

BOKKIE LOMBAARD P O BOX 187 DESPATCH 041-9333338 CELL 0832706552 bokkie@karookaya.co.za

<u>STATEMENT</u>

REINSTATING a BOREHOLE CONTAINING HIGH LEVELS OF, Iron as in Fe & manganese as in Mn

I acquired a plot near Cape St Frances on the Kromme River in the Eastern Cape in the latter of 2014.

The previous owner pumped water from the river and desalinated same via a RO System for domestic use. The financial institution financing the deal required as precondition a sustainable source of other than the river eg. a Well or bore hole.

We inspected one of 3 existing bore holes on the plot. I contracted Mr Frik Barkhuizen owner of Chlorine Free water Systems to inspect and analise the water from the bore holes. A Hydro Drilling Company was approached to re bore and sleeve one specific borehole (AH 0481) after the aforementioned was completed C L Free took a water sample (labeled AH 0481) for analises at a water analises laboratory. The water was clear as it was pumped from the bore-hole but left in a closed clear 5 lit container, the container soon was near explosion as it bulged and the water turned chocolate brown smelling like rotten eggs.

The water analises dated 18/11/2014 of sampling point AH0481 forms part of this statement.

The result was that the water was not fit for domestic use. The water had a distinct sulphureus smell and the Iron as Fe levels tested at 1779.8mg/l, Manganese as Mn tested 1851.70mg/l.

All indications were that this water was never going to be potable. C. L. Free assured me. That they will with there treatment remove the smell and lower the FE & Mn to acceptable levels for use domestically (excluding for human consumption)

I was hesitant at first but after a demonstration performed by the company and taking into consideration capitol already spent on the borehole I agreed to install a system supplied and installed by C ℓ Free at a reasonable and affordable cost.

C L Free installed the system and performed there different procedures and after three weeks of operation I was astonished at the visible change and the bore hole delivering water with no smell at all.

I erected a system with 3 X 5000 lit tanks to serve as settling tanks and for refined treatment of the water with an inline multimedia filter for final treatment.

A water sample was taken of the final water and the results which forms part of this statement dated 14 may 2015 of water sampling points AH 522A & AH 522B. The results speak for it self.

I Run a guest house on the Plot and clients has to date used the water domestically (rain water tanks is used to supply water for human consumption)

I can confidently recommend the C L FREE treatment for the removal of Fe, Mn, Bacteria and sulphureus gasse from bore holes. Feel free to contact me for any details I may have not mentioned in my statement

BOKKIELOMBAARD DATE 05/07/2015

Rietvlei Laboratory

Rietvlei Laboratory

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Nelmapius Drive

0062

CERTIFICATE OF ANALYSIS

- **Customer: Rietvlei Laboratory**
- Address: Rietvlei Dam
 - **BTW Boeing & Nelmapius Drive**

Date: 2014-11-18

Sampling Point: AH0481 Frik Barkhuizen			
Sample Date: 2014-11-10			
Analysis	Unit of measurement	Limit(s)	Result
Aluminium as Al	µg/L	> 0.0 to < 300.0	4,224.63
Ammonia as N	mg/L	> 0.0 to < 1.5	0.25
Antimony as Sb	µg/L	> 0.0 to < 20.0	<2.7
Arsenic as As	µg/L	> 0.0 to < 10.0	14.17
Cadmium as Cd	µg/L	> 0.0 to < 5.0	1.82
Calcium as Ca	mg/L	> 0.0 to < 150.0	85.63
Calcium Hardness as CaCO3	mg/L	> 0.0 to < 370.0	213.82
Chloride as Cl	mg/L	> 0.0 to < 300.0	302.40
Cobalt as Co	µg/L	> 0.0 to < 499.0	133.06
Colour	mg/L	> 0.0 to < 15.0	48.00
Conductivity	mS/m	> 0.0 to < 170.0	234.00
Copper as Cu	µg/L	> 0.0 to < 2000.0	295.59
Iron as Fe	µg/L	> 0.0 to < 300.0	17,719.8
Lead as Pb	µg/L	> 0.0 to < 20.0	0

The results relate only to the samples tested according to the customer's request and are subject to an estimated measurement of uncertainty at 95% confidence level.

Sampling Point: AH0481 Frik Barkhuizen				
Sample Date: 2014-11-10				
Analysis	Unit of measurement	Limit(s)	Result	
Magnesium as Mg	mg/L	> 0.0 to < 70.0	72.64	
Magnesium Hardness as CaCO3	mg/L	> 0.0 to < 280.0	299.13	
Manganese as Mn	μg/L	> 0.0 to < 100.0	1,851.70	
Nickel as Ni	μg/L	> 0.0 to < 70.0	206.38	
Nitrate as N	mg/L	> 0.0 to < 11.0	0.17	
Nitrite as N	mg/L	> 0.0 to < 0.9	0.00	
Orthophosphate as PO4	mg/L		0.04	
pH at 25⁰C	pH units	> 5.0 to < 9.7	3.13	
Pottasium as K	mg/L	> 0.0 to < 50.0	5.13	
Selenium as Se	μg/L	> 0.0 to < 40.0	37.09	
Silica as Si	mg/L	> 0.0 to < 100.0	18.13	
Sodium as Na	mg/L	> 0.0 to < 200.0	215.58	
Sulphate as SO4	mg/L	> 0.0 to < 250.0	298.04	
Temperature (field test)	٥C		20.60	
Total Chromium as Cr	μg/L	> 0.0 to < 50.0	<0.7	
Total Dissolved Solids	mg/L	> 0.0 to < 999.0	1,567.80	
Total Hardness as CaCO3	mg/L	> 0.0 to < 660.0	512.95	
Total Oxidised Nitrogen as N	mg/L	> 0.0 to < 10.0	0.17	
Turbidity Operational NTU <1	NTU	> 0.0 to < 1.0	64.40	
Uranium as U	μg/L	> 0.0 to < 30.0	319.56	
Vanadium as V	μg/L	> 0.0 to < 200.0	<0.4	
Zinc as Zn	mg/L	> 0.0 to < 5.0	0.66	
Alkalinity as CaCO3				
Barium as Ba				
Boron as B				
C.C.P.P.@ 25⁰C				
Chemical Oxygen Demand				
Fluoride as F				
pH (field test)				

Sampling Point: AH0481 Frik Barkhuizen			
Sample Date: 2014-11-10			
Analysis	Unit of measurement	Limit(s)	Result
UV 254			

for General Manager: Rietvlei Laboratory

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CERTIFICATE OF ANALYSIS

		CERTIFICA	TE OF ANAL	1313				
Sampling Point Name:				AH0522A Boorgat Huis kraan	AH0522B Settling tanks			
Sampling Point Code:				AH0522A	AH0522B			
Sample Date:				14-May-15	14-May-15			
Sample Time:				00:00	00:00			
Analysis	Unit	Standard Limits	Risk					
Aluminium as Al	µg/L	≤ 300.0	Operational	212.57	136.02			
Antimony as Sb	µg/L	≤ 20.0	Chronic Health	<2.7	<2.7			
Cadmium as Cd	µg/L	≤ 5.0	Chronic Health	0.75	0.72			
Calcium as Ca	mg/L	≤ 150.0		63.89	50.68			
Calcium Hardness as CaCO3	mg/L	≤ 370.0		159.54	126.55			
Cobalt as Co	µg/L	≤ 499.0	Chronic Health	44.44	39.43			
Conductivity	mS/m	≤ 170.0	Aesthetic	214.00	261.00			
Copper as Cu	μg/L	≤ 2000.0	Chronic Health	230.80	<5.0			
ron as Fe	μg/L	≤ 300.0	Aesthetic	258.39	2261.88			
_ead as Pb	µg/L	≤ 20.0	Chronic Health	9.86	<3.5			
Magnesium as Mg	mg/L	≤ 70.0		32.64	31.83			
Magnesium Hardness as CaCO3	mg/L	≤ 280.0		134.42	131.08			
Manganese as Mn	μg/L	≤ 100.0	Aesthetic	767.51	380.51			
Nickel as Ni	μg/L	≤ 70.0	Chronic Health	90.40	76.49			
oH at 25⁰C	pH units	≤ 9.7	Operational	3.19	2.98			
Pottasium as K	mg/L	≤ 50.0		4.63	4.38			
Silica as Si	mg/L	≤ 100.0		13.14	13.22			
Sodium as Na	mg/L	≤ 200.0	Aesthetic	287.78	305.35			
Fotal Chromium as Cr	μg/L	≤ 50.0		1.03	<0.7			
Total Dissolved Solids	mg/L	≤ 999.0	Aesthetic	1433.80	1748.70			
urbidity Operational NTU <1	NTU	≤ 1.0	Operational	3.83	28.00			
/anadium as V	µg/L	≤ 200.0	Chronic Health	2.19	<0.4			
Zinc as Zn	mg/L	≤ 5.0	Aesthetic	8.65	0.17			