Water Quality of Canals with respect to Criteria parameters during 2023 (January-December)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters					Frequency of violation (Percent of violation) from designated criteria value				Existing Class	Parameters responsible fo downgrading the water quality	Possible Reason
			pH	DO (mg/L)	BOD (mg/L)	TC (MPN/100 ml)	FC (MPN/100 ml)	DO	BOD	TC	FC			
Taladanda canal														
1.	Jobra*	5	7.7 (7.4-8.3)	7.1 (6.6-7.4)	1.3 (1.1-1.8)	83000 (17000-160000)	59040 (3300-160000)	0	0	5$ (100) 5$$ (100)	5 (100)	Does not conform to Class B & C	TC, FC	Human activities
2.	Ranihat*	5	7.7 (7.3-8.4)	6.9 (6.2-7.6)	2.0 (1.5-2.8)	132800 (24000-160000)	104580 (7900-160000)	0	0	5$ (100) 5$$ (100)	5 (100)	Does not conform to Class B & C	TC,FC	Human activities and waste water of Cuttack town
3.	Chatrabazar*	5	7.7 (7.4-8.4)	6.9 (6.2-7.4)	1.6 (1.1-2.2)	88780 (7900-160000)	63840 (2200-160000)	0	0	5$ (100) 5$$ (100)	4 (80)		TC,FC	
4.	Nuabazar**	4	7.7 (7.4-8.2)	7.2 (6.8-7.6)	1.6 (1.3-2.1)	111750 (35000-160000)	92000 (13000-160000)	0	0	4$ (100) 4$$ (100)	4 (100)	Does not conform to Class B & C	TC,FC	
5.	Biribati**	4	7.6 (7.3-8.1)	7.3 (6.8-7.6)	1.8 (1.4-2.4)	102250 (35000-160000)	73250 (17000-160000)	0	0	3$ (75) 3$$ (75)	4 (100)		TC,FC	
6.	Atharabanki	12	7.7 (7.1-8.3)	4.1 (2.2-5.8)	2.2 (1.2-3.9)	27067 (2200-92000)	11333 (790-35000)	6 (50)	2 (17)	7$ (58) 12$$ (100)	6 (50)	Does not conform to Class B & C	DO, BOD, TC,FC	Human activities
*****Class 'C'**			**6.5-8.5**	**4 and above**	**3 or less**	**5000 or less**	**-**	**Drinking water source with conventional treatment followed by disinfection**						
*****Class 'B'**			**6.5-8.5**	**5 and above**	**3 or less**	**500 or less**	**-**	**Outdoor bathing**						
Water quality criteria for bathing water			**6.5-8.5**	**5 and above**	**3 or less**	**-**	**2500 (Maximum Permissible)**	**Water use for organised outdoor bathing (MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000)**						

* Data for the period August-December, 2023 ** Data for the period August-November, 2023

*** Tolerance limits for Inland Surface water bodies (IS-2296-1982)

$ for Class C and $$ for Class B

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Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters					Frequency of violation (Percent of violation) from designated criteria value				Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/L)	BOD (mg/L)	TC (MPN/ 100 ml)	FC (MPN/ 100 ml)	DO	BOD	TC	FC			
(b) Puri canal														
1.	Hansapal	12	7.6 (7.2-8.5)	7.6 (5.5-10.1)	1.5 (1.1-1.9)	21200 (2400-92000)	7419 (490-35000)	0	0	6$ (50) 12$$ (100)	6 (50)	Does not conform to Class B, C	TC, FC	Human activities
2.	Jagannathpur	12	7.6 (7.1-8.0)	6.8 (4.2-9.6)	1.5 (1.2-2.0)	3467 (1700-4900)	1225 (330-2200)	0	0	0$ 12$$ (100)	0	Does not conform to Class B, C	TC, FC	Human activities
3.	Chandanpur****	6	7.5 (7.2-7.7)	5.9 (4.2-7.3)	1.5 (1.2-1.8)	2200 (1100-3500)	583 (330-1100)	0	0	0$ 6$$ (100)	0	Does not conform to Class B, C	TC	
Class 'C'			**6.5-8.5**	**4 and above**	**3 or less**	**5000 or less**	**-**	**Drinking water source with conventional treatment followed by disinfection**						
Class 'B'			**6.5-8.5**	**5 and above**	**3 or less**	**500 or less**	**-**	**Outdoor bathing**						
Water quality criteria for bathing water			**6.5-8.5**	**5 and above**	**3 or less**	**-**	**2500 (Maximum Permissible)**	**Water use for organised outdoor bathing (MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000)**						

$ for Class C and $$ for Class B

**** Data for the period January, May, August, September, October, November, 2023

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis:(Ref : IS 2296-1982 foot note)
For Class B : TC values with more than 5% of samples show more than 2000 MPN/100 ml and more than 20% of the samples show more than 500 MPN/ 100 ml.
For Class C : TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml.

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Sl. No	Sampling Location	No. of Obs.	Annual average value (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value			Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	EC (microSiemens /cm)	SAR	B (mg/L)	EC	SAR	B			
(a) Taladanda canal												
1.	Jobra*	5	7.7 (7.4-8.3)	193 (142-262)	0.46 (0.34-0.65)	<0.5 (<0.5-<0.5)	0	0	0	Conform to Class E		
2.	Ranihat*	5	7.7 (7.3-8.4)	185 (123-235)	0.48 (0.37-0.58)	<0.5 (<0.5-<0.5)	0	0	0			
3.	Chatrabazar*	5	7.7 (7.4-8.4)	190 (135-242)	0.43 (0.35-0.47)	<0.5 (<0.5-<0.5)	0	0	0			
4.	Nuabazar**	4	7.7 (7.4-8.2)	181 (140-224)	0.45 (0.41-0.47)	<0.5 (<0.5-<0.5)	0	0	0			
5.	Biribati**	4	7.6 (7.3-8.1)	193 (162-230)	0.44 (0.34-0.48)	<0.5 (<0.5-<0.5)	0	0	0			
6.	Atharabanki	12	7.7 (7.1-8.3)	327 (180-515)	1.49 (0.44-4.98)	<0.5 (<0.5-1.448)	0	0	0			
Puri Canal												
1.	Hansapal	12	7.6 (7.2-8.5)	205 (148-250)	0.57 (0.42-0.79)	<0.5 (<0.5-0.586)	0	0	0	Conform to Class E		
2.	Jagannathpur	12	7.6 (7.1-8.0)	203 (144-248)	0.55 (0.43-0.7)	<0.5 (<0.5-<0.5)	0	0	0			
3.	Chandanpur***	6	7.5 (7.2-7.7)	207 (164-235)	0.54 (0.4-0.72)	<0.5 (<0.5-0.568)	0	0	0			
******Class 'E'**			**6.0-8.5**	**2250 or less**	**26 or less**	**2.0 or less**	**Irrigation, industrial cooling, controlled waste disposal**					

* Data for the period August-December, 2023 ** Data for the period August-November, 2023
*** Data for the period January, May, August, September, October, November, 2023
**** Tolerance limits for Inland Surface water bodies (IS-2296-1982)

Water Quality of Taladanda Canal with respect to other parameters during 2023 (January-December)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Mineral constituents					
		Annual average values (Range of values)											
		TSS	Total alkalinity	COD	NH_4-N	Free NH_3-N	TKN	% Na	TDS	TH	Cl	SO_4	F
		(mg/L)		(mg/L)					(mg/L)				
1.	Jobra*	130 (11-500)	82 (52-124)	8.3 (7.3-11)	0.56 (0.56-0.56)	0.02 (0.008-0.055)	3.57 (3.36-3.92)	19.94 (16.13-24.71)	120 (100-152)	77 (60-92)	10 (6-16)	14.6 (8.8-24.4)	0.24 (0.12-0.35)
2.	Ranihat*	131 (12-480)	84 (44-112)	12.1 (7.3-16)	0.56 (0.56-0.56)	0.023 (0.007-0.07)	3.92 (2.8-5.04)	21.27 (19.83-22.73)	119 (88-152)	74 (48-92)	10 (6-16)	14.2 (8.3-23.7)	0.28 (0.14-0.41)
3.	Chhatrabazar*	126 (11-490)	84 (52-112)	9.7 (7.3-14)	0.67 (0.56-1.12)	0.026 (0.011-0.07)	4.48 (2.24-7.28)	19.15 (18.21-21.51)	120 (92-148)	77 (52-96)	9 (6-16)	13.5 (7.5-21.2)	0.21 (0.16-0.27)
4.	Nuabazar**	115 (11-360)	75 (52-104)	10.3 (8-14)	0.7 (0.56-1.12)	0.032 (0.008-0.09)	4.11 (2.8-6.72)	20.48 (18.88-22.63)	114 (100-144)	72 (52-96)	9 (8-12)	15.9 (8.8-23.5)	0.21 (0.14-0.24)
5.	Biribati**	107 (12-310)	77 (56-108)	11.6 (7.3-16)	0.7 (0.56-1.12)	0.021 (0.007-0.036)	5.41 (3.92-7.28)	19.6 (16.3-21.69)	116 (108-132)	74 (64-92)	10 (6-14)	12.8 (7.8-19.1)	0.23 (0.18-0.3)
6.	Atharabanki	18 (<10-60)	102 (56-168)	13.6 (11-22)	0.66 (0.56-1.12)	0.027 (0.003-0.109)	4.09 (1.68-6.72)	36.68 (19.22-71.67)	204 (116-336)	103 (72-200)	53 (14-150)	15.2 (7.3-35.2)	0.49 (0.29-0.91)
Class 'C'		-	-	-	-	-	-	-	1500	-	600	400	1.5
Class 'E'		-	-	-	-	-	-	60	2100	-	600	1000	-

* Data for the period August-December, 2023 ** Data for the period August-November, 2023

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Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual average values (Range of values)										
		NO_3^-	PO_4^{3-}-P	Cr(VI) ##	T. Cr ##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/L)		(mg/L)								
1.	Jobra*	1.527 (0.81-2.457)	<0.05 (<0.05-0.08)	NA	NA	NA	NA	NA	NA	NA	NA	NA
2.	Ranihat*	1.525 (0.548-2.397)	0.106 (<0.05-0.303)	NA	NA	NA	NA	NA	NA	NA	NA	NA
3.	Chhatrabazar*	1.654 (1.058-2.38)	0.055 (<0.05-0.12)	NA	NA	NA	NA	NA	NA	NA	NA	NA
4.	Nuabazar**	1.772 (0.986-2.501)	0.145 (<0.05-0.335)	NA	NA	NA	NA	NA	NA	NA	NA	NA
5.	Biribati**	2.681 (0.89-5.985)	0.066 (<0.05-0.129)	NA	NA	NA	NA	NA	NA	NA	NA	NA
6.	Atharabanki	3.294 (0.385-10.324)	0.157 (<0.05-0.8)	<0.002	0.006	2.389	0.010	0.005	0.042	0.0027	0.00077	0.008
Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
Class 'E'		-	-	-	-	-	-	-	-	-	-	-

* Data for the period August-December, 2023 ** Data for the period August-November, 2023
Data for the period April, 2023 NA : Not analysed

Water Quality of Puri Canal with respect to other parameters during 2023 (January-December)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Mineral constituents					
		Annual average values (Range of values)											
		TSS	Total alkalinity	COD	NH_4-N	Free NH_3-N	TKN	% Na	TDS	TH	Cl	SO_4	F
		(mg/L)		(mg/L)					(mg/L)				
1.	Hansapal	41 (<10-171)	84 (48-104)	11.1 (7-16)	0.76 (0.56-1.68)	0.021 (0.006-0.087)	4.87 (2.24-7.28)	23.49 (18.3-29.58)	124 (96-148)	79 (56-92)	12 (8-16)	12.4 (8.1-17.2)	0.35 (0.14-0.787)
2.	Jagannathpur	42 (<10-146)	83 (56-104)	13.6 (7.3-20)	0.66 (0.56-1.12)	0.014 (0.003-0.028)	4.42 (2.24-7.28)	22.7 (17.46-26.59)	126 (100-160)	81 (52-104)	15 (8-30)	11.5 (6.3-18.4)	0.38 (0.16-0.807)
3.	Chandanpur***	11 (<10-21)	88 (64-112)	9.1 (7.8-12)	0.78 (0.56-1.12)	0.015 (0.006-0.025)	4.06 (2.8-6.16)	22.16 (17.69-28.53)	121 (96-144)	81 (64-96)	13 (8-20)	11.9 (8.5-18.4)	0.27 (0.18-0.445)
**Class 'C'		-	-	-	-	-	-	-	1500	-	600	400	1.5
**Class 'E'		-	-	-	-	-	-	60	2100	-	600	1000	-

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual average values (Range of values)										
		NO_3^-	PO_4^{3-}-P	Cr(VI) ##	T Cr	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/L)				(mg/L)						
1.	Hansapal	4.188 (0.43-35.567)	0.097 (<0.05-0.321)	<0.002	0.01	1.548	0.005	0.004	0.006	<0.0005	0.00046	0.003
2.	Jagannathpur	4.12 (0.406-31.338)	0.076 (<0.05-0.178)	<0.002	0.004	0.667	0.004	0.003	0.009	0.0020	0.00031	0.005
3.	Chandanpur***	1.595 (0.371-4.821)	0.085 (<0.05-0.219)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
Class 'E'		-	-	-	-	-	-	-	-	-	-	-

*** Data for the period January, May, August, September, October, November, 2023

Data for the period April, 2023 NA : Not Analysed