



CERTIFICATE OF ANALYSES
GENERAL WATER QUALITY PARAMETERS

Date received: 2018 - 08 - 30 Date completed: 2018 - 09 - 07
Project number: 1000 Report number: 76923 Order number: Delh.2018-049-6
Client name: Delta h Water Systems Contact person: Dr. M. Holland
Address: P.O. Box 11465 Silver Lakes 0054 e-mail: martin@delta-h.co.za
Telephone: 082 497 9088 Facsimile: - Mobile: 082 497 9088

Analyses in mg/l (Unless specified otherwise)	Method Identification	Sample Identification				
		HE01	HE03	HE05	HE08	HE09
Sample Number		39433	39434	39435	39436	39437
pH – Value at 25°C	WLAB065	8.0	8.2	7.9	8.2	8.4
Electrical Conductivity in mS/m at 25°C	WLAB002	138	37.0	36.9	43.1	30.9
Total Dissolved Solids at 180°C	WLAB003	880	228	282	298	214
Turbidity in N.T.U	WLAB005	54	3.6	0.7	13	19
Total Alkalinity as CaCO ₃	WLAB007	324	204	192	156	136
Chloride as Cl	WLAB046	219	6	4	11	8
Sulphate as SO ₄	WLAB046	122	3	<2	25	18
Fluoride as F	WLAB014	<0.2	<0.2	<0.2	<0.2	<0.2
Nitrate as N	WLAB046	<0.1	<0.1	2.8	12	2.3
Ortho Phosphate as P	WLAB046	<0.1	<0.1	<0.1	<0.1	<0.1
Free & Saline Ammonia as N	WLAB046	0.3	0.2	0.1	0.1	0.1
ICP-MS Scan (Dissolved) *	WLAB050	See Attached Report: 76923-A				
% Balancing *	---	94.5	96.0	93.1	92.2	95.0

E. Nkabinde

Technical Signatory

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Project number: 1000 Report number: 76923 Order number: Delh.2018-049-6
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Analyses in mg/l (Unless specified otherwise)	Method Identification	Sample Identification					
		HE14	HE15	HE16	HE17	HE18	HE19
Sample Number		39438	39439	39440	39441	39442	39443
pH – Value at 25°C	WLAB065	7.6	7.3	7.8	7.5	6.4	8.2
Electrical Conductivity in mS/m at 25°C	WLAB002	8.1	18.9	12.3	73.8	700	27.6
Total Dissolved Solids at 180°C	WLAB003	80	142	84	528	7 028	202
Turbidity in N.T.U	WLAB005	4.1	1.8	8.8	0.2	5.4	24
Total Alkalinity as CaCO ₃	WLAB007	40	92	60	408	112	120
Chloride as Cl	WLAB046	3	4	4	17	70	8
Sulphate as SO ₄	WLAB046	<2	2	<2	40	271	18
Fluoride as F	WLAB014	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Nitrate as N	WLAB046	<0.1	0.7	<0.1	<0.1	0.9	2.9
Ortho Phosphate as P	WLAB046	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Free & Saline Ammonia as N	WLAB046	0.1	0.2	0.1	0.6	0.5	0.1
ICP-MS Scan *	WLAB015	See Attached Report: 76923-A					
% Balancing *	---	93.2	92.9	94.1	95.7	23.9	95.0

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CERTIFICATE OF ANALYSES
GENERAL WATER QUALITY PARAMETERS

Date received: 2018 - 08 - 30 Date completed: 2018 - 09 - 07
Project number: 1000 Report number: 76923 Order number: Delh.2018-049-6
Client name: Delta h Water Systems Contact person: Dr. M. Holland
Address: P.O. Box 11465 Silver Lakes 0054 e-mail: martin@delta-h.co.za
Telephone: 082 497 9088 Facsimile: - Mobile: 082 497 9088

Analyses in mg/l (Unless specified otherwise)	Method Identification	Sample Identification					
		HE20	HE21	HE23	HE24	HE26	HE27
Sample Number		39444	39445	39446	39447	39448	39449
pH – Value at 25°C	WLAB065	8.2	7.2	7.0	7.8	6.4	7.4
Electrical Conductivity in mS/m at 25°C	WLAB002	47.7	53.1	24.3	6.0	2.2	3.7
Total Dissolved Solids at 180°C	WLAB003	316	364	166	66	32	36
Turbidity in N.T.U	WLAB005	11	0.2	240	12	0.6	7.0
Total Alkalinity as CaCO ₃	WLAB007	252	280	120	28	8	16
Chloride as Cl	WLAB046	9	14	7	3	2	2
Sulphate as SO ₄	WLAB046	13	16	<2	<2	<2	<2
Fluoride as F	WLAB014	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Nitrate as N	WLAB046	2.2	0.2	<0.1	<0.1	<0.1	<0.1
Ortho Phosphate as P	WLAB046	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Free & Saline Ammonia as N	WLAB046	0.1	0.1	0.2	<0.1	0.1	0.1
ICP-MS Scan *	WLAB015	See Attached Report: 76923-A					
% Balancing *	---	97.3	98.5	99.8	95.7	92.3	95.4

* = Not SANAS Accredited

Tests marked "Not SANAS Accredited" in this report are not included in the SANAS Schedule of Accreditation for this Laboratory.

E. Nkabinde

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CERTIFICATE OF ANALYSES
GENERAL WATER QUALITY PARAMETERS

Date received: 2018 - 09 - 21	Date completed: 2018 - 10 - 11
Project number: 1000	Report number: 77576
	Order number: Delh.2018.049-6
Client name: Delta h Water Systems	Contact person: Dr. M. Holland
Address: P.O. Box 11465 Silver Lakes 0054	e-mail: martin@delta-h.co.za
Telephone: 082 497 9088	Facsimile: -
	Mobile: 082 497 9088

Analyses in mg/l (Unless specified otherwise)	Method Identification	Sample Identification	
		Thorn 1	Thorn 3
Sample Number		42128	42129
pH – Value at 25°C	WLAB065	6.2	6.3
Electrical Conductivity in mS/m at 25°C	WLAB002	349	335
Total Dissolved Solids at 180°C	WLAB003	2 412	2 512
Turbidity in N.T.U	WLAB005	0.2	0.1
Total Alkalinity as CaCO ₃	WLAB007	176	104
Chloride as Cl	WLAB046	42	42
Sulphate as SO ₄	WLAB046	167	175
Fluoride as F	WLAB014	<0.2	<0.2
Nitrate as N	WLAB046	448	445
Ortho Phosphate as P	WLAB046	<0.1	<0.1
Free & Saline Ammonia as N	WLAB046	0.1	0.1
ICP-MS Scan (Dissolved) *	WLAB050	See Attached Report: 77576-A	
% Balancing *	---	92.7	92.9

* = Not SANAS Accredited

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J. Ngobeza

Technical Signatory

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WATERLAB (PTY) LTD

CERTIFICATE OF ANALYSIS

Project Number : 1000
Client : Delta H Water Systems
Report Number : 76923-A

Sample Origin	Sample ID												
		Ag (mg/L)	Al (mg/L)	As (mg/L)	Au (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Ce (mg/L)	Co (mg/L)
HE01	39433	< 0.010	<0.100	< 0.010	< 0.010	0.022	< 0.010	< 0.010	< 0.010	18	< 0.010	< 0.010	< 0.010
HE03	39434	< 0.010	< 0.100	< 0.010	< 0.010	< 0.010	0.011	< 0.010	< 0.010	37	< 0.010	< 0.010	< 0.010
HE05	39435	< 0.010	< 0.100	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	33	< 0.010	< 0.010	< 0.010
HE08	39436	< 0.010	< 0.100	< 0.010	< 0.010	< 0.010	0.020	< 0.010	< 0.010	31	< 0.010	< 0.010	< 0.010
HE09	39437	< 0.010	0.168	< 0.010	< 0.010	< 0.010	0.015	< 0.010	< 0.010	26	< 0.010	< 0.010	< 0.010
HE14	39438	< 0.010	< 0.100	< 0.010	< 0.010	< 0.010	0.016	< 0.010	< 0.010	5	< 0.010	< 0.010	< 0.010
HE15	39439	< 0.010	< 0.100	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	18	< 0.010	< 0.010	< 0.010
HE16	39440	< 0.010	< 0.100	< 0.010	< 0.010	0.024	< 0.010	< 0.010	< 0.010	9	< 0.010	< 0.010	< 0.010
HE17	39441	< 0.010	< 0.100	< 0.010	< 0.010	0.030	0.019	< 0.010	< 0.010	42	< 0.010	< 0.010	< 0.010
HE18	39442	< 0.010	< 0.100	< 0.010	< 0.010	0.114	0.399	< 0.010	< 0.010	264	< 0.010	< 0.010	< 0.010
HE19	39443	< 0.010	0.335	< 0.010	< 0.010	< 0.010	0.012	< 0.010	< 0.010	25	< 0.010	< 0.010	< 0.010
HE20	39444	< 0.010	< 0.100	< 0.010	< 0.010	0.028	0.027	< 0.010	< 0.010	30	< 0.010	< 0.010	< 0.010
HE21	39445	< 0.010	< 0.100	< 0.010	< 0.010	0.034	0.017	< 0.010	< 0.010	43	< 0.010	< 0.010	< 0.010
HE23	39446	< 0.010	< 0.100	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	21	< 0.010	< 0.010	< 0.010
HE24	39447	< 0.010	0.618	< 0.010	< 0.010	< 0.010	0.011	< 0.010	< 0.010	5	< 0.010	< 0.010	< 0.010
HE26	39448	< 0.010	< 0.100	< 0.010	< 0.010	0.024	< 0.010	< 0.010	< 0.010	1	< 0.010	< 0.010	< 0.010
HE27	39449	< 0.010	0.143	< 0.010	< 0.010	0.030	< 0.010	< 0.010	< 0.010	3	< 0.010	< 0.010	< 0.010

Sample Origin	Sample ID												
		Cr (mg/L)	Cs (mg/L)	Cu (mg/L)	Dy (mg/L)	Er (mg/L)	Eu (mg/L)	Fe (mg/L)	Ga (mg/L)	Gd (mg/L)	Ge (mg/L)	Hf (mg/L)	Hg (mg/L)
HE01	39433	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.026	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
HE03	39434	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.042	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
HE05	39435	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.029	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
HE08	39436	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.037	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
HE09	39437	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.081	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
HE14	39438	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.429	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
HE15	39439	0.017	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.025	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
HE16	39440	< 0.010	< 0.010	0.013	< 0.010	< 0.010	< 0.010	0.528	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
HE17	39441	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.071	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
HE18	39442	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.026	0.048	< 0.010	< 0.010	< 0.010	< 0.010
HE19	39443	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.115	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
HE20	39444	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.100	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
HE21	39445	< 0.010	< 0.010	0.014	< 0.010	< 0.010	< 0.010	< 0.025	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
HE23	39446	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.038	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
HE24	39447	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.513	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
HE26	39448	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.037	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
HE27	39449	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.471	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010

Sample	Sample												
Origin	ID												
		Ho (mg/L)	In (mg/L)	Ir (mg/L)	K (mg/L)	La (mg/L)	Li (mg/L)	Lu (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Nb (mg/L)
HE01	39433	< 0.010	< 0.010	< 0.010	2.0	< 0.010	< 0.010	< 0.010	95	0.065	< 0.010	111	< 0.010
HE03	39434	< 0.010	< 0.010	< 0.010	< 0.5	< 0.010	< 0.010	< 0.010	21	< 0.025	< 0.010	9	< 0.010
HE05	39435	< 0.010	< 0.010	< 0.010	< 0.5	< 0.010	< 0.010	< 0.010	19	< 0.025	< 0.010	9	< 0.010
HE08	39436	< 0.010	< 0.010	< 0.010	0.8	< 0.010	< 0.010	< 0.010	26	< 0.025	< 0.010	9	< 0.010
HE09	39437	< 0.010	< 0.010	< 0.010	0.8	< 0.010	< 0.010	< 0.010	19	< 0.025	< 0.010	6	< 0.010
HE14	39438	< 0.010	< 0.010	< 0.010	0.5	< 0.010	< 0.010	< 0.010	5	< 0.025	< 0.010	2	< 0.010
HE15	39439	< 0.010	< 0.010	< 0.010	0.6	< 0.010	< 0.010	< 0.010	7	< 0.025	< 0.010	6	< 0.010
HE16	39440	< 0.010	< 0.010	< 0.010	< 0.5	< 0.010	< 0.010	< 0.010	7	< 0.025	< 0.010	3	< 0.010
HE17	39441	< 0.010	< 0.010	< 0.010	0.8	< 0.010	< 0.010	< 0.010	74	< 0.025	< 0.010	10	< 0.010
HE18	39442	< 0.010	< 0.010	< 0.010	6.2	< 0.010	< 0.010	< 0.010	670	0.193	< 0.010	104	< 0.010
HE19	39443	< 0.010	< 0.010	< 0.010	0.8	< 0.010	< 0.010	< 0.010	16	< 0.025	< 0.010	7	< 0.010
HE20	39444	< 0.010	< 0.010	< 0.010	0.6	< 0.010	< 0.010	< 0.010	42	< 0.025	< 0.010	10	< 0.010
HE21	39445	< 0.010	< 0.010	< 0.010	0.6	< 0.010	< 0.010	< 0.010	43	< 0.025	< 0.010	10	< 0.010
HE23	39446	< 0.010	< 0.010	< 0.010	1.1	< 0.010	< 0.010	< 0.010	16	0.242	< 0.010	4	< 0.010
HE24	39447	< 0.010	< 0.010	< 0.010	< 0.5	< 0.010	< 0.010	< 0.010	3	< 0.025	< 0.010	2	< 0.010
HE26	39448	< 0.010	< 0.010	< 0.010	0.1	< 0.010	< 0.010	< 0.010	1	< 0.025	< 0.010	1	< 0.010
HE27	39449	< 0.010	< 0.010	< 0.010	< 0.5	< 0.010	< 0.010	< 0.010	2	< 0.025	< 0.010	2	< 0.010

[illegible]

WATERLAB (PTY) LTD

CERTIFICATE OF ANALYSIS

Project Number : 1000
Client : Delta H Water Systems
Report Number : 77576-A

Sample	Sample												
Origin	ID												
		Ag (mg/L)	Al (mg/L)	As (mg/L)	Au (mg/L)	B (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	Ca (mg/L)	Cd (mg/L)	Ce (mg/L)	Co (mg/L)
Thorn 1	42128	< 0.010	< 0.100	< 0.010	< 0.010	0.035	0.183	< 0.010	< 0.010	184	< 0.010	< 0.010	< 0.010
Thorn 3	42129	< 0.010	< 0.100	< 0.010	< 0.010	0.041	0.177	< 0.010	< 0.010	101	< 0.010	< 0.010	< 0.010

Sample	Sample												
Origin	ID												
		Cr (mg/L)	Cs (mg/L)	Cu (mg/L)	Dy (mg/L)	Er (mg/L)	Eu (mg/L)	Fe (mg/L)	Ga (mg/L)	Gd (mg/L)	Ge (mg/L)	Hf (mg/L)	Hg (mg/L)
Thorn 1	42128	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.025	0.019	< 0.010	< 0.010	< 0.010	< 0.010
Thorn 3	42129	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.025	0.020	< 0.010	< 0.010	< 0.010	< 0.010

Sample	Sample												
Origin	ID												
		Ho (mg/L)	In (mg/L)	Ir (mg/L)	K (mg/L)	La (mg/L)	Li (mg/L)	Lu (mg/L)	Mg (mg/L)	Mn (mg/L)	Mo (mg/L)	Na (mg/L)	Nb (mg/L)
Thorn 1	42128	< 0.010	< 0.010	< 0.010	2.8	< 0.010	< 0.010	< 0.010	298	< 0.025	< 0.010	22	< 0.010
Thorn 3	42129	< 0.010	< 0.010	< 0.010	2.9	< 0.010	< 0.010	< 0.010	331	< 0.025	< 0.010	28	< 0.010

Sample	Sample												
Origin	ID												
		Nd (mg/L)	Ni (mg/L)	Os (mg/L)	P (mg/L)	Pb (mg/L)	Pd (mg/L)	Pr (mg/L)	Pt (mg/L)	Rb (mg/L)	Rh (mg/L)	Ru (mg/L)	Sb (mg/L)
Thorn 1	42128	< 0.010	< 0.010	< 0.010	0.205	< 0.010	< 0.010	< 0.010	< 0.010	0.017	< 0.010	< 0.010	< 0.010
Thorn 3	42129	< 0.010	0.022	< 0.010	0.106	< 0.010	< 0.010	< 0.010	< 0.010	0.013	< 0.010	< 0.010	< 0.010

Sample	Sample												
Origin	ID												
		Sc (mg/L)	Se (mg/L)	Si (mg/L)	Sm (mg/L)	Sn (mg/L)	Sr (mg/L)	Ta (mg/L)	Tb (mg/L)	Te (mg/L)	Th (mg/L)	Ti (mg/L)	Tl (mg/L)
Thorn 1	42128	< 0.010	< 0.010	30	< 0.010	< 0.010	0.585	< 0.010	< 0.010	< 0.010	< 0.010	0.139	< 0.010
Thorn 3	42129	< 0.010	< 0.010	22	< 0.010	< 0.010	0.370	< 0.010	< 0.010	< 0.010	< 0.010	0.077	< 0.010

Sample	Sample								
Origin	ID								
		Tm (mg/L)	U (mg/L)	V (mg/L)	W (mg/L)	Y (mg/L)	Yb (mg/L)	Zn (mg/L)	Zr (mg/L)
Thorn 1	42128	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.047	< 0.010
Thorn 3	42129	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.029	< 0.010