



Wetland 06 - Spring 2020 Monitoring Data Results

Report To	HEMMERA ENVIROCHEM INC.									
Mazam Job No.	C036129									
Date Received	5/29/2020									
Report Date	6/5/2020									
RESULTS OF ANALYSIS										
Sample ID	WQ-01	WQ-02	WQ-03	WQ-04A	WQ-04B	WQ-05A	WQ-05B	WQ-06	WQ-07	
Date Sampled	5/28/2020	5/28/2020	5/28/2020	5/28/2020	5/28/2020	5/28/2020	5/28/2020	5/28/2020	5/28/2020	5/28/2020
Time Sampled	10:40	14:00	12:30	17:40	15:40	17:15	16:25	15:00	14:30	
Mazam Sample ID	XV3750	XV3751	XV3752	XV3753	XV3754	XV3755	XV3756	XV3757	XV3758	
Nature	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Chain Of Custody Number	609351-01-01	609351-01-01	609351-01-01	609351-01-01	609351-01-01	609351-01-01	609351-01-01	609351-01-01	609351-01-01	609351-01-01
Alkalinity @25C (pp. total), CO3,HCO3,OH										
Alkalinity (total) as CaCO3	510	300	240	350	360	380	380	310	300	
Phenolphthalein Alkalinity	<1.0	2.5	<1.0	<1.0	8.7	<1.0	<1.0	<1.0	<1.0	
Bicarbonate	620	360	290	420	420	460	460	380	370	
Carbonate	<1.0	3.0	<1.0	<1.0	10	<1.0	<1.0	<1.0	<1.0	
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Biochemical Oxygen Demand										
biochemical oxygen demand	<2.0	2.2	2.3	<2.0	<2.0	<2.0	<2.0	2.8	3.2	
Cadmium - low level CCME - Dissolved										
Cadmium (Cd)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	
Chloride/Sulphate by Auto Colourimetry										
Dissolved Chloride	16	12	18	7.7	8.2	8.1	11	13	13	
Sulphate (SO4)	44	50	55	52	50	76	96	52	57	
COD by Colorimeter										
Chemical Oxygen Demand	28	27	42	22	20	34	23	32	33	
Oxygen (Dissolved)										
Dissolved Oxygen	3.2	11	9.4	8.0	9.0	9.8	11	11	7.0	
Conductivity @25C										
Conductivity	1000	680	620	750	770	840	890	680	710	
Hardness										
Hardness (CaCO3)	460	310	270	320	370	390	410	290	300	
Elements by ICP - Dissolved										
Iron (Fe)	<0.060	0.090	<0.060	<0.060	0.092	<0.060	<0.060	<0.060	0.083	
Lithium (Li)	<0.020	<0.020	<0.020	0.022	0.022	<0.020	0.022	<0.020	<0.020	
Magnesium (Mg)	49	41	33	38	44	47	50	40	42	
Manganese (Mn)	0.089	0.0663	0.0053	0.0082	0.023	0.015	0.0060	0.0082	0.021	
Potassium (K)	4.7	4.2	5.7	4.1	3.9	6.7	5.6	4.8	5.7	
Sodium (Na)	45	33	26	41	41	33	31	34	35	
Strontium (Sr)	0.61	0.55	0.40	0.64	0.74	0.65	0.61	0.51	0.51	
Sulphur as S	14	15	18	16	16	26	28	15	17	
Phosphorus (P)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Barium (Ba)	0.17	0.12	0.14	0.074	0.098	0.12	0.15	0.11	0.12	
Silicon (Si)	12	15	11	5.8	4.3	6.9	5.0	6.7	14	
Boron (B)	0.036	0.041	0.033	0.049	0.064	0.043	0.024	0.034	0.035	
Calcium (Ca)	38	55	54	66	73	78	81	49	51	
Elements by ICPMS - Dissolved										
Aluminum (Al)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	
Chromium (Cr)	<0.0010	<0.0010	<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	<0.00030	<0.00030	
Copper (Cu)	0.030	0.00667	0.0012	0.0027	0.0038	0.0098	0.0019	0.0055	0.0052	
Lead (Pb)	<0.00020	<0.00020	<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	<0.00060	<0.00060	
Molybdenum (Mo)	0.00052	0.0021	0.0023	0.0018	0.0016	0.0054	0.0030	0.0015	0.0021	
Nickel (Ni)	0.0017	0.0011	0.0021	<0.00050	0.00061	0.0011	0.0013	0.0010	0.0012	
Selenium (Se)	<0.00020	0.00088	0.00073	0.0010	0.00093	0.00074	0.0016	0.00070	0.00057	
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
Arsenic (As)	0.00095	0.0011	0.0012	0.00036	0.00056	0.0018	0.00059	0.0011	0.0012	
Thallium (Tl)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
Tin (Sn)	<0.0010	<0.0010	<0.0010	<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	<0.0010	<0.0010	
Uranium (U)	0.0011	0.0035	0.0030	0.0025	0.0025	0.013	0.0089	0.0035	0.0034	
Vanadium (V)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Zinc (Zn)	0.0062	<0.0030	<0.0030	<0.0030	0.0084	0.0031	<0.0030	<0.0030	<0.0030	
Beryllium (Be)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Ion Balance										
Ionic Balance	1.9	2.2	1.1	0.39	4.3	0.0020	0.61	2.3	0.36	
Sum of cations, anions										
Anion Sum	11	7.4	6.5	8.2	8.4	9.4	9.8	7.7	7.6	
Cation Sum	11	7.7	6.6	8.3	9.2	9.4	9.7	7.4	7.6	
Ammonia-N (Total)										
Ammonia as N	0.066	0.075	0.093	0.047	0.069	0.072	0.059	0.058	0.068	
Nitrate and Nitrite										
Nitrate (as NO3)	<0.044	<0.044	8.0	0.086	0.064	<0.044	1.6	<0.044	<0.044	
Nitrite (NO2)	<0.033	<0.033	0.35	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	
Nitrate - Nitrite-N (calculated)										
Nitrate plus Nitrite (N)	<0.014	<0.014	1.9	0.019	0.015	<0.014	0.36	<0.014	<0.014	
Nitrogen (Nitrite - Nitrate) by IC										
Nitrate (as N)	<0.010	<0.010	1.8	0.019	0.015	<0.010	0.36	<0.010	<0.010	
Nitrite (as N)	<0.010	<0.010	0.11	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
pH @25 C										
pH	7.91	8.34	8.29	8.22	8.46	8.15	8.18	8.29	8.18	
Orthophosphate by Konelab										
Ortho Phosphate (P)	0.0036	0.0033	0.0040	0.0034	<0.0030	0.041	0.0054	<0.0030	0.0072	
Total Dissolved Solids (Filt. Residue)										
TDS	540	360	360	400	420	500	470	330	350	
Total Dissolved Solids (Calculated)										
TDS (calculated)	560	380	340	420	440	480	500	380	380	
Total Kjeldahl Nitrogen										
Total Kjeldahl Nitrogen	0.58	0.90	1.6	0.39	0.45	0.90	0.70	0.77	0.98	
Phosphorus -P (Total, Dissolved)										
Phosphorus (P)	0.0032	0.0052	0.0095	<0.0030	<0.0030	0.047	0.0058	0.0051	0.013	
Total Phosphorus										
Phosphorus (P)	0.011	0.021	0.034	0.011	0.0090	0.060	0.0092	0.020	0.046	
Total Suspended Solids (NFR)										
TSS	1.0	2.5	7.1	2.7	11	11	29	6.0	6.8	
Turbidity										
Turbidity	1.1	1.7	7.4	0.20	5.9	0.41	0.87	1.9	2.0	



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Flow Data for May 29

Site	Channel Width (m)	Depth*(m)			Velocity* (m/sec)			Discharge (m ³ /sec)	Comments	Site	Temperature	Dissolved Oxygen (mg/l)	pH	Conductivity (µS/cm)	Depth (m)
		RMID	MID	LMID	RMID	MID	LMID								
										WQ1	11.44	3.91	8.34	912.35	0.40
FL 1	0.55	0.03	0.08	0.05	0.00	0.10	0.00	-	Channel had water present but no measurable velocity in the channel	WQ2	14.58	9.67	9.01	662.02	0.56
FL 2	1.62	0.62	0.65	0.64	0.00	0.00	0.00	-	Channel had water present but no measurable velocity in the channel	WQ3	12.68	9.72	8.89	590.97	0.48
FL 3	-	-	-	-	-	-	-	-	Channel was dry at the time of the survey	WQ4a	14.71	8.26	8.86	711.93	0.15
FL 4	-	-	-	-	-	-	-	-	Channel was dry at the time of the survey	WQ4b	12.53	9.24	5.63	676.97	0.08
* RMID= right mid channel, MID= mid channel, LMID= left mid channel										WQ5a	13.54	9.31	8.76	779.79	0.20
(-)= null result										WQ5b	12.48	10.13	8.69	5.99	0.35
										WQ5c	-	-	-	-	Dry
										WQ06	17.78	10.90	9.09	635.55	0.23
										WQ07	15.29	7.56	8.65	683.23	0.38
										(-)= null result					