sanas Testing Laboratory T0156

REGEN WATERS
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CK. 89/14418/23

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STEVE TSHWETE MUNICIPALITY

P.O. BOX 14
MIDDELBURG
1050

CERTIFICATE OF CHEMICAL ANALYSIS

Our Ref: STE / 96 - 99 / B / 09 /16
Attention:Mr. R. Bouwer / Ms. Z. Louw / Mr. K. Swart

Date Received : 13 September 2016
Date Reported : 21 September 2016
Quantity Analyzed: 2

B 96

	LPM Method	Analysis Results mg/l	Naledi Village	SANS Standards -241-1: (2015) Ed 2 Domestic Water	
				Risk	Standard Limits
Physical requirements					
	-	*Colour as Pt-Co* *	4	*Aesthetic*	*≤ 15*
	LPM 51 / 82	*Conductivity at 25° C in mS/m*	34.9	*Aesthetic*	*≤ 170*
	LPM 2	*Total Dissolved Solids*	186	*Aesthetic*	*≤ 1 200*
	LPM 51 / 82	*pH-Value at 25 ° C*	7.27	*Operational*	*≥ 5.0 to ≤ 9.7*
	LPM 23 / 81	*Turbidity as N.T.U.*	0.80	*Operational Aesthetic*	*≤ 1.0 ≤ 5.0*
	LPM 11 / 81	*Total Alkalinity as $CaCO_3$*	10		
	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*	17.5		
	LPM 30/76	*Chlorides as Cl*	16.3	*Aesthetic*	*≤300*
	LPM 27 / 76	*Fluoride as F*	<0.20	*Chronic Health*	*≤1.5*
	LPM 15	*Magnesium as Mg*	5.37		
	LPM 32 / 76	*Nitrate NO_3 as N*	0.50	*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*	32.9	*Aesthetic*	*≤ 200*
	LPM 28 / 76	*Sulphate as SO_4*	90	*Acute Health Aesthetic*	*≤ 500 ≤ 250*
	LPM 15	*Potassium as K*	24.1		
	LPM 15 / 67	*Zinc as Zn*	0.03	*Aesthetic*	*≤5*

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Our Ref: STE / 98 - 99 / B / 09 /16

Attention: Mr. R. Bouwer / Ms. Z. Louw / Mr. K. Swart

Date Received : 13 September 2016

Date Reported : 21 September 2016

Quantity Analyzed: 2

B 98

	LPM Method	Analysis Results µg/l	Naledi Village	SANS Standards -241-1: (2015) Ed 2 Domestic Water	
				Risk	Standard Limits
Micro Determinants µg/l					
	LPM 15 / 67	Aluminium as Al	76.5	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	11.2	Chronic Health	≤ 700
	LPM 15 / 67	Boron as B	37.9	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	4.43		
	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	54.4	Chronic Health Aesthetic	≤ 2000 ≤ 300
	LPM 15 / 67	Lead as Pb	<1.0	Chronic Health	≤10
	LPM 15 / 67	Manganese as Mn	27.4	Chronic Health Aesthetic	≤ 400 ≤ 100
	LPM 15 / 67	Mercury as Hg	<1.0	Chronic Health	≤ 6
	LPM 15 / 67	Nickel as Ni	3.92	Chronic Health	≤ 70
	LPM 15 / 67	Selenium as Se	1.03	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	0.89	Chronic Health	≤ 10
	LPM 69	Total Trihalomethanes µg/l *	GC	Chronic Health	
		Mycrosystin as LR µg/l *	<1.0	Chronic Health	≤1
	LPM 74	Phenolic Compounds µg/l*	GC	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	2.75
Anion Balance	2.94
% Difference	-3.5
Measured TDS	186
Calculated TDS	170
Limits > 1.0 - <1.2	1.1
Calcul TDS / E.C. (0.55 - 0.70)	0.5

P L GUYS (M.D.)

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CERTIFICATE OF ANALYSIS
TRIHALOMETHANE COMPOUNDS
(THM)

SAMPLE INFORMATION		LAB NUMBER	B98.D
DATE RECEIVED	13-Sep-16	DATE ANALYZED	19-Sep-16
CLIENT	Steve Tshwete Municipality	MATRIX	Water
SAMPLE NAME	Naledi Village	DILUTION FACTOR	No Dilution
CONTAINER	Plastic		
INSTRUMENT	Agilent 7890A GC/MS, Headspace 7697A, Solid Phase Extraction		

COMPOUND	CONCENTRATION	UNITS
Chloroform	<10	µg/liter
Trichloroethene	<10	µg/liter
Bromodichloromethane	<10	µg/liter
Dibromochloromethane	<10	µg/liter
Bromoform	<10	µg/liter

Samples stored at 5°C after acceptance by Regen Waters.

This report is only applicable to the sample provided for testing.

Regen Waters cannot be held accountable for any errors that might have been caused by improper sampling, handling or storage of samples prior to acceptance.

Trihalomethane Result Interpretation

According to the South African National Standards 241-1: Ed1 2011 the Limits for Trihalomethane content in drinking water are;

Compound	Concentration	Units
Chloroform	<300	µg/liter
Bromoform	<100	µg/liter
Dibromochloromethane	<100	µg/liter
Bromodichloromethane	<60	µg/liter
Trichloroethene*	<20	µg/liter

*Standard from the World Health Organization drinking water standard 2011 (Not technically a THM but is a frequently requested compound in conjunction with THM analysis.)

Trihalomethanes in potable water is a by-product of disinfection using chlorine and other disinfectants. The concentration of Trihalomethanes in potable water needs to be monitored, as long term consumption of high concentrations can lead to chronic ailments.

The sample, Naledi Village, complies with the standard for Trihalomethane content in drinking water.

P.L.G. Uys (M.D.)

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CERTIFICATE OF CHEMICAL ANALYSIS

Our Ref: STE / 98 - 99 / B / 09 /16
Attention:Mr. R . Bouwer / Ms. Z. Louw / Mr. K. Swart

Date Received : 13 September 2016
Date Reported : 21 September 2016
Quantity Analyzed: 2

	LPM Method	Analysis Results mg/l	B 99 Lesedi Village	SANS Standards -241-1: (2015) Ed 2 Domestic Water	
				Risk	Standard Limits
Physical requirements					
	-	*Colour as Pt-Co* *	1	*Aesthetic*	≤ 15
	LPM 51 / 82	*Conductivity at 25° C in mS/m*	18.9	*Aesthetic*	≤ 170
	LPM 2	*Total Dissolved Solids*	104	*Aesthetic*	≤ 1 200
	LPM 51 / 82	*pH-Value at 25 ° C*	8.54	*Operational*	≥ 5.0 to ≤ 9.7
	LPM 23 / 81	*Turbidity as N.T.U.*	0.33	*Operational Aesthetic*	≤ 1.0 ≤ 5.0
	LPM 11 / 81	*Total Alkalinity as $CaCO_3$*	63		
	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*	12.7		
	LPM 30/76	*Chlorides as Cl*	7.2	*Aesthetic*	≤300
	LPM 27 / 76	*Fluoride as F*	<0.20	*Chronic Health*	≤1.5
	LPM 15	*Magnesium as Mg*	8.72		
	LPM 32 / 76	*Nitrate NO_3 as N*	0.31	*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*	13.7	*Aesthetic*	≤ 200
	LPM 26 / 76	*Sulphate as SO_4*	18.0	*Acute Health Aesthetic*	≤ 500 ≤ 250
	LPM 15	*Potassium as K*	2.21		
	LPM 15 / 67	*Zinc as Zn*	0.01	*Aesthetic*	≤5

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	LPM Method	Analysis Results µg/l	B 99 Lesedi Village	SANS Standards -241-1: (2015) Ed 2 Domestic Water	
				Risk	Standard Limits
Micro Determinants µg/l					
	LPM 15 / 67	Aluminium as Al	63.2	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	31.7	Chronic Health	≤ 700
	LPM 15 / 67	Boron as B	13.2	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	59.8	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	<1.0	Chronic Health	≤ 70
	LPM 15 / 67	Selenium as Se	1.22	Chronic Health	≤ 40
	LPM 15 / 67	Uranium as U (238) *	<1.0	Chronic Health	≤ 30
	LPM 15 / 67	Vanadium as V	1.43		
Organics Determinand					
	LPM 68	Total Organic Carbon mg/l	2.38	Chronic Health	≤ 10
	LPM 69	Total Trihalomethanes µg/l *	GC	Chronic Health	
		Mycrosystin as LR µg/l *	<1.0	Chronic Health	≤1
	LPM 74	Phenolic Compounds µg/l*	GC	Aesthetic	≤ 10

All heavy metal analyses have been performed on filtered samples.
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QUALITY CONTROL CHECKS	
Cation Balance	1.95
Anion Balance	1.93
% Difference	0.3
Measured TDS	104
Calculated TDS	100
Limits > 1.0 - <1.2	1.0
Calcul TDS / E.C. (0.55 - 0.70)	0.5

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CERTIFICATE OF ANALYSIS

TRIHALOMETHANE COMPOUNDS

(THM)

SAMPLE INFORMATION		LAB NUMBER	B99.D
DATE RECEIVED	13-Sep-16	DATE ANALYZED	19-Sep-16
CLIENT	Steve Tshwete Municipality	MATRIX	Water
SAMPLE NAME	Lesedi Village	DILUTION FACTOR	No Dilution
CONTAINER	Plastic		
INSTRUMENT	Agilent 7890A GC/MS, Headspace 7697A, Solid Phase Extraction		

COMPOUND	CONCENTRATION	UNITS
Chloroform	<10	µg/liter
Trichloroethene	<10	µg/liter
Bromodichloromethane	<10	µg/liter
Dibromochloromethane	<10	µg/liter
Bromoform	<10	µg/liter

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Bromoform	<100	µg/liter
Dibromochloromethane	<100	µg/liter
Bromodichloromethane	<60	µg/liter
Trichloroethene*	<20	µg/liter

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