



**Wetland 06 - Spring 2019 Monitoring Data Results**

Project 102604-01  
 ReportTo HEMMERA ENVIROCHEM INC.  
 Maxxam Job No. B940971  
 Date Received 5/29/2019  
 Report Date 6/7/2019

**RESULTS OF ANALYSIS**

Sample ID	WQ1	WQ2	WQ3	WQ5B	WQ4A	WQ4B	WQ5A
Date Sampled	5/29/2019	5/29/2019	5/29/2019	5/29/2019	5/29/2019	5/29/2019	5/29/2019
Time Sampled	9:25	11:20	10:20	15:00	12:00	12:30	14:40
Maxxam Sample ID	VT6457	VT6458	VT6459	VT6463	VT6460	VT6461	VT6462
Nature	WATER						
Chain Of Custody Number	583206-01-01	583206-01-01	583206-01-01	583206-01-01	583206-01-01	583206-01-01	583206-01-01
<b>Alkalinity @25C (pp, total), CO3,HCO3,OH</b>							
Alkalinity (total) as CaCO3	490	350	330	420	-	-	-
Phenolphthalein Alkalinity	<1.0	<1.0	<1.0	<1.0	-	-	-
Bicarbonate	590	430	400	510	-	-	-
Carbonate	<1.0	<1.0	<1.0	<1.0	-	-	-
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	-	-	-
<b>Biochemical Oxygen Demand</b>							
biochemical oxygen demand	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	4.0
<b>Cadmium - low level CCME - Dissolved</b>							
Cadmium (Cd)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
<b>Chloride by Automated Colourimetry</b>							
Dissolved Chloride	17	13	12	11	-	-	-
<b>COD by Colorimeter</b>							
Chemical Oxygen Demand	30	30	40	-	-	-	-
<b>Oxygen (Dissolved, winkler)</b>							
Dissolved Oxygen	5.1	7.7	7.9	10	1.8	8.9	9.6
<b>Conductivity @25C</b>							
Conductivity	970	780	690	990	-	-	-
<b>Hardness</b>							
Hardness (CaCO3)	430	340	320	480	-	-	-
<b>Elements by ICP - Dissolved</b>							
Iron (Fe)	0.20	0.083	0.076	0.081	<0.060	0.077	0.13
Lithium (Li)	<0.020	<0.020	<0.020	0.020	<0.020	0.020	0.027
Magnesium (Mg)	48	47	42	60	38	45	61
Manganese (Mn)	0.063	0.016	0.0098	0.0058	<0.0040	0.069	0.053
Potassium (K)	3.7	4.7	5.8	4.3	3.6	3.9	6.4
Sodium (Na)	45	38	26	32	37	39	37
Strontium (Sr)	0.58	0.64	0.51	0.76	0.67	0.72	0.76
Sulphur as S	6.9	17	8.1	35	17	19	50
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Barium (Ba)	0.15	0.14	0.15	0.13	0.062	0.10	0.092
Silicon (Si)	8.1	0.92	1.3	5.2	4.2	4.0	6.3
Boron (B)	0.032	0.046	0.031	0.030	0.045	0.049	0.054
Calcium (Ca)	93	58	57	92	70	72	88
<b>Elements by ICPMS - Dissolved</b>							
Aluminum (Al)	<0.0030	<0.0030	0.0050	<0.0030	<0.0030	<0.0030	<0.0030
Chromium (Cr)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)	0.00085	0.00071	0.00047	0.00077	<0.00020	0.00021	0.0013
Lead (Pb)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Antimony (Sb)	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Molybdenum (Mo)	0.0010	0.0025	0.0025	0.0017	0.0022	0.0017	0.0093
Nickel (Ni)	0.00079	0.00080	0.0011	<0.00050	<0.00050	<0.00050	<0.00050
Selenium (Se)	<0.00020	0.00060	0.00033	0.0048	0.0028	0.0013	0.00043
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)	0.00063	0.00080	0.0011	0.00040	<0.00020	0.00068	0.0017
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Uranium (U)	0.0018	0.0059	0.0052	0.0094	0.0043	0.0038	0.029
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.19	0.0031
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
<b>Ion Balance</b>							
Ionic Balance	0.12	0.27	0.90	0.042	-	-	-
<b>Sum of cations, anions</b>							
Anion Sum	11	8.6	7.5	11	-	-	-
Cation Sum	11	8.5	7.6	11	-	-	-

<b>Ammonia-N (Total)</b>							
Ammonia as N	0.030	0.027	<0.015	-	-	-	-
<b>Nitrate and Nitrite</b>							
Nitrate (as NO <sub>3</sub> )	<0.044	<0.044	<0.044	1.8	3.4	0.32	0.11
Nitrite (NO <sub>2</sub> )	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033
<b>Nitrate + Nitrite-N (calculated)</b>							
Nitrate plus Nitrite (N)	<0.014	<0.014	<0.014	0.42	0.77	0.073	0.024
<b>Nitrogen (Nitrite - Nitrate) by IC</b>							
Nitrate (as N)	<0.010	<0.010	<0.010	0.42	0.77	0.073	0.024
Nitrite (as N)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
<b>pH @25°C</b>							
pH	7.97	8.26	8.33	8.18	-	-	-
<b>Orthophosphate by Konelab</b>							
Ortho Phosphate (P)	0.013	0.0037	0.0039	0.0072	0.0056	0.010	0.035
<b>Sulphate by Automated Colourimetry</b>							
Sulphate (SO <sub>4</sub> )	21	56	24	110	-	-	-
<b>Total Dissolved Solids (Filt. Residue)</b>							
TDS	570	450	390	-	-	-	-
<b>Total Dissolved Solids (Calculated)</b>							
TDS (calculated)	520	430	370	560	-	-	-
<b>Total Kjeldahl Nitrogen</b>							
Total Kjeldahl Nitrogen	0.58	0.55	0.64	-	-	-	-
<b>Phosphorus -P (Total, Dissolved)</b>							
Phosphorus (P)	0.0065	0.0049	0.0060	-	-	-	-
<b>Total Phosphorus</b>							
Phosphorus (P)	0.018	0.014	0.016	-	-	-	-
<b>Total Suspended Solids (NFR)</b>							
TSS	3.1	2.1	14	-	-	-	-
<b>Turbidity</b>							
Turbidity	3.3	2.0	1.8	2.4	0.74	2.0	1.6



**Wetland 06 - Spring 2019 Monitoring Data Results**

Flow Data For May 29

Site	Channel Width (m)	Depth*(m)			Velocity* (m/sec)			Discharge (m3/sec)	Comments
		RMID	MID	LMID	RMID	MID	LMID		
FL 1	0.55	-	0.04	-	-	0.20	-	-	
FL 2	1.58	0.26	0.55	0.66	0.00	0.00	0.00	-	Channel had water present but no measurable velocity in the channel
FL 3	-	-	-	-	-	-	-	-	Channel was dry at the time of the survey
FL 4	-	-	-	-	-	-	-	-	Channel was dry at the time of the survey

\* RMID= right mid channel, MID= mid channel, LMID= left mid channel  
 (-)= null result

In-situ Water Quality Parameters - May 29

Site	Temperature	Dissolved Oxygen (mg/l)	pH	Conductivity (µS/cm)	Depth (m)
WQ1	9.33	4.68	7.55	855.36	0.20
WQ2	12.30	7.17	7.97	711.62	0.68
WQ3	16.06	8.68	8.27	574.72	0.57
WQ4a	7.18	3.60	7.52	724.29	0.18
WQ4b	11.62	9.25	8.64	732.26	0.10
WQ5a	13.59	6.77	7.99	881.77	0.28
WQ5b	14.15	9.23	7.97	906.92	0.08
WQ5c	-	-	-	-	Dry

(-)= null result