

Appendix 4A-4: Diel Oxygen Measurements Associated With Stormwater Treatment Areas and Downstream Stations

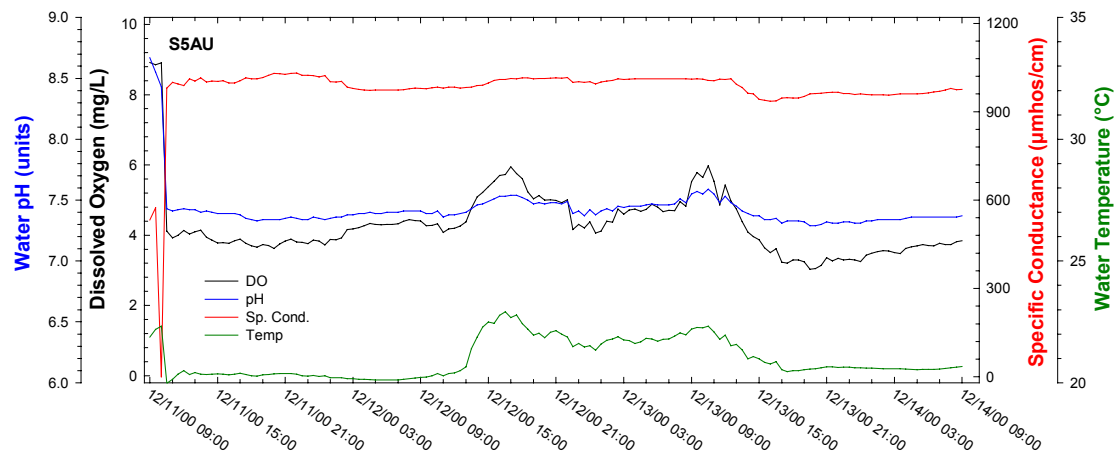


Figure 1. Diel measurements at S5AU, December 11-14, 2000

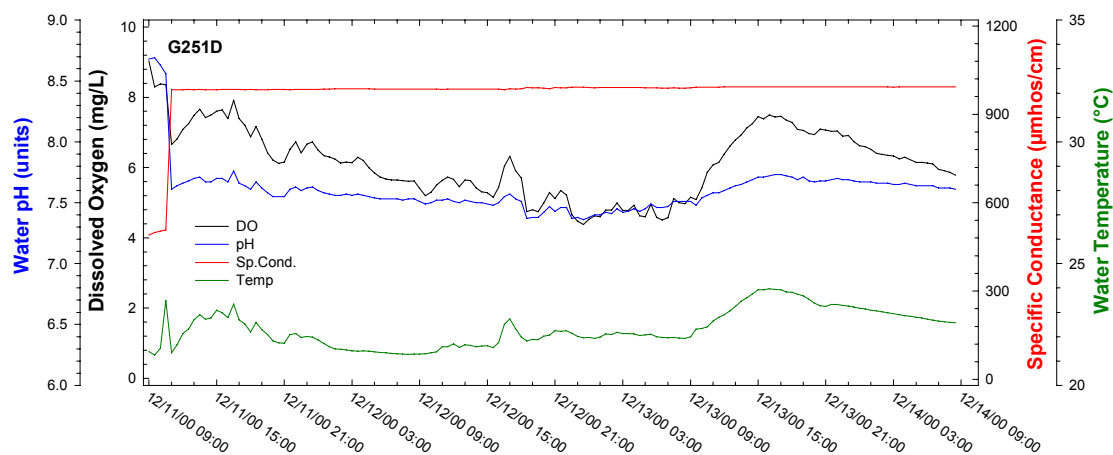


Figure 2. Diel measurements at G251D, December 11-14, 2000

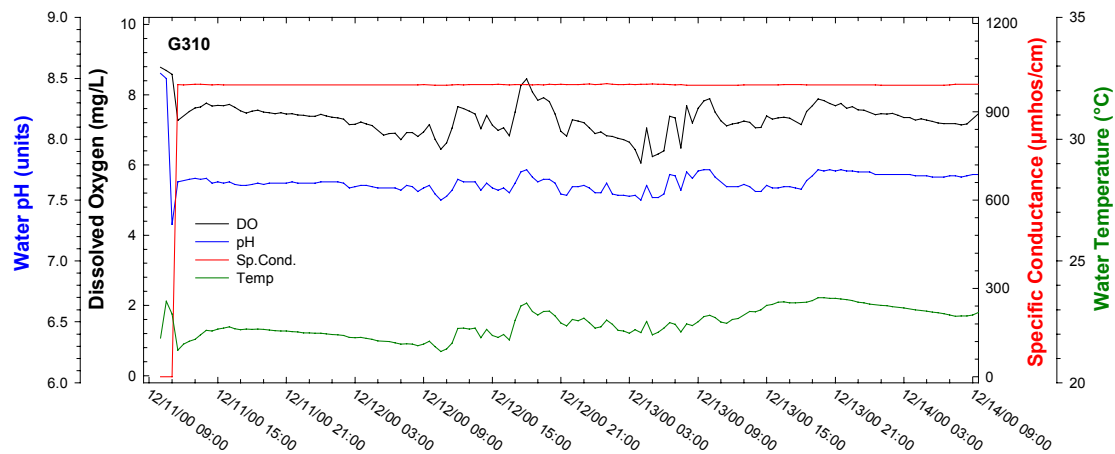


Figure 3. Diel measurements at G310, December 11-14, 2000

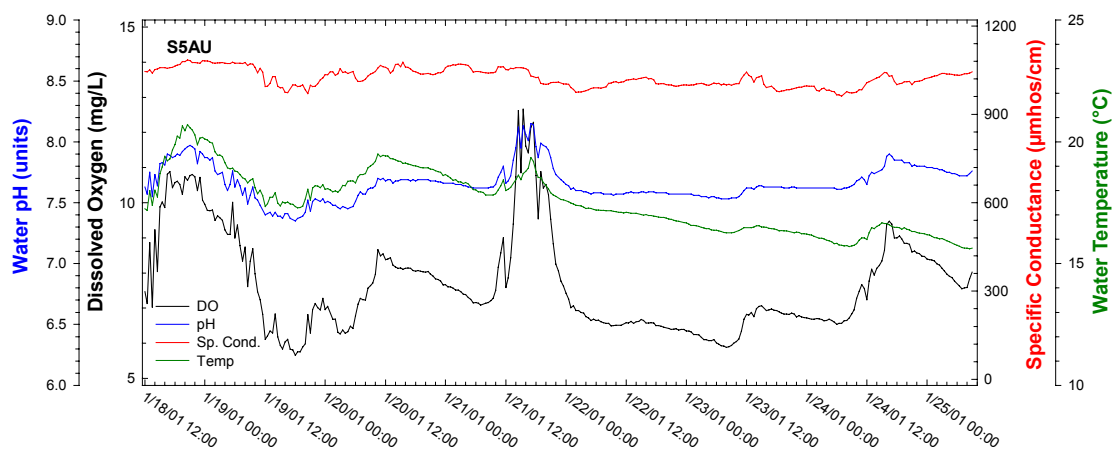


Figure 4. Diel measurements at S5AU, January 18-25, 2001

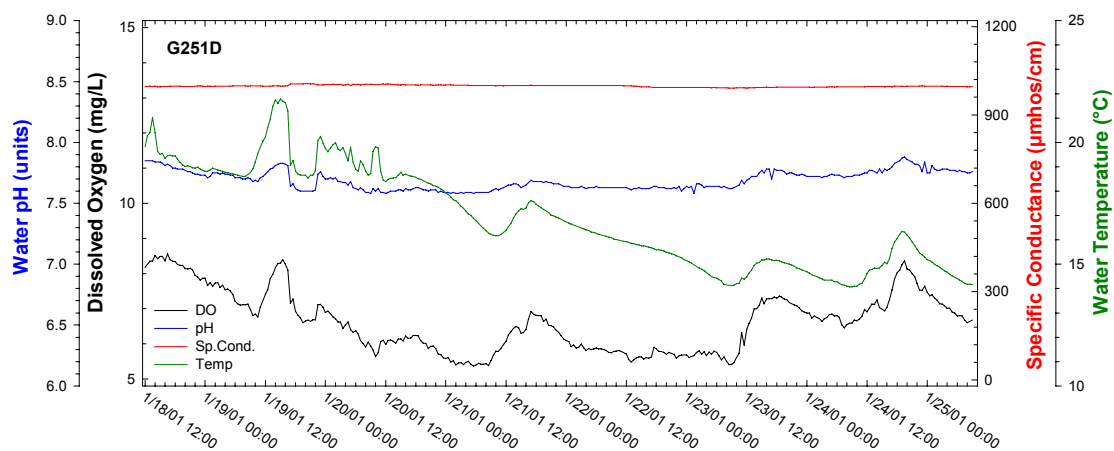


Figure 5. Diel measurements at G251D, January 18-25, 2001

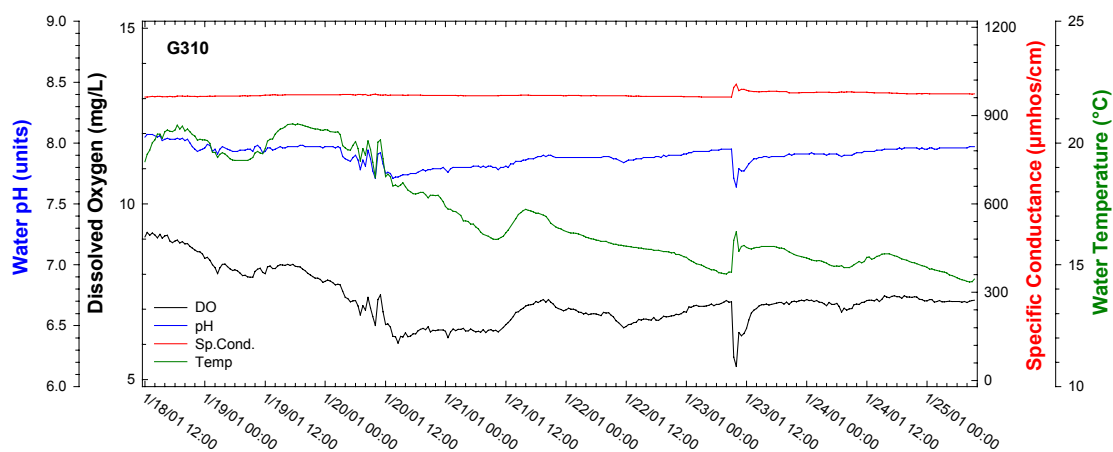


Figure 6. Diel measurements at G310, January 18-25, 2001

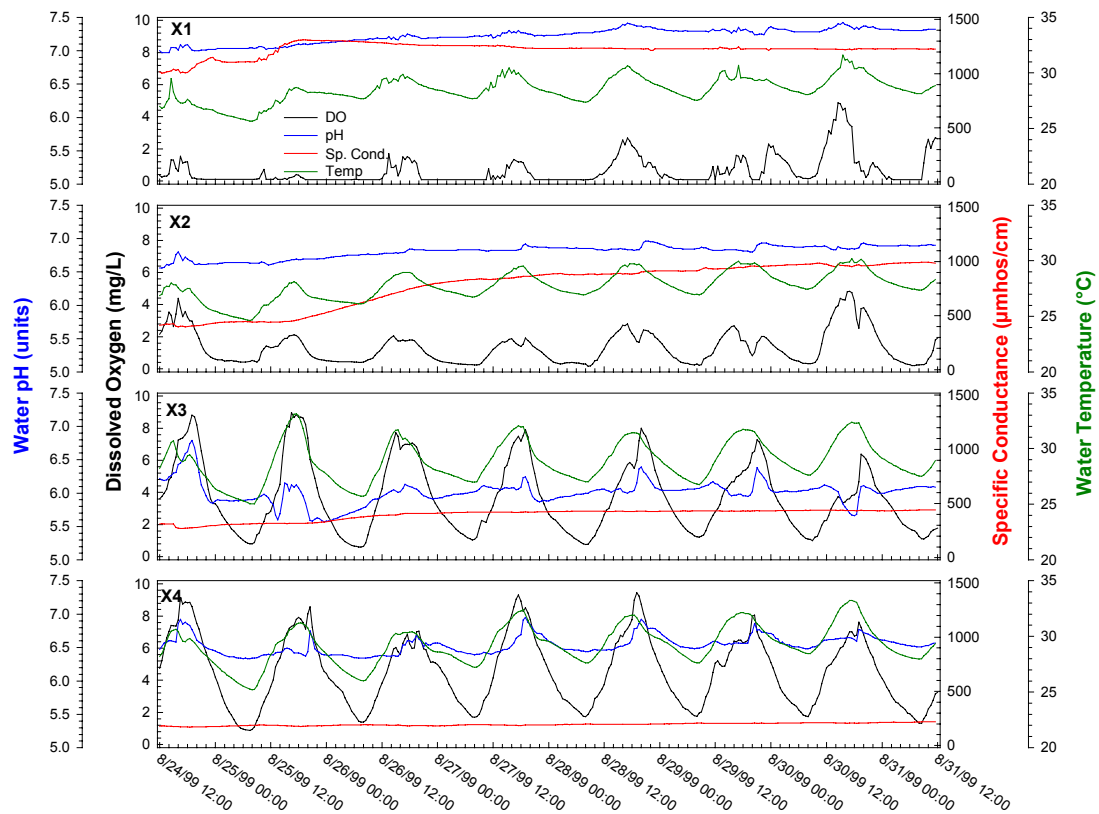


Figure 7. Diel measurements along Transect X, August 24-31, 1999

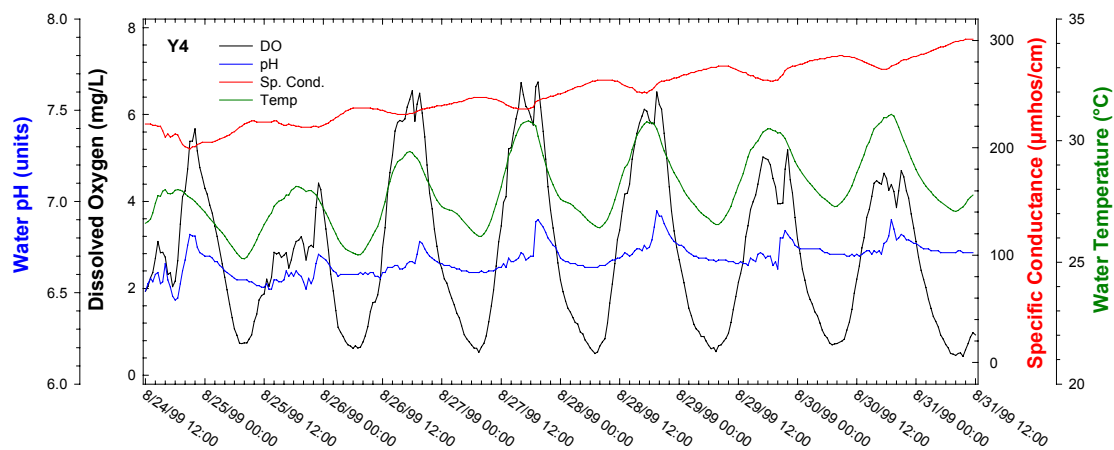


Figure 8. Diel measurements along Transect Y, August 24-31, 1999

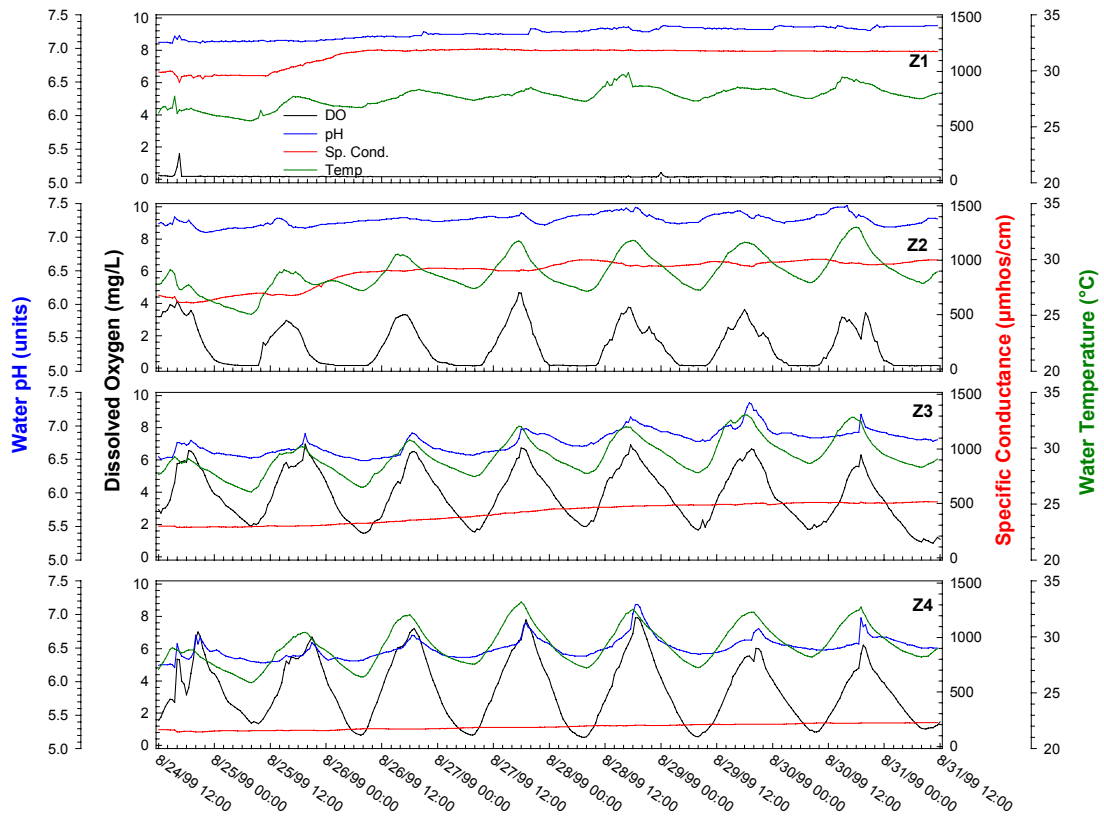


Figure 9. Diel measurements along Transect Z, August 24-August 31, 1999

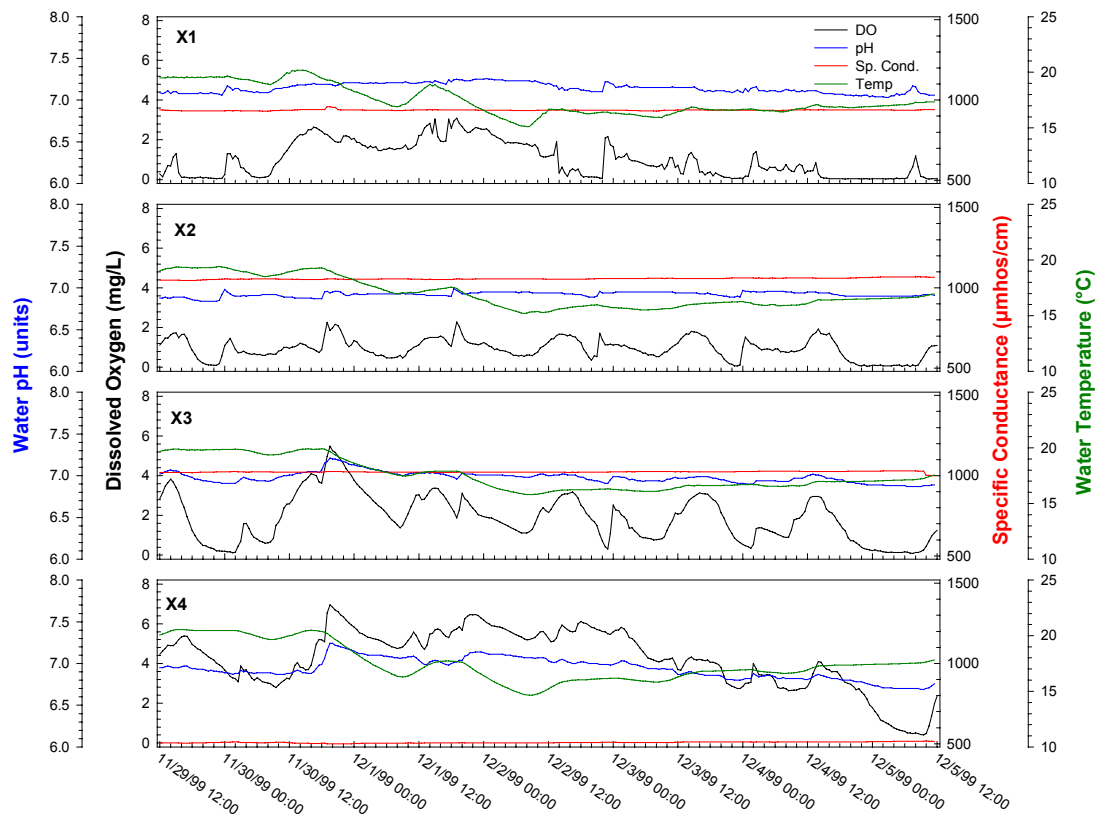


Figure 10. Diel measurements along Transect X, November 29-December 5, 1999

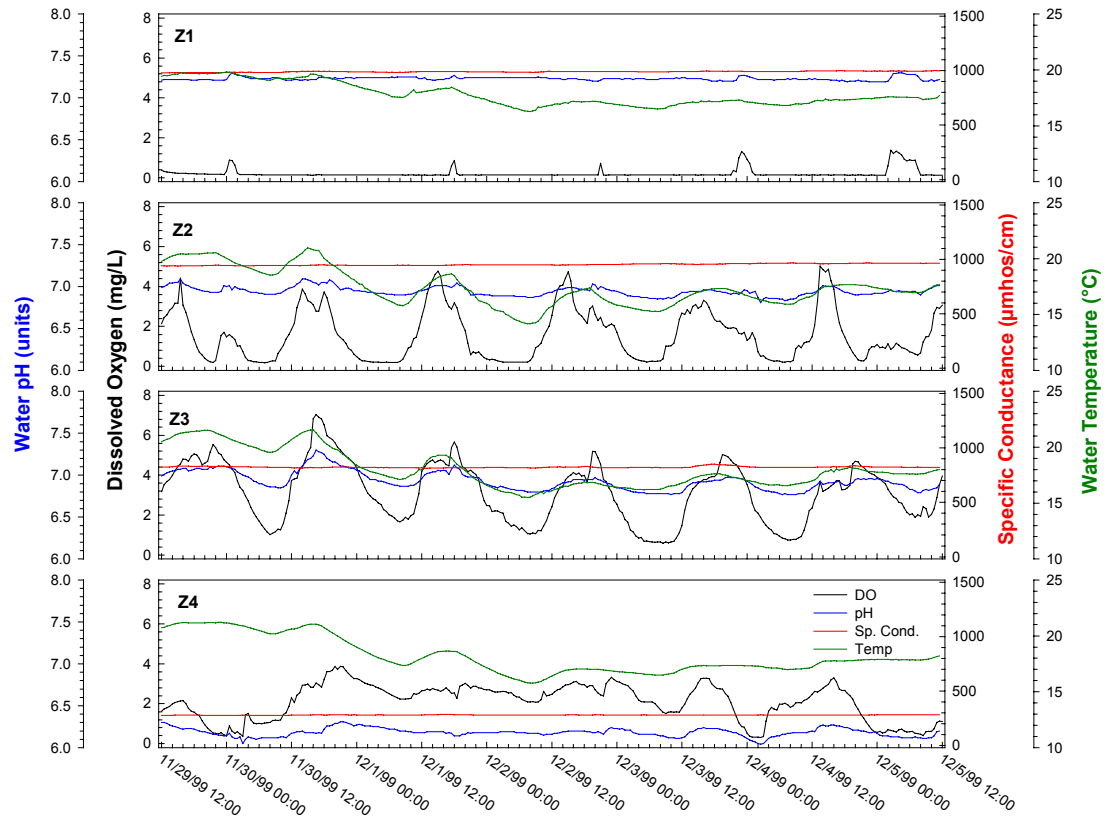


Figure 11. Diel measurements along Transect Z, November 29-December 5, 1999

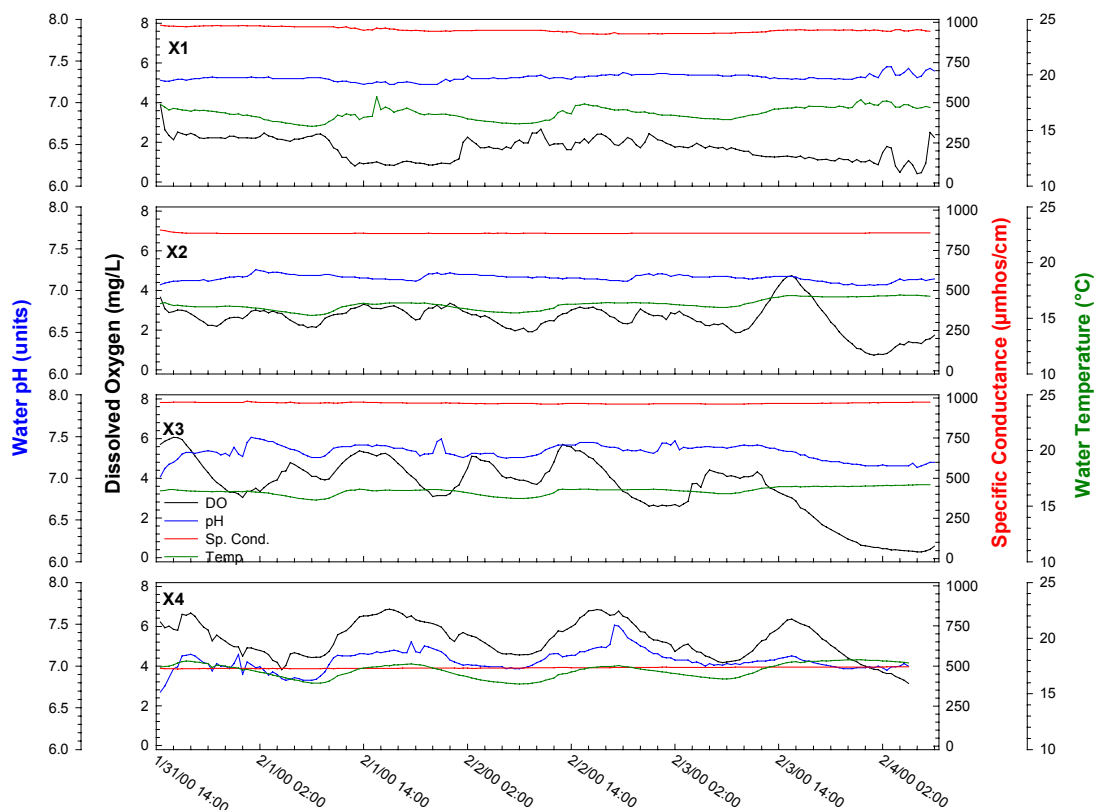


Figure 12. Diel measurements along Transect X, January 31-February 4, 2000

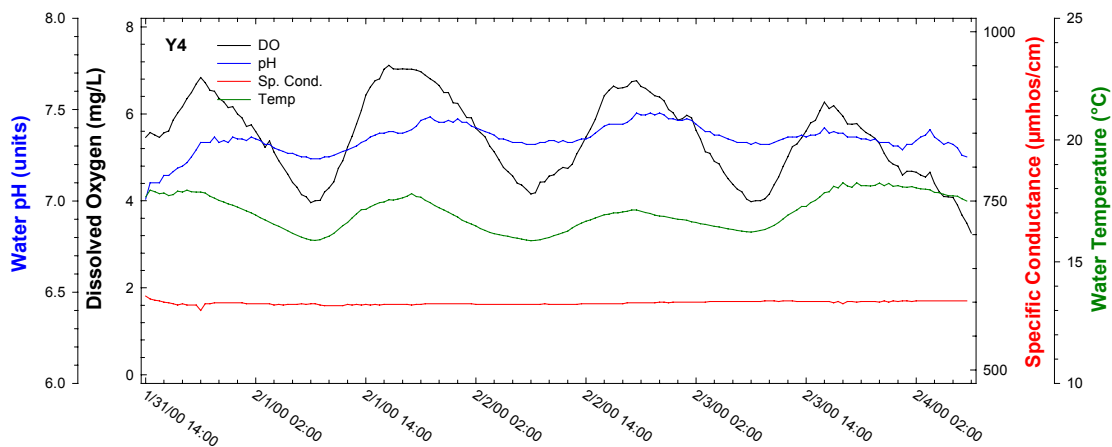


Figure 13. Diel measurements along Transect Y, January 31-February 4, 2000

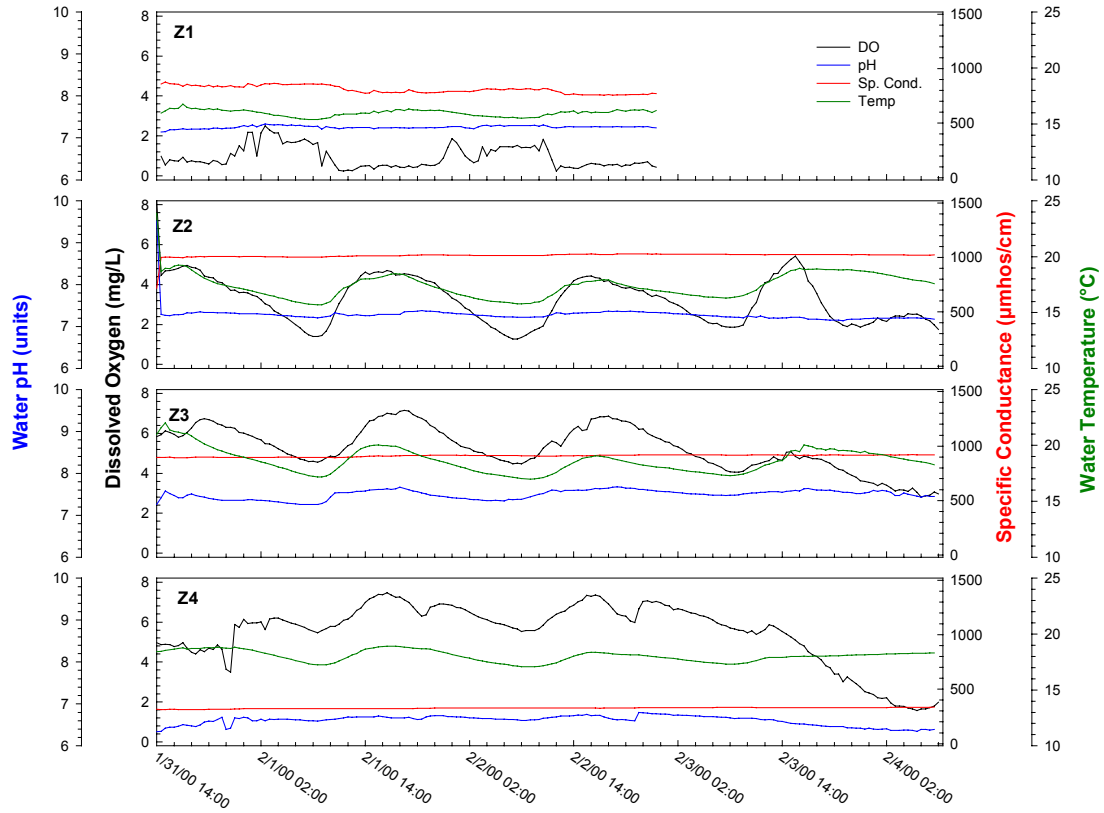


Figure 14. Diel measurements along Transect Z, January 31-February 4, 2000

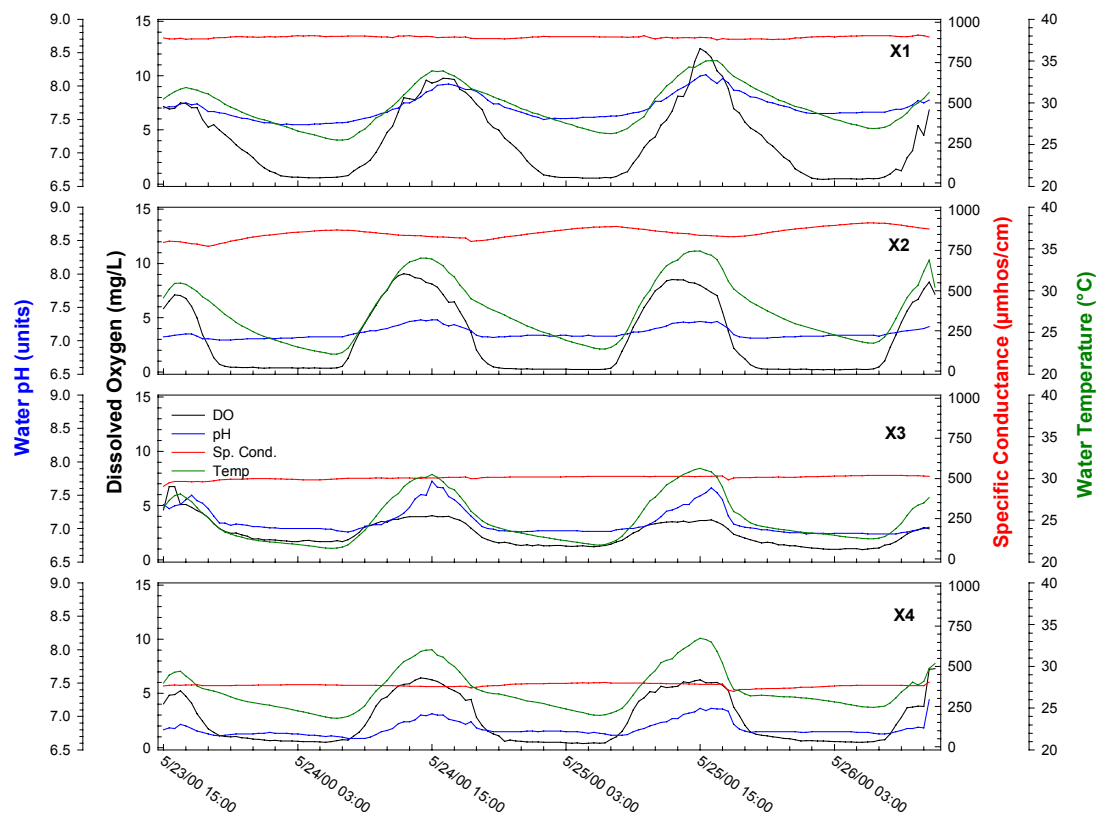


Figure 15. Diel measurements along Transect X, May 23-26, 2000

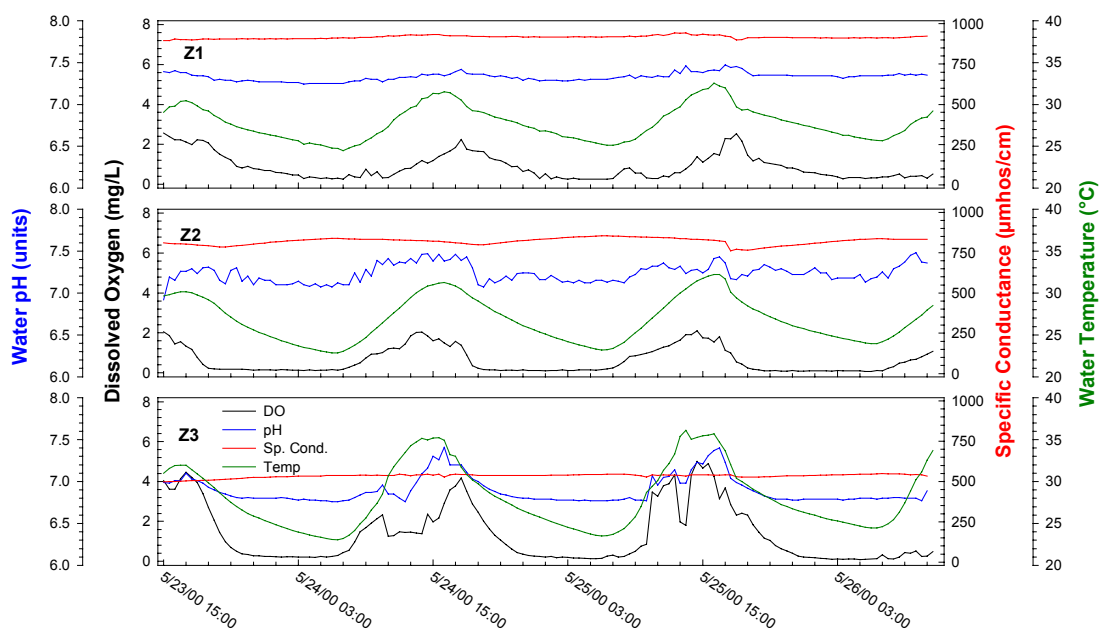


Figure 16. Diel measurements along Transect Z, May 23-26, 2000

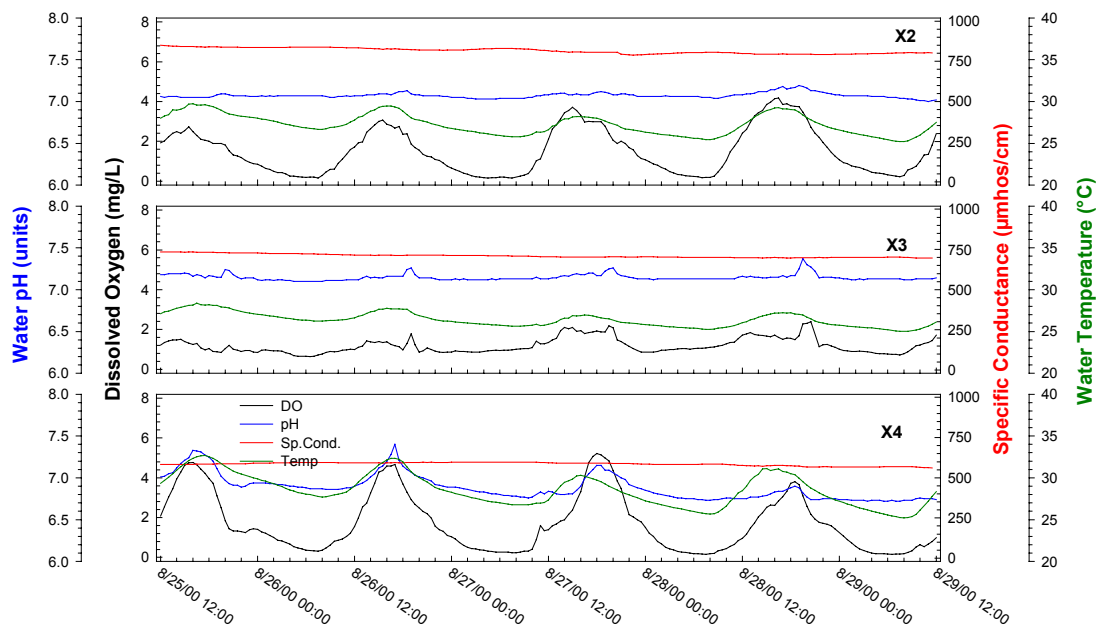


Figure 17. Diel measurements along Transect X, August 25-29, 2000

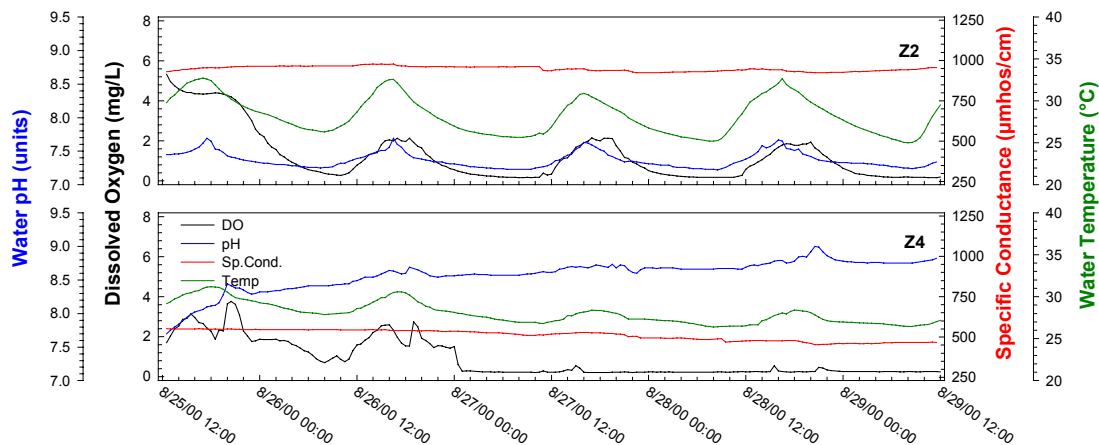


Figure 18. Diel measurements along Transect Z, August 25-29, 2000

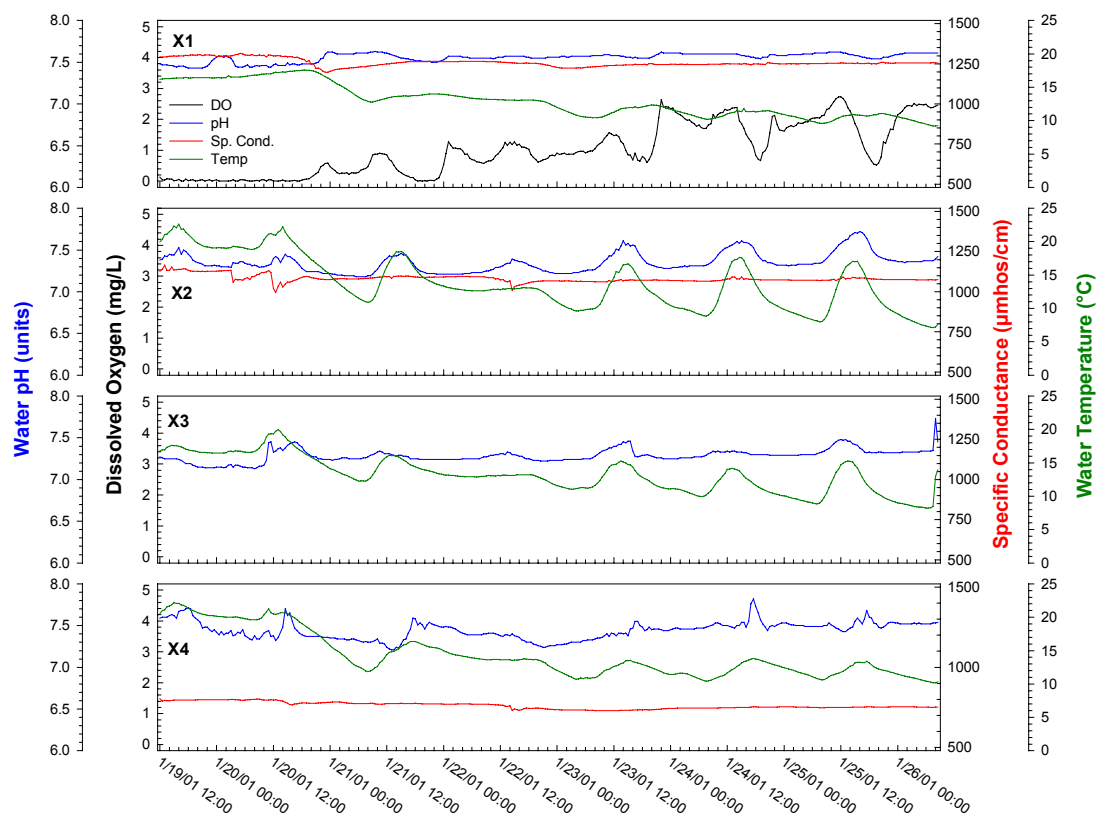


Figure 19. Diel measurements along Transect X, January 19-26, 2001

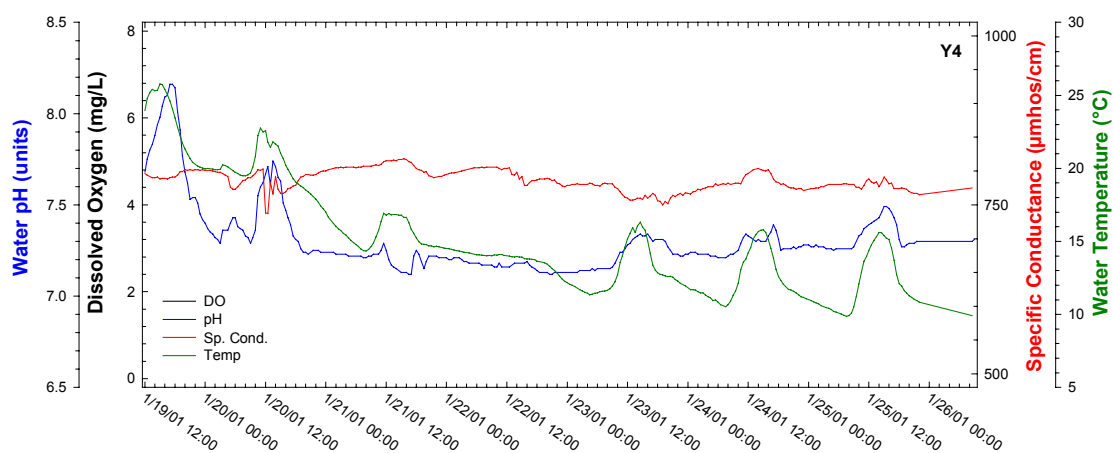


Figure 20. Diel measurements at Station Y4, January 19-26, 2001

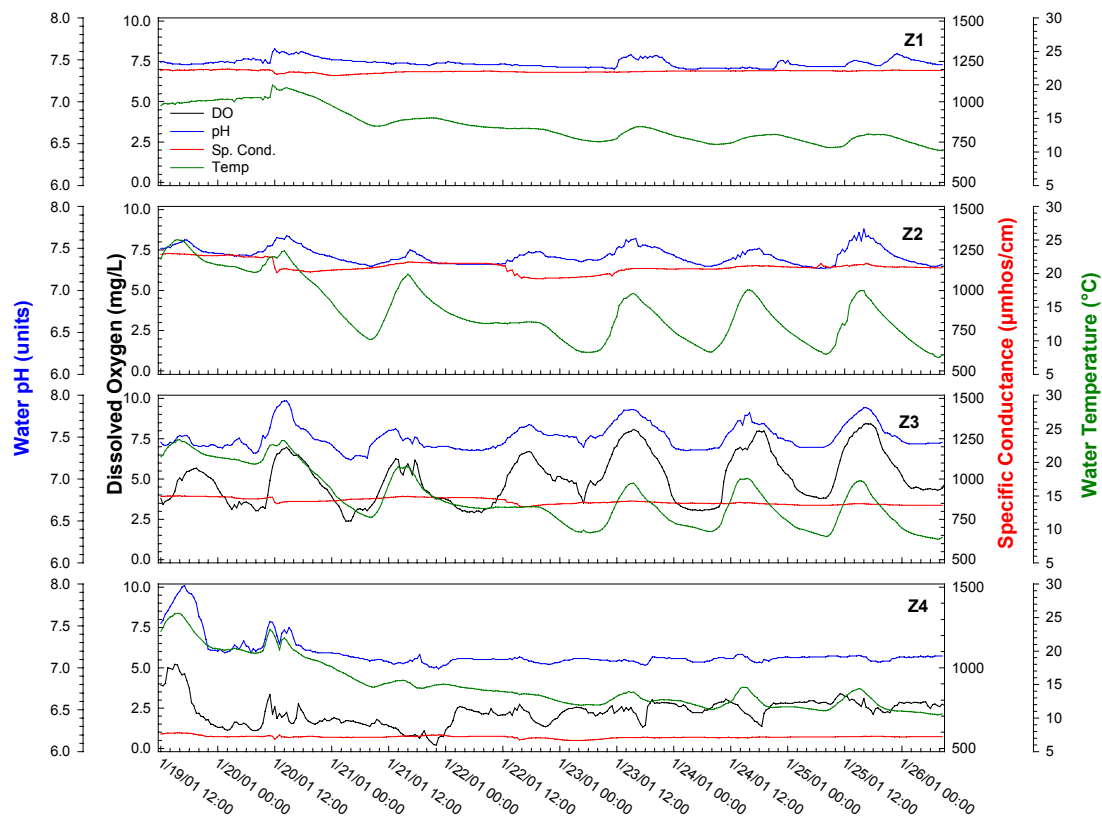


Figure 21. Diel measurements along Transect Z, January 19-26, 2001

Table 1. Statistical summary of diel parameters at the outflow stations (G251D and G310) and transect stations in the refuge for each deployment period.

Period	Transect	Station	Temperature (°C)						Specific Conductivity (µmhos/cm)						Water pH						Dissolved Oxygen (mg/L)						
			No. of Samples	Mean	Minimum	Median	Maximum	Standard Deviation	No. of Samples	Mean	Minimum	Median	Maximum	Standard Deviation	No. of Samples	Mean	Minimum	Median	Maximum	Standard Deviation	No. of Samples	Mean	Minimum	Median	Maximum	Standard Deviation	
08/24/99 - 08/31/99	Outflow	G251D	337	28.9	25.8	29.0	31.7	1.4	337	1111	1001	1117	1362	54	337	7.6	7.4	7.6	7.8	0.1	0	----	----	----	----	----	
	X	X1	337	28.5	25.7	28.4	31.6	1.1	337	1223	1006	1230	1311	64	337	7.2	7.0	7.3	7.4	0.1	337	0.6	0.1	0.2	4.9	0.9	
		X2	337	27.7	24.6	27.7	30.2	1.2	337	779	395	877	993	203	337	6.8	6.6	6.8	7.0	0.1	337	1.3	0.2	1.0	4.8	1.0	
		X3	337	28.8	25.0	28.6	33.1	1.8	337	396	268	424	442	51	337	6.0	5.6	6.0	6.8	0.2	337	3.7	0.6	3.3	9.0	2.2	
		X4	337	29.2	25.2	29.2	33.2	1.7	337	195	170	193	219	12	337	6.5	6.3	6.5	7.0	0.1	337	4.6	0.9	4.5	9.4	2.2	
	Y	Y4	337	28.0	25.1	27.8	31.1	1.5	337	251	199	250	301	26	337	6.7	6.5	6.7	7.0	0.1	337	2.8	0.4	2.6	6.8	1.8	
	Z	Z1	337	27.6	25.5	27.7	29.8	0.9	337	1147	902	1187	1208	84	337	7.2	7.1	7.3	7.4	0.1	337	0.2	0.1	0.2	1.6	0.1	
		Z2	337	28.8	25.1	28.5	32.9	1.6	337	890	609	941	1008	121	337	7.3	7.1	7.3	7.5	0.1	337	1.3	0.1	0.8	4.7	1.2	
		Z3	337	29.3	26.1	29.0	33.0	1.6	337	410	279	445	516	87	337	6.8	6.5	6.8	7.3	0.2	337	3.8	0.8	3.7	7.0	1.6	
		Z4	337	29.2	25.9	28.9	33.1	1.7	337	180	132	178	219	26	337	6.5	6.2	6.5	7.2	0.2	337	3.4	0.5	3.2	7.9	2.0	
11/29/99 - 12/05/99	Outflow	G251D	289	18.2	15.3	17.9	21.2	1.7	289	1200	1167	1200	1222	12	289	7.5	7.4	7.5	7.5	0.0	0	----	----	----	----	----	
	X	X1	289	17.5	15.1	16.9	20.2	1.3	289	937	931	937	959	3	289	7.1	7.0	7.1	7.3	0.1	289	1.0	0.0	0.7	3.1	0.9	
		X2	289	17.0	15.2	16.5	19.4	1.3	289	1057	1045	1056	1069	5	289	6.9	6.8	6.9	7.0	0.0	289	0.9	0.0	0.9	2.3	0.5	
		X3	289	17.5	15.8	17.0	19.9	1.4	289	1023	1001	1023	1030	4	289	7.0	6.9	7.0	7.2	0.1	289	1.9	0.1	1.8	5.5	1.2	
		X4	289	17.5	14.7	17.2	20.6	1.7	289	508	499	508	517	4	289	6.9	6.7	6.9	7.2	0.1	289	4.2	0.4	4.3	6.9	1.5	
	Z	Z1	289	17.8	16.3	17.4	19.8	1.0	289	991	980	992	1000	5	289	7.2	7.2	7.2	7.3	0.0	289	0.2	0.1	0.1	1.4	0.2	
		Z2	289	17.4	14.2	17.1	21.0	1.6	289	952	938	950	966	8	289	6.9	6.8	6.9	7.1	0.1	289	1.6	0.2	1.2	5.0	1.3	
		Z3	289	18.0	15.5	17.6	21.5	1.7	289	824	814	822	850	6	289	6.9	6.8	6.9	7.3	0.1	289	3.1	0.6	3.3	7.0	1.5	
		Z4	289	18.2	15.8	17.8	21.2	1.6	289	280	275	280	284	2	289	6.2	6.0	6.2	6.3	0.1	289	2.1	0.3	2.3	3.9	0.9	
	01/31/00 - 02/04/00	Outflow	G251D	181	18.0	17.1	18.1	18.8	0.5	181	801	769	784	863	30	181	7.4	7.3	7.4	7.5	0.0	0	----	----	----	----	----
X		X1	180	16.5	15.4	16.5	18.1	0.6	180	952	928	950	983	16	180	7.3	7.2	7.3	7.4	0.0	180	1.7	0.4	1.8	3.9	0.6	
		X2	180	16.2	15.3	16.3	17.1	0.5	180	856	854	856	877	3	180	7.2	7.1	7.2	7.3	0.0	180	2.6	0.8	2.7	4.8	0.7	
		X3	180	16.4	15.5	16.4	16.9	0.3	180	968	962	969	980	4	180	7.3	7.0	7.3	7.5	0.1	180	3.6	0.3	3.9	6.1	1.5	
		X4	174	17.1	15.9	17.2	18.1	0.6	174	489	482	489	495	4	174	7.1	6.7	7.0	7.5	0.1	174	5.3	3.1	5.3	6.9	0.9	
Y		Y4	181	17.0	15.9	17.0	18.3	0.7	181	599	588	598	609	2	181	7.3	7.0	7.3	7.5	0.1	181	5.4	3.3	5.5	7.1	0.9	
		Z	Z1	115	16.0	15.4	16.0	16.8	0.3	115	809	756	807	878	35	115	7.3	7.1	7.3	7.3	0.0	115	0.9	0.2	0.7	2.5	0.6
			Z2	181	17.4	15.7	17.4	23.9	1.1	181	1017	718	1021	1032	24	181	7.3	7.1	7.3	9.5	0.2	181	3.2	1.3	3.2	8.2	1.2
			Z3	181	18.6	17.0	18.5	22.0	1.1	181	910	892	914	921	9	181	7.5	7.3	7.5	7.7	0.1	181	5.2	2.8	5.2	7.2	1.1
Z4			181	18.0	17.1	18.1	18.9	0.5	181	326	313	327	337	6	181	6.6	6.3	6.6	6.8	0.1	181	5.5	1.6	5.9	7.5	1.5	
05/23/00 - 05/26/00	Outflow	G251D	137	28.9	26.9	29.0	30.9	1.1	139	862	827	863	900	20	139	7.6	7.5	7.6	7.8	0.1	139	4.4	2.1	4.6	6.3	1.3	
	X	X1	138	29.6	25.5	29.3	35.0	2.5	138	908	892	910	921	7	138	7.7	7.4	7.6	8.2	0.2	138	3.9	0.9	2.9	12.5	3.3	
		X2	139	27.6	22.4	26.9	34.8	3.6	139	861	775	860	1143	42	139	7.1	7.0	7.1	7.3	0.1	139	3.0	0.2	0.8	9.1	3.2	
		X3	138	25.0	21.6	23.9	31.2	2.8	138	505	452	508	519	11	138	7.1	6.9	7.0	7.7	0.2	138	2.4	1.0	1.9	6.8	1.2	
		X4	139	27.1	23.8	26.4	33.4	2.4	139	382	345	383	406	10	139	6.8	6.7	6.8	7.3	0.1	139	2.5	0.4	1.1	7.3	2.2	
	Y	Y4	48	28.9	24.3	26.8	37.0	4.5	48	368	354	369	398	9	48	6.9	6.7	6.8	7.4	0.2	48	1.0	0.4	0.6	7.0	1.1	
	Z	Z1	138	27.8	24.5	27.4	32.6	2.0	138	917	895	917	944	9	138	7.3	7.2	7.3	7.5	0.0	138	0.9	0.3	0.6	2.6	0.6	
		Z2	138	26.8	22.8	26.4	32.2	2.6	138	821	762	827	854	21	138	7.2	6.9	7.2	7.5	0.1	138	0.6	0.1	0.2	2.1	0.6	
Z3	138	28.1	23.0	27.1	36.1	3.8	138	535	498	538	549	11	138	6.9	6.8	6.8	7.4	0.2	138	1.3	0.1	0.5	5.0	1.4			
08/25/00 - 08/29/00	Outflow	G251D	189	29.4	28.1	29.0	32.5	1.1	193	1104	1086	1102	1123	11	193	7.6	7.4	7.5	7.9	0.1	193	4.1	0.6	3.6	8.6	2.0	
	X	X2	193	27.2	25.2	27.1	29.7	1.2	193	816	789	816	850	17	193	7.1	7.0	7.1	7.2	0.0	193	1.5	0.2	1.2	4.2	1.1	
		X3	193	26.4	25.0	26.3	28.4	0.8	193	710	695	705	735	11	193	7.1	7.1	7.1	7.4	0.0	193	1.2	0.6	1.0	2.4	0.4	
		X4	193	28.6	25.2	28.3	32.7	1.9	193	585	560	587	598	10	193	6.9	6.7	6.9	7.4	0.1	193	1.7	0.2	1.3	5.2	1.4	
	Z	Z2	192	28.2	25.0	27.9	32.7	2.2	192	949	924	947	977	15	192	7.4	7.2	7.3	7.7	0.1	192	1.2	0.2	0.8	5.3	1.3	
		Z4	192	28.0	26.4	27.9	31.2	1.3	192	511	453	522	551	33	192	8.6	7.7	8.6	9.0	0.2	192	0.9	0.2	0.3	3.8	0.9	
01/19/01 - 01/26/01	Outflow	G251D	283	16.5	14.1	16.1	21.8	1.9	283	998	991	999	1006	4	283	7.7	7.6	7.7	7.9	0.1	283	6.4	5.4	6.4	8.4	0.7	
	X	G310	284	16.6	14.3	15.8	20.8	1.9	284	971	963	969	1006	6	284	7.9	7.6	7.9	8.0	0.1	284	7.0	5.4	7.1	8.3	0.5	
		X1	330	12.9	9.2	12.6	17.6	2.4	330	1257	1198	1253	1314	24	330	7.6	7.4	7.6	7.6	0.1	330	1.0	0.0	0.9	2.7	----	
		X2	330	13.9	7.1	13.0	22.6	4.0	330	1082	995	1076	1166	22	330	7.3	7.2	7.3	7.7	0.1	0	----	----	----	----	----	
		X3	332	13.3	8.2	13.1	20.0	2.7	0	----	----	----	----	----	332	7.3	7.1	7.3	7.7	0.1	0	----	----	----	----	----	
	Y	X4	330	14.3	10.2	13.3	22.2	3.4	330	761	729	754	803	21	330	7.4	7.2	7.5	7.8	0.1	0	----	----	----	----	----	
		Y4	311	15.1	9.9	14.3	25.8	3.8	311	787	737	786	818	15	311	7.3	7.1	7.3	8.2	0.2	0	----	----	----	----	----	
		Z	Z1	331	14.0	10.2	13.5	20.0	2.5	331	1187	1162	1189	1201	8	331	7.5	7.4	7.5	7.6	0.1	0	----	----	----	----	----
			Z2	331	14.5	7.5	13.2	25.0	4.6	331	1147	1071	1144	1230	38	331	7.4	7.3	7.4	7.7	0.1	0	----	----	----	----	----
	Z3	331	14.6	8.6																							

Table 2. Statistical summary of diel parameters at the outflow stations from STA-5 and stations in the Miami Canal for each deployment period.

Period	Station	Temperature (°C)						Specific Conductivity (µmhos/cm)						Water pH						Dissolved Oxygen (mg/L)					
		No. of Samples	Mean	Minimum	Median	Maximum	Standard Deviation	No. of Samples	Mean	Minimum	Median	Maximum	Standard Deviation	No. of Samples	Mean	Minimum	Median	Maximum	Standard Deviation	No. of Samples	Mean	Minimum	Median	Maximum	Standard Deviation
05/15/00 - 05/18/00	G344A	145	28.4	27.2	28.5	29.7	0.6	145	656	591	648	721	34	145	8.1	7.8	8.1	8.5	0.2	145	6.9	5.3	6.9	8.9	0.8
	G344D	145	28.9	26.7	28.8	32.3	1.2	145	856	679	815	1133	123	145	7.7	7.3	7.8	8.2	0.2	145	3.3	2.4	2.7	7.5	1.3
	Miami Canal - Upstream	145	29.8	28.5	29.9	30.9	0.6	145	472	465	472	480	4	145	8.5	6.4	8.5	8.7	0.2	145	5.0	4.4	5.0	5.7	0.3
	Miami Canal - Downstream	145	28.6	27.3	28.7	29.8	0.6	145	471	463	470	479	4	145	8.1	7.8	8.1	8.3	0.1	145	5.4	4.8	5.4	6.3	0.3
08/14/00 - 08/17/00	G344A	141	29.3	28.7	29.2	30.1	0.4	141	688	651	682	737	23	141	7.1	7.0	7.2	7.3	0.1	141	2.0	0.1	2.2	4.5	1.2
	G344D	140	30.2	29.0	30.1	31.7	0.8	140	629	569	636	663	24	140	7.1	7.0	7.1	7.3	0.1	140	2.1	0.0	1.9	5.2	1.3
	Miami Canal - Upstream	142	30.6	29.7	30.5	31.8	0.6	142	720	663	696	809	49	142	7.4	7.3	7.4	7.7	0.1	142	4.3	1.8	4.3	6.9	1.3
	Miami Canal - Downstream	142	30.7	29.8	30.6	32.0	0.6	142	735	674	709	812	49	142	7.5	7.3	7.4	7.7	0.1	142	3.9	1.9	3.9	6.8	1.3
09/11/00 - 09/14/00	G344A	140	29.6	28.3	29.3	31.3	0.8	140	687	609	666	776	50	140	7.4	7.2	7.4	7.9	0.2	140	3.7	0.5	3.7	8.7	1.9
	G344D	139	29.3	27.4	29.5	31.6	1.0	139	546	523	539	583	18	139	7.3	7.2	7.3	7.7	0.1	139	2.4	0.1	2.2	7.7	2.0
	Miami Canal - Upstream	141	29.8	29.2	29.6	32.3	0.6	141	773	674	761	853	47	141	7.4	7.3	7.4	7.7	0.1	141	3.0	1.6	2.6	8.0	1.3
	Miami Canal - Downstream	143	29.6	28.9	29.5	31.8	0.6	143	742	654	741	822	36	143	7.3	7.2	7.3	7.8	0.1	143	3.2	2.1	2.9	8.4	1.3
10/30/00 - 11/03/00	G344A	193	23.8	22.9	23.7	24.7	0.5	193	665	627	659	733	23	193	7.4	7.3	7.4	7.5	0.0	193	1.7	0.8	1.7	3.3	0.5
	G344D	193	23.8	21.7	23.9	25.2	0.7	193	562	517	573	614	37	193	7.3	7.2	7.3	7.4	0.0	193	1.6	0.1	1.3	4.0	1.1
	Miami Canal - Upstream	193	23.9	22.8	23.9	24.9	0.5	193	648	623	647	695	15	193	7.5	7.3	7.5	7.7	0.1	193	3.1	1.8	3.0	5.6	0.9
	Miami Canal - Downstream	193	23.5	22.6	23.6	24.4	0.5	193	636	606	637	684	19	193	7.4	7.3	7.4	7.5	0.1	193	3.2	1.7	3.3	4.9	0.9