



RAND WATER
Madibeng Water Quality Report
12 Month

22 August 2019 to 21 August 2020

Date generated: 28 August 2020

							Descriptive Statistics		
Determinands	Measurement Units	Risks	SANS 241:2015 standard limits (1)	No of results	Required compliances to SANS 241:2015 spec(%)	Achieved compliances to SANS 241:2015 spec(%)	Mean	Standard Deviation	Mean + 3 Std deviations
Microbiological determinands									
<i>E. coli</i>	(mpn per 100 mL)	Acute health	Non-detect	440	99.0%	100%	0	0.00	0
Total Coliforms	(mpn per 100 mL)	Operational	≤ 10	440	95.0%	100%	0	0.07	0
Heterotrophic Plate Count	(cfu per 1 mL)	Operational	≤ 1000	440	95.0%	100%	2	11.93	37
<i>Cryptosporidium spp</i> (2)	(org / 10 Litre)	Acute health	Non-detect	196	99.0%	98.98%	0	0.10	0
<i>Giardia spp</i> (2)	(org / 10 Litre)	Acute health	Non-detect	196	99.0%	98.47%	0	0.12	0
Somatic Coliphages (2)	(count per 10 mL)	Operational	Non-detect	846	95.0%	99.88%	0	0.03	0
Physical and Aesthetic determinands									
Colour	(mg / L as Pt-Co)	Aesthetic	≤ 15	35	95.0%	100%	5.11	0.40	6.33
Conductivity	(mS / m)	Aesthetic	≤ 170	435	95.0%	100%	21.89	2.83	30.38
Total Dissolved Solids	(mg / L)	Aesthetic	≤ 1200	34	95.0%	100%	149.56	12.64	187.46
Turbidity	(NTU)	Operational	≤ 1	439	95.0%	100%	0.29	0.06	0.46
Turbidity	(NTU)	Aesthetic	≤ 5	439	95.0%	100%	0.29	0.06	0.46
pH	(pH units)	Operational	≥ 5 to ≤ 9.7	435	95.0%	100%	7.94	0.13	8.34
Chemical Properties: Macro determinands									
Ammonia	(mg / L as N)	Aesthetic	≤ 1.5	435	95.0%	100%	0.28	0.16	0.76
Chloride	(mg / L as Cl)	Aesthetic	≤ 300	40	95.0%	100%	12.25	2.77	20.55
Free chlorine	(mg / L as Cl ₂)	Chronic health	≤ 5	439	97.0%	100%	0.09	0.05	0.25
Monochloramine	(mg / L as Cl ₂)	Chronic health	≤ 4.1	439	97.0%	100%	1.11	0.49	2.58
Fluoride	(mg / L as F)	Chronic health	≤ 1.5	40	97.0%	100%	0.31	0.10	0.62
Nitrate	(mg / L as N)	Acute health	≤ 11	436	99.0%	100%	0.57	0.10	0.86
Nitrite	(mg / L as N)	Acute health	≤ 0.9	435	99.0%	100%	0.06	0.08	0.29
Combined nitrate plus nitrite (3)	(mg / L as N)	Acute health	≤ 1	437	99.0%	100%	0.18	0.20	0.79
Residual disinfectant (4)	(mg / L as Cl ₂)	Operational	≥ 0.1	439	95.0%	99.54%	1.19	0.50	2.69
Sodium	(mg / L as Na)	Aesthetic	≤ 200	35	95.0%	100%	12.02	8.83	38.51
Sulphate	(mg / L as SO ₄)	Aesthetic	≤ 250	41	95.0%	100%	18.66	5.17	34.17
Sulphate	(mg / L as SO ₄)	Acute health	≤ 500	41	99.0%	100%	18.66	5.17	34.17
Zinc	(mg / L as Zn)	Aesthetic	≤ 5	35	95.0%	100%	0.02	0.00	0.02
Chemical Properties: Micro determinands									
Aluminium	(µg / L as Al)	Operational	≤ 300	35	95.0%	100%	29.89	13.29	69.76
Antimony	(µg / L as Sb)	Chronic health	≤ 20	32	97.0%	100%	0.60	0.02	0.68
Arsenic	(µg / L as As)	Chronic health	≤ 10	34	97.0%	100%	2.93	3.33	12.90
Barium	(µg / L as Ba)	Chronic health	≤ 700	35	97.0%	100%	43.31	7.27	65.13
Boron	(µg / L as B)	Chronic health	≤ 2400	35	97.0%	100%	10.77	12.22	47.44
Cadmium	(µg / L as Cd)	Chronic health	≤ 3	34	97.0%	100%	1.16	0.28	2.00
Chromium (Total)	(µg / L as Cr)	Chronic health	≤ 50	35	97.0%	100%	5.00	0.00	5.00
Copper	(µg / L as Cu)	Chronic health	≤ 2000	35	97.0%	100%	9.51	4.30	22.41
Cyanide (Recoverable)	(µg / L as CN)	Acute health	≤ 200	35	99.0%	100%	5.00	0.00	5.00
Iron	(µg / L as Fe)	Chronic health	≤ 2000	35	97.0%	100%	15.65	8.19	40.22
Iron	(µg / L as Fe)	Aesthetic	≤ 300	35	95.0%	100%	15.65	8.19	40.22
Lead	(µg / L as Pb)	Chronic health	≤ 10	34	97.0%	100%	3.80	2.76	12.08
Manganese	(µg / L as Mn)	Chronic health	≤ 400	35	97.0%	100%	3.00	0.00	3.00
Manganese	(µg / L as Mn)	Aesthetic	≤ 100	35	95.0%	100%	3.00	0.00	3.00
Mercury	(µg / L as Hg)	Chronic health	≤ 6	32	97.0%	100%	1.02	0.33	2.01
Nickel	(µg / L as Ni)	Chronic health	≤ 70	35	97.0%	100%	5.00	0.00	5.00
Selenium	(µg / L as Se)	Chronic health	≤ 40	34	97.0%	100%	5.18	1.85	10.73
Uranium	(µg / L as U)	Chronic health	≤ 30	32	97.0%	100%	0.52	0.09	0.78
Organic determinands									
Total Organic Carbon	(mg / L)	Chronic health	≤ 10	35	97.0%	100%	3.71	0.54	5.34
Phenols as C ₆ H ₅ OH	(µg / L)	Aesthetic	≤ 10	35	95.0%	100%	3.00	0.00	3.00
Chloroform - CHCl ₃	(µg / L)	Chronic health	≤ 300	39	97.0%	100%	32.82	7.38	54.96
Bromoform - CHBr ₃	(µg / L)	Chronic health	≤ 100	39	97.0%	100%	10.00	0.00	10.00
Dibromochloromethane - CHBr ₂ Cl	(µg / L)	Chronic health	≤ 100	39	97.0%	100%	10.00	0.00	10.00
Bromodichloromethane - CHBrCl ₂	(µg / L)	Chronic health	≤ 60	39	97.0%	100%	14.08	2.50	21.57
Combined trihalomethanes (5)	(µg / L)	Chronic health	≤ 1	39	97.0%	100%	0.36	0.07	0.57
Total Microcystin (2)	(µg / L)	Chronic health	≤ 1	195	97.0%	100%	0.31	0.00	0.31
For monitoring/reporting purposes only									
Calcium (6)	(mg / L as Ca)	Aesthetic	≤ 150	35	not applicable	100%	19.11	7.62	41.98
Hardness (7)	(mg / L as CaCO ₃)	Operational	≥ 20 to ≤ 200	35	not applicable	97.14%	74.03	25.40	150.22
Magnesium (6)	(mg / L as Mg)	Aesthetic	≤ 70	35	not applicable	100%	7.56	1.88	13.21
Potassium (6)	(mg / L as K)	Aesthetic	≤ 50	35	not applicable	100%	3.55	1.15	7.01
Rand Water Risk Determinands (RWRD) (6)									
Odour	TON	RWRD	≤ 2	190	not applicable	100%	1.00	0.00	1.00
Taste	FTN	RWRD	≤ 2	190	not applicable	100%	1.00	0.00	1.00

Water quality risk indices

Risks	Required compliances to SANS 241: 2015 standard	Overall Compliances - SANS 241: 2015 standard
Acute health microbiological	99.0%	99.40%
Acute health chemical	99.0%	100%
Chronic health	97.0%	100%
Aesthetic	95.0%	100%
Operational	95.0%	99.90%

Notes

- (1) Specification_SANS 241 date of effect : 1 July 2016
- (2) Measured at water treatment works exit points
- (3) (NO₂/0.9 + NO₃/11)
- (4) Residual disinfectant : Results from the chloraminated system = Sum of Free and Monochloramine
- (5) (CHCl₃/300 + CHBr₃/100 + CHBr₂Cl/100 + CHBrCl₂/60)
- (6) Customer request: Results not included in the risk indices compliance calculations and limits based on SANS 241:2006
- (7) Customer request: Results not included in the risk indices compliance calculations and limits based on RW Internal Spec