



# REPORTS FOR EMFULENI MUNICIPALITY

21 NOVEMBER 2015 TO 22 DECEMBER 2015

DATE GENERATED : 05 JANUARY 2016

## Emfuleni Municipality Water Quality Report

21 November 2015 to 22 December 2015

Date generated : 05 January 2016

Parameter	Units of measure	Specifications (based on SANS241: 2005)		No of results	Achieved compliance levels	
		Required compliance			Class I	Class II
		95% min to Class I	99% min to Class II			
<b>SPECIFICATIONS</b>						
<b>Chemical and Physical properties</b>						
Colour	(mg / l as Pt)	< 20	≤ 50	17	100.0%	100.0%
Conductivity	(mS / m)	< 150	≤ 370	72	100.0%	100.0%
pH	(pH units)	≥ 5 to ≤ 9.5	≥ 4 to ≤ 10	72	100.0%	100.0%
Turbidity	(NTU)	< 1	≤ 5	72	100.0%	100.0%
Total Dissolved Solids	(mg / l)	< 1000	≤ 2400	72	100.0%	100.0%
Taste	(FTN)	< 5	≤ 10	9	100.0%	100.0%
Odour	(TON)	< 5	≤ 10	9	100.0%	100.0%
<b>Organic Determinants</b>						
Total Trihalomethanes	(ug / l)	< 200	≤ 300	9	100.0%	100.0%
Phenols as C6H5OH	(ug / l)	< 10	≤ 70	5	100.0%	100.0%
Dissolved Organic Carbon	(mg / l)	< 10	≤ 20	9	100.0%	100.0%
<b>Micro Elements</b>						
Antimony	(ug / l as Sb)	< 10	≤ 50	17	100.0%	100.0%
Arsenic	(ug / l as As)	< 10	≤ 50	17	100.0%	100.0%
Cadmium	(ug / l as Cd)	< 5	≤ 10	17	100.0%	100.0%
Chromium (Total)	(ug / l as Cr)	< 100	≤ 500	17	100.0%	100.0%
Cobalt	(ug / l as Co)	< 500	≤ 1000	17	100.0%	100.0%
Cyanide (Recoverable)	(ug / l as CN)	< 50	≤ 70	9	100.0%	100.0%
Lead	(ug / l as Pb)	< 20	≤ 50	17	100.0%	100.0%
Mercury	(ug / l as Hg)	< 1	≤ 5	17	100.0%	100.0%
Nickel	(ug / l as Ni)	< 150	≤ 350	17	100.0%	100.0%
Selenium	(ug / l as Se)	< 20	≤ 50	17	100.0%	100.0%
Vanadium	(ug / l as V)	< 200	≤ 500	17	100.0%	100.0%
<b>Macro Elements &amp; Miscellaneous Determinants</b>						
Aluminium	(mg / l as Al)	< 0.3	≤ 0.5	17	100.0%	100.0%
Ammonia	(mg / l as N)	< 1	≤ 2	25	100.0%	100.0%
Calcium	(mg / l as Ca)	< 150	≤ 300	17	100.0%	100.0%
Chloride	(mg / l as Cl)	< 200	≤ 600	17	100.0%	100.0%
Copper	(mg / l as Cu)	< 1	≤ 2	17	100.0%	100.0%
Fluoride	(mg / l as F)	< 1	≤ 1.5	17	100.0%	100.0%
Iron	(mg / l as Fe)	< 0.2	≤ 2	17	100.0%	100.0%
Magnesium	(mg / l as Mg)	< 70	≤ 100	17	100.0%	100.0%
Manganese	(mg / l as Mn)	< 0.1	≤ 1	17	100.0%	100.0%
Nitrate & Nitrite	(mg / l as N)	< 10	≤ 20	25	100.0%	100.0%
Potassium	(mg / l as K)	< 50	≤ 100	17	100.0%	100.0%
Sodium	(mg / l as Na)	< 200	≤ 400	17	100.0%	100.0%
Sulphate	(mg / l as SO <sub>4</sub> )	< 400	≤ 600	17	100.0%	100.0%
Zinc	(mg / l as Zn)	< 5	≤ 10	17	100.0%	100.0%
<b>Microbiological</b>						
E. Coli	(cfu per 100 ml)	minimum of 95% of the original results shall be non-detected	minimum of 99% of the original and repeat/consecutive results shall be non-detected	72	100.0%	100.0%
<b>Other Determinants as required by supply contract (3),(4)</b>						
Free chlorine and monochloramine	(mg / l)	Chloraminated system: ≥ 0.1 min 95% compliance; Chlorinated system: ≥ 0.2 min 95% compliance		72	100.0%	

**Notes :**

- (1) Specification date of effect : July 2006
- (2) Guideline derived from SANS 241: 2005 operations alert and industry practices
- (3) Compliance for Free and monochloramine is against 0.2 mg/l for areas in the chlorinated system
- (4) Compliance for Free and monochloramine is against 0.1 mg/l for areas in the chloraminated system after 30 June 2014
- (5) Compliance for Standard Plate Count is against 100 cfu per 1ml before 30 June 2014 and 500 cfu per 1ml after 30 June 2014 mg/l for areas in the chloraminated system

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Parameter	Units of measure	Specification	No of samples	Mean - 3 SD	Mean - 1 SD	Mean	Mean + 1 SD	Mean + 3 SD	Standard Deviation
<b>Chemical and Physical properties</b>									
Colour	(mg / l as Pt)	< 20	17	5.00	5.00	5.06	5.30	5.79	0.24
Conductivity	(mS / m)	< 150	72	19.00	19.95	20.78	21.60	23.26	0.83
pH	(pH units)	≥ 5 to ≤ 9.5	72	7.63	7.95	8.12	8.29	8.49	0.17
Turbidity	(NTU)	< 1	72	0.13	0.20	0.28	0.37	0.44	0.08
Total Dissolved Solids	(mg / l)	< 1000	72	135.00	139.52	143.96	148.39	157.27	4.44
Hardness	(mg / l as CaCO <sub>3</sub> )	> 20 to < 200	17	61.00	63.93	69.06	74.19	78.00	5.13
Taste	(FTN)	< 5	9	1.00	1.00	1.00	1.00	1.00	0.00
Odour	(TON)	< 5	9	1.00	1.00	1.00	1.00	1.00	0.00
<b>Organic Determinants</b>									
Total Trihalomethanes	(ug / l)	< 200	9	24.00	29.32	39.67	50.01	53.00	10.34
Phenols as C <sub>6</sub> H <sub>5</sub> OH	(ug / l)	< 10	5	2.50	2.50	2.50	2.50	2.50	0.00
Dissolved Organic Carbon	(mg / l)	< 10	9	3.70	3.77	3.91	4.06	4.20	0.15
<b>Micro Elements</b>									
Antimony	(ug / l as Sb)	< 10	17	0.25	0.25	0.27	0.34	0.49	0.07
Arsenic	(ug / l as As)	< 10	17	0.05	0.05	0.31	0.64	0.86	0.32
Cadmium	(ug / l as Cd)	< 5	17	1.25	1.25	1.25	1.25	1.25	0.00
Chromium (Total)	(ug / l as Cr)	< 100	17	7.50	7.50	7.50	7.50	7.50	0.00
Cobalt	(ug / l as Co)	< 500	17	5.00	5.00	5.00	5.00	5.00	0.00
Cyanide (Recoverable)	(ug / l as CN)	< 50	9	2.50	2.50	1.00	3.66	5.10	0.87
Lead	(ug / l as Pb)	< 20	17	0.10	0.10	0.10	0.10	0.10	0.00
Mercury	(ug / l as Hg)	< 1	17	0.40	0.40	0.40	0.40	0.40	0.00
Nickel	(ug / l as Ni)	< 150	17	5.00	5.00	5.00	5.00	5.00	0.00
Selenium	(ug / l as Se)	< 20	17	0.92	1.33	2.93	4.53	6.20	1.60
Vanadium	(ug / l as V)	< 200	17	5.00	5.00	5.00	5.00	5.00	0.00
<b>Macro Elements &amp; Miscellaneous Determinants</b>									
Aluminium	(mg / l as Al)	< 0.3	17	0.013	0.013	0.013	0.013	0.013	0.000
Ammonia	(mg / l as N)	< 1	25	0.050	0.050	0.051	0.053	0.058	0.003
Calcium	(mg / l as Ca)	< 150	17	15.000	15.518	17.353	19.188	21.000	1.835
Chloride	(mg / l as Cl)	< 200	17	9.300	9.901	10.682	11.464	12.000	0.781
Copper	(mg / l as Cu)	< 1	17	0.005	0.005	0.006	0.010	0.017	0.004
Fluoride	(mg / l as F)	< 1	17	0.075	0.109	0.159	0.210	0.210	0.050
Iron	(mg / l as Fe)	< 0.2	17	0.003	0.003	0.010	0.018	0.025	0.008
Magnesium	(mg / l as Mg)	< 70	17	6.700	7.102	7.412	7.722	7.900	0.310
Manganese	(mg / l as Mn)	< 0.1	17	0.005	0.005	0.005	0.005	0.005	0.000
Nitrate & Nitrite	(mg / l as N)	< 10	25	0.050	0.053	0.101	0.148	0.200	0.048
Potassium	(mg / l as K)	< 50	17	2.500	2.680	2.824	2.967	3.100	0.144
Sodium	(mg / l as Na)	< 200	17	9.300	10.045	10.671	11.000	11.000	0.625
Sulphate	(mg / l as SO <sub>4</sub> )	< 400	17	12.000	12.336	13.118	13.899	15.000	0.781
Zinc	(mg / l as Zn)	< 5	17	0.008	0.008	0.008	0.010	0.013	0.002
<b>Microbiological</b>									
E. Coli	(cfu per 100 ml)	minimum of 95% of the original results shall be non-detected	72	0.0	0.0	0.0	0.0	0.0	0.0
<b>Other Determinants as required by supply contract (3),(4)</b>									
Free chlorine and monochloramine	(mg / l)	Chloraminated system: ≥ 0.1 min 95% compliance; Chlorinated system: ≥ 0.2 min 95% compliance	72	0.60	1.15	1.43	1.70	2.20	0.28
Notes :									
(1) Specification date of effect : July 2006									
(2) Guideline derived from SANS 241: 2005 operations alert and industry practices									