



CK. 89/14418/23

REGEN WATERS
LABORATORY • LABORATORIUM

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ESKOM ARNOT POWERSTATION

Private Bag X 2
Rietkuil
1097

CERTIFICATE OF CHEMICAL ANALYSIS

Our Ref: EAP / 728 - 731 / C / 09 / 17

Att : Mrs Upearl Kutlwano Mahlangu

Date Received : 22 September 2017

Date Reported : 5 October 2017

Quantity Analyzed: 4

C 730

	LPM Method	Analysis Results mg/l	Raw Water	SANS Standards -241-1: (2015) Ed 2 Domestic Water	
				Risk	Standard Limits
Physical requirements					
	-	Colour as Pt-Co *	14	Aesthetic	≤ 15
	LPM 51 / 82	Conductivity at 25° C in mS/m	12.5	Aesthetic	≤ 170
	LPM 2	Total Dissolved Solids	82	Aesthetic	≤ 1 200
	LPM 51 / 82	pH-Value at 25 ° C	7.76	Operational	≥ 5.0 to ≤ 9.7
	LPM 23 / 81	Turbidity as N.T.U.	4.56	Operational Aesthetic	≤ 1.0 ≤ 5.0
	LPM 11 / 81	Total Alkalinity as CaCO ₃	48		
	LPM 84	Free Chlorine as Cl ₂ *	<0.1	Chronic Health	≤ 5
	-	Monochloramine *	<1.0	Chronic Health	≤ 3
Macro Determinants					
	LPM 29 / 76	Free & Saline Ammonia as N	<0.20	Aesthetic	≤ 1.5
	LPM 15	Calcium as Ca	10.32		
	LPM 30/76	Chlorides as Cl	6.98	Aesthetic	≤300
	LPM 27 / 76	Fluoride as F	<0.20	Chronic Health	≤1.5
	LPM 15	Magnesium as Mg	7.22		
	LPM 32 / 76	Nitrate NO ₃ as N	0.11	Acute Health	≤ 11
	LPM 32 / 76	Nitrite NO ₂ as N	<0.1	Acute Health	≤ 0.9
	-	Nitrite - Nitrate Ratio	<1.0		≤ 1
	LPM 15	Sodium as Na	7.6	Aesthetic	≤ 200
	LPM 28 / 76	Sulphate as SO ₄	15.2	Acute Health Aesthetic	≤ 500 ≤ 250
	LPM 15	Potassium as K	1.26		
	LPM 15 / 67	Zinc as Zn	<0.01	Aesthetic	≤5

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	LPM Method	Analysis Results mg/l	Raw Water	SANAS Standard 2411: (2013) for Domestic Water	
				Risk	Standard Limits
Micro Determinants µg/l					
	LPM 15 / 67	Aluminium as Al	130	Operational	≤ 300
	LPM 15 / 67	Antimony as Sb	<1.0	Chronic Health	≤ 20
	LPM 15 / 67	Arsenic as As	<1.0	Chronic Health	≤ 10
	LPM 15 / 67	Barium as Ba	22.2	Chronic Health	≤ 700
	LPM 15 / 67	Boron as B	70.0	Chronic Health	≤ 2 400
	LPM 15 / 67	Cadmium as Cd	<1.0	Chronic Health	≤ 3
	LPM 15 / 67	Total Chromium as Cr	<1.0	Chronic Health	≤ 50
	LPM 15 / 67	Cobalt as Co	<1.0		
	LPM 15 / 67	Copper as Cu	1.46	Chronic Health	≤ 2000
	LPM 15 / 67	Cyanide as CN *	<70	Acute Health	≤ 200
	LPM 15 / 67	Iron as Fe	160	Chronic Health Aesthetic	≤ 2000 ≤ 300
	LPM 15 / 67	Lead as Pb	<1.0	Chronic Health	≤ 10
	LPM 15 / 67	Manganese as Mn	20.0	Chronic Health Aesthetic	≤ 400 ≤ 100
	LPM 15 / 67	Mercury as Hg	<1.0	Chronic Health	≤ 6
	LPM 15 / 67	Nickel as Ni	1.77	Chronic Health	≤ 70
	LPM 15 / 67	Selenium as Se	<1.0	Chronic Health	≤ 40
	LPM 15 / 67	Uranium as U (238) *	<1.0	Chronic Health	≤ 30
	LPM 15 / 67	Vanadium as V	1.12		
Organics Determinand					
	LPM 68	Total Organic Carbon mg/l	2.20	Chronic Health	≤ 10
	LPM 69	Total Trihalomethanes µg/l *	Attached	Chronic Health	
		Mycroystin as LR in µg/l *	<1.0	Chronic Health	≤ 1
	LPM 74	Phenolic Compounds µg/l*	Attached	Aesthetic	≤ 10

All heavy metal analyses have been performed on filtered samples.

Tests marked with an asterisk * are not SANAS accredited

These results are related only to the items tested

These results must be read in conjunction with the Uncertainty of Measurement list as provided by Regen Waters Laboratory

QUALITY CONTROL CHECKS

Cation Balance	1.44
Anion Balance	1.54
% Difference	-3.5
Measured TDS	82
Calculated TDS	77
Limits > 1.0 - <1.2	1.1
Calcul TDS / E.C. (0.55 - 0.70)	0.6



P.L.G. UYS (M.D.)
Technical Signatory



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Quantity Analyzed: 4

C 731

	LPM Method	Analysis Results mg/l	Potable	SANS Standards -241-1: (2015) Ed 2 Domestic Water	
				Risk	Standard Limits
Physical requirements					
	-	Colour as Pt-Co *	8	Aesthetic	≤ 15
	LPM 51 / 82	Conductivity at 25° C in mS/m	14.8	Aesthetic	≤ 170
	LPM 2	Total Dissolved Solids	84	Aesthetic	≤ 1 200
	LPM 51 / 82	pH-Value at 25 ° C	8.72	Operational	≥ 5.0 to ≤ 9.7
	LPM 23 / 81	Turbidity as N.T.U.	0.56	Operational Aesthetic	≤ 1.0 ≤ 5.0
	LPM 11 / 81	Total Alkalinity as CaCO ₃	55		
	LPM 84	Free Chlorine as Cl ₂ *	<0.1	Chronic Health	≤ 5
	-	Monochloramine *	<1.0	Chronic Health	≤ 3
Macro Determinants					
	LPM 29 / 76	Free & Saline Ammonia as N	<0.20	Aesthetic	≤ 1.5
	LPM 15	Calcium as Ca	10.21		
	LPM 30/76	Chlorides as Cl	10.4	Aesthetic	≤300
	LPM 27 / 76	Fluoride as F	<0.20	Chronic Health	≤1.5
	LPM 15	Magnesium as Mg	6.04		
	LPM 32 / 76	Nitrate NO ₃ as N	0.13	Acute Health	≤ 11
	LPM 32 / 76	Nitrite NO ₂ as N	<0.1	Acute Health	≤ 0.9
	-	Nitrite - Nitrate Ratio	<1.0		≤ 1
	LPM 15	Sodium as Na	13.0	Aesthetic	≤ 200
	LPM 28 / 76	Sulphate as SO ₄	13.4	Acute Health Aesthetic	≤ 500 ≤ 250
	LPM 15	Potassium as K	1.30		
	LPM 15 / 67	Zinc as Zn	0.01	Aesthetic	≤5

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				Risk	Standard Limits
Micro Determinants µg/l					
	LPM 15 / 67	Aluminium as Al	30.0	Operational	≤ 300
	LPM 15 / 67	Antimony as Sb	<1.0	Chronic Health	≤ 20
	LPM 15 / 67	Arsenic as As	<1.0	Chronic Health	≤ 10
	LPM 15 / 67	Barium as Ba	22.3	Chronic Health	≤ 700
	LPM 15 / 67	Boron as B	60.0	Chronic Health	≤ 2 400
	LPM 15 / 67	Cadmium as Cd	<1.0	Chronic Health	≤ 3
	LPM 15 / 67	Total Chromium as Cr	<1.0	Chronic Health	≤ 50
	LPM 15 / 67	Cobalt as Co	<1.0		
	LPM 15 / 67	Copper as Cu	<1.0	Chronic Health	≤ 2000
	LPM 15 / 67	Cyanide as CN *	<70	Acute Health	≤ 200
	LPM 15 / 67	Iron as Fe	370	Chronic Health Aesthetic	≤ 2000 ≤ 300
	LPM 15 / 67	Lead as Pb	<1.0	Chronic Health	≤ 10
	LPM 15 / 67	Manganese as Mn	<10	Chronic Health Aesthetic	≤ 400 ≤ 100
	LPM 15 / 67	Mercury as Hg	<1.0	Chronic Health	≤ 6
	LPM 15 / 67	Nickel as Ni	2.80	Chronic Health	≤ 70
	LPM 15 / 67	Selenium as Se	<1.0	Chronic Health	≤ 40
	LPM 15 / 67	Uranium as U (238) *	<1.0	Chronic Health	≤ 30
	LPM 15 / 67	Vanadium as V	<1.0		
Organics Determinand					
	LPM 68	Total Organic Carbon mg/l	1.50	Chronic Health	≤ 10
	LPM 69	Total Trihalomethanes µg/l *	Attached	Chronic Health	
		Mycoystin as LR in µg/l *	<1.0	Chronic Health	≤ 1
	LPM 74	Phenolic Compounds µg/l*	Attached	Aesthetic	≤ 10

All heavy metal analyses have been performed on filtered samples.

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 with the Uncertainty of Measurement
 list as provided by Regen Waters Laboratory

QUALITY CONTROL CHECKS

Cation Balance	1.57
Anion Balance	1.74
% Difference	-5.0
Measured TDS	84
Calculated TDS	87
Limits > 1.0 - <1.2	1.0
Calcul TDS / E.C. (0.55 - 0.70)	0.6



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