

**REFUGE'S ENHANCED WATER QUALITY PROGRAM
MONTHLY SAMPLING**

July through August, 2014 Data Update
Submitted October 7, 2014

by:

Donatto Surratt

**Everglades National Park
c/o A.R.M. Loxahatchee National Wildlife Refuge**

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Site	Sample Date	Full(F), Partial(P), None(N), Reanalyzer (R) Units	Depth ¹ meter	Total Depth ² meter	DCS ³ meter	Alkalinity mg/l	Calcium Dissolved mg/l	Carbon, Dissolved Organic mg/l	Carbon, Total Organic mg/l	Chloride mg/l	Conductivity (Field) µMHSO/cm	Nitrate + Nitrite as Nitrogen mg/l	Nitrogen, Total Kjeldahl mg/l	Ortho-phosphate as Phosphorus mg/l	Oxygen, Dissolved (Field) mg/l	pH (Field) pH units	Phosphorus, Total mg/l	Silica mg/l	Solids, Total Dissolv mg/l	Solids, Total Suspended (TSS) mg/l	Sulfate mg/l	Temperature (Field) DEG C	Turbidity NTU
A101	07/14/14	P	0.08	0.16						36	290				3.7	6.9	0.017			U	4.2	28.3	
A102		N																					
A103		N																					
A104	07/16/14	F	>1M	>1M	>1M	165	49	27	28	110	767	0.033	1.7	0.006	4.3	7.7	0.023	22.8	517	U	55.2	29.8	1.1
A105	07/14/14	P	0.06	0.12						73	137				3.3	6.9	0.017			U	9.3	30.5	
A106		N																					
A107		N																					
A108		N																					
A109	07/16/14	F	0.10	0.21		42	11	19	19	25	170	U	1.1	0.003	2.2	6.6	0.009	2.3	131	U	1.8	27.9	0.6
A110	07/16/14	P	0.06	0.12						26	155				4.4	6.7	0.006			U	U	28.2	
A111	07/16/14	P	0.05	0.11						18	120				3.7	6.3	0.007			U	0.8	29.0	
A112	07/16/14	F	0.10	0.20		40	12	16	16	18	139	U	0.9	U	3.9	6.6	0.006	2.4	122	U	1	28.7	0.6
A113	07/16/14	P	0.08	0.17						17	114				6.5	6.5	0.005			U	U	29.4	
A114	07/16/14	P	0.07	0.15						16	103				6.5	6.5	0.006			U	U	29.8	
A115	07/16/14	F	>1M	>1M	>1M	154	47	28	29	109	745	0.024	1.7	0.006	4.3	7.6	0.026	21.9	494	U	53.2	29.7	1.9
A117	07/17/14	P	0.07	0.15						40	279				1.5	7.0	0.016			U	3.5	26.5	
A118	07/17/14	F	0.11	0.22		33	11	15	15	20	146	0.002	0.8	0.003	4.0	6.8	0.007	4.0	115	U	1.5	27.9	0.7
A119	07/17/14	F	0.12	0.24		35	13	20	20	22	148	U	1.2	0.003	2.9	7.1	0.008	6.8	136	U	0.8	27.6	0.7
A120	07/17/14	F	0.12	0.25		24	9	20	20	27	146	0.003	1.3	U	3.6	7.2	0.005	5.2	135	U	U	27.8	0.7
A122	07/17/14	P	0.09	0.18						24	201				0.2	6.6	0.011			U	2	27.3	
A124	07/16/14	F	0.13	0.27		21	7	10	10	15	90	0.025	0.6	U	3.6	6.3	0.009	4.5	81	U	0.8	29.0	0.5
A126	07/17/14	F	0.11	0.22		39	13	17	17	23	168	U	1.2	0.006	4.2	7.3	0.006	5.9	150	U	1.5	27.0	0.7
A127	07/17/14	F	0.11	0.23		16	7	22	23	19	106	U	1.4	U	4.9	7.3	0.007	1.5	120	U	U	27.5	0.7
A128	07/16/14	P	0.05	0.10						19	109				6.6	6.6	0.005			U	U	30.3	
A129	07/16/14	F	>1M	>1M	>1M	147	52	25	25	101	673	0.011	1.5	0.005	3.4	7.3	0.039	11.1	443	U	27	29.8	2.2
A130	07/17/14	F	0.10	0.21		67	28	30	31	64	366	U	1.4	U	0.3	6.6	0.010	4.5	261	U	4	25.2	0.8
A131	07/17/14	F	0.11	0.22		39	18	37	36	45	246	U	2.3	0.005	3.0	6.6	0.009	16.2	234	U	1.5	25.7	0.7
A132	07/16/14	F	>1M	>1M	>1M	151	53	25	25	102	691	0.026	1.6	0.007	2.8	7.4	0.039	11.5	447	U	30.9	29.5	1.4
A133	07/17/14	P	0.09	0.19						48	327				0.8	6.9	0.023			U	1.6	25.2	
A134	07/17/14	F	0.12	0.23		62	25	26	27	44	280	U	1.4	0.002	0.7	6.9	0.011	6.2	217	U	1.9	25.9	0.7
A135	07/16/14	F	>1M	>1M	>1M	199	61	23	23	125	810	0.030	1.5	0.003	3.8	7.5	0.024	9.7	523	U	39.9	29.8	1.7
A136	07/17/14	P	0.09	0.18						53	355				1.5	7.3	0.015			U	2	26.2	
A137	07/17/14	F	0.10	0.20		60	22	28	27	39	256	U	1.5	U	2.3	7.2	0.014	6.1	212	U	2.2	26.3	0.9
A138	07/17/14	P	0.08	0.17						27	174				4.0	7.2	0.009			U	1.3	25.9	
A139	07/17/14	P	0.08	0.16						22	139				3.9	7.0	0.010			U	0.9	25.9	
A140	07/14/14	P	0.08	0.15						27	181				6.9	7.6	0.012			U	2	32.5	
A141	07/17/14	F	0.59	1.18		62	20	19	20	43	276	U	1.1	0.003	1.2	7.0	0.010	8.3	200	U	2.5	27.5	0.8
Total			37																				
Full			18																				
Partial			14																				
None			5																				

(1) Sample depth

(2) Total depth is depth of the clear water column

(3) Depth to consolidated substrate

U indicates that the compound was analyzed for but not detected; see "LOXA_Parameter_Info" tab for table of MDLs.

The analyte was detected in both the sample and the associated method blank

Equipment malfunction, no value retrieved

Additional information on the Enhanced Water Quality Monitoring Network can be found at:

http://sofia.usgs.gov/lox_monitor_model/wq_network.html

Data from June 2004 to May 2006 available on DBHYDRO:

<http://www.sfwmd.gov/org/ema/dbhydro/>

Field notes are maintained by the Everglades Program Team at the A.R.M. Loxahatchee National Wildlife Refuge.

Site	Sample Date	Full(F), Partial(P), None(N), Reanalyzer (R) Units	Depth ¹ meter	Total Depth ² meter	DCS ³ meter	Alkalinity mg/l	Calcium Dissolved mg/l	Carbon, Dissolved Organic mg/l	Carbon, Total Organic mg/l	Chloride mg/l	Conductivity (Field) µMHSO/cm	Nitrate + Nitrite as Nitrogen mg/l	Nitrogen, Total Kjeldahl mg/l	Ortho-phosphate as Phosphorus mg/l	Oxygen, Dissolved (Field) mg/l	pH (Field) pH units	Phosphorus, Total mg/l	Silica mg/l	Solids, Total Dissolved mg/l	Solids, Total Suspended (TSS) mg/l	Sulfate mg/l	Temperature (Field) DEG C	Turbidity NTU	
A101	08/12/14	F	0.12	0.24		72.70	23	22	22	34	264	U	1.2	0.006	1.1	6.5	0.017	8.9	194	U	2	27.3	0.6	
A102	08/12/14	P	0.08	0.17						28	211				4.6	6.4	0.010		U	U	2.8	28.0		
A103	08/12/14	P	0.09	0.19						18	147				1.9	6.4	0.008		U	U	1.6	27.6		
A104	08/13/14	F	>1M	>1M	>1M	222	72	31	33	130	937	0.026	1.9	0.005	3.6	7.5	0.021	25.4	652	U	85.5	31.1	1.2	
A105	08/12/14	F	0.12	0.25		122	41	27	27	73	525	U	1.5	0.006	1.2	6.6	0.015	14.5	344	U	20.9	28.1	0.8	
A106	08/12/14	P	0.09	0.18						36	258				2.0	6.7	0.009		U	U	3.6	28.2		
A107	08/12/14	P	0.07	0.15						19	147				0.8	6.4	0.008		U	U	1.1	28.0		
A108	08/12/14	P	0.07	0.15						17	111				5.4	6.4	0.005		U	U	U	31.7		
A109	08/13/14	F	0.16	0.32		43	13	19	19	20	162	U	1.2	U	U	6.3	0.008	4.3	92	U	1.9	29.4	0.7	
A110	08/13/14	F	0.10	0.20		26	9	22	23	18	123	U	1.5	U	4.2	6.4	0.007	6.7	157	U	U	30.0	1.1	
A111	08/13/14	F	0.11	0.22		26	7	15	16	11	88	U	1.0	U	3.8	6.3	0.008	2.9	118	U	0.8	29.4	2.0	
A112	08/13/14	F	0.15	0.31		33	11	16	16	14	118	U	1.2	U	2.6	6.3	0.006	3.4	134	U	1.1	30.3	0.9	
A113	08/13/14	F	0.12	0.25		21	7	16	16	11	85	0.008	1.2	U	3.9	6.4	0.007	3.8	107	U	U	30.8	1.3	
A114	08/13/14	F	0.11	0.22		16	6	17	17	11	79	U	1.3	U	3.8	6.3	0.009	3.3	105	U	U	31.0	2.2	
A115	08/13/14	F	>1M	>1M	>1M	193	70	31	32	121	906	0.028	1.9	0.006	2.8	7.3	0.020	24.7	650	U	77.9	31.1	1.2	
A117	08/14/14	F	0.12	0.25		83	29	22	22	55	389	U	1.2	0.004	U	6.5	0.015	11.4	264	U	20.5	27.6	0.9	
A118	08/14/14	F	0.14	0.29		30	9	13	14	13	117	U	0.8	U	1.1	6.2	0.007	3.5	81	U	1.5	29.0	0.7	
A119	08/14/14	F	0.15	0.30		29	9	18	19	12	103	U	1.2	0.002	3.4	6.3	0.009	3.8	94	U	U	30.4	0.9	
A120	08/14/14	F	0.12	0.25		16	6	15	15	19	111	0.002	1.2	U	1.8	6.3	0.005	4.1	79	U	U	30.3	0.7	
A122	08/14/14	F	0.14	0.28		57	18	17	18	23	204	U	1.0	U	U	6.5	0.013	4.5	141	U	3.5	28.8	1.0	
A124	08/13/14	F	0.11	0.23		24	9	13	13	14	99	0.004	0.8	U	1.0	5.7	0.017	3.4	118	U	U	28.0	1.0	
A126	08/14/14	F	0.16	0.32		69	24	21	21	52	325	U	1.4	U	2.2	6.7	0.006	9.8	218	U	4.1	29.4	0.6	
A127	08/14/14	F	0.13	0.27		17	7	19	19	18	106	U	1.4	U	1.8	6.3	0.006	3.7	97	U	U	29.4	1.0	
A128	08/13/14	P	0.09	0.18						11	75				U	6.3	0.006		U	U	U	31.3		
A129	08/13/14	F	>1M	>1M	>1M	260	105	35	36	135	1124	0.031	2.1	0.008	3.2	7.5	0.026	26.2	790	U	109	31.8	1.2	
A130	08/11/14	F	0.16	0.32		142	55	26	26	99	649	U	1.5	0.004	0.9	6.7	0.014	14.2	410	U	27.6	28.9	1.0	
A131	08/11/14	F	0.16	0.32		39	16	27	27	33	200	0.003	0.3	0.003	7.3	6.9	0.007	9.3	170	U	1.4	29.3	0.7	
A132	08/13/14	F	>1M	>1M	>1M	265	106	36	36	137	1133	0.017	2.0	0.008	2.4	7.4	0.026	26.1	846	U	109	31.4	0.8	
A133	08/11/14	F	0.11	0.22		126	48	25	25	87	564	0.003	1.6	0.003	1.1	6.7	0.030	12.1	359	U	14.4	27.7	1.4	
A134	08/11/14	F	0.17	0.35		118	46	25	24	90	555	U	1.6	0.002	2.6	6.8	0.014	11.6	360	U	17.7	29.3	0.8	
A135	08/13/14	F	>1M	>1M	>1M	266	110	36	37	140	1153	0.031	2.0	0.011	2.4	7.4	0.024	26.7	836	U	116	31.3	1.2	
A136	08/11/14	F	0.17	0.35		206	68	28	29	110	767	U	2.7	0.004	0.5	6.8	0.028	17.3	497	U	38.6	28.5	3.0	
A137	08/11/14	F	0.12	0.25		117	47	28	28	88	552	0.007	1.8	0.004	3.1	6.6	0.013	12.4	365	U	18.2	30.0	1.1	
A138	08/11/14	F	0.13	0.27		45	18	28	27	30	195	U	3.2	0.003	4.8	6.6	0.008	10.2	174	U	1.3	30.4	0.9	
A139	08/11/14	F	0.10	0.20		20	10	38	37	19	118	U	2.3	0.002	4.3	6.5	0.009	4.4	146	U	0.9	29.4	0.9	
A140	08/12/14	F	0.10	0.21		43	16	28	28	27	192	U	1.5	0.004	2.9	6.4	0.015	5.2	161	U	1.3	29.2	1.0	
A141	08/14/14	F				59	18	18	18	40	272	0.004	1.2	U	U	6.6	0.011	7.7	176	U	4.7	28.8	2.0	
Total			37																					
Full			31																					
Partial			6																					
None			0																					

(1) Sample depth

(2) Total depth is depth of the clear water column

(3) Depth to consolidated substrate

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Field notes are maintained by the Everglades Program Team at the A.R.M. Loxahatchee National Wildlife Refuge.

**AR.M. Loxahatchee National Wildlife Refuge
Enhanced Water Quality Monitoring Network**

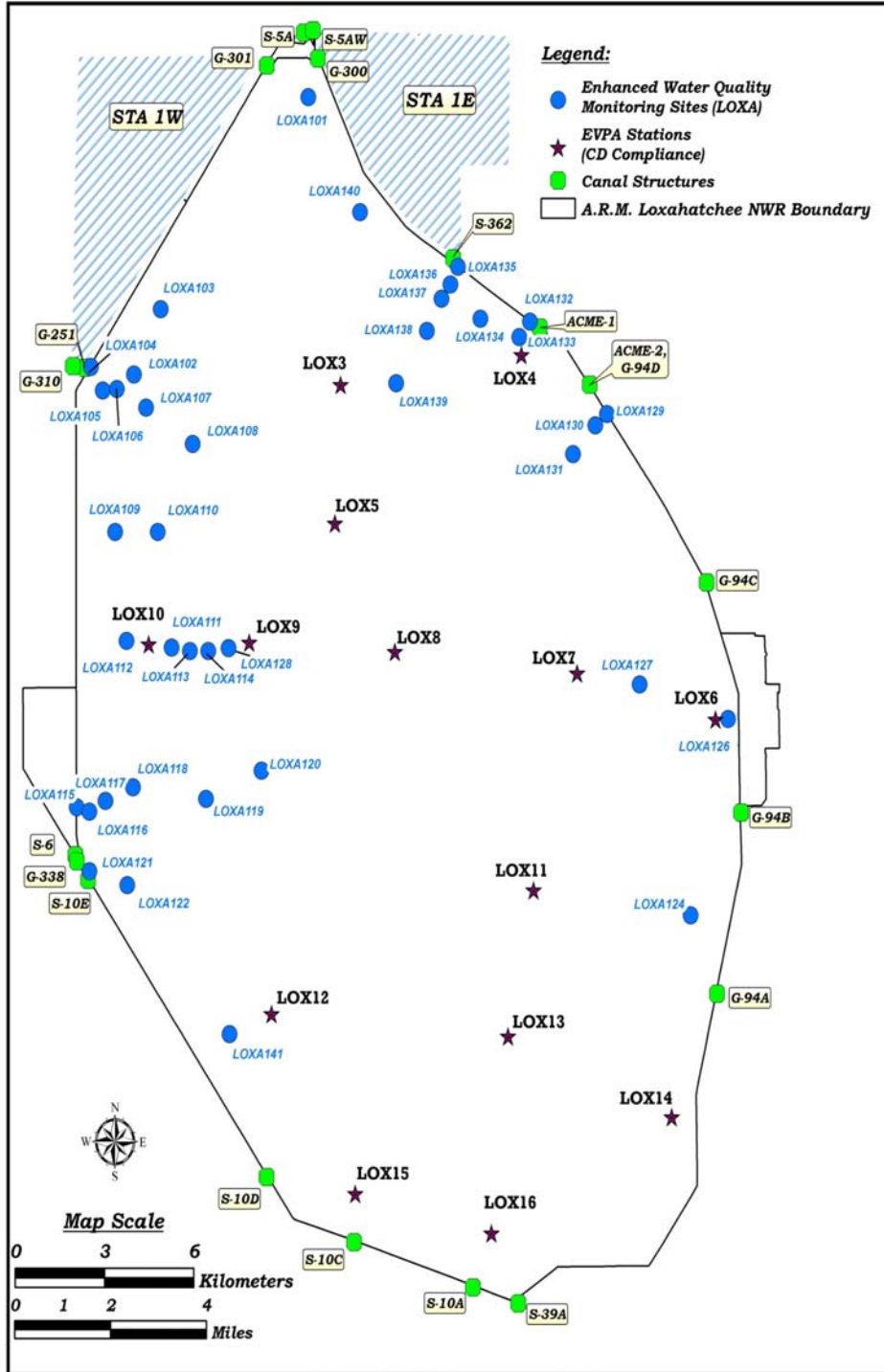
Parameter Information:

Parameter	Units	Analysis Method	MDL
Alkalinity as CaCO ₃ , Total	mg/L	310.1	5
Calcium Dissolved	mg/L	200.7	0.02 - 0.03
Carbon, Dissolved Organic	mg/L	415.1	0.1 - 0.3
Carbon, Total Organic	mg/L	415.1	0.1 - 0.3
Chloride	mg/L	300.0	0.1
Conductivity (field)	μMHOS/cm	120.1 (field)	-
Nitrate + Nitrite as Nitrogen	mg/L	300.0	0.003 - 0.009
Nitrogen, Total Kjeldahl (TKN)	mg/L	351.2	0.06 - 0.07
Ortho-phosphate as Phosphorus	mg/L	365.1	0.002 - 0.003
Oxygen, Dissolved (Field)	mg/L	360.1	1
pH (Field)	pH units	150.1	-
Phosphorus, Total	mg/L	365.3	0.003
Silica	mg/L	370.1	0.14
Solids, Total Dissolved (TDS)	mg/L	160.1	10
Solids, Total Suspended (TSS)	mg/L	160.2	5
Sulfate	mg/L	300.0	0.1
Temperature (Field)	DEG C	170.1	-
Turbidity	NTU	180.1	0.1

Note: Nitrate and Nitrite not analyzed after June 2006

**A.R.M. Loxahatchee National Wildlife Refuge
Enhanced Water Quality Monitoring Network**

Map of sites:



Coordinates of sites:

Name	Latitude	Longitude	X_DMS*	Y_DMS*	X_DM**	Y_DM**
LOXA101	26.66739249	-80.36636475	80° 21' 58.91" W	26° 40' 2.61" N	80° 21.9818333' W	26° 40.0435' N
LOXA102	26.59598877	-80.42553769	80° 25' 31.94" W	26° 35' 45.56" N	80° 25.532333' W	26° 35.7593333333333' N
LOXA103	26.61285142	-80.41643631	80° 24' 59.17" W	26° 36' 46.27" N	80° 24.98616667' W	26° 36.7711666666667' N
LOXA104	26.59798188	-80.44004508	80° 26' 24.16" W	26° 35' 52.73" N	80° 26.4026667' W	26° 35.8788333333333' N
LOXA105	26.59189923	-80.43609407	80° 26' 9.94" W	26° 35' 30.84" N	80° 26.1656667' W	26° 35.514' N
LOXA106	26.59220622	-80.43128096	80° 25' 52.61" W	26° 35' 31.94" N	80° 25.876833' W	26° 35.5323333333333' N
LOXA107	26.58739046	-80.42144468	80° 25' 17.20" W	26° 35' 14.61" N	80° 25.286667' W	26° 35.2435' N
LOXA108	26.5779601	-80.40585344	80° 24' 21.07" W	26° 34' 40.66" N	80° 24.35116667' W	26° 34.6776666666667' N
LOXA109	26.55528865	-80.43205157	80° 25' 55.39" W	26° 33' 19.04" N	80° 25.92316667' W	26° 33.3173333333333' N
LOXA110	26.55523973	-80.41769154	80° 25' 3.69" W	26° 33' 18.86" N	80° 25.0615' W	26° 33.3143333333333' N
LOXA111	26.52533583	-80.41314705	80° 24' 47.33" W	26° 31' 31.21" N	80° 24.7888333' W	26° 31.5201666666667' N
LOXA112	26.52712473	-80.42837332	80° 25' 42.14" W	26° 31' 37.65" N	80° 25.702333' W	26° 31.6275' N
LOXA113	26.52442784	-80.40699875	80° 24' 25.20" W	26° 31' 27.94" N	80° 24.42' W	26° 31.4656666666667' N
LOXA114	26.52439258	-80.40083965	80° 24' 3.02" W	26° 31' 27.81" N	80° 24.050333' W	26° 31.4635' N
LOXA115	26.48422578	-80.44533675	80° 26' 43.21" W	26° 29' 3.21" N	80° 26.7201667' W	26° 29.0535' N
LOXA116	26.4830586	-80.441098	80° 26' 27.95" W	26° 28' 59.01" N	80° 26.4658333' W	26° 28.9835' N
LOXA117	26.48580427	-80.4356858	80° 26' 8.47" W	26° 29' 8.90" N	80° 26.14116667' W	26° 29.1483333333333' N
LOXA118	26.48928924	-80.42639091	80° 25' 35.01" W	26° 29' 21.44" N	80° 25.5835' W	26° 29.3573333333333' N
LOXA119	26.48621462	-80.40180845	80° 24' 6.51" W	26° 29' 10.37" N	80° 24.1085' W	26° 29.1728333333333' N
LOXA120	26.49341054	-80.38307987	80° 22' 59.09" W	26° 29' 36.28" N	80° 22.9848333' W	26° 29.6046666666667' N
LOXA121	26.46767673	-80.44113231	80° 26' 28.08" W	26° 28' 3.64" N	80° 26.468' W	26° 28.0606666666667' N
LOXA122	26.46404297	-80.42843367	80° 25' 42.36" W	26° 27' 50.55" N	80° 25.706' W	26° 27.8425' N
LOXA123	26.42675307	-80.40036372	80° 24' 1.31" W	26° 25' 36.31" N	80° 24.0218333' W	26° 25.6051666666667' N
LOXA124	26.45535397	-80.23875455	80° 14' 19.52" W	26° 27' 19.27" N	80° 14.325333' W	26° 27.3211666666667' N
LOXA126	26.50601148	-80.22585171	80° 13' 33.07" W	26° 30' 21.64" N	80° 13.55116667' W	26° 30.3606666666667' N
LOXA127	26.51513474	-80.25555976	80° 15' 20.02" W	26° 30' 54.49" N	80° 15.3336667' W	26° 30.9081666666667' N
LOXA128	26.52516286	-80.3940121	80° 23' 38.44" W	26° 31' 30.59" N	80° 23.6406667' W	26° 31.5098333333333' N
LOXA129	26.58500726	-80.26608256	80° 15' 57.90" W	26° 35' 6.03" N	80° 15.965' W	26° 35.1005' N
LOXA130	26.58211881	-80.27005531	80° 16' 12.20" W	26° 34' 55.63" N	80° 16.20333' W	26° 34.9271666666667' N
LOXA131	26.57474791	-80.27764653	80° 16' 39.53" W	26° 34' 29.09" N	80° 16.6588333' W	26° 34.4848333333333' N
LOXA132	26.60900561	-80.29189939	80° 17' 30.84" W	26° 36' 32.42" N	80° 17.514' W	26° 36.5403333333333' N
LOXA133	26.6050896	-80.29557491	80° 17' 44.07" W	26° 36' 18.32" N	80° 17.7345' W	26° 36.3053333333333' N
LOXA134	26.60985664	-80.30860325	80° 18' 30.97" W	26° 36' 35.48" N	80° 18.51616667' W	26° 36.5913333333333' N
LOXA135	26.62335538	-80.31612276	80° 18' 58.04" W	26° 37' 24.08" N	80° 18.967333' W	26° 37.4013333333333' N
LOXA136	26.61879302	-80.31866688	80° 19' 7.20" W	26° 37' 7.65" N	80° 19.12' W	26° 37.1275' N
LOXA137	26.61510337	-80.32170327	80° 19' 18.13" W	26° 36' 54.37" N	80° 19.30216667' W	26° 36.9061666666667' N
LOXA138	26.60681693	-80.32666537	80° 19' 36.00" W	26° 36' 24.54" N	80° 19.6' W	26° 36.409' N
LOXA139	26.59332525	-80.33715389	80° 20' 13.75" W	26° 35' 35.97" N	80° 20.22916667' W	26° 35.5995' N
LOXA140	26.63760323	-80.34909432	80° 20' 56.74" W	26° 38' 15.37" N	80° 20.9456667' W	26° 38.2561666666667' N
LOXA141	26.42708333	80.3942	80° 23' 39.12" W	26° 38' 37.5" N	80° 23.652' W	26° 25.625' N

* DMS = Degrees Minutes Seconds

** DM = Degrees Minutes Decimal Minutes

Additional information on the coordinates for the Enhanced Water Quality Monitoring Network can be found at:

http://sofia.usgs.gov/lox_monitor_model/workplans/EnhancedWQsamplingStations_.pdf