



Department of **Biodiversity,
Conservation and Attractions**

Science and Conservation

Enquiries: Kirsty Quinlan
Phone: (08) 9219 9445
Email: Kirsty.quinlan@dbca.wa.gov.au

To: Jenny McGuire
Government Chemistry Centre (WA)

Re: Kimberley Springs water samples – August 2017

Dear Jenny,

Water samples collected during the 2017 Kimberley Springs sampling are listed on the attached sheet.

Please, I would like these samples to be analysed for the following:

General Properties and Anions in waters or water extracts

Turbidity
Alkalinity/CO₃/HCO₃/ OH
Chloride
EC
pH
TDS (Grav)
Sulphate

Nutrients

Ammonia as N
Nitrate as N
Nitrite as N
Total nitrogen (TN)
Soluble reactive phosphorus (PO₄_P)
Total Phosphorus (TP)
Chlorophyll and phaeophytin

Other

Ca
Fe
Strontium
K
Mg
Na

RECEIVED
ChemCentre
By: U. Govinnag
Date: 18/8/17
Time: 12:30
Sample: frozen cold ambient
Job# 1750702

Yours Sincerely,

Kirsty Quinlan
Senior Technical Officer, Wetlands Conservation
Department of Biodiversity, Conservation and Attractions
17 Dick Perry Avenue, Kensington WA 6151
18 August 2017



ChemCentre
Inorganic Chemistry Section
Report of Examination



Accredited for compliance with ISO/IEC 17025, Accreditation No. 8

PO Box 1250, Bentley Delivery Centre
Bentley WA 6983

Purchase Order: None

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ChemCentre Reference: 17S0702 R0

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ABN 40 991 865 705

Dept. of Biodiversity, Conservation & Attractions
Locked Bag 104
Bentley Delivery Centre WA 6983

Attention: Kirsty Quinlan

Kerry Robbins

Report on: 9 samples received on 18/08/2017

LAB ID	Material	Client ID and Description
17S0702 / 001	water	KMS10 Potential Spring 9
17S0702 / 002	water	KMS11 Attack Spring
17S0702 / 003	water	KMS12 Potential Spring 6
17S0702 / 004	water	KMS13 Long Spring
17S0702 / 005	water	KMS14 Potential Spring 1
17S0702 / 006	water	KMS15 King George Spring
17S0702 / 007	water	KMS16 Bamboo Spring
17S0702 / 008	water	KMS17 Bunda Bunda Spring
17S0702 / 009	water	KMS18 Big Springs

LAB ID	Client ID	Sampled	Analyte	Method	Unit	001	002	003	004
						KMS10	KMS11	KMS12	KMS13
						01/08/2017	01/08/2017	02/08/2017	03/08/2017
Alkalinity as CaCO ₃			iALK1WATI	mg/L	18	29	18	122	
Bicarbonate			iALK1WATI	mg/L	22	36	22	149	
Calcium			iMET1WCICP	mg/L	7.0	10.0	1.4	38.6	
Carbonate			iALK1WATI	mg/L	<1	<1	<1	<1	
Chloride			iCO1WCDA	mg/L	59	79	23	49	
Chlorophyll a			WL177	mg/L	0.004	0.005	0.008	0.002	
Electrical Conductivity			iEC1WZSE	mS/m	22.9	27.0	12.0	36.9	
Hydroxide			iALK1WATI	mg/L	<1	<1	<1	<1	
Iron			iMET1WCICP	mg/L	0.077	0.032	0.057	0.030	
Magnesium			iMET1WCICP	mg/L	7.0	13.6	4.1	11.2	
Nitrogen, ammonia			iAMMN1WFIA	mg/L	0.06	0.02	<0.01	<0.01	
Nitrogen, nitrate + nitrite			iNTAN1WFIA	mg/L	0.07	0.03	0.01	0.01	
Nitrogen, nitrate			iNTAN1WCALC	mg/L	0.06	0.02	<0.01	<0.01	
Nitrogen, nitrite			iNTRN1WFIA	mg/L	<0.01	0.01	<0.01	<0.01	
Nitrogen, total			iNP1WTFIA	mg/L	1.8	1.9	1.0	1.6	
pH			iPH1WASE		6.5	6.9	7.5	7.2	
Phaeophytin a			WL177	mg/L	<0.001	0.006	0.006	0.002	
Phosphorus, sol. reactive			iP1WTFIA	mg/L	0.08	<0.01	<0.01	<0.01	
Phosphorus, total			iPP1WTFIA	mg/L	0.15	0.18	0.19	0.094*	
Potassium			iMET1WCICP	mg/L	2.3	3.1	1.2	0.2	
Sodium			iMET1WCICP	mg/L	37.2	59.0	16.0	37.3	
Strontium			iMET1WCICP	mg/L	0.038	0.065	0.016	0.096	
Sulphate			iCO1WCDA	mg/L	<1	2	<1	<1	
Total dissolved solids(grav)			iSOL1WDGR	mg/L	180	270	75	290	

LAB ID 009
 Client ID KMS18
 Sampled 09/08/2017

Analyte	Method	Unit	
Nitrogen, ammonia	iAMMN1WFIA	mg/L	<0.01
Nitrogen, nitrate + nitrite	iNTAN1WFIA	mg/L	0.02
Nitrogen, nitrate	iNTAN1WCALC	mg/L	0.01
Nitrogen, nitrite	iNTRN1WFIA	mg/L	<0.01
Nitrogen, total	iNP1WTFIA	mg/L	0.31
pH	iPH1WASE		8.0
Phaeophytin a	WL177	mg/L	0.001
Phosphorus, sol. reactive	iP1WTFIA	mg/L	0.01
Phosphorus, total	iPP1WTFIA	mg/L	0.042
Potassium	iMET1WCICP	mg/L	6.9
Sodium	iMET1WCICP	mg/L	49.9
Strontium	iMET1WCICP	mg/L	0.14
Sulphate	iCO1WCDA	mg/L	14
Total dissolved solids(grav)	iSOL1WDGR	mg/L	280
Turbidity	iTURB1WCZZ	NTU	24

Method	Method Description
iALK1WATI	Alkalinity (as CaCO ₃) and constituents by acid titration.
iAMMN1WFIA	Ammonia expressed as Nitrogen by FIA.
iCO1WCDA	Colourimetric analysis by DA (Discrete Autoanalyser).
iEC1WZSE	Electrical conductivity in water compensated to 25C.
iMET1WCICP	Total dissolved metals by ICPAES.
iNP1WTFIA	Total Nitrogen by persulphate digestion and analysis by FIA.
iNTAN1WCALC	Nitrate expressed as nitrogen by FIA.
iNTAN1WFIA	Nitrate+Nitrite expressed as Nitrogen by FIA.
iNTRN1WFIA	Nitrite expressed as nitrogen by FIA.
iP1WTFIA	Phosphorus soluble reactive as P in water by FIA.
iPH1WASE	pH in water by pH meter.
iPP1WTFIA	Total Phosphorus by persulphate digestion and FIA.
iSOL1WDGR	Total dissolved solids (TDS) by gravimetry, dried at 178 - 182 C.
iTURB1WCZZ	Turbidity of water by Nephelometer.
WL177	Chlorophyll a, b, c and Pheophytin a by Spectrometry

Analysis of the pH was outside the holding time of six hours. The results should be used as reference only.

These results apply only to the sample(s) as received. Unless arrangements are made to the contrary, these samples will be disposed of after 30 days of the issue of this report.

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Hanna May
 Environmental Chemistry Team Leader
 Scientific Services Division
 6-Sep-2017



Elena Mcconville-Wolfe
 Chemist
 Scientific Services Division

ChemCentre Id	Method Code	Limits of Reporting	Units	17S0702/001 KMS10 Potential Spring 9 1/08/2017	17S0702/002 KMS11 Attack Spring 1/08/2017
Client Id					
Description					
Sampled					
Alkalin	iALK1WATI	1	mg/L	18	29
CO3	iALK1WATI	1	mg/L	<1	<1
Ca	iMET1WCICP	0.1	mg/L	7	10
Chloro_a	WL177	0.001	mg/L	0.004	0.005
Cl	iCO1WCDA	1	mg/L	59	79
ECond	iEC1WZSE	0.2	mS/m	22.9	27
Fe	iMET1WCICP	0.005	mg/L	0.077	0.032
HCO3	iALK1WATI	1	mg/L	22	36
K	iMET1WCICP	0.1	mg/L	2.3	3.1
Mg	iMET1WCICP	0.1	mg/L	7	13.6
N_NH3	iAMMN1WFIA	0.01	mg/L	0.06	0.02
N_NO2	iNTRN1WFIA	0.01	mg/L	<0.01	0.01
N_NO3	iNTAN1WCALC	0.01	mg/L	0.06	0.02
N_NOx	iNTAN1WFIA	0.01	mg/L	0.07	0.03
N_total	iNP1WTFIA	0.01	mg/L	1.8	1.9
Na	iMET1WCICP	0.1	mg/L	37.2	59
OH	iALK1WATI	1	mg/L	<1	<1
P_SR	iP1WTFIA	0.01	mg/L	0.08	<0.01
P_total	iPP1WTFIA	0.005	mg/L	0.15	0.18
Phaeo_a	WL177	0.001	mg/L	<0.001	0.006
SO4	iCO1WCDA	1	mg/L	<1	2
Sr	iMET1WCICP	0.002	mg/L	0.038	0.065
TDS_grav	iSOL1WDGR	10	mg/L	180	270
Turbidit	iTURB1WCZZ	0.5	NTU	21	8.7
pH	iPH1WASE	0.1		6.5	6.9

17S0702/008	17S0702/009
KMS17	KMS18
Bunda Bunda Spring	Big Springs
7/08/2017	9/08/2017
12	91
<1	<1
3.1	27.4
0.035	0.001
23	43
13.6	32.8
0.007	<0.005
15	111
5.5	6.9
2.3	20.4
0.01	<0.01
<0.01	<0.01
0.01	0.01
0.02	0.02
0.71	0.31
16.3	49.9
<1	<1
0.02	0.01
0.057	0.042
0.011	0.001
20	14
0.039	0.14
100	280
26	24
6.7	8