML	MLH0127 Jadi MLH0128 Kod MLH0129 Mev MLH0130 Pho MLH0131 Vay MLH0132 Bha MLH0133 Dhn MLH0134 Ghe MLH0135 Gut MLH0135 Gut MLH0136 Koy MLH0137 Kun	dawas doli evasa not ayor hamiya helo(I) uhedia uhedia yyadam	Govt of Guj, Govt of Guj,	70-46 E 69-44 E 73-23 E 71-33 E 71-25 E	23-26 N 23-23+F347 N 23-04 N 21-44N	1961 1961 1961 1961 1961 1962 1962		Local River Local Stream Local River Phot Local River Vahela	Rapar Abdasa Rapar Tappar Naliya	V V V V	TE TE TE TE TE	13.91 17.00 21.50 14.14	883.00 808.00 878.00 1421.00	825.00 108.00 1240.00 699.53	2420.00 3506.00 8250.00 2303.00		2420.00 3283.00 8250.00 2020.00	     	245.00 541.00 1445.00
126         GJ04h           127         GJ04h           127         GJ04h           128         GJ04h           129         GJ04h           129         GJ04h           130         GJ04h           131         GJ04h           132         GJ04h           133         GJ04h           134         GJ04h           135         GJ04h           136         GJ04h           137         GJ04h           138         GJ04h           138         GJ04h	4MH0128 Kod 4MH0129 Mev 4LH0130 Pho 4LH0131 Vay 4LH0132 Bha 4LH0133 Dhn 4MH0134 Ghe 4LH0135 Gut 4MH0136 Koy 4LH0137 Kun	odoli evasa evasa evasa evasa evasa evasa evasa evasa evasa evas evas	Govt of Guj. Govt of Guj.	69-44 E 73-23 E 71-33 E 71-25 E	23-23+F347 N 23-04 N 21-44N	1961 1961 1961 1961 1962 1962		Local Stream Local River Phot Local River Vahela	Abdasa Rapar Tappar Naliya	V V V	TE TE TE TE	17.00 21.50 14.14	808.00 878.00 1421.00	108.00 1240.00 699.53	3506.00 8250.00 2303.00	797.00	3283.00 8250.00 2020.00	   	541.00 1445.00
127         GJ04h           128         GJ04L           129         GJ04L           129         GJ04L           130         GJ04L           131         GJ04L           132         GJ04L           133         GJ04L           134         GJ04L           135         GJ04L           136         GJ04L           137         GJ04L           138         GJ04L           138         GJ04L	4MH0129 Mev 4LH0130 Pho 4LH0131 Vay 4LH0132 Bha 4LH0133 Dhn 4MH0134 Ghe 4LH0135 Gut 4MH0136 Koy 4LH0137 Kun	evasa not ayor hamirya hrufania helo(l) uhedia oyadam	Govt of Guj, Govt of Guj, Govt of Guj, Govt of Guj, Govt of Guj, Govt of Guj, Govt of Guj,	69-44 E 73-23 E 71-33 E 71-25 E	23-23+F347 N 23-04 N 21-44N	1961 1961 1961 1962 1962		Local River Phot Local River Vahela	Rapar Tappar Naliya	V V V	TE TE TE	21.50 14.14	878.00 1421.00	1240.00 699.53	8250.00 2303.00	797.00	8250.00 2020.00	1	1445.00
128 GJ04L 129 GJ04L 130 GJ04L 131 GJ04L 131 GJ04L 132 GJ04L 133 GJ04L 135 GJ04L 136 GJ04L 137 GJ04A 138 GJ04L	4LH0130 Pho 4LH0131 Vay 4LH0132 Bha 4LH0133 Dhn 4MH0134 Ghe 4LH0135 Gut 4MH0136 Koy 4LH0137 Kun	not ayor hufaria helo(i) uhedia oyadam	Govt of Guj. Govt of Guj. Govt of Guj. Govt of Guj. Govt of Guj. Govt of Guj.	69-44 E 73-23 E 71-33 E 71-25 E	23-23+F347 N 23-04 N 21-44N	1961 1961 1962 1962		Phot Local River Vahela	Tappar Naliya	V V	TE TE	14.14	1421.00	699.53	2303.00	797.00	2020.00	1	
GUM           129         GJ04L           130         GJ04L           131         GJ04L           132         GJ04L           133         GJ04L           133         GJ04L           134         GJ04L           135         GJ04L           136         GJ04L           137         GJ04L           138         GJ04L	4LH0131 Vay 4LH0132 Bha 4LH0133 Dhm 4MH0134 Ghe 4LH0135 Guh 4MH0136 Koy 4LH0137 Kun	ayor namirya hrufaria helo(l) uhedia oyadam	Govt of Guj. Govt of Guj. Govt of Guj. Govt of Guj. Govt of Guj.	73-23 E 71-33 E 71-25 E	23-04 N 21-44N	1961 1962 1962		Local River Vahela	Naliya	٧	TE					797.00		1	304.50
129         GJ04L           130         GJ04L           131         GJ04L           132         GJ04L           133         GJ04L           134         GJ04L           135         GJ04L           136         GJ04L           137         GJ04L           138         GJ04L           138         GJ04L	4LH0131 Vay 4LH0132 Bha 4LH0133 Dhn 4MH0134 Ghe 4LH0135 Gut 4MH0136 Koy 4LH0137 Kun	naminya hrufania helo(l) uhedia oyadam	Govt of Guj. Govt of Guj. Govt of Guj. Govt of Guj.	73-23 E 71-33 E 71-25 E	23-04 N 21-44N	1962 1962		Vahela	10.000			12.80	960.00	429.00	1120.00				
GJ04           131         GJ04           132         GJ04           133         GJ04           134         GJ04           135         GJ04           136         GJ04           137         GJ04           138         GJ04	MLH0133 Dhn MH0134 Ghe MLH0135 Gut MH0136 Koy MLH0137 Kun	hrufania helo(l) uhedia oyadam	Govt of Guj. Govt of Guj. Govt of Guj.	71-33 E 71-25 E	21-44N	1962			Balasinor						1120.00		1120.00	1	154.00
132 GJ040 133 GJ040 133 GJ040 135 GJ040 136 GJ040 137 GJ040 138 GJ040	4MH0134 Ghe 4LH0135 Gut 4MH0136 Koy 4LH0137 Kun	helo(l) uhedia oyadam	Govt of Guj. Govt of Guj.	71-25 E	0.22633	0.000		A month to many		IV.	TE	11.80	396.00		13727.00	720.00	12428.00	1	1010.00
132         GJ04N           133         GJ04L           134         GJ04N           135         GJ04L           136         GJ04N           137         GJ04N           138         GJ04N	4MH0134 Ghe 4LH0135 Gut 4MH0136 Koy 4LH0137 Kun	uhedia oyadam	Gavt of Guj.		21-59 N	-		Localstream	Lathi	1V	TE	11.00	549.00		1491.00		1313.00	1	354.00
134 GJ041 135 GJ041 136 GJ041 137 GJ041 138 GJ041	4MH0136 Koy HLH0137 Kun	oyadam		20.015		1962		Ghelo	Babara	IV	TE	21.18	883.00	1003.45	10090.00	3430.00	9860.00	1	1190.00
134 GJ04M 135 GJ04L 136 GJ04H 137 GJ04M 138 GJ04L	4MH0136 Koy 14LH0137 Kun			73-01 E	23-01 N	1962		Vahela	Balasinor	III	TE	12.20	1920.00		45872.00	4240.00	45872.00	1	9000.00
136 GJ04H 137 GJ04H 138 GJ04L	HEINIGI		Govt of Guj.	73-29 E	23-14 N	1962		Vahela	Virpur	N	TE	18.68	175.00		25465.00	138.00	24168.00	1	9900.00
137 GJ04N 138 GJ04L	Line I im	undol Tank	Govt of Guj.	73-20 E	23-54 N	1962		Kundolvaga	Bhlioda	N	Te	11.00	320.00		1430.00		1416.00	1	236.00
138 GJ04L		mdi Bhogavo I	Govt of Guj.	71-30 E	22-28 N	1962		Bhogavo	Sayala	N	TE/PG	42.68	2744.00	879.00	22483.00	8520.00	21973.00	185	1472.00
138 GJ04L	4MH0139 Cha	hang	Govt of Guj.			1963		Chang	Bhachau	V	TE	18.31	1440.36	363.40	6943.00	1957.00	6470.00	1	606.00
139 0.004	ALHO140 Cha	havadka	Govt of Guj.			1963		Local River	Nakhatrana	V	TE	10.68	173.30	80.00	1560.00		1560.00	1	196.00
	4MH0141 Eka	ala	Govt of Guj.	71 - 51 E	21-41 N	1963		Localstream	Sihor	٧	TE	17.00	314.00		2680.00		2570.00	1	329.00
		aradi	Govt of Guj.			1963		Mandvi	Kachchh	٧	TE	17.40	2017.00	466.00	6179.00	1720.00	5494.00	1	502.00
		helo(S)	Govt of Guj.	71-34 E	22-03 N	1963		Ghelo	Jasdan		TE	19.41	883.00	351.29	6067.00			4	
		nivsagar	Govt of Guj.	71 - 17 E	22 - 03 N	1963		T/Keri	Jasdan	N	TE	13.55	220.00		3630.00	Abbreviat			
		noralia Mi Tank	Govt of Guj.	71 - 58 E	21-03 N	1963		T/Shetrunji	Talaja	N	TE	18	640	ý	3640		Rock FillER		
144 GJ04M	4MH0148 Umb	mban	Govt of Guj.	72-56 E	24-13 N	1963		T/Sabarmati	Danta	N	TE	17.00	154.00	19.00	1513.00		Aasonry:PG# In Flood Control:		
		amaka	Govt of Guj.			1963		Vamaka	Bhachau	٧	TE	21.25	183.00	145.00	680.00		coly:S# Navigal		Oult
146 GJ04L	HLH0150 War	ada tharawada	Govt of Guj.			1963		Local Stream	Anjar	٧	TE	12.50	1018.00		1008.00		and a starting of		
147 GJ04L	ALH0151 Ban	aranda	Govt of Guj.			1964		Local River	Dayapar	٧	TE	13.45	725.57	111.73	1630.00	283.02	1300.00	1	351.83
		nadar	Govt of Guj.	70-46 E	21-50 N	1964		Bhadar	Gondal	N	TE/PG	29.26	4429.00	1735.00	188140.00	44650.00	187910.00	18.5	5660.00
	0.0		0.110			4004	_	0.454	Maline	- M	TT	10.04	007.00	510.00	0000.00		2000.00		102.02



#### Scope:

The scope covers verification of RoUs from the project - Hasnapur Earthen Dam, Storage and Water Supply Project Activity Junagadh, Gujarat, India. (UCR ID – 304)

#### Criteria:

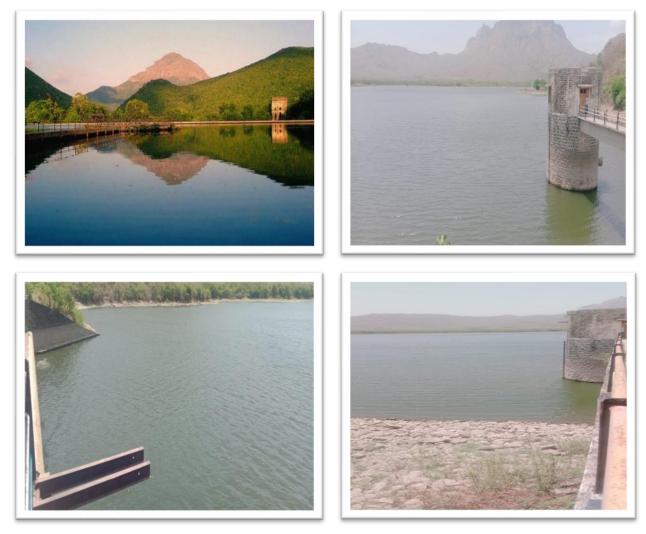
Verification criteria is as per the requirements of UCR RoU program for the scope – 2.

## **Objectives of project:**

The impact assessment or objectives of this project activity can generally be enumerated as follows:

- ✓ Conservation and harvesting of surplus monsoon runoff in ground water reservoir which otherwise would go un-utilized outside the watershed/ basin and to sea.
- ✓ Rise in ground water levels due to additional recharge to ground water. In cases where continuous decline of ground water level was taking place, a check to this and/or the intensity of decline subsequently reduces. The energy consumption for lifting the water is also reduced.
- ✓ The ground water structures (wells) in the benefitted zone of artificial structures gain sustainability and the wells provide water in lean month when these were going dry.
- ✓ The domestic wells will become sustainable and many of the areas become tanker free.
- ✓ Green vegetation cover has increased in the zone of benefit and also along the structures due to additional availability of soil moisture.
- ✓ The quality of ground water has improved due to dilution.
- ✓ Besides the direct measurable impacts, the artificial recharge scheme generates indirect benefit in terms of decrease in soil erosion, improvement in fauna and flora, influx of migratory birds, etc.





# Ecological or Sustainable Development Goals (SDGs) Aspects:

Sustainable Development	Most relevant SDG Target /	Indicator (SDG Indicator)
Goals Targeted	SDG Impact	
13 CLIMATE	13.2: Integrate climate change measures into national	Amount of water conserved
	policies, strategies and planning	
13 Climate Action (mandatory)		
1 NO POVERTY	1.4: By 2030, ensure that all	Number of people employed
POVERTY	men and women, in particular	in the construction and
<u>Ň:</u> ‡‡;	the poor and the vulnerable,	maintenance of SDW systems
/0`*`#`#`#`#	have equal rights to economic	and monitoring units.
	resources, as well as access to	
1 – No Poverty	basic services, ownership and	



<ul> <li>3 GOOD HEALTH</li> <li>3 - Ensure healthy lives and promote well-being for all at all ages.</li> </ul>	control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.	Number of households having access to SDW
6 CLEAN WATER AND SANITATION 6 - Clean Water and sanitation	6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water for all	Number of households having access to SDW
8 DECENT WORK AND ECONDMIC GROWTH 8 – Promote inclusive and sustainable economic growth, employment and decent work for all	<ul> <li>8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.</li> <li>8.6 By 2020, substantially reduce the proportion of youth not in employment, education</li> </ul>	Number of jobs created and people trained during the installation and maintenance process of the project activity
10 REDUCED 10 REQUALITIES 10 - Reducing inequalities and ensuring no one is left behind	or training 10.2: By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status	Improved water security and therefore a stronger sense of independence and trust amongst villagers.
	15.2: By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and	Promotes forest biodiversity in the surrounding areas.



15 – Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss	substantially increase afforestation and reforestation globally	
<ul> <li>11 SUSTAINABLE CITIES</li> <li>11 SUBJECT AND COMMUNITIES</li> <li>11 - Making cities and human settlements inclusive, safe, resilient and sustainable</li> </ul>	11.1: By 2030, ensure access for all to adequate, safe and affordable basic services.	The PP provides SDW as a basic human right.
<ul> <li>17 PARTNERSHIPS FOR THE GOALS</li> <li>17 - Strengthen the means of implementation and revitalize the global partnership for sustainable development</li> </ul>	17.7: Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms including on concessional and preferential terms, as mutually agreed	PP working with UCR in India to generate carbon credits to build scale and climate resilience before 2030.

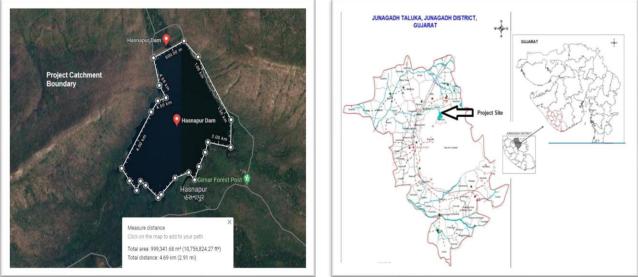
# Solving for Recharge:

Water Budget Component	Typical Estimated Uncertainty (%)	Description
Surface Inflow	1.00%	Typical range of accuracy from meters to minimum
		delivery accuracy requirements of delivery and
		diversion measurement devices.
Precipitation	5.00%	Typical range of accuracy from field-level rain gauges
		to extrapolation of local weather station data.
Surface Outflow	20%	Typical range of accuracy from meters to
		estimated outflow relationships
Evapo-transpiration &	53.1 million ft <sup>3</sup>	Data provided by PP
Absorption	(1.5 million m <sup>3</sup> )	
Change in Storage	15%	Estimated accuracy of change in storage calculation
		based on field scale water budget calibration to
		observed water levels.
Uncertain	ty (%)	41%



PROJECT NAME	: Hasnapur Earthen Dam, Storage and Water Supply Project Activity Junagadh, Gujarat, India.
UCR Scope	: RoU Scope 2: Measures for conservation and storage of excess surface
	water for future requirements.
PCNMR Prepared on	: 24/02/2023.
Latitude	: 21°34'35"N
Longitude	: 70°31'5"E
Project Commissioning Year	: 1964







#### Rainfall

Junagadh city falls under the semi-arid zone and has characteristics of high variation in rainfall. The average rainfall recorded in Junagadh district is between 900mm-881 mm. 90-95% of the rainfall occurs between the months of June and September while other months are generally dry with occasional showers. Annual rainy days range between 22 to 29 days. Depth to water level ranges between 14.41 to 52.75 m bgl during studies undertaken in May 2015. The central part of the taluka observed shallow water level whereas the Northern and Southern parts are deeper.

Water table ranges between 5.86 m to 74.98 m above msl and groundwater flow direction are diverting from Girnar Hill from all the directions and forming one ground water trough in the northern part of the taluka.

Decadal average water level mostly between the period of 2006 and 2015 ranges from 10.59 to 32.77m bgl. Major parts of the taluka shows decadal average water level ranges between 10 and 20 m bgl.

F	Pre-monsoon(	1987-2015)		F	Post-monsoc	on(1987-2015)	
Ri	se	Fa	all	Ri	se	Fa	all
Min	Max	Min	Max	Min	Max	Min	Max
0.20	2.90	1.50	4.25	1.10	7.15	3.06	

#### Baseline scenario

The baseline scenario is the situation where, in the absence of the project activity, unutilized water flows uncollected and is not conserved. Baseline scenario, if not directly measurable, is calculated by using:

Harvested water or Volume of water utilized (m3) = Area of Catchment/Roof/Collection Zone (m2) X {Amount of rainfall (mm) X Runoff coefficient \*Uncertainty Factor (1-0.41 = 0.59).

#### Area: 22947293 m<sup>2</sup>

As per UCR RoU Standard: Different Surfaces	Runoff Coefficient (K)
Forest	0.2 (conservative)



#### Level of Assurance:

The verification report is based on remote audit, information collected through tele interviews, supporting documents provided during the verification, Project Concept Note - Monitoring Report (PCNMR) submitted to SQAC. The verification opinion is assured provided the credibility of all the above.

#### Verification Methodology:

Review of the following documentation was done by SQAC Verifiers, Mr. Santosh Nair who is experienced in such projects.

- Project Concept Note / Monitoring Report (PCNMR)
- Commissioning report of the dam.
- Calibration report of flow meters.
- Water level log book reading
- Joint reading with concerned authorities report

#### Sampling:

Not applicable

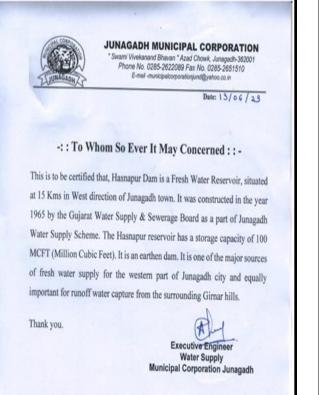
#### Persons interviewed:

1. Mr. Alpesh Chavda : Chief Engineer, Junagadh Water Works.

#### **Documentation Verified:**

- Project Concept Note / Monitoring Report (PCNMR)
- Commissioning report of the dam.
- Calibration report of flow meter.
- Water level log book reading
- Joint reading with concerned authorities report





B		1:2015 Certified Compa	,	09GJ2017PTC096649	53
	Plot No. G G.I.D.C. ME	1004 To 1008/A, Nr TODA, RAJKOT - 36	D SYSTEMS P\ Durga Weigh Bridge, P 0021 (GUJRAT) INDIA I fo@aarohies.com Web. :	Cishan Gate No. 3, PH. 02827-297280	CE HORODOL NI TTS BEST
					Solow
					1031
To,					
JUNAGADH	MUNCIPA	L CORPORATIO	N		
Junagadh,					
Hasanpur Dar					
(Vishal Hind	ocha)				
		CALIBR	ATION CERTIFIC	TE	
		SHOLD			
Report No.		: AES/23-24/0		<b>Date of Calibration</b>	:26/06/2023
Name of Ins	strument		netic flow meter	Make	: Endress+Hause
Model		: Promag 400		Sr. No.	: MB039B20000
Least count		:0.01m3/hr		Range	:m3/hr 9600
Line size		: 600 MM		Due date	:25/06/2024
Accuracy		: +/- (0.5% of R	eading)		
		<u>0</u>	BSERVATIONS:		
Ε	Sr. No.	0 Standard Reading In m3/hr	BSERVATIONS: DUC Reading In m3/hr	% Error	
Ē	1	Standard Reading In m3/hr 346.46	DUC Reading In	% Error	
	1 2	Standard Reading In m3/hr 346.46 303.21	DUC Reading In m3/hr 347.64 304.51	0.34 0.43	
Ē	1 2 3	Standard Reading In m3/hr 346.46 303.21 291.75	DUC Reading In m3/hr 347.64 304.51 292.84	0.34 0.43 0.37	
	1 2	Standard Reading In m3/hr 346.46 303.21	DUC Reading In m3/hr 347.64 304.51	0.34 0.43	
DETAILS OF	1 2 3 4	Standard Reading In m3/hr 346.46 303.21 291.75 262.84	DUC Reading In m3/hr 347.64 304.51 292.84	0.34 0.43 0.37 0.32	
DETAILS OF	1 2 3 4 REFERENC	Standard Reading In m3/hr 346.46 303.21 291.75 262.84 E STANDARD &	DUC Reading In m3/hr 347.64 304.51 292.84 263.69	0.34 0.43 0.37 0.32	
	1 2 3 4 REFERENC	Standard Reading In m3/hr 346.46 303.21 291.75 262.84 E STANDARD &	DUC Reading In m3/hr 304.51 292.84 263.69 MAIOR INSTRUM rasonic Flowmeter	0.34 0.43 0.37 0.32	
nstrument N	1 2 3 4 REFERENC	Standard Reading In m3/hr 346.46 303.21 291.75 262.84 E STANDARD & : Handheld Ultr	DUC Reading In m3/hr 347.64 304.51 292.84 263.69 MAIOR INSTRUM asonic Flowmeter 502497	0.34 0.43 0.37 0.32	
instrument N Sr. No. Certificate No Due date	1 2 3 4 REFERENC	Standard Reading In m3/hr 346.46 303.21 291.75 262.84 ESTANDARD & : Handheld Ultr : 160520-H-814	DUC Reading In m3/hr 347.64 304.51 292.84 263.69 MAIOR INSTRUM asonic Flowmeter 502497	0.34 0.43 0.37 0.32	
instrument N Sr. No. Certificate No Due date Fraceability t	1 2 3 4 REFERENC ame	Standard Reading In m3/hr           346.46           303.21           291.75           262.84           E STANDARD &           : Handheld Ultt           : 160520-H-81t           : AES/FL/23-2:           : 27/04/2024           : Calibration L	DUC Reading In m3/hr 347.64 304.51 292.84 292.84 263.69 MAIOR INSTRUM asonic Flowmeter 502497 4/016 aboratory of AESI	0.34 0.43 0.37 0.32 ENTS USED	
instrument N Sr. No. Certificate No Due date Fraceability t	1 2 3 4 REFERENC ame	Standard Reading In m3/hr           346.46	DUC Reading In m3/hr 347.64 304.51 292.84 292.84 263.69 MAIOR INSTRUM asonic Flowmeter 502497 4/016 aboratory of AESI	0.34 0.43 0.37 0.32 ENTS USED	6
instrument N Sr. No. Certificate No Due date Fraceability t	1 2 3 4 REFERENC ame	Standard Reading In m3/hr           346.46           303.21           291.75           262.84           ESTANDARD &           : Handheld Ultr : 160520-H-81: : AES/FL/23-2: : 27/04/2024           : Z7/04/2024           : Calibration L           D SYSTEMS PVT	DUC Reading In m3/hr 347.64 304.51 292.84 263.69 MAIOR INSTRUM asonic Flowmeter 502497 4/016 aboratory of AESI	0.34 0.43 0.37 0.32 ENTS USED	fam
instrument N Sr. No. Certificate No Due date Fraceability t	1 2 3 4 REFERENC ame	Standard Reading In m3/hr           346.46           303.21           291.75           262.84           ESTANDARD &           : Handheld Ultr : 160520-H-81: : AES/FL/23-2: : 27/04/2024           : Z7/04/2024           : Calibration L           D SYSTEMS PVT	DUC Reading In m3/hr 347.64 304.51 292.84 292.84 263.69 MAIOR INSTRUM asonic Flowmeter 502497 4/016 aboratory of AESI	0.34 0.43 0.37 0.32 ENTS USED	Jang.

		AA	AROHI E	MBEDDED	SYSTEN	MS PVT. LI	ſD.		
		Ons	ide Draft Ca	libration / Test	Report				
M/S:- JUNAGAI Junagadh, Hasanpur Dam (Vishal Hindoch		ORPORATION	l,	Draft Report No. Date of Calibration		26/06/2023			
			P	ipe Details					
O.D. (Outer Dia	motori		- 00mm	Liner Thickness	-	No Liner			
Pipe Thickness			5mm	Tranducer Spacing	l	528mm			
I.D. (Inner Dian			38mm	Pipe material	<u> </u>	M.S.			
Lind. (inner Dian	neter)		bomm	Pipe material		MI.3.			
		Desc	ription and Iden	tification Of Instrum	nent/Item				
Instrument Na	me :-	Endress+Hau	ser (E&H)	Serial No. :-	MB039B20000	1			
Model No. :-		PrOMAG 400		Range :-	9600m3/h				
Make :-		Endress+Hau	ser	Least Count :-	0.01				
Line Size :-		600mm							
			Environr	mental Conditions					
Temperature		31'		Humidity					
			Standar	d Equipment Used					
Instrum	ent Name	Model N	o.	Sr. No.	Calibrated At	Certificate No.	Valid Upto		
Handheld	Ultrasonic	TDS - 100	0H 1605	520-H-81602497	AESPL	AES/FL/23-24/016	27/04/2024		
			Calibre	tion/Test Result					
				-					
Sr. No.		er meter Flov			DUC Flow Rate		Error%		
	Unit	262	m3/h	Unit	277	m3/h			
1		262			307				
2		303			307				
3		303			321				
4									
	1			I					
		%Error is	(Measured Value	-Reference Value) / R	eference Value				
	ATION BY					WITNESS			
Kevin V	aghasiya					Dilip Bh	ai		









#### **Corrective Action Requests (CARs)**

Not applicable as no non-conformities has been evidenced. **Applied methodologies:** 

Verification criteria is as per the requirements of UCR RoU program for the scope -2.

According to the UCR RoU Standard principles, the project activity accomplishes the following:

- Increases the sustainable water yield in areas where over development has depleted the aquifer
- Conserve and store excess water for future use

Applicability of double counting emission reductions

Currently not applicable for water credits.



## Rainfall Statistics of India (Reference - hydro.imd.gov.in)

					Ľ	2015					
GUJARAT	1					GUJARAT	1.00	12.0	400.7	0.0	415.7
AHMEDABAD	1.5	6.6	681.2	8.8	698.1	AHMEDABAD	2.0	13.0	400.7	0.0	415.7
AMRELI	3.8	7.6	503.2	22.5	537.1	AMRELI	2.2	31.3 26.5	743.1 452.6	6.3 0.0	782.9
ANAND	9.1	2.2	984.4	5.4	1001.1	BANASKANTHA	2.1	9.2	402.0	0.0	4/9.2 834.8
BANASKANTHA	3.4	5.7	520.9	0.0	530.0	BARODA	0.0	7.6	421.4	2.6	431.6
BARODA	20.6	0.2	689.8	5.0	715.6	BHAVNAGAR	1.4	13.4	541.0	0.4	451.0
BHAVNAGAR	0.8	1.9	476.8	16.3	495.8	BROACH	1.4	12.7	437.9	1.6	453.4
BROACH	1.1	0.0	619.7	0.2	621.0	DAHOD	1.4	10.0	426.8	1.1	439.3
DAHOD	19.2	0.0	537.7	5.4	562.3	DANGS	0.0	73.5	1036.2	64.0	1173.7
DANGS	1.0	11.0	1125.5	65.5	1203.0	GANDHINAGAR	14.8	14.3	666.7	0.0	695.8
GANDHINAGAR	0.8	13.2	663.5	0.0	677.5	JAMNAGAR	1.1	2.4	435.3	11.2	450.0
JAMNAGAR	0.0	0.0	536.1	5.4	541.5	JUNAGARH	3.4	12.8	598.9	8.1	623.1
JUNAGARH	0.0	1.7	892.2	36.5	930.4	KHEDA	2.1	13.3	503.5	0.1	519.0
KHEDA	22.7	0.3	777.8	0.0	800.8	КИТСН	0.8	5.4	473.6	3.9	483.7
KUTCH	0.0	2.1	285.9	2.8	290.8	MEHSANA	5.1	12.6	670.6	0.0	688.4
MEHSANA	0.0	2.1	766.6	0.2	768.9	NARMADA	4.1	33.1	650.2	1.2	688.6
GUJARAT			1	22.27.27		GUJARAT					
AHMEDABAD	0.0	1.5	382.2	52.4	436.1	AHMEDABAD	0.0 0.0 0.0	0.0 0.2 88	3 490.9	100.1 52.0 0.0	0.0 3.0
AMRELI	0.0	5.0	578.9	103.9	687.8	AMRELI	0.0 0.0 0.0		stress months and stress		0.0 3.9
ANAND	0.0	3.0	436.9	54.7		ANAND				LINA AALL PAIA	
ANANU	0.0				494.5			10.010.9195	6 376.8	1687 593 0.0	
	0.0	0.0	880.0	72.8	494.5 952.8		0.0 0.0 0.0		admini contrata tanàna ami		0.0 1.
ARAVALLI						ARAVALLI	0.0 0.0 0.0	0.0 0.0 61	.2 618.7	151.2 56.0 0.0	0.0 1.
ARANAD ARAVALLI BANASKANTHA BHARUCH	0.0	0.0	880.0	72.8	952.8			0.0 0.0 61 0.1 0.3 76	.2 618.7 .8 939.7	151.2 56.0 0.0 95.0 25.3 0.0	0.0 1. 0.0 8. 0.0 0.
aravalli Banaskantha	0.0	0.0	880.0 388.3	72.8 78.3	952.8 466.6	ARAVALLI BANASKANTHA	0.0 0.0 0.0	0.0 0.0 61 0.1 0.3 76 0.0 0.0 18	.2 618.7 .8 939.7 1.5 265.2	151.2         56.0         0.0           95.0         25.3         0.0           234.7         62.5         21.6	0.0 1.1 0.0 8.1 0.0 0.1 0.0 0.1
ARAVALLI BANASKANTHA BHARUCH	0.0 0.0 0.0	0.0 0.0 1.6	880.0 388.3 414.0	72.8 78.3 66.4	952.8 466.6 482.1	ARAVALLI BANASKANTHA BHARUCH	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 61 0.1 0.3 76 0.0 0.0 18 0.0 0.0 72	.2 618.7 .8 939.7 1 1.5 265.2 1 .6 222.5 1	151.2         56.0         0.0           95.0         25.3         0.0           234.7         62.5         21.6           210.0         63.0         22.3	0.0 1. 0.0 8. 0.0 0. 0.0 6. 0.0 5.
ARAVALLI BANASKANTHA BHARUCH BHAVNAGAR	0.0 0.0 0.0 0.0 0.0	0.0 0.0 1.6 0.4	880.0 388.3 414.0 576.1	72.8 78.3 66.4 66.3	952.8 466.6 482.1 642.8	ARAVALLI BANASKANTHA BHARUCH BHAVNAGAR	0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0	0.0 0.0 61 0.1 0.3 76 0.0 0.0 18 0.0 0.0 72 0.0 0.0 72	.2         618.7           .8         939.7           .5         265.2           .6         222.5           .3         340.3	151.2         56.0         0.0           95.0         25.3         0.0           234.7         62.5         21.6           210.0         63.0         22.3           196.0         63.8         0.0	0.0 1.1 0.0 8.1 0.0 0.1 0.0 6.1 0.0 5.1 0.0 6.1
ARAVALLI BANASKANTHA BHARUCH BHAVNAGAR BOTAD CHHOTA UDEPUR	0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 1.6 0.4 0.0	880.0 388.3 414.0 576.1 412.5	72.8 78.3 66.4 66.3 124.8	952.8 466.6 482.1 642.8 537.3	ARAVALLI BANASKANTHA BHARUCH BHAVNAGAR BOTAD	0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0	0.0 0.0 61 0.1 0.3 76 0.0 0.0 18 0.0 0.0 72 0.0 0.0 72 0.0 0.0 83	.2         618.7           .8         939.7           .5         265.2           .6         222.5           .3         340.3           .0         404.1	151.2         56.0         0.0           95.0         25.3         0.0           234.7         62.5         21.6           210.0         63.0         22.3           196.0         63.8         0.0           236.0         101.9         9.2	0.0         1.1           0.0         8.1           0.0         0.1           0.0         0.1           0.0         5.1           0.0         5.1           0.0         6.1           0.0         5.1           0.0         6.1           0.0         9.1
ARAVALLI BANASKANTHA BHARUCH BHAVNAGAR BOTAD	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 1.6 0.4 0.0 1.6	880.0 388.3 414.0 576.1 412.5 795.3	72.8 78.3 66.4 66.3 124.8 34.9	952.8 466.6 482.1 642.8 537.3 831.8	ARAVALLI BANASKANTHA BHARUCH BHAVNAGAR BOTAD CHHOTA UDEPUR	0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0	0.0 0.0 61 0.1 0.3 76 0.0 0.0 18 0.0 0.0 72 0.0 0.0 72 0.0 0.0 83	.2         618.7           .8         939.7           1.5         265.2           .6         222.5           .3         340.3           .0         404.1           1.2         363.2	151.2         56.0         0.0           95.0         25.3         0.0           234.7         62.5         21.6           210.0         63.0         22.3           196.0         63.8         0.0           236.0         101.9         9.2           113.0         58.7         1.2	0.0         1.1           0.0         8.1           0.0         0.1           0.0         6.1           0.0         5.1           0.0         6.1           0.0         6.1           0.0         6.1           0.0         6.1           0.0         6.1           0.0         6.1
ARAVALLI BANASKANTHA BHARUCH BHAVNAGAR BOTAD CHHOTA UDEPUR DAHOD DAHOD DANGS	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 1.6 0.4 0.0 1.6 0.0	880.0 388.3 414.0 576.1 412.5 795.3 731.1	72.8 78.3 66.4 66.3 124.8 34.9 48.9	952.8 466.6 482.1 642.8 537.3 831.8 780.0	ARAVALLI BANASKANTHA BHARUCH BHAVNAGAR BOTAD CHHOTA UDEPUR DAHOD	0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0	0.0         0.0         61           0.1         0.3         76           0.0         0.0         18           0.0         0.0         72           0.0         0.0         72           0.0         0.0         72           0.0         0.0         83           0.0         1.0         11	.2         618.7           .8         939.7           1.5         265.2           .6         222.5           .3         340.3           .0         404.1           .1.2         363.2           .9.7         955.0	1512         56.0         0.0           95.0         25.3         0.0           2347         62.5         21.6           210.0         63.0         22.3           196.0         63.8         0.0           236.0         101.9         9.2           113.0         58.7         1.2           361.7         187.0         114.0	0.0 1.1 0.0 8.1 0.0 0.1 0.0 6.1 0.0 5.1 0.0 6.1 0.0 9.4 0.0 9.4
ARAVALLI BANASKANTHA BHARUCH BHAVNAGAR BOTAD CHHOTA UDEPUR DAHOD DAHOD DANGS DEVBHOOMI DWARKA	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 1.6 0.4 0.0 1.6 0.0 1.5	880.0 388.3 414.0 576.1 412.5 795.3 731.1 1946.6	72.8 78.3 66.4 66.3 124.8 34.9 48.9 75.3	952.8 466.6 482.1 642.8 537.3 831.8 780.0 2034.3	ARAVALLI BANASKANTHA BHARUCH BHAVNAGAR BOTAD CHHOTA UDEPUR DAHOD DANGS	0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0	0.0         0.0         61           0.1         0.3         76           0.0         0.0         18           0.0         0.0         72           0.0         0.0         72           0.0         0.0         72           0.0         0.0         72           0.0         0.0         72           0.0         0.0         83           0.0         1.0         11           0.0         0.0         28	.2         618.7           .8         939.7           .5         265.2           .6         222.5           .3         340.3           .0         404.1           .12         363.2           37.         955.0           .2         280.7	1512         56.0         0.0           95.0         25.3         0.0           2347         62.5         21.6           210.0         63.0         22.3           196.0         63.8         0.0           236.0         101.9         9.2           113.0         58.7         1.2           361.7         167.0         114.0           222.7         6.6         0.0	0.0         1.1           0.0         8.1           0.0         0.1           0.0         5.1           0.0         5.1           0.0         6.1           0.0         6.1           0.0         6.1           0.0         6.1           0.0         6.1           0.0         6.1           0.0         5.1           0.0         5.1           0.0         5.1           0.0         5.1           0.0         5.1
ARAVALLI BANASKANTHA BHARUCH BHAVNAGAR BOTAD CHHOTA UDEPUR DAHOD	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 1.6 0.4 0.0 1.6 0.0 12.5 0.3	880.0 388.3 414.0 576.1 412.5 795.3 731.1 1946.6 523.1	72.8 78.3 66.4 66.3 124.8 34.9 48.9 75.3 49.7	952.8 466.6 482.1 642.8 537.3 831.8 780.0 2034.3 573.1	ARAVALLI BANASKANTHA BHARUCH BHAVNAGAR BOTAD CHHOTA UDEPUR DAHOD DANGS DEVBHOOMI DWARKA	0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0           0.0         0.0         0.0	0.0         0.0         61           0.1         0.3         76           0.0         0.0         18           0.0         0.0         18           0.0         0.0         72           0.0         0.0         72           0.0         0.0         72           0.0         0.0         72           0.0         0.0         83           0.0         1.0         11           0.0         0.0         28           0.0         0.0         111           0.0         0.5         70	.2         618.7           .8         939.7           .15         265.2           .15         265.2           .3         340.3           .0         404.1           .12         363.2           .37         955.0           .12         280.7           .12         280.7           .12         889.2	1512         56.0         0.0           95.0         25.3         0.0           2347.         62.5         21.6           2100.         63.0         22.3           195.0         63.8         0.0           2361.7         187.0         14.0           2222.7         6.6         0.0           144.8         94.9         0.0	0.0 1. 0.0 8. 0.0 0. 0.0 6. 0.0 5. 0.0 6. 0.0 9. 0.0 6. 0.0 56. 0.0 56. 0.0 0.
ARAVALLI BANASKANTHA BHARUCH BHAVNAGAR BOTAD CHHOTA UDEPUR DAHOD DANGS DEVBHOOMI DWARKA GANDHINAGAR	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 1.6 0.4 0.0 1.6 0.0 12.5 0.3 1.6	880.0 388.3 414.0 576.1 412.5 795.3 731.1 1946.6 523.1 588.4	72.8 78.3 66.4 66.3 124.8 34.9 48.9 75.3 49.7 63.6	952.8 466.6 482.1 642.8 537.3 831.8 780.0 2034.3 573.1 653.6	ARAVALLI BANASKANTHA BHARUCH BHAVNAGAR BOTAD CHHOTA UDEPUR DAHOD DANGS DEVBHOOMI DWARKA GANDHINAGAR	0.0         0.0         0.0         0.0           0.0         0.0         0.0         0.0           0.0         0.0         0.0         0.0           0.0         0.0         0.0         0.0           0.0         0.0         0.0         0.0           0.0         0.0         0.0         0.0           0.0         0.0         0.0         0.0           0.0         0.0         0.0         0.0           0.0         0.0         0.0         0.0           0.0         0.0         0.0         0.0           0.0         0.0         0.0         0.0           0.0         0.0         0.0         0.0	0.0         0.0         61           0.1         0.3         76           0.0         0.0         18           0.0         0.0         18           0.0         0.0         72           0.0         0.0         72           0.0         0.0         72           0.0         0.0         72           0.0         0.0         83           0.0         1.0         11           0.0         0.0         28           0.0         0.0         11           0.0         0.0         11           0.0         0.5         70           0.0         0.0         99	.2         618.7           .8         939.7           1.5         265.2           .6         222.5           .3         340.3           .0         404.1           .12         363.2           .37         955.0           .12         280.7           .9         889.2           .5         582.5	1512         56.0         0.0           95.0         25.3         0.0           2347.         62.5         21.6           2100.         63.0         22.3           196.0         63.8         0.0           2360.         101.9         9.2           113.0         58.7         1.2           361.7         187.0         114.0           2222.7         6.6         0.0           144.8         94.9         0.0           276.3         74.1         19.8	0.0 1.4 0.0 8.4 0.0 0.6 0.0 6.4 0.0 5.7 0.0 6.4 0.0 9.4 0.0 6.4 0.0 56 0.0 56



2018															20	)19													
GUJARAT			_				_								GUJA	RAT REGION		1 8		1	1	18	1			- 5			
AHMEDABAD	0.0	0.0	0.0	0.0	0.0	13.	1 1	28.1	128.4	16.3	0.0	0.0	0.0		AHNE	DABAD	0.0	0.0	0.0	0.7	0.	1 7	2.6	83.1	353.5	216.6	47.9	3.9	0.0
AMREU	0.0	0.0	0.0	0.0	0.0	-	-	107.1	39.0	18.7	4.7	0.0	0.0		AMRE	U	0.0	0.0	0.0	0.0	0.	11	5.5 1	26.2	246.4	315.1	67.2	16.0	0.0
ANAND	0.0	0.0	0.0	0.0	0.0	53.	0 4	182.2	253.9	38.2	0.0	0.0	0.0		ANAN	D	0.0	0.0	0.0	0.0	0.	0	1.9	69.6	541.1	226.7	83.3	5.0	0.0
ARAVALLI	0.0	0.0	0.0	0.0	0.3	134	7 2	85.3	175.3	119.2	0.0	0.0	0.0		ARAV	ALU	0.0	3.7	0.0	0.7	0.	1	13 1	92.0	447.2	282.7	96.0	0.8	0.0
BANASKANTHA	0.0	0.0	0.0	0.0	0.0	32.	1 1	23.0	54.3	5.1	0.0	0.0	0.0		BANA	skantha	0.0	0.5	0.0	3.5	0.	1	1.5 1	16.2	229.7	180.4	83.2	21.1	4.6
BHARUCH	0.0	0.0	0.0	0.0	0.0	70.	8 4	175.7	145.4	44.3	0.1	0.0	0.0	13.1	BHAR		0.0	0.0	0.0	0.0	0.	-		-	506.3	260.9	49.5	15.5	0.0
BHAVNAGAR	0.0	0.0	0.0	0.0	0.0	23.	7 2	92.2	78.0	18.9	4.7	0.0	0.0			NAGAR	0.0	0.0	0.0	0.0	0.	-			262.8	223.2	40.2	12.9	0.0
BOTAD	0.0	0.0	0.0	0.0	0.0	43.	3 2	259.0	68.3	8.5	0.0	0.0	0.0		BOTA		0.0	0.0	0.0	0.0	0.	-			379.3	290.3	38.3	21.5	0.0
CHHOTA UDEPUR	0.0	0.0	0.0	0.0	0.0	80.	5 3	376.3	258.2	63.8	0.0	0.0	0.0	111	-	TA UDEPUR	0.0	0.0	0.0	0.0	0.	-			993.8	339.4	56.6	15.3	0.0
DAHOD	0.0	0.0	0.0	0.0	0.0	17.	1 2	230.8	199.3	64.5	0.0	0.0	0.0		DAHO	7	0.0	0.0	0.0	0.0	0.			_	350.3	217.4	44.4	3.0	0.0
DANGS	0.0	0.0	0.0	0.0	0.0	298	9 13	311.4	444.7	128.0	7.0	0.0	0.0	11.1	DANG		0.0	0.0	0.0	0.0	0.	-		-	158.3	688.3	112.0	31.0	0.0
DEVBHOOMI DWARKA	0.0	0.0	0.0	0.0	0.0	0.5	5 1	195.3	27.3	22.7	0.0	0.0	0.0	111	-	HOOMI DWARKA Hinagar	22	0.0	0.0	0.0	0.	_	-	-	229.6	590.7	5.3	16.2	0.8
GANDHINAGAR	0.0	0.0	0.0	0.0	0.0	12	-	14.5	157.3	42.4	0.0	0.0	0.0	1.1	-	MINAGAK OMNATH	0.0	0.0	0.0	0.0	0.	-		-	411.8 233.8	264.0 463.1	20.1	2.7	0.0
GIR SOMNATH	0.0	0.0	0.0	0.0	0.0	-	-	153.7	61.6	26.1	2.8	0.0	0.0	10	LAWN		0.0	0.1	0.0		-	_		And in case of the	233.0	403.1	and the local data	23.4	1.9
JAMNAGAR	0.0	0.0	0.0	0.0	0.0	-	-	55.8	56.8	20.3	1.7	0.0	0.0		JUNA	te te area	0.0	0.0	0.0	0.0	0.	-	-	Concession of the	339.8	639.9	46.9	16.0	0.5
JUNAGADH	0.0	0.0	0.0	0.0	0.0	43	1 1	21.7	63.8	39.9	0.0	0.0	0.0		KHED		0.0	0.0		-	U.	-				-	60.1	-	-
KHELIK	0.0	4.4	0.0	4.4	0.0	93.	3 6	L.CO	223.4	91.1	4.4	0.0	0.0				*/*	919	*/*	4/4				1010	444.4	E.W.V	991		414
भारत के वर्षा आंकड़े - 202	9		DICT	DICT WI	TPAN	VEALL		Constant Constant	Statistic	s of Indi	a - 2021	Pa	ge	1	177	SAURASHTRA & Kutch		0.0	0.0	0.0	2.0	42.6	68.5	5 116.4	18.	3 423.	.4 28.	6 5.3	7 2.
			DIST	RICT-WI	SE RAP	NFALL !		Constant Constant	Statistic	s of Indi	a - 2021	Pa	g¢		22	KUTCH													
भारत के वर्षा आंकड़े - 202 SNo. Net Subdivison' S	islae!	W F		RICT-WE	-			Constant Constant	<u>Statistic</u>	s of Indi SEP	a - 2020 OCT	P a	ge 1 DEC		1	KUTCH Amreli		0.0	0.0	0.0	4.0	127.3	94.6	134.4	89.	9 410.	.2 14.	7 0.:	3 8.
SNO. UTs/ Districts	lates/ J	1.1	EB I	NAR A	PR	MAY	STATIS JUN	JUL	AUG	SEP	OCT	NOV	DEC		1	KUTCH					4.0	127.3	94.6		89.		.2 14.	7 0.:	3 8.
SNo. Net Subdivison' S UTsi Districts 22 Saurashtra & M	lates/ J	0.2	EB	VAR A	PR I	MAY 0.0	JUN 123.3	JUL 303.9	AUG 621.5	SEP 97.5	OCT 35.3	NOV 0.0	DEC 2.0		1 2 3	KUTCH AMRELI BHAVNAGAR BOTAD		0.0	0.0	0.0	4.0	127.3 137.3	94.0 161.2	134.4	89. 8 44. 8 18.	9 410. 2 380. 8 330.	.2 14. .3 20. .5 14.	7 0.3	3 8. 0 11.
SNo. Net Subdivison' S UTsi Districts 22 Saurashtra & M 1 Amreli	lates/ J	0.2	EB     0.0 0.0	WAR A 0.8 0.5	PR   0.2 2.3	MAY 0.0 0.3	JUN 123.3 177.7	JUL 303.9 263.5	AUG 621.5 525.8	SEP 97.5 149.3	OCT 35.3 37.0	NOV 0.0	DEC 2.0 5.6		1 2 3 4	KUTCH AMRELI BHAVNAGAR BOTAD DEVBHOOMI DWA	RKA	0.0	0.0	0.0	4.0	127.3 137.3	94.6 161.2 103.8 76.7	134.4 52.3 148.3 164.5	89. 8 44. 8 18. 5 10.	9 410. 2 380. 8 330. 2 652.	.2 14. .3 20. .5 14. .6 59.	7 0.3 6 0.0 8 0.0	3 8. 0 11. 0 0. 6 1.
SNo. Net Subdivison' S UTs/ Districts 22 SAURASHTRA & M 1 AMRELI 2 BHAVNAGAR	lates/ J	0.2 0.0 0.0	EB 0.0 0.0 0.0	WAR A 0.8 0.5 0.5	PR   0.2 2.3 0.3	MAY 0.0 0.3 0.1	JUN 123.3 177.7 141.0	JUL 303.9 263.9 153.8	AUG 621.5 525.8 303.6	SEP 97.5 149.3 124.6	OCT 35.3	NOV 0.0 0.0	DEC 2.0 5.6 8.0		1 2 3 4 5	KUTCH AMRELI BHAVNAGAR BOTAD DEVBHOOMI DWAI DIU	RKA	0.0	0.0	0.0	4.0 0.5 3.5	127.3 137.3 111.8	94.6 161.2 103.8 76.7	134.4 52.3 148.3 164.5	89. 8 44. 8 18. 5 10.	9 410. 2 380. 8 330.	.2 14. .3 20. .5 14. .6 59.	7 0.3 6 0.0 8 0.0 5 5.0	3 8. 0 11. 0 0. 6 1.
SNo. Net Subdivison' S UTsi Districts 22 SAURASHTRA & M 1 AMRELI 2 BHAVNAGAR 3 BOTAD	tatesi J KUTCH	0.2 0.0 0.0 0.0	EB 0.0 0.0 0.0 0.0	NAR A 0.8 0.5 0.5 0.0	PR   1 0.2 0.3 0.0	MAY 0.0 0.3 0.1 0.0	JUN 123.3 177.7 141.0 198.3	JUL 303.9 263.5 153.8	AUG 621.5 525.8 303.6 542.8	SEP 97.5 149.3 124.6 90.8	OCT 35.3 37.0 27.9 4.3	NOV 0.0 0.0	DEC 2.0 5.6 8.0 3.0		1 2 3 4 5	KUTCH AMRELI BHAVNAGAR BOTAD DEVBHOOMI DWA	RKA	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	4.0 0.5 3.5 0.0	127.3 137.3 111.8 0.0	94.8 161.2 103.8 76.7 39.8	134.4 52.3 148.3 164.5	8 89. 8 44. 8 18. 5 10.	9 410. 2 380. 8 330. 2 652.	2 14. 3 20. 5 14. 6 59. 8 5.	7 0.3 6 0.0 8 0.0 5 5.0 8 0.0	3 8. 0 11. 0 0. 6 1.
SNo. Net Subdivison/ S UTs/ Districts 22 Saurashtra & M 1 Amreli 2 Bhavnagar	tatesi J KUTCH	0.2 0.0 0.0	EB 0.0 0.0 0.0	WAR A 0.8 0.5 0.5	PR   0.2 2.3 0.3	MAY 0.0 0.3 0.1	JUN 123.3 177.7 141.0 198.3 162.5	JUL 303.9 263.5 153.8 171.2 926.5	AUG 621.5 525.8 303.6 542.8 905.9	SEP 97.5 149.3 124.6 90.8	OCT 35.3 37.0 27.9 4.3	NOV 0.0 0.0	DEC 2.0 5.6 8.0 3.0		22 1 2 3 4 5 6 7	KUTCH AMRELI BHAVNAGAR BOTAD DEVBHOOMI DWAI DIU GIR SOMNATH JAMNAGAR	RKA	0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0	4.0 0.5 3.5 0.0	127.3 137.3 111.8 0.0 87.4	94.8 161.2 103.8 76.7 39.8 48.1	134. 52. 148. 164.	89. 844. 818. 510. 2114. 540.	9 410. 2 380. 8 330. 2 652. 0 357.	2 14. 3 20. 5 14. 6 59. 8 5. .7 30.	7 0.0 6 0.0 8 0.0 5 5.0 8 0.0 6 0.0	3 8. 0 11. 0 0. 6 1. 5 13.
SNo. Net Subdivison' S UTsi Districts 22 SAURASHTRA & M 1 AMRELI 2 BHAVNAGAR 3 BOTAD	tatesi J KUTCH	0.2 0.0 0.0 0.0	EB 0.0 0.0 0.0 0.0	NAR A 0.8 0.5 0.5 0.0	PR   1 0.2 0.3 0.0	MAY 0.0 0.3 0.1 0.0	JUN 123.3 177.7 141.0 198.3	JUL 303.9 263.5 153.8	AUG 621.5 525.8 303.6 542.8 905.9	SEP 97.5 149.3 124.6 90.8	OCT 35.3 37.0 27.9 4.3	NOV 0.0 0.0 0.0	DEC 2.0 5.6 8.0 3.0 0.0		22 1 2 3 4 5 6 7	KUTCH AMRELI BHAVNAGAR BOTAD DEVBHOOMI DWA DIU GIR SOMNATH	RKA	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0	4.0 0.5 3.5 0.0 0.0 0.0	127.3 137.3 111.8 0.0 87.4 140.8 16.0	94.0 161.2 103.0 76.7 39.0 48.1 59.5	134. 52. 148. 148. 164. 164. 106. 232.	8 89. 8 44. 8 18. 5 10. 5 114. 5 144.	9 410. 2 380. 8 330. 2 652. 0 357. 1 561. 4 654. 8 808.	.2 14. .3 20. .5 14. .6 59. .8 5. .7 30. .0 26. .9 45.	7 0. 6 0.0 8 0.0 5 5. 5 5. 6 0.1 4 0.0	3 8. 0 11. 0 0. 5 13. 4 0. 1 1.
SNo.         Met Subdivison/ S           UTs/ Districts         UTs/ Districts           22         SAURASHTRA & H           1         AMRELI           2         BHAVNAGAR           3         BOTAD           4         DEVBHOOMI DWA	tatesi J KUTCH	0.2 0.0 0.0 0.0 0.1	EB     0.0 0.0 0.0 0.0	WAR A 0.8 0.5 0.5 0.0 0.1	PR 1 0.2 2.3 0.3 0.0 0.0	MAY 0.0 0.3 0.1 0.0	JUN 123.3 177.7 141.0 198.3 162.5	JUL 303.9 263.5 153.6 171.2 926.5 543.2	AUG 621.5 525.8 303.6 542.8 905.9	SEP 97.5 149.3 124.6 90.8 136.6	OCT 35.3 37.0 27.9 4.3 34.2	NOV 0.0 0.0 0.0 0.0	DEC 2.0 5.6 8.0 3.0 0.0 36.7		1 1 2 3 4 5 6 7 8 9	KUTCH AMRELI BHAVNAGAR BOTAD DEVBHOOMI DWA DIU GIR SOMNATH JAMNAGAR JUNAGADH KUTCH	RKA	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	4.0 0.5 3.5 0.0 0.0 0.0 1.3	127.3 137.3 111.8 0.0 87.4 140.8 16.0	94.6 161.2 103.8 76.7 39.8 48.1 59.5 63.2	52. 52. 148. 148. 164. 164. 232. 5162. 232. 5162.	8 89. 8 44. 8 18. 5 10. 5 114. 5 144.	9 410. 2 380. 8 330. 2 652. 0 357. 1 561. 4 654.	.2 14. 3 20. 5 14. 6 59. 8 5. 7 30. 0 26. 9 45. 7 26.	7 0.3 6 0.0 8 0.1 5 5.5 8 0.1 6 0.1 4 0.4 9 6.1	3 8. 0 11. 0 0. 5 13. 4 0. 1 1.
SNo.         Net Subdivision' S UTSI Districts           22         SAURASHTRA & H           1         AMRELI           2         BHAVNAGAR           3         BOTAD           4         DEVBHOOMI DWA           5         DIU	tatesi J KUTCH	0.2 0.0 0.0 0.0 0.1	EB 0.0 0.0 0.0 0.0 0.0	MAR A 0.8 0.5 0.5 0.0 0.1	PR 1 0.2 2.3 0.3 0.0 0.0 0.0	0.0 0.3 0.1 0.0 0.0 0.0	JUN 123.3 177.7 141.0 198.3 162.5 185.7	JUL 303.9 263.5 153.8 171.2 926.5 543.2 433.8	AUG 621.5 525.8 303.6 542.8 905.9 664.5 815.8	SEP 97.5 149.3 124.6 90.8 136.6 137.1	OCT 35.3 37.0 27.9 4.3 34.2 2,4	VOV 0.0 0.0 0.0 0.0 0.0	DEC 2.0 5.6 8.0 3.0 0.0 0 3.0 0 0.0 0 10.8		22 1 2 3 4 5 6 7 8 9 10	KUTCH AMRELI BHAVNAGAR BOTAD DEVBHOOMI DWAI DIU GIR SOMNATH JAMNAGAR JUNAGADH KUTCH MORBI	RKA	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	4.0 0.5 3.5 0.0 0.0 0.0 1.3 0.2	127.3 137.3 111.8 0.0 87.4 140.8 16.0 44.1 7.6	94.8 161.2 103.8 76.7 39.8 48.1 59.8 63.2 46.3	52. 52. 148. 148. 164. 164. 232. 5162. 232. 5162.	8 89. 8 44. 8 18. 5 10. 2 114. 5 40. 8 7. 8 7. 8 7. 8 2. 9 8.	9 410. 2 380. 8 330. 2 652. 0 357. 1 561. 4 654. 8 808. 8 310. 0 306.	.2 14. .3 20. .5 14. .6 59. .8 5. .7 30. .0 26. .9 45. .7 26. .6 22.	7 0.3 6 0.0 8 0.1 5 5.5 8 0.1 8 0.1 4 0.4 9 6.1	3 8. 0 11. 0 0. 5 13. 5 13. 4 0. 1 1. 6 1.
SNo.         Met Subdivison/ SUJTS/ Districts           22         SAURASHTRA & H           1         AMRELI           2         BHAVNAGAR           3         BOTAD           4         DEVBHOOMI DWA           5         DIU           6         GIR SOMNATH	tatesi J KUTCH	0.2 0.0 0.0 0.0 0.1 0.0 0.0	EB 0.0 0.0 0.0 0.0 0.0 0.0	MAR A 0.8 0.5 0.5 0.0 0.0 0.0 0.0	PR 1 0.2 2.3 0.3 0.0 0.0 0.0 0.0	MAY 0.0 0.3 0.1 0.0 0.0 0.0	JUN 123.3 177.7 141.0 198.3 162.5 185.7 151.6	JUL 303.5 263.5 153.8 171.3 926.5 543.2 433.8 575.8	AUG 621.5 525.8 303.6 542.8 905.9 664.5 815.8	SEP 97.5 149.3 124.6 90.8 136.6 137.1 100.4	OCT 35.3 37.0 27.9 4.3 34.2 2.4 25.3	NOV 0.0 0.0 0.0 0.0 0.0 0.0	DEC 2.0 5.6 3.0 0.0 0.0 0.0 10.8 10.8		22 1 2 3 4 5 6 7 8 9 10 11	KUTCH AMRELI BHAVNAGAR BOTAD DEVBHOOMI DWA DIU GIR SOMNATH JAMNAGAR JUNAGADH KUTCH MORBI PORBANDAR	RKA	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	4.0 0.5 3.5 0.0 0.0 0.0 1.3 0.2 2.3	127.3 137.3 111.8 0.0 87.4 140.8 16.0 44.1 7.6	94.6 161.2 103.8 76.7 39.8 48.1 59.5 63.2 46.3 72.0	i 134. 52. 148. 164. 164. 106. 232. 162. 162. 246. 78.	8 89. 8 44. 8 18. 5 10. 2 114. 5 40. 8 7. 8 7. 8 7. 8 2. 9 8.	9 410. 2 380. 8 330. 2 652. 0 357. 1 561. 4 654. 8 808. 8 310.	.2 14. .3 20. .5 14. .6 59. .8 5. .7 30. .0 26. .9 45. .7 26. .6 22.	7 0.0 6 0.0 8 0.0 5 5.0 8 0.0 6 0.0 6 0.0 4 0.0 6 11.0 6 11.0 2 6.0	3 8. 0 11. 0 0. 6 1. 5 13. 4 0. 1 1. 6 1. 6 0.
SNo. Net Subdivison' S UTsi Districts 22 SAURASHTRA & M 1 AMRELI 2 BHAVNAGAR 3 BOTAD 4 DEVBHOOMI DWA 5 DIU 6 GIR SOMNATH 7 JAMNAGAR	tatesi J KUTCH	0.2 0.0 0.0 0.0 0.1 0.0 0.0 0.0	EB 0.0 0.0 0.0 0.0 0.0 0.0 0.0	MAR A 0.8 0.5 0.5 0.0 0.1 0.0 0.6 0.0	PR 1 0.2 2.3 0.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	MAY 0.0 0.3 0.1 0.0 0.0 0.0 0.0	JUN 123.3 177.7 141.0 198.3 162.5 185.7 151.6 96.8	JUL 303.5 263.5 153.8 171.3 926.5 543.2 433.8 575.8	AUG 621.5 525.8 303.6 542.8 905.9 664.5 815.8 628.3	SEP 97.5 149.3 124.6 90.8 136.6 137.1 100.4 113.2	OCT 35.3 37.0 27.9 4.3 34.2 2.4 25.3 30.5 59.1	NOV 0.0 0.0 0.0 0.0 0.0 0.0	DEC 2.0 5.6 8.0 0.0 0 3.0 0 0.0 10.8 0.0 0.0		22 1 2 3 4 5 6 7 8 9 10 11 12	KUTCH AMRELI BHAVNAGAR BOTAD DEVBHOOMI DWAI DIU GIR SOMNATH JAMNAGAR JUNAGADH KUTCH MORBI		0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	4.0 0.5 3.5 0.0 0.0 0.0 1.3 0.2 2.3 6.4	127.3 137.3 111.8 0.0 87.4 140.8 16.0 44.1 7.6 36.2	94.8 161.2 103.8 76.7 39.8 48.1 59.9 63.2 46.3 72.0 30.2	5 134.4 52: 52: 148.3 148.3 164.3 165.1 16	8 89. 8 44. 8 18. 5 10. 2 114. 5 40. 8 7. 8 7. 8 7. 8 7. 9 8. 9 8. 1 15.	9 410. 2 380. 8 330. 2 652. 0 357. 1 561. 4 654. 8 808. 8 310. 0 306.	2 14. 3 20. 5 14. 6 59. 8 5. 7 30. 0 26. 9 45. 7 26. 6 22. 6 17. 1 46.	7 0.3 6 0.0 8 0.1 5 5.5 6 0.1 6 0.1 6 0.1 6 0.1 6 0.1 6 11.1 7 6.1 5 0.1 5 0.1	3 8. 0 11. 0 0. 1 0 0. 5 13. 5 13. 4 0. 1 1. 6 1. 6 0. 0 0. 2 0.



	TA	BLE-1	: DAII	AY RA	INFAI	LL (mm	) AT JU	NAGAI	DH -YE	AR-202	2	
Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1								2.5				
2							43.7	0.3				
3							126.3	6.6	2.0			
- 4							1.5	1.4				
5	-						11.0	50.4				
6	-		<u> </u>		<u> </u>		81.6	10.0				
7	0.2		<u> </u>		<u> </u>		16.3	28.3				
8	+		<u> </u>		<u> </u>		83.4	4.6	10.0			
9	+		<u> </u>	<u> </u>	<u> </u>		48.7	39.8	12.0			
10	-				<u> </u>		26.8	11.7	3.3	51.2		
	-				<u> </u>	13.2	2.0	10.2	0.5			
12	-	_	-	<u> </u>	-	13.2	6.5	4.0	5.5			_
13	+				<u> </u>	27.1	64.0	6.3	84.9			
14	+		<u> </u>		<u> </u>	3.5	35.3	3.4	0.5			
15	+	<u> </u>	<u> </u>	<u> </u>		0.5	50.1 18.0	12.4	_	-		_
16	+	<u> </u>	<u> </u>	<u> </u>	-	8.1 10.0	7.9	40.9	2.5			
17	+		<u> </u>	-	-	10.0	5.0	40.9 93.5				
19	+	-	<u> </u>	-	<u> </u>	1.6	1.2	6.2		-		_
20	+	<u> </u>	<u> </u>	<u> </u>	<u> </u>	0.7	0.2	0.2				
20	+	-	-	-	-	0.7	0.2	0.1				
22	+	-	<u> </u>	-	<u> </u>		4.6	1.0		$\vdash$		-
23	+	-	<u> </u>	<u> </u>	-		6.0	1.6		$\vdash$		
24	+		-	-	-	6.2	10.0	1.0		$\vdash$		
25	+	-	<u> </u>	-	$\vdash$	24.1	7.9	0.4				-
26	+		<u> </u>	-	<u> </u>	9.3	0.6	0.7		$\vdash$		
27	+				-	7.0	3.0		2.4			
28	$\vdash$				-		0.2	0.3				
29	+		-	-	<u> </u>			0.5				
30	$\vdash$							6.5				
31	$\vdash$											
Total	0.2	0.0	0.0	0.0	0.0	104.3	661.8	384.3	117,1	51.2	0.0	0.0
R. Days	0	0	0	0	0	8	20	18	6	1	0	0
G	rand To	tal :	1318.9					Rainy D	ays: 53			
< 2.5	31	28	31	30	31	22	11	13	24	30	30	31
2.5 - 10	0	0	0	0	0	5	8	9	4	0	0	0
10 30	0	0	0	0	0	4	5	0	1	0	0	0
30-60	0	0	0	0	0	0	4	4	0	1	0	0
>60	0	0	0	0	0	0	4	1	1	0	0	0

# Issuance Period: (09 years) - 01/01/2014 to 31/12/2022

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022
Rainfall (mm)	930.4	623.2	482.9	878.6	830.1	1404.3	1665.1	1250.4	1318.9



Year	Harvested Water (m3)	Loss (m3)	Total (m3)	Calculated RoUs (million)	Max RoUs allowed. (UCR Cap)
	· ·				
2014	2519319046	1500000	2517819046	2.5	1000000
2015	1687488854	1500000	1685988854	1.6	1000000
2016	1307587239	1500000	1306087239	1.3	1000000
2017	2379056012	1500000	2377556012	2.3	1000000
2018	2247728654	1500000	2246228654	2.2	1000000
2019	3802536260	1500000	3801036260	3.8	1000000
2020	4508725434	1500000	4507225434	4.5	1000000
2021	3385808830	1500000	3384308830	3.3	1000000
2022	3571291799	1500000	3569791799	3.5	1000000
				Total	9000000

#### Annual RoU:

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Max RoUs										
allowed (UCR										
Cap)	1000000	1000000	1000000	1000000	1000000	1000000	1000000	1000000	1000000	9000000



## Conclusions:

Based on the audit conducted on the basis of UCR Protocol, which draws reference from UCR RoU program, the documents submitted during the verification including the data, Project Concept Note (PCNMR), SQAC is able to certify that the Water Credits from the project - Hasnapur Earthen Dam, Storage and Water Supply Project Activity Junagadh, Gujarat, India (UCR ID – 304) for the period 01/01/2014 to 31/12/2022 amounts to 9000000 **RoUs** 

Santosh Nair Lead Verifier (Signature)



Praful Shinganapurkar Senior Internal Reviewer (Signature)

Date: 30/06/2023