Appendix 3A-1: Water Year 2011 Water Quality Monitoring Results

Florida Department of Environmental Protection[1]

[1] Florida Department of Environmental Protection, Division of Environmental Assessment and Restoration, Environmental Assessment and Support Program, Tallahassee, FL

Table 1. Summary of water quality monitoring results from Water Year 2011 (May 1, 2010–April 30, 2011). Only water quality variables analyzed during the water year for a given region and site class are included. Excursion categories of concern, potential concern, minimal concern, and no concern are denoted by "C," "PC," "MC," and "NC," respectively. For sulfate, the excursion category is given as "NA" because no numeric criterion applies.

Parameter	Units	Area	Class	Arithmetic Mean	Standard Deviation	25th Percentile	Median	75th Percentile	Min.	Max.	Sample Size (n)	Percent Excursions	Exceedance Category
Total Alkalinity as $CaCO_3$	mg/L	ENP	Interior	158.0	37.9	135.5	157.0	181.8	82.0	240.0	60	0 ± 0	NC
Total Alkalinity as $CaCO_3$	mg/L	Refuge	Inflow	218.4	54.7	179.0	221.5	255.0	107.0	342.0	130	0 ± 0	NC
Total Alkalinity as $CaCO_3$	mg/L	Refuge	Interior	30.9	21.1	15.0	27.0	39.5	8.0	106.0	101	39.6 ± 8	MC
Total Alkalinity as $CaCO_3$	mg/L	Refuge	Outflow	110.7	40.6	76.0	104.0	131.3	42.0	226.0	42	0 ± 0	NC
Total Alkalinity as $CaCO_3$	mg/L	WCA-2	Inflow	209.2	67.0	162.0	217.5	256.0	47.0	318.0	88	0 ± 0	NC
Total Alkalinity as $CaCO_3$	mg/L	WCA-2	Interior	210.4	57.8	179.5	206.0	236.3	115.0	468.0	70	0 ± 0	NC
Total Alkalinity as $CaCO_3$	mg/L	WCA-2	Outflow	178.1	43.3	140.0	183.5	212.3	108.0	252.0	50	0 ± 0	NC
Total Alkalinity as $CaCO_3$	mg/L	WCA-3	Inflow	207.6	36.8	181.0	200.0	234.8	134.0	319.0	108	0 ± 0	NC
Total Alkalinity as $CaCO_3$	mg/L	WCA-3	Interior	167.6	28.2	146.0	170.0	190.0	112.0	223.0	83	0 ± 0	NC
Total Iron	µg/L	Refuge	Interior	71.5	69.2	22.5	53.0	85.0	7.0	324.0	37	0 ± 0	NC
Total Iron	µg/L	Refuge	Outflow	10.6	7.0	5.5	8.0	14.5	4.0	30.0	13	0 ± 0	NC
Total Iron	µg/L	WCA-2	Inflow	10.4	4.7	5.5	9.0	15.5	4.0	16.0	13	0 ± 0	NC
Total Iron	µg/L	WCA-2	Interior	8.7	6.0	5.0	8.0	9.5	3.0	32.0	25	0 ± 0	NC
Total Iron	µg/L	WCA-2	Outflow	16.5	14.7	7.3	12.0	16.8	4.0	61.0	16	0 ± 0	NC
Total Iron	µg/L	WCA-3	Inflow	33.0	39.2	12.8	18.5	37.0	5.0	182.0	22	0 ± 0	NC
Total Iron	µg/L	WCA-3	Interior	138.9	186.9	7.0	66.0	219.5	3.0	737.0	29	0 ± 0	NC
pH, Field	pH Units	ENP	Inflow	7.3	0.3	7.1	7.3	7.4	6.8	8.2	262	0 ± 0	NC
pH, Field	pH Units	ENP	Interior	7.6	0.3	7.4	7.6	7.8	7.0	8.3	79	0 ± 0	NC
pH, Field	pH Units	Refuge	Inflow	7.8	0.3	7.6	7.8	7.9	7.0	8.4	258	0 ± 0	NC
pH, Field	pH Units	Refuge	Interior	6.6	0.5	6.3	6.5	6.9	4.8	8.4	209	4.8 ± 2.4	MC

Table 1. Continued.

Parameter	Units	Area	Class	Arithmetic Mean	Standard Deviation	25th Percentile	Median	75th Percentile	Min.	Max.	Sample Size (n)	Percent Excursions	Exceedance Category
pH, Field	pH Units	Refuge	Outflow	7.7	0.4	7.5	7.8	7.9	6.7	8.5	75	0 ± 0	NC
pH, Field	pH Units	Refuge	Rim	7.6	0.3	7.4	7.7	7.8	7.1	8.0	24	0 ± 0	NC
pH, Field	pH Units	WCA-2	Inflow	7.8	0.2	7.6	7.8	7.9	6.9	8.5	138	0 ± 0	NC
pH, Field	pH Units	WCA-2	Interior	7.5	0.2	7.4	7.5	7.6	6.9	8.2	90	0 ± 0	NC
pH, Field	pH Units	WCA-2	Outflow	7.6	0.2	7.4	7.6	7.7	7.1	8.1	74	0 ± 0	NC
pH, Field	pH Units	WCA-3	Inflow	7.6	0.3	7.4	7.6	7.8	7.0	8.7	394	0.3 ± 0.4	MC
pH, Field	pH Units	WCA-3	Interior	7.4	0.2	7.2	7.3	7.5	6.8	8.3	100	0 ± 0	NC
pH, Field	pH Units	WCA-3	Outflow	7.3	0.2	7.1	7.3	7.4	6.8	8.0	238	0 ± 0	NC
SP Conductivity, Field	µmhos/cm	ENP	Inflow	507.6	123.4	408.3	519.5	580.0	238.0	905.0	264	0 ± 0	NC
SP Conductivity, Field	µmhos/cm	ENP	Interior	497.3	143.5	396.0	501.0	596.0	234.0	933.0	77	0 ± 0	NC
SP Conductivity, Field	µmhos/cm	Refuge	Inflow	1019.6	217.8	873.8	1046.0	1172.0	438.2	1573.0	258	9.7 ± 3	MC
SP Conductivity, Field	µmhos/cm	Refuge	Interior	196.2	150.5	102.0	140.6	234.0	62.0	878.0	203	0 ± 0	NC
SP Conductivity, Field	µmhos/cm	Refuge	Outflow	624.9	255.4	396.0	641.0	829.0	184.0	1176.0	75	0 ± 0	NC
SP Conductivity, Field	µmhos/cm	Refuge	Rim	823.6	158.5	694.0	810.5	929.5	536.0	1119.0	24	0 ± 0	NC
SP Conductivity, Field	µmhos/cm	WCA-2	Inflow	935.6	248.0	805.0	982.0	1108.0	184.0	1301.0	139	2.2 ± 2	MC
SP Conductivity, Field	µmhos/cm	WCA-2	Interior	893.2	224.2	731.5	879.5	1001.8	467.0	1866.0	88	4.5 ± 3.7	MC
SP Conductivity, Field	µmhos/cm	WCA-2	Outflow	759.6	200.6	562.8	811.5	920.5	426.0	1143.0	74	0 ± 0	NC
SP Conductivity, Field	µmhos/cm	WCA-3	Inflow	736.3	182.4	583.8	751.0	864.3	329.2	1341.0	394	0.5 ± 0.6	MC

Table 1. Continued.

Parameter	Units	Area	Class	Arithmetic Mean	Standard Deviation	25th Percentile	Median	75th Percentile	Min.	Max.	Sample Size (n)	Percent Excursions	Exceedance Category
SP Conductivity, Field	µmhos/cm	WCA-3	Interior	556.9	151.9	452.5	542.5	638.3	289.0	1146.0	100	0 ± 0	NC
SP Conductivity, Field	µmhos/cm	WCA-3	Outflow	509.0	141.3	395.0	491.0	614.0	238.0	905.0	239	0 ± 0	NC
Turbidity	NTU	ENP	Inflow	1.9	1.6	0.7	1.1	3.0	0.5	5.2	24	0 ± 0	NC
Turbidity	NTU	ENP	Interior	1.5	1.4	0.7	0.9	1.7	0.3	5.8	60	0 ± 0	NC
Turbidity	NTU	Refuge	Interior	0.6	0.2	0.5	0.6	0.8	0.3	1.4	101	0 ± 0	NC
Turbidity	NTU	Refuge	Outflow	1.4	0.6	0.9	1.1	1.7	0.4	2.9	36	0 ± 0	NC
Turbidity	NTU	WCA-2	Inflow	1.3	0.7	0.9	1.2	1.6	0.2	3.5	43	0 ± 0	NC
Turbidity	NTU	WCA-2	Interior	0.8	0.4	0.5	0.7	1.0	0.3	2.1	69	0 ± 0	NC
Turbidity	NTU	WCA-2	Outflow	1.3	0.8	0.8	1.1	1.6	0.3	4.2	68	0 ± 0	NC
Turbidity	NTU	WCA-3	Inflow	1.8	1.0	1.1	1.5	2.3	0.4	6.3	218	0 ± 0	NC
Turbidity	NTU	WCA-3	Interior	0.8	0.7	0.5	0.6	0.9	0.4	4.5	83	0 ± 0	NC
Turbidity	NTU	WCA-3	Outflow	1.8	1.3	0.9	1.2	2.3	0.5	5.2	45	0 ± 0	NC
Un-ionized Ammonia	µg/L	ENP	Interior	1.56	1.46	0.59	1.04	1.89	0.20	6.97	55	0 ± 0	NC
Un-ionized Ammonia	µg/L	Refuge	Inflow	3.99	2.06	2.76	3.62	4.35	1.31	10.95	78	0 ± 0	NC
Un-ionized Ammonia	µg/L	Refuge	Interior	0.03	0.04	0.01	0.01	0.03	0.00	0.30	86	0 ± 0	NC
Un-ionized Ammonia	µg/L	Refuge	Outflow	1.12	0.66	0.66	1.09	1.46	0.14	3.34	40	0 ± 0	NC
Un-ionized Ammonia	µg/L	WCA-2	Inflow	2.57	1.93	1.14	2.13	3.82	0.04	11.44	81	0 ± 0	NC
Un-ionized Ammonia	µg/L	WCA-2	Interior	0.78	0.57	0.36	0.63	1.20	0.04	2.65	64	0 ± 0	NC

Table 1. Continued.

Parameter	Units	Area	Class	Arithmetic Mean	Standard Deviation	25th Percentile	Median	75th Percentile	Min.	Max.	Sample Size (n)	Percent Excursions	Exceedance Category
Un-ionized Ammonia	µg/L	WCA-2	Outflow	0.86	0.68	0.36	0.70	1.15	0.02	2.83	47	0 ± 0	NC
Un-ionized Ammonia	µg/L	WCA-3	Inflow	2.10	1.25	1.07	1.81	2.95	0.05	5.79	102	0 ± 0	NC
Un-ionized Ammonia	µg/L	WCA-3	Interior	0.42	0.66	0.17	0.26	0.44	0.02	4.51	81	0 ± 0	NC
Sulfate	mg/L	ENP	Inflow	3.3	4.4	0.1	0.5	5.4	0.1	14.6	24	NA	NA
Sulfate	mg/L	ENP	Interior	1.3	1.5	0.2	0.6	2.1	0.1	6.0	60	NA	NA
Sulfate	mg/L	Refuge	Inflow	58.9	24.2	38.7	58.1	75.4	11.4	119.0	109	NA	NA
Sulfate	mg/L	Refuge	Interior	1.1	3.3	0.1	0.1	0.6	0.1	28.8	138	NA	NA
Sulfate	mg/L	Refuge	Outflow	38.1	25.1	14.8	35.4	55.6	3.0	95.0	67	NA	NA
Sulfate	mg/L	WCA-2	Inflow	47.1	20.1	35.8	45.1	60.6	0.1	95.0	108	NA	NA
Sulfate	mg/L	WCA-2	Interior	29.0	19.3	15.2	19.0	45.3	6.3	86.0	78	NA	NA
Sulfate	mg/L	WCA-2	Outflow	26.7	20.8	10.7	20.3	37.5	2.3	78.7	54	NA	NA
Sulfate	mg/L	WCA-3	Inflow	33.0	19.7	18.3	33.8	43.9	0.7	78.7	92	NA	NA
Sulfate	mg/L	WCA-3	Interior	7.6	11.4	0.3	2.3	13.4	0.1	59.9	83	NA	NA
Sulfate	mg/L	WCA-3	Outflow	3.9	5.7	0.1	0.5	6.4	0.1	23.7	32	NA	NA

Min. – minimum
Max. – maximum
Refuge – Arthur R. Marshall Loxahatchee National Wildlife Refuge
ENP – Everglades National Park
WCA-2 – Water Conservation Area 2
WCA-3 – Water Conservation Area 3
µg/L – micrograms per liter
mg/L – milligrams per liter
NTU – nephelometric turbidity unit
µmhos/cm – micromhos per centimeter
SP – Specific
$CaCO_3$ – calcium carbonate