

Royal Bafokeng Nation Water Quality Report - 12 Month

23 January 2018 to 22 January 2019

Date generated: 11 February 2019

Determinand	Measurement units	Risk	Required compliance to SANS 241: 2015 standard (%)	SANS 241: 2015 standard limits (1)	No of results	Achieved Compliance to SANS 241: 2015 Spec(%)	Descriptive statistics		
							Mean	Standard Deviation	Mean + 3 standard deviations
Microbiological determinands									
<i>E. coli</i>	(mpn per 100 mL)	Acute health	99.0%	0	259	99.2%	0	1.19	4
Total Coliforms	(mpn per 100 mL)	Operational	95.0%	10	259	86.9%	15	47.22	157
Heterotrophic Plate Count	(cfu per 1 mL)	Operational	95.0%	≤1000	259	78.8%	871	3004.38	9884
<i>Cryptosporidium spp</i> (5)	(org / 10 Litre)	Acute health	99.0%	0	24	100.0%	0	0.00	0
<i>Giardia spp</i> (5)	(org / 10 Litre)	Acute health	99.0%	0	24	100.0%	0	0.00	0
Somatic Coliphages (5)	(count per 10 mL)	Operational	95.0%	0	96	100.0%	0	0.00	0
Physical and Aesthetic determinands									
Colour	(mg / L as Pt-Co)	Aesthetic	95.0%	≤15	110	98.2%	6.45	3.80	17.86
Conductivity	(mS / m)	Aesthetic	95.0%	≤170	258	100.0%	71.02	14.75	115.27
Total Dissolved Solids	(mg / L)	Aesthetic	95.0%	≤1200	84	100.0%	439.17	75.69	666.25
Turbidity	(NTU)	Operational	95.0%	≤1	252	96.8%	0.46	0.71	2.59
Turbidity	(NTU)	Aesthetic	95.0%	≤5	252	99.2%	0.46	0.71	2.59
pH	(pH units)	Operational	95.0%	≥ 5 to ≤ 9.7	258	100.0%	7.86	0.20	8.47
Chemical Properties									
Macro determinands									
Ammonia	(mg / L as N)	Aesthetic	95.0%	≤1.5	250	100.0%	0.20	0.16	0.67
Chloride	(mg / L as Cl)	Aesthetic	95.0%	≤300	110	100.0%	104.59	25.06	179.76
Free chlorine (2)	(mg / L as Cl ₂)	Chronic health	97.0%	≤5	258	100.0%	0.30	0.46	1.69
Monochloramine (3)	(mg / L as Cl ₂)	Chronic health	97.0%	≤4.1	258	100.0%	0.60	0.51	2.14
Fluoride	(mg / L as F)	Chronic health	97.0%	≤1.5	111	100.0%	0.27	0.05	0.43
Nitrate	(mg / L as N)	Acute health	99.0%	≤11	259	100.0%	0.48	0.05	0.62
Nitrite	(mg / L as N)	Acute health	99.0%	≤0.9	259	100.0%	0.05	0.11	0.38
Combined nitrate plus nitrite (7)	(mg / L as N)	Acute health	99.0%	≤1	259	100.0%	0.10	0.12	0.47
Residual disinfectant (4)	(mg / L)	Operational	95.0%	≥0.1 Sum of Free and Monochloramine	258	95.3%	0.89	0.59	2.68
Sodium	(mg / L as Na)	Aesthetic	95.0%	≤200	110	100.0%	60.86	17.96	114.74
Sulphate	(mg / L as SO ₄)	Aesthetic	95.0%	≤250	110	100.0%	99.43	19.92	159.20
Sulphate	(mg / L as SO ₄)	Acute health	99.0%	≤500	110	100.0%	99.43	19.92	159.20
Zinc	(mg / L as Zn)	Aesthetic	95.0%	≤5	110	100.0%	0.07	0.21	0.69
Micro determinands									
Aluminium	(µg / L as Al)	Operational	95.0%	≤300	110	100.0%	37.62	21.59	102.40
Antimony	(µg / L as Sb)	Chronic health	97.0%	≤20	71	100.0%	0.54	0.19	1.11
Arsenic	(µg / L as As)	Chronic health	97.0%	≤10	70	100.0%	2.03	2.42	9.30
Barium	(µg / L as Ba)	Chronic health	97.0%	≤700	110	100.0%	71.21	19.36	129.29
Boron	(µg / L as B)	Chronic health	97.0%	≤2400	110	100.0%	49.16	13.27	88.97
Cadmium	(µg / L as Cd)	Chronic health	97.0%	≤3	69	100.0%	1.98	0.68	4.02
Chromium (Total)	(µg / L as Cr)	Chronic health	97.0%	≤50	109	100.0%	11.15	4.89	25.81
Copper	(µg / L as Cu)	Chronic health	97.0%	≤2000	110	100.0%	10.72	3.51	21.26
Cyanide (Recoverable)	(µg / L as CN)	Acute health	99.0%	≤200	108	100.0%	15.19	6.89	35.85
Iron	(µg / L as Fe)	Chronic health	97.0%	≤2000	110	100.0%	20.39	19.60	79.21
Iron	(µg / L as Fe)	Aesthetic	95.0%	≤300	110	100.0%	20.39	19.60	79.21
Lead	(µg / L as Pb)	Chronic health	97.0%	≤10	71	100.0%	1.77	2.42	9.04
Manganese	(µg / L as Mn)	Chronic health	97.0%	≤400	109	100.0%	29.56	26.72	109.72
Manganese	(µg / L as Mn)	Aesthetic	95.0%	≤100	109	98.2%	29.56	26.72	109.72
Mercury	(µg / L as Hg)	Chronic health	97.0%	≤6	71	100.0%	0.77	0.16	1.25
Nickel	(µg / L as Ni)	Chronic health	97.0%	≤70	110	100.0%	8.09	2.44	15.41
Selenium	(µg / L as Se)	Chronic health	97.0%	≤40	70	100.0%	2.93	2.50	10.42
Uranium	(µg / L as U)	Chronic health	97.0%	≤30	71	100.0%	0.38	0.18	0.92
Organic determinands									
Total Organic Carbon	(mg / L)	Chronic health	97.0%	≤10	69	100.0%	5.13	0.99	8.11
Phenols as C ₆ H ₅ OH	(µg / L)	Aesthetic	95.0%	≤10	69	100.0%	4.25	0.98	7.18
Chloroform - CHCl ₃	(µg / L)	Chronic health	97.0%	≤300	69	100.0%	22.01	9.63	50.91
Bromoform - CHBr ₃	(µg / L)	Chronic health	97.0%	≤100	69	100.0%	4.89	4.07	17.11
Dibromochloromethane - CHBr ₂ Cl	(µg / L)	Chronic health	97.0%	≤100	69	100.0%	13.03	4.45	26.37
Bromodichloromethane - CHBrCl ₂	(µg / L)	Chronic health	97.0%	≤60	69	100.0%	18.60	6.01	36.64
Combined trihalomethanes (8)	(µg / L)	Chronic health	97.0%	≤1	69	98.6%	0.56	0.19	1.14
Total Microcystin (5)	(µg / L)	Chronic health	97.0%	≤1	67	100.0%	0.31	0.00	0.31
For monitoring/reporting purposes only (6)									
Calcium	(mg / L as Ca)	Aesthetic	not applicable	≤150	110	100.0%	33.15	7.85	56.70721034
Hardness	(mg / L as CaCO ₃)	Operational	not applicable	≥ 20 to ≤ 200	110	90.9%	161.80	37.85	275.34
Magnesium	(mg / L as Mg)	Aesthetic	not applicable	≤70	110	100.0%	22.75	5.81	40.19
Potassium	(mg / L as K)	Aesthetic	not applicable	≤50	110	100.0%	8.53	1.82	13.99
Rand Water Risk Determinands (RWRD)									
Odour	TON	RWRD	95.0%	≤2	144	100.0%	1.01	0.07	1.21
Taste	FTN	RWRD	95.0%	≤2	144	100.0%	1.01	0.06	1.18

Risk	Required compliance to SANS 241: 2015 standard	Overall Compliance-SANS 241
Acute health microbiological	99.00%	99.35%
Acute health chemical	99.00%	100.00%
Chronic health	97.00%	99.96%
Aesthetic	95.00%	99.64%
Operational	95.00%	92.69%

Notes:

- (1) Specification date of effect : 1 July 2016
- (2) Free chlorine : Results from chloraminated system
- (3) Monochloramine : Results are from the chloraminated systems
- (4) Residual disinfectant : Results from chloraminated system
- (5) Measured at water treatment works exit points
- (6) Customer request: Results not included in the risk indices compliance calculations
- (7) (NO₂/0.9 + NO₃/11)
- (8) (CHCl₃/300 + CHBr₃/100 + CHBr₂Cl/100 + CHBrCl₂/60)