



RAND WATER
Madibeng Water Quality Report
1 Month

22 June 2019 to 22 July 2019

Date generated: August 02, 2019

							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	31	99.0%	100%	0	0.00	0
Total Coliforms	(mpn per 100 mL)	Operational	≤ 10	31	95.0%	100%	0	0.00	0
Heterotrophic Plate Count	(cfu per 1 mL)	Operational	≤ 1000	31	95.0%	100%	0	0.71	2
<i>Cryptosporidium spp</i> (2)	(org / 10 Litre)	Acute health	Non-detect	16	99.0%	100%	0	0.00	0
<i>Giardia spp</i> (2)	(org / 10 Litre)	Acute health	Non-detect	16	99.0%	100%	0	0.00	0
Somatic Coliphages (2)	(count per 10 mL)	Operational	Non-detect	64	95.0%	100%	0	0.00	0
Physical and Aesthetic determinands									
Colour	(mg / L as Pt-Co)	Aesthetic	≤ 15	4	95.0%	100%	5.00	0.00	5.00
Conductivity	(mS / m)	Aesthetic	≤ 170	31	95.0%	100%	19.68	1.11	23.00
Total Dissolved Solids	(mg / L)	Aesthetic	≤ 1200	4	95.0%	100%	138.75	4.79	153.11
Turbidity	(NTU)	Operational	≤ 1	31	95.0%	100%	0.26	0.03	0.34
Turbidity	(NTU)	Aesthetic	≤ 5	31	95.0%	100%	0.26	0.03	0.34
pH	(pH units)	Operational	≥ 5 to ≤ 9.7	31	95.0%	100%	8.18	0.06	8.37
Chemical Properties: Macro determinands									
Ammonia	(mg / L as N)	Aesthetic	≤ 1.5	31	95.0%	100%	0.40	0.15	0.85
Chloride	(mg / L as Cl)	Aesthetic	≤ 300	3	95.0%	100%	10.13	0.81	12.56
Free chlorine	(mg / L as Cl ₂)	Chronic health	≤ 5	31	97.0%	100%	0.11	0.07	0.31
Monochloramine	(mg / L as Cl ₂)	Chronic health	≤ 4.1	31	97.0%	100%	1.53	0.17	2.04
Fluoride	(mg / L as F)	Chronic health	≤ 1.5	3	97.0%	100%	0.39	0.01	0.41
Nitrate	(mg / L as N)	Acute health	≤ 11	31	99.0%	100%	0.50	0.00	0.50
Nitrite	(mg / L as N)	Acute health	≤ 0.9	33	99.0%	100%	0.02	0.01	0.06
Combined nitrate plus nitrite (3)	(mg / L as N)	Acute health	≤ 1	31	99.0%	100%	0.05	0.01	0.08
Residual disinfectant (4)	(mg / L as Cl ₂)	Operational	≥ 0.1	31	95.0%	100%	1.63	0.16	2.11
Sodium	(mg / L as Na)	Aesthetic	≤ 200	4	95.0%	100%	8.30	0.27	9.11
Sulphate	(mg / L as SO ₄)	Aesthetic	≤ 250	3	95.0%	100%	12.00	0.00	12.00
Sulphate	(mg / L as SO ₄)	Acute health	≤ 500	3	99.0%	100%	12.00	0.00	12.00
Zinc	(mg / L as Zn)	Aesthetic	≤ 5	4	95.0%	100%	0.02	0.00	0.02
Chemical Properties: Micro determinands									
Aluminium	(µg / L as Al)	Operational	≤ 300	4	95.0%	100%	33.50	14.39	76.66
Antimony	(µg / L as Sb)	Chronic health	≤ 20	4	97.0%	100%	0.60	0.00	0.60
Arsenic	(µg / L as As)	Chronic health	≤ 10	4	97.0%	100%	0.80	0.00	0.80
Barium	(µg / L as Ba)	Chronic health	≤ 700	4	97.0%	100%	40.50	0.58	42.23
Boron	(µg / L as B)	Chronic health	≤ 2400	4	97.0%	100%	8.95	0.37	10.06
Cadmium	(µg / L as Cd)	Chronic health	≤ 3	4	97.0%	100%	1.00	0.00	1.00
Chromium (Total)	(µg / L as Cr)	Chronic health	≤ 50	4	97.0%	100%	5.00	0.00	5.00
Copper	(µg / L as Cu)	Chronic health	≤ 2000	4	97.0%	100%	15.50	13.70	56.60
Cyanide (Recoverable)	(µg / L as CN)	Acute health	≤ 200	4	99.0%	100%	5.00	0.00	5.00
Iron	(µg / L as Fe)	Chronic health	≤ 2000	4	97.0%	100%	22.75	18.19	77.32
Iron	(µg / L as Fe)	Aesthetic	≤ 300	4	95.0%	100%	22.75	18.19	77.32
Lead	(µg / L as Pb)	Chronic health	≤ 10	4	97.0%	100%	2.00	0.00	2.00
Manganese	(µg / L as Mn)	Chronic health	≤ 400	4	97.0%	100%	3.00	0.00	3.00
Manganese	(µg / L as Mn)	Aesthetic	≤ 100	4	95.0%	100%	3.00	0.00	3.00
Mercury	(µg / L as Hg)	Chronic health	≤ 6	4	97.0%	100%	0.80	0.00	0.80
Nickel	(µg / L as Ni)	Chronic health	≤ 70	4	97.0%	100%	5.00	0.00	5.00
Selenium	(µg / L as Se)	Chronic health	≤ 40	4	97.0%	100%	4.00	0.00	4.00
Uranium	(µg / L as U)	Chronic health	≤ 30	4	97.0%	100%	0.50	0.00	0.50
Organic determinands									
Total Organic Carbon	(mg / L)	Chronic health	≤ 10	4	97.0%	100%	3.50	0.24	4.23
Phenols as C ₆ H ₅ OH	(µg / L)	Aesthetic	≤ 10	4	95.0%	100%	3.00	0.00	3.00
Chloroform - CHCl ₃	(µg / L)	Chronic health	≤ 300	5	97.0%	100%	16.00	2.92	24.75
Bromoform - CHBr ₃	(µg / L)	Chronic health	≤ 100	5	97.0%	100%	10.00	0.00	10.00
Dibromochloromethane - CHBr ₂ Cl	(µg / L)	Chronic health	≤ 100	5	97.0%	100%	10.00	0.00	10.00
Bromodichloromethane - CHBrCl ₂	(µg / L)	Chronic health	≤ 60	5	97.0%	100%	10.20	0.45	11.54
Combined trihalomethanes (5)	(µg / L)	Chronic health	≤ 1	5	97.0%	100%	0.19	0.04	0.33
Total Microcystin (2)	(µg / L)	Chronic health	≤ 1	16	97.0%	100%	0.31	0.00	0.31
For monitoring/reporting purposes only									
Calcium (6)	(mg / L as Ca)	Aesthetic	≤ 150	4	not applicable	100%	18.75	0.96	21.62
Hardness (7)	(mg / L as CaCO ₃)	Operational	≥ 20 to ≤ 200	4	not applicable	100%	69.50	2.38	76.64
Magnesium (6)	(mg / L as Mg)	Aesthetic	≤ 70	4	not applicable	100%	6.58	0.10	6.86
Potassium (6)	(mg / L as K)	Aesthetic	≤ 50	4	not applicable	100%	2.75	0.10	3.05
Rand Water Risk Determinands (RWRD) (6)									
Odour	TON	RWRD	≤ 2	9	not applicable	100%	1.00	0.00	1.00
Taste	FTN	RWRD	≤ 2	9	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%	100%
Acute health chemical	99.0%	100%
Chronic health	97.0%	100%
Aesthetic	95.0%	100%
Operational	95.0%	100%

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