

Appendices I–IV

Appendix I. Summary statistics for the water-level and specific-conductance models used in the study.

[WL, water level; SC, specific conductance; Min, minimum; Max, maximum; n, number of data points; R², coefficient of determination; SSE, sum of squared error; ME, mean error; RMSE, root mean square error; PME, percent model error]

Model name	Gage number	Output variable	Range of output variable		Training		SSE	ME	RMSE	PME	Range of output variable		Testing					
			Min	Max	n	R ²					Min	Max	n	R ²	SSE	ME	RMSE	PME
USGS river network water-level models																		
wl8840a-2005-1	2198840	WL-daily	-0.31	4.46	11051	0.969	165.57	0.000	0.12	2.6%	-0.48	5.66	81446	0.964	1911	0.022	0.15	2.5%
wl8840h-2005-1	2198840	WL-hourly	-3.98	6.87	2303	0.987	199.33	-0.000	0.29	2.7%	-4.32	7.09	70796	0.983	7935	0.025	0.33	2.9%
wl8920a-2005-1	2198920	WL-daily	-0.94	3.07	10482	0.977	84.06	-0.000	0.09	2.2%	-0.95	4.05	68121	0.883	2803	0.183	0.20	4.1%
wl8920h-2005-1	2198920	WL-hourly	-7.08	6.73	10538	0.995	467.38	0.000	0.21	1.5%	-6.46	7.34	68368	0.991	5492	0.186	0.28	2.1%
wl8977a-2005-1	2198977	WL-daily	-0.91	3.07	10612	0.960	137.193	0.000	0.11	2.9%	-0.91	3.68	79682	0.965	857	0.028	0.10	2.3%
wl8977h-2005-1	2198977	WL-hourly	-7.20	6.85	10717	0.994	528.459	-0.000	0.22	1.6%	-6.65	7.13	79951	0.995	3422	0.029	0.21	1.5%
wl8979a-2005-1	2198979	WL-daily	-0.30	3.86	7987	0.952	141.946	-0.000	0.13	3.2%	-0.32	4.75	70993	0.961	1153	0.043	0.13	2.5%
wl8979h-2005-1	2198979	WL-hourly	-4.70	6.86	8029	0.984	980.854	-0.000	0.35	3.0%	-4.86	7.15	71187	0.981	10071	0.034	0.38	3.1%
USGS river network specific-conductance models																		
sc8840a-2005-1	2198840	SC-daily	60	773	10056	0.887	1763591.2	0.047	13	1.9%	45.95	773.40	77309	0.851	12414716	-3.254	13	1.7%
sc8840h-2005-1	2198840	SC-hourly	59	8370	10197	0.879	21846887	0.056	46	0.6%	30.00	2374.60	77772	0.567	42270460	-3.236	23	1.0%
sc8920a-2005-1	2198920	SC-daily	68	18667	9836	0.897	1.41E+10	0.864	1198	6.4%	50.48	18725.80	67677	0.883	8.80E+10	-367.667	1141	6.1%
sc8920h-2005-1	2198920	SC-hourly	6	31169	9900	0.900	3.84E+10	-0.732	1971	6.3%	30.00	31934.70	67820	0.867	2.32E+11	-308.104	1850	5.8%
sc89784a-2005-1	21989784	SC-daily	79	2198	8534	0.880	1.62E+8	0.160	138	6.5%	50.45	2229.85	70348	0.853	1.02E+9	-60.755	121	5.5%
sc89784h-2005-1	21989784	SC-hourly	72	5821	8600	0.825	2.92E+8	0.006	184	3.2%	40.00	4286.00	71064	0.793	1.62E+9	-56.100	151	3.6%
sc89791a-2005-1	21989791	SC-daily	78	5693	9660	0.887	5.97E+8	0.870	249	4.4%	51.64	5689.54	75782	0.870	2.89E+9	-65.833	195	3.5%
sc89791h-2005-1	21989791	SC-hourly	75	15200	9736	0.888	1.10E+9	0.336	336	2.2%	50.00	10972.59	76366	0.826	5.42E+9	-63.386	266	2.4%
USGS marsh network water-level models																		
pb1mwl-2005	B1	WL-hourly	-0.10	1.50	3143	0.770	12.88	0.000	0.06	4.0%	-0.10	1.60	17653	0.762	67.48	-0.001	0.06	3.6%
pb2mwl-2005	B2	WL-hourly	0.00	1.80	3284	0.797	37.00	0.000	0.11	5.9%	0.00	2.20	18228	0.768	229.15	-0.002	0.11	5.1%
pb3mwl-2005	B3	WL-hourly	0.00	1.80	3558	0.858	19.22	-0.000	0.07	4.1%	0.00	2.10	20082	0.866	105.25	-0.000	0.07	3.4%
pb4mwl-2005	B4	WL-hourly	0.00	2.00	2879	0.887	19.31	-0.002	0.08	4.1%	0.00	2.30	15877	0.872	127.81	0.000	0.09	3.9%
pf1mwl-2005	F1	WL-hourly	0.00	1.50	4243	0.839	19.61	0.000	0.07	4.5%	0.00	2.00	23982	0.836	113.20	-0.001	0.07	3.4%
pm1mwl-2005	M1	WL-hourly	0.00	1.40	2424	0.694	22.38	0.000	0.10	6.9%	0.00	1.70	13299	0.722	111.83	0.001	0.09	5.4%
pm2mwl-2005	M2	WL-hourly	0.00	1.40	1751	0.808	12.22	0.000	0.08	6.0%	0.00	1.80	9676	0.778	73.91	-0.002	0.09	4.9%
USGS marsh network specific-conductance models																		
pb1msc-2005-2	B1	SC-hourly	117	2433	2333	0.857	6.56E+7	-0.050	168	7.2%	53.60	2561.60	20555	0.849	5.98E+8	0.207	171	6.8%
pb2msc-2005-2	B2	SC-hourly	52	3055	2142	0.826	1.41E+8	-0.684	257	8.5%	50.50	3881.00	18770	0.832	1.22E+9	0.823	255	6.7%
pb3msc-2005-2	B3	SC-hourly	619	4478	2326	0.549	6.17E+8	0.657	515	13.4%	98.50	4921.80	20519	0.532	5.48E+9	-4.510	517	10.7%
pb4msc-2005-2	B4	SC-hourly	131	21845	2093	0.654	9.59E+9	-2.247	2142	9.9%	50.00	24624.80	18577	0.641	9.06E+10	14.870	2209	9.0%

Appendix I. Summary statistics for the water-level and specific-conductance models used in the study.—Continued

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Model name	Gage number	Output variable	Range of output variable		Training		SSE	ME	RMSE	PME	Range of output variable		Testing					
			Min	Max	n	R ²					Min	Max	n	R ²	SSE	ME	RMSE	PME
GPA river network water-level models																		
wl_gpa04d-2005	GPA04	WL-hourly	-1.22	1.27	4215	0.640	134.44	-0.024	0.18	7.2%	-0.79	1.35	1079	0.626	35.47	-0.023	0.18	8.5%
wl_gpa05d-2005	GPA05	WL-hourly	-1.12	3.71	4344	0.638	148.27	0.070	0.18	3.8%	-1.00	0.72	1133	0.676	36.01	0.067	0.18	10.4%
wl_gpa06d-2005	GPA06	WL-hourly	-0.64	0.88	4305	0.176	166.61	-0.037	0.20	12.9%	-0.65	0.92	1124	0.152	45.26	-0.045	0.20	12.8%
wl_gpa07d-2005	GPA07	WL-hourly	-1.81	1.10	1606	0.641	85.52	-0.031	0.23	7.9%	-1.34	1.06	416	0.638	23.15	-0.035	0.24	9.9%
wl_gpa08d-2005	GPA08	WL-hourly	-0.77	0.97	4614	0.238	153.87	0.029	0.18	10.5%	-0.78	0.74	1175	0.216	36.88	0.021	0.18	11.7%
wl_gpa09d-2005	GPA09	WL-hourly	-1.39	1.59	4642	0.338	877.16	0.019	0.43	14.6%	-1.36	1.43	1192	0.310	230.22	0.027	0.44	15.8%
wl_gpa10d-2005	GPA10	WL-hourly	-2.18	1.79	2187	0.230	138.00	-0.125	0.25	6.3%	-1.07	3.34	587	0.233	42.88	-0.112	0.27	6.1%
wl_gpa11d-2005	GPA11	WL-hourly	-1.27	1.94	1578	0.534	180.26	-0.037	0.34	10.5%	-1.49	1.97	434	0.570	46.47	-0.021	0.33	9.5%
wl_gpa11rd-2005	GPA11R	WL-hourly	-1.53	0.86	1617	0.863	57.56	-0.012	0.19	7.9%	-1.57	0.79	399	0.855	15.06	-0.015	0.19	8.3%
wl_gpa12d-2005	GPA12	WL-hourly	-3.08	1.92	2846	0.272	1733.72	-0.045	0.78	15.6%	-2.93	1.61	749	0.242	461.76	-0.033	0.79	17.3%
wl_gpa13d-2005	GPA13	WL-hourly	-3.52	1.91	2123	0.917	301.34	-0.008	0.38	6.9%	-3.48	1.75	561	0.926	72.48	-0.022	0.36	6.9%
wl_gpa14d-2005	GPA14	WL-hourly	-0.95	1.63	1630	0.914	54.32	-0.016	0.18	7.1%	-0.86	1.56	424	0.909	14.23	-0.022	0.18	7.6%
wl_gpa21d-2005	GPA21	WL-hourly	-0.71	0.84	2227	0.030	117.57	0.006	0.23	14.8%	-0.68	0.76	551	0.004	29.40	0.004	0.23	16.1%
wl_gpa22d-2005	GPA22	WL-hourly	-1.04	1.36	1502	0.884	57.72	0.012	0.20	8.2%	-1.01	1.40	384	0.867	15.60	0.011	0.20	8.4%
wl_gpa23d-2005	GPA23	WL-hourly	-0.77	1.43	2754	0.816	98.93	0.013	0.19	8.6%	-0.90	1.31	696	0.798	27.75	0.006	0.20	9.0%
wl_gpa24md-2005	GPA24M	WL-hourly	-0.89	1.24	2755	0.760	126.14	0.089	0.21	10.0%	-0.86	1.28	697	0.741	35.18	0.088	0.22	10.5%
wl_gpa25md-2005	GPA25M	WL-hourly	-0.97	1.44	2750	0.653	158.93	0.001	0.24	10.0%	-1.10	1.14	697	0.645	39.98	0.002	0.24	10.7%
wl_gpa26d-2005	GPA26	WL-hourly	-1.19	1.29	2210	0.788	85.62	-0.008	0.20	7.9%	-0.92	1.19	553	0.786	23.05	0.003	0.20	9.7%
GPA river network specific-conductance models																		
sc_gpa04bd-2005	GPA04B	SC-hourly ²	-39814	-8970	4284	0.522	4.04E+10	1124	3072	10.0%	-37572	-10000	1090	0.491	1.12E+10	1264	3202.85	11.6%
sc_gpa04sd-2005	GPA04S	SC-hourly ²	-27602	2556	4511	0.650	2.93E+10	901	2549	8.5%	-26373	-775	1145	0.666	7.30E+9	796	2527	9.9%
sc_gpa05bd-2005	GPA05B	SC-hourly ²	-21759	1084	3901	0.714	1.87E+10	-2161	2190	9.6%	-21367	-178	1021	0.702	5.13E+9	-2082	2244	10.6%
sc_gpa06bd-2005	GPA06B	SC-hourly ²	-37739	-502	4155	0.676	5.80E+10	2127	3737	10.0%	-37574	-621	1090	0.678	1.46E+10	1960	3663	9.9%
sc_gpa06sd-2005	GPA06S	SC-hourly ²	-20801	11578	4131	0.641	1.68E+10	497	2017	6.2%	-19027	9616	1044	0.630	4.20E+9	428	2008	7.0%
sc_gpa07bd-2005	GPA07B	SC-hourly ²	-15830	147	2042	0.806	3.14E+9	175	1241	7.8%	-15880	41	555	0.808	9.45E+8	140	1307	8.2%
sc_gpa07sd-2005	GPA07S	SC-hourly ²	-16314	100	2376	0.857	2.65E+9	-388	1057	6.4%	-15529	97	598	0.861	7.79E+8	-471	1143	7.3%
sc_gpa08bd-2005	GPA08B	SC-hourly ²	-30232	5712	4792	0.402	5.98E+10	672	3533	9.8%	-30249	592	1216	0.428	1.35E+10	799	3335	10.8%
sc_gpa08sd-2005	GPA08S	SC-hourly ²	-6751	19219	4112	0.419	8.33E+9	-320	1424	5.5%	-4379	15676	1030	0.409	1.72E+9	-331	1294	6.4%
sc_gpa09bd-2005	GPA09B	SC-hourly ²	-23857	9668	4611	0.260	1.31E+10	400	1686	5.0%	-21042	3490	1178	0.295	3.07E+9	369	1616	6.6%
sc_gpa09sd-2005	GPA09S	SC-hourly ²	-10331	13666	1640	0.546	1.93E+9	-49	1085	4.5%	-9256	10335	410	0.568	3.86E+8	-71	973	5.0%

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Model name	Gage number	Output variable	Range of output variable		Training		SSE	ME	RMSE	PME	Range of output variable		Testing					
			Min	Max	n	R ²					Min	Max	n	R ²	SSE	ME	RMSE	PME
GPA river network specific-conductance models—Continued																		
scgpa10bd-2005	GPA10B	SC-hourly ²	-5530	19498	2335	0.919	1.75E+9	-84	866	3.5%	-4965	13853	625	0.908	4.30E+8	-113	831	4.4%
scgpa10sd-2005	GPA10S	SC-hourly ²	-3999	16271	1609	0.899	1.15E+9	-366	846	4.2%	-4321	13949	410	0.887	3.20E+8	-410	886	4.8%
scgpa11bd-2005	GPA11B	SC-hourly ²	-6645	1386	1777	0.534	2.53E+8	-66	378	4.7%	-6422	1237	470	0.430	7.57E+7	-77	402	5.3%
scgpa11rbd-2005	GPA11RB	SC-hourly ²	-13115	16987	1288	0.662	3.98E+9	-633	1759	5.8%	-12878	15785	326	0.743	7.36E+8	-733	1507	5.3%
scgpa12bd-2005	GPA12B	SC-hourly ²	-569	21688	3003	0.986	6.51E+8	-66	466	2.1%	-298	20393	787	0.985	1.65E+8	-76	458	2.2%
scgpa12rsd-2005	GPA12RS	SC-hourly ²	-4958	20297	1455	0.847	2.63E+9	-384	1345	5.3%	-4131	18648	367	0.861	6.21E+8	-532	1304	5.7%
scgpa13bd-2005	GPA13B	SC-hourly ²	-1769	2620	2120	0.408	8.06E+7	84	195	4.4%	-1411	2212	561	0.502	2.06E+7	83	192	5.3%
scgpa14bd-2005	GPA14B	SC-hourly ²	-53	36	4502	0.662	2.55E+5	5	8	8.4%	-45	31	1169	0.657	6.84E+4	5	8	10.2%
scgpa15sd-2005	GPA15S	SC-hourly ²	-5267	769	5540	0.555	3.90E+8	-2	265	4.4%	-5180	560	1359	0.518	1.00E+8	4	271	4.7%
scgpa21bd-2005	GPA21B	SC-hourly ²	-39980	-9982	1759	0.577	2.03E+10	56	3399	11.3%	-39856	-10000	427	0.503	5.19E+9	-149	3495	11.7%
scgpa21sd-2005	GPA21S	SC-hourly ²	-20970	8773	2396	0.606	1.03E+10	-927	2074	7.0%	-21397	5496	597	0.594	2.57E+9	-1063	2078	7.7%
scgpa22bd-2005	GPA22B	SC-hourly ²	-28249	-660	1328	0.329	1.45E+10	-99	3307	12.0%	-25199	-1255	334	0.269	3.81E+9	-415	3388	14.1%
scgpa22sd-2005	GPA22S	SC-hourly ²	-11036	18858	1602	0.627	4.29E+9	212	1637	5.5%	-12626	14317	393	0.627	1.09E+9	217	1670	6.2%
GPA marsh network water-level models																		
ps1canalwl-2005	Site 1	WL-hourly	-0.80	6.01	815	0.983	59.48	-0.000	0.27	4.0%	-0.8	6.27	7911	0.983	680.61	-0.007	0.29	4.1%
ps1marshwl-2005	Site 1	WL-hourly	4.88	5.57	1726	0.648	2.17	0.000	0.04	5.1%	4.86	5.66	7208	0.610	13.02	-0.001	0.04	5.3%
³ ps1marshwat-2005	Site 1	WL-hourly	4.73	5.89	1371	0.672	8.09	-0.000	0.08	6.7%								
ps2canalwl-2005	Site 2	WL-hourly	0.56	5.70	613	0.922	96.17	-0.001	0.40	7.7%	0.56	5.76	2398	0.936	390.11	0.004	0.40	7.8%
ps2marshwl-2005	Site 3	WL-hourly	3.55	4.65	796	0.741	3.67	0.000	0.07	6.2%	3.47	4.78	2306	0.740	13.30	-0.002	0.08	5.8%
ps3canalwl-2005	Site 3	WL-hourly	-0.50	6.29	877	0.976	78.46	-0.000	0.30	4.4%	-0.5	6.56	12699	0.961	2004.13	-0.013	0.40	5.6%
ps3marshwl-2005	Site 4	WL-hourly	3.89	5.32	2077	0.891	3.87	0.000	0.04	3.0%	3.85	5.32	12595	0.806	43.74	-0.002	0.06	4.0%
ps4canalwl-2005	Site 4	WL-hourly	-2.78	5.94	809	0.986	68.59	0.001	0.29	3.3%	-2.79	6.12	7784	0.985	818.92	-0.012	0.32	3.6%
ps4marshwl-2005	Site 5	WL-hourly	4.06	5.16	1764	0.902	1.76	-0.000	0.03	2.9%	4.06	5.25	7762	0.858	12.98	-0.001	0.04	3.4%
ps5canalwl-2005	Site 5	WL-hourly	-0.35	6.36	4805	0.989	226.77	0.000	0.22	3.2%	-0.22	8.59	5784	0.619	10029.90	1.632	1.32	14.9%
ps5marshwl-2005	Site 6	WL-hourly	4.62	5.60	1965	0.911	1.61	-0.000	0.03	2.9%	4.61	5.61	10219	0.891	10.16	-0.003	0.03	3.2%
ps6canalwl-2005	Site 6	WL-hourly	0.18	6.13	791	0.990	22.32	-0.000	0.17	2.8%	0.18	6.78	7408	0.983	441.83	-0.003	0.24	3.7%
ps6marshwl-2005	Site 6	WL-hourly	4.83	5.47	1647	0.804	1.31	0.000	0.03	4.4%	4.83	5.6	6637	0.763	7.89	-0.002	0.03	4.5%
³ ps6marshwat-2005	Site 6	WL-hourly	4.67	5.84	1720	0.960	1.65	-0.000	0.03	2.6%								
ps7canalwl-2005	Site 7	WL-hourly	-0.93	5.69	572	0.924	177.69	0.000	0.56	8.4%	-0.93	6	2739	0.933	881.28	-0.024	0.57	8.2%
³ ps7marshwl-2005	Site 7	WL-hourly	4.19	5.28	2822	0.701	13.81	-0.000	0.07	6.4%								

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³ ps8canalwl-2005	Site 8	WL-hourly	0.18	5.74	430	0.996	6.54	0.000	0.12	2.2%								
ps9canalwl-2005	Site 9	WL-hourly	1.00	5.68	805	0.991	14.87	0.000	0.14	2.9%	0.99	6.18	7829	0.988	213.29	-0.001	0.17	3.2%
ps9marshwl-2005	Site 9	WL-hourly	3.89	5.13	1801	0.827	8.63	0.000	0.07	5.6%	3.89	5.27	7882	0.762	55.80	0.000	0.08	6.1%
ps10canalwl-2005	Site 10	WL-hourly	-0.26	6.29	694	0.982	45.82	0.000	0.26	3.9%	-0.26	6.68	5982	0.980	513.02	-0.010	0.29	4.2%
ps10marshwl-2005	Site 10	WL-hourly	3.99	5.09	1530	0.906	1.73	0.000	0.03	3.1%	3.98	5.19	5985	0.904	9.32	-0.005	0.04	3.3%
GPA marsh network specific-conductance models																		
ps1canalsc-2005	Site 1	SC-hourly	0	22990	750	0.926	1.51E+9	1.3	1420.82	6.2%	0	23690	7559	0.885	1.34E+10	-179	1331.61	5.6%
ps1marshsc-2005	Site 1	SC-hourly	0	16740	1441	0.726	1.29E+9	0.3	946.81	5.7%	0	16740	3990	0.722	2.11E+9	-45.0	727.38	4.3%
ps2canalsc-2005	Site 2	SC-hourly	694	25157	1301	0.913	3.27E+9	9.0	1586.61	6.5%	0	25869	6355	0.897	1.54E+10	-110	1556.94	6.0%
ps2marshsc-2005	Site 2	SC-hourly	5	21870	902	0.882	4.00E+9	2.4	2107.13	9.6%	0	21870	2733	0.876	8.97E+9	45.7	1812.32	8.3%
ps3canalsc-2005	Site 3	SC-hourly	0	19750	2118	0.812	3.88E+9	0.0	1354.12	6.9%	0	23010	11954	0.813	1.28E+10	-75.0	1034.87	4.5%
ps3marshsc-2005	Site 3	SC-hourly	0	13320	2062	0.845	1.84E+9	1.7	945.09	7.1%	0	13320	11025	0.826	5.25E+9	-34.5	690.13	5.2%
ps4canalsc-2005	Site 4	SC-hourly	0	13535	1798	0.865	9.28E+8	4.3	718.82	5.3%	0	14330	7463	0.839	2.85E+9	0.8	618.05	4.3%
ps4marshsc-2005	Site 4	SC-hourly	0	9590	1658	0.897	3.11E+8	0.0	433.36	4.5%	0	9890	5535	0.861	7.44E+8	-14.5	366.70	3.7%
ps5canalsc-2005	Site 5	SC-hourly	0	11600	1500	0.814	8.42E+8	2.8	749.72	6.5%	0	45780	4312	0.000	3.22E+11	19536	8643.49	18.9%
ps5marshsc-2005	Site 5	SC-hourly	0	21300	4108	0.630	1.78E+10	-2.4	2082.09	9.8%	0	21300	12677	0.548	3.99E+10	6.6	1774.24	8.3%
ps6canalsc-2005	Site 6	SC-hourly	0	20830	1617	0.834	3.17E+9	-1.1	1401.02	6.7%	0	22290	6115	0.825	7.58E+9	3.1	1113.54	5.0%
ps6marshsc-2005	Site 6	SC-hourly	0	19170	1673	0.859	1.50E+9	1.0	947.45	4.9%	0	20940	5953	0.814	3.62E+9	-40.7	779.94	3.7%
ps7canalsc-2005	Site 7	SC-hourly	0	24710	3665	0.873	1.18E+10	3.1	1794.83	7.3%	0	22260	3049	0.000	1.70E+11	1214	7469.44	33.6%
prs7marshpwc	Site 7	SC-hourly	88	6089	1539	0.150	3.26E+9	1.0	1456.37	24.3%	0	8180.38	6136	0.141	1.28E+10	-14.1	1444.55	17.7%
ps7marshpwc-2005-2	Site 7	SC-hourly	0	20180	4270	0.650	1.11E+10	-1.0	1612.68	8.0%	0	22180	4260	0.679	1.07E+10	21.0	1585.22	7.1%
ps8canalsc-2005	Site 8	SC-hourly	0	5797	1458	0.871	7.40E+7	0.3	225.48	3.9%	0	5797	4752	0.831	2.73E+8	24.1	239.74	4.1%
ps9canalsc-2005	Site 9	SC-hourly	0	16240	1806	0.847	1.10E+9	-10.6	780.87	4.8%	0	16240	6905	0.826	2.58E+9	-11.1	611.35	3.8%
prs9marshpwc	Site 9	SC-hourly	88	3729	1519	0.098	2.20E+8	-0.0	380.82	10.5%	0	3781.08	6052	0.097	8.34E+8	-1.5	371.28	9.8%
ps9marshpwc-2005-2	Site 9	SC-hourly	0	6002	4221	0.518	7.95E+8	-0.1	434.09	7.2%	0	6002	4205	0.556	7.27E+8	-20.5	415.90	6.9%
prs10marshpwc	Site 10	SC-hourly	88	2184	1460	0.100	8.41E+9	0.4	2401.70	114.6%	0	2188.51	5797	0.101	3.17E+10	77.0	2338.85	106.9%
ps10marshpwc-2005-2	Site 10	SC-hourly	0	17400	3195	0.851	2.42E+9	1.1	870.58	5.0%	0	17370	4917	0.324	3.70E+10	-1834	2743.72	15.8%

¹ Sum of results from marsh and residual models. Statistics for period of record for each USGS marsh site.

² Models predicted differences from one of the USGS river gages. Observed minimum conductance is difference with USGS river gage and may be negative.

³ Due to data quality concerns, data set was not bifurcated into training and testing datasets.

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
USGS river network water-level models							
w18840a-2005-1	Q8500A DQ8500A FWL8980A XWL8980A DXWLAD1 DWLAD1	WL8840A	3	11051	81446	0.969	0.964
w18840h-2005-1	LG1NWL LG1D3NWL LG4D3NWL LG7D3NWL LG10D3NWL LG13D3NWL PWL8840A	WL8840	3	2303	70796	0.987	0.983
w18920a-2005-1	Q8500A DQ8500A FWL8980A XWL8980A DXWLAD1 DWLAD1	WL8920A	3	10482	68121	0.977	0.883
w18920h-2005-1	LG1NWL LG1D3NWL LG4D3NWL LG7D3NWL LG10D3NWL LG13D3NWL PWL8920A	WL8920	2	10538	68368	0.995	0.991
w18977a-2005-1	Q8500A DQ8500A FWL8980A XWL8980A DXWLAD1 DWLAD1	WL8977A	2	10612	79682	0.960	0.965
w18977h-2005-1	LG1NWL LG1D3NWL LG4D3NWL LG7D3NWL LG10D3NWL LG13D3NWL PWL8977A	WL8977	2	10717	79951	0.994	0.995

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
USGS river network water-level models—Continued							
wl8979a-2005-1	Q8500A DQ8500A FWL8980A XWL8980A DXWLAD1 DWLAD1	WL8979A	2	7987	70993	0.952	0.961
wl8979h-2005-1	LG1NWL LG1D3NWL LG4D3NWL LG7D3NWL LG10D3NWL LG13D3NWL PWL8979A	WL8979	2	8029	71187	0.984	0.981
USGS river network specific-conductance models							
sc8840a-2005-1	Q8500A DQ8500A LAQ2 DAQ2 DAQ16 DAQ30 FWL8980A XWL8980A DWLA DXWLA	SC8840A	3	10056	77309	0.887	0.851
sc8840h-2005-1	LG1NWL LG1D3NWL LG4D3NWL LG7D3NWL PSC8840A NXWL	SC8840	2	10197	77772	0.879	0.567
sc8920a-2005-1	Q8500A DQ8500A LAQ2 DAQ2 DAQ16 DAQ30 FWL8980A XWL8980A DWLA DXWLA LG2DWLA LG2DXWLA	SC8920A	2	9836	67677	0.897	0.883

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
USGS river network specific-conductance models—Continued							
sc8920h-2005-1	FWL8980A XWL8980A NXWL LG1NWL LG1D3NWL LG4D3NWL LG7D3NWL LG10D3NWL LG13D3NWL PSC8920A	SC8920	2	9900	67820	0.900	0.867
sc89784a-2005-1	Q8500A DQ8500A LAQ2 DAQ2 DAQ16 DAQ30 FWL8980A XWL8980A DWLA DXWLA LG2DWLA LG2DXWLA	SC89784A	3	8534	70348	0.880	0.853
sc89784h-2005-1	PSC89784A FWL8980A XWL8980A NXWL LG1NWL LG1D3NWL LG4D3NWL LG7D3NWL LG10D3NWL LG13D3NWL	SC89784	3	8600	71064	0.825	0.793
sc89791a-2005-1	Q8500A DQ8500A LAQ2 DAQ2 DAQ16 DAQ30 FWL8980A XWL8980A	SC89791A	3	9660	75782	0.887	0.870

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
USGS river network specific-conductance models—Continued							
sc89791a-2005-1 (cont.)	DWLA DXWLA LG2DWLA LG2DXWLA						
sc89791h-2005-1	FWL8980A XWL8980A NXWL LG1NWL LG1D3NWL LG4D3NWL LG7D3NWL LG10D3NWL LG13D3NWL PSC89791A	SC89791	3	9736	76366	0.888	0.826
USGS marsh network water-level models							
pb1mwl-2005	FWL8840 DFWL8840 LG3DFWL8840 LG6DFWL8840 FWLDIF8977 FWLDIF8979 FWLDIF8920	B1MWL	2	3143	17653	0.770	0.762
pb2mwl-2005	FWL8840 DFWL8840 LG3DFWL8840 LG6DFWL8840 FWLDIF8977 FWLDIF8979 FWLDIF8920	FB2MWL	2	3284	18228	0.797	0.768
pb3mwl-2005	FWL8840 DFWL8840 LG3DFWL8840 LG6DFWL8840 FWLDIF8977 FWLDIF8979 FWLDIF8920	FB3MWL	2	3558	20082	0.858	0.866
pb4mwl-2005	FWL8840 DFWL8840 LG3DFWL8840 LG6DFWL8840	FB4MWL-0P1	2	2879	15877	0.887	0.883

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
USGS marsh network water-level models—Continued							
pb4mwl-2005 (cont.)	FWLDIF8977						
	FWLDIF8979						
	FWLDIF8920						
pf1mwl-2005	FWL8840	FF1MWL	2	4243	23982	0.839	0.836
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FWLDIF8977						
	FWLDIF8979						
	FWLDIF8920						
pm1mwl-2005	FWL8840	FM1MWL	2	2424	13299	0.694	0.722
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FWLDIF8977						
	FWLDIF8979						
	FWLDIF8920						
pm2mwl-2005	FWL8840	M2MWL	2	1751	9676	0.808	0.778
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FWLDIF8977						
	FWLDIF8979						
	FWLDIF8920						
USGS marsh network specific-conductance models							
pb1msc-2005-2	SCDIF8840A	B1MSC	1	2333	20555	0.857	0.849
	SCDIF8920A						
	FSC89791A4WK						
	LG672FSC89791A4WKD4WK						
	FSC89791A2WKD4WK						
	FSC89791A1WKD2WK						
	FSC89791A48D1WK						
	FSC89791DA48						
	DFSC89791DA48						
	LG3DFSC89791DA48						
pb2msc-2005-2	SCDIF8840A	B2MSC	1	2142	18770	0.827	0.832
	SCDIF8920A						
	FSC89791A4WK						
	LG672FSC89791A4WKD4WK						
	FSC89791A2WKD4WK						

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
USGS marsh network specific-conductance models—Continued							
pb2msc-2005-2 (cont.)	FSC89791A1WKD2WK						
	FSC89791A48D1WK						
	FSC89791DA48						
	DFSC89791DA48						
	LG3DFSC89791DA48						
pb3msc-2005-2	SCDIF8840A	B3MSC	1	2326	20519	0.549	0.532
	SCDIF8920A						
	FSC89791A4WK						
	LG672FSC89791A4WKD4WK						
	FSC89791A2WKD4WK						
	FSC89791A1WKD2WK						
	FSC89791A48D1WK						
	FSC89791DA48						
	DFSC89791DA48						
LG3DFSC89791DA48							
pb4msc-2005-2	SCDIF8840A	B4MSC	1	2093	18577	0.654	0.641
	SCDIF8920A						
	FSC89791A4WK						
	LG672FSC89791A4WKD4WK						
	FSC89791A2WKD4WK						
	FSC89791A1WKD2WK						
	FSC89791A48D1WK						
	FSC89791DA48						
	DFSC89791DA48						
LG3DFSC89791DA48							
pf1msc-2005-2	SCDIF8840A	F1MSC	1	2496	22073	0.816	0.820
	SCDIF8920A						
	FSC89791A4WK						
	LG672FSC89791A4WKD4WK						
	FSC89791A2WKD4WK						
	FSC89791A1WKD2WK						
	FSC89791A48D1WK						
	FSC89791DA48						
	DFSC89791DA48						
LG3DFSC89791DA48							
pm1msc-2005-2	SCDIF8840A	M1MSC	1	2147	18927	0.809	0.808
	SCDIF8920A						
	FSC89791A4WK						
	LG672FSC89791A4WKD4WK						
	FSC89791A2WKD4WK						

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
USGS marsh network specific-conductance models—Continued							
pm1msc-2005-2 (cont.)	FSC89791A1WKD2WK FSC89791A48D1WK FSC89791DA48 DFSC89791DA48 LG3DFSC89791DA48						
pm2msc-2005-2	SCDIF8840A SCDIF8920A FSC89791A4WK LG672FSC89791A4WKD4WK FSC89791A2WKD4WK FSC89791A1WKD2WK FSC89791A48D1WK FSC89791DA48 DFSC89791DA48 LG3DFSC89791DA48	M2MSC	1	2323	20593	0.841	0.830
GPA river specific-conductance decorrelation models							
dc_gpa_a1wk_10s_11b	PSCGPA11B_FLR_A1WK	PSCGPA10S_FLR_A1WK	1	7644	30459	0.800	0.804
dc_gpa_a1wk_10s_11rb	PSCGPA11RB_FLR_A1WK	PSCGPA10S_FLR_A1WK	1	7750	30921	0.957	0.958
dc_gpa_a1wk_10s_12rs	PSCGPA12RS_FLR_A1WK	PSCGPA10S_FLR_A1WK	1	7750	30921	0.881	0.880
Residual USGS marsh models							
prb1msc	RSC10S_12RS_A1WK RSC10S_11RB_A1WK RSC10S_11B_A1WK PSCGPA10S_FLR_A1WK	RB1MSC	1	4547	18224	0.080	0.087
prb2msc	RSC10S_12RS_A1WK RSC10S_11RB_A1WK RSC10S_11B_A1WK PSCGPA10S_FLR_A1WK	RB2MSC	1	4176	16736	0.067	0.059
prb3msc	RSC10S_12RS_A1WK RSC10S_11RB_A1WK RSC10S_11B_A1WK PSCGPA10S_FLR_A1WK	RB3MSC	1	4519	18209	0.020	0.018
prb4msc	RSC10S_12RS_A1WK RSC10S_11RB_A1WK RSC10S_11B_A1WK PSCGPA10S_FLR_A1WK	RB4MSC	1	4097	16456	0.020	0.020
prf1msc	RSC10S_12RS_A1WK RSC10S_11RB_A1WK RSC10S_11B_A1WK PSCGPA10S_FLR_A1WK	RF1MSC	1	4873	19579	0.042	0.050

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
Residual USGS marsh models—Continued							
prm1msc	RSC10S_12RS_A1WK	RM1MSC	1	4163	16803	0.073	0.065
	RSC10S_11RB_A1WK						
	RSC10S_11B_A1WK						
	PSCGPA10S_FLR_A1WK						
prm2msc	RSC10S_12RS_A1WK	RM2MSC	1	4539	18260	0.034	0.016
	RSC10S_11RB_A1WK						
	RSC10S_11B_A1WK						
	PSCGPA10S_FLR_A1WK						
GPA river network water-level models							
wlgpa04d-2005	WL8977	DWL8977GPA04	2	4215	1079	0.640	0.626
	D3WL8977						
	D3WL8977(006)						
	D3WL8977(012)						
	D3WL8977(018)						
	D3WL8977(024)						
wlgpa05d-2005	WL8977	DWL8977GPA05	2	4344	1133	0.638	0.676
	D3WL8977						
	D3WL8977(006)						
	D3WL8977(012)						
	D3WL8977(018)						
	D3WL8977(024)						
wlgpa06d-2005	WL8977	DWL8977GPA06	2	4305	1124	0.176	0.152
	D3WL8977						
	D3WL8977(006)						
	D3WL8977(012)						
	D3WL8977(018)						
	D3WL8977(024)						
wlgpa07d-2005	WL8920	DWL8920GPA07	2	1606	416	0.641	0.639
	D3WL8920						
	D3WL8920(006)						
	D3WL8920(012)						
	D3WL8920(018)						
	D3WL8920(024)						
wlgpa08d-2005	WL8920	DWL8920GPA08	2	4614	1175	0.238	0.216
	D3WL8920						
	D3WL8920(006)						
	D3WL8920(012)						
	D3WL8920(018)						
	D3WL8920(024)						

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
GPA river network water-level models—Continued							
wlgpa09d-2005	WL8920 D3WL8920 D3WL8920(006) D3WL8920(012) D3WL8920(018) D3WL8920(024)	DWL8920GPA09	3	4642	1192	0.338	0.310
wlgpa10d-2005	WL8920 D3WL8920 D3WL8920(006) D3WL8920(012) D3WL8920(018) D3WL8920(024)	DWL8920GPA10	2	2187	587	0.230	0.233
wlgpa11d-2005	WL8979 D3WL8979 D3WL8979(006) D3WL8979(012) D3WL8979(018) D3WL8979(024)	DWL8979GPA11	2	1578	434	0.534	0.570
wlgpa11rd-2005	WL8920 D3WL8920 D3WL8920(006) D3WL8920(012) D3WL8920(018) D3WL8920(024)	DWL8920GPA11R	2	1617	399	0.863	0.855
wlgpa12d-2005	WL8920 D3WL8920 D3WL8920(006) D3WL8920(012) D3WL8920(018) D3WL8920(024)	DWL8920GPA12	2	2846	749	0.272	0.242
wlgpa13d-2005	WL8979 D3WL8979 D3WL8979(006) D3WL8979(012) D3WL8979(018) D3WL8979(024)	DWL8979GPA13	2	2123	561	0.917	0.926
wlgpa14d-2005	WL8840 D3WL8840 D3WL8840(006) D3WL8840(012) D3WL8840(018) D3WL8840(024)	DWL8840GPA14	2	1630	424	0.914	0.909

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
GPA river network water-level models—Continued							
wlgpa21d-2005	WL8977 D3WL8977 D3WL8977(006) D3WL8977(012) D3WL8977(018) D3WL8977(024)	DWL8977GPA21	2	2227	551	0.030	0.004
wlgpa22d-2005	WL8920 D3WL8920 D3WL8920(006) D3WL8920(012) D3WL8920(018) D3WL8920(024)	DWL8920GPA22	2	1502	384	0.884	0.867
wlgpa23d-2005	WL8977 D3WL8977 D3WL8977(006) D3WL8977(012) D3WL8977(018) D3WL8977(024)	DWL8977GPA23	2	2754	696	0.816	0.798
wlgpa24md-2005	WL8977 D3WL8977 D3WL8977(006) D3WL8977(012) D3WL8977(018) D3WL8977(024)	DWL8977GPA24M	2	2755	697	0.760	0.741
wlgpa25md-2005	WL8977 D3WL8977 D3WL8977(006) D3WL8977(012) D3WL8977(018) D3WL8977(024)	DWL8977GPA25M	2	2750	697	0.653	0.645
wlgpa26d-2005	WL8977 D3WL8977 D3WL8977(006) D3WL8977(012) D3WL8977(018) D3WL8977(024)	DWL8977GPA26	2	2210	553	0.788	0.786
GPA river network specific-conductance models							
scgpa04bd-2005	SC8920 D3SC8920 D3SC8920(006)	DSC8920GPA04B	3	4284	1090	0.522	0.491

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
GPA river network specific-conductance models—Continued							
scgpa04bd-2005 (cont.)	D3SC8920(012)						
	D3SC8920(018)						
	D3SC8920(024)						
	WL8977						
	D3WL8977						
	D3WL8977(006)						
	D3WL8977(012)						
	D3WL8977(018)						
	D3WL8977(024)						
scgpa04sd-2005	SC8920	DSC8920GPA04S	2	4511	1145	0.650	0.666
	D3SC8920						
	D3SC8920(006)						
	D3SC8920(012)						
	D3SC8920(018)						
	D3SC8920(024)						
	WL8977						
	D3WL8977						
	D3WL8977(006)						
	D3WL8977(012)						
	D3WL8977(018)						
	D3WL8977(024)						
	scgpa05bd-2005	SC8920	DSC8920GPA05B	3	3901	1021	0.714
D3SC8920							
D3SC8920(006)							
D3SC8920(012)							
D3SC8920(018)							
D3SC8920(024)							
WL8977							
D3WL8977							
D3WL8977(006)							
D3WL8977(012)							
D3WL8977(018)							
D3WL8977(024)							
scgpa06bd-2005		SC8920	DSC8920GPA06B	3	4155	1090	0.676
	D3SC8920						
	D3SC8920(006)						
	D3SC8920(012)						
	D3SC8920(018)						
	D3SC8920(024)						
	WL8977						

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
GPA river network specific-conductance models—Continued							
scgpa06bd-2005 (cont.)	D3WL8977 D3WL8977(006) D3WL8977(012) D3WL8977(018) D3WL8977(024)						
scgpa06sd-2005	SC8920 D3SC8920 D3SC8920(006) D3SC8920(012) D3SC8920(018) D3SC8920(024) WL8977 D3WL8977 D3WL8977(006) D3WL8977(012) D3WL8977(018) D3WL8977(024)	DSC8920GPA06S	2	4131	1044	0.641	0.630
scgpa07bd-2005	SC89791 D3SC89791 D3SC89791(006) D3SC89791(012) D3SC89791(018) D3SC89791(024) WL8979 D3WL8979 D3WL8979(006) D3WL8979(012) D3WL8979(018) D3WL8979(024)	DSC89791GPA07B	2	2042	555	0.806	0.808
scgpa07sd-2005	SC89791 D3SC89791 D3SC89791(006) D3SC89791(012) D3SC89791(018) D3SC89791(024) WL8979 D3WL8979 D3WL8979(006) D3WL8979(012) D3WL8979(018) D3WL8979(024)	DSC89791GPA07S	2	2376	598	0.857	0.861

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
GPA river network specific-conductance models—Continued							
scgpa08bd-2005	DSC89791GPA07S	DSC8920GPA08B	2	4792	1216	0.402	0.428
	SC8920						
	D3SC8920						
	D3SC8920(006)						
	D3SC8920(012)						
	D3SC8920(018)						
	D3SC8920(024)						
	WL8920						
	D3WL8920						
	D3WL8920(006)						
	D3WL8920(012)						
	D3WL8920(018)						
	D3WL8920(024)						
scgpa08sd-2005	SC8920	DSC8920GPA08S	2	4112	1030	0.419	0.409
	D3SC8920						
	D3SC8920(006)						
	D3SC8920(012)						
	D3SC8920(018)						
	D3SC8920(024)						
	WL8920						
	D3WL8920						
	D3WL8920(006)						
	D3WL8920(012)						
	D3WL8920(018)						
	D3WL8920(024)						
	scgpa09bd-2005	SC8920	DSC8920GPA09B	2	4611	1178	0.260
D3SC8920							
D3SC8920(006)							
D3SC8920(012)							
D3SC8920(018)							
D3SC8920(024)							
WL8920							
D3WL8920							
D3WL8920(006)							
D3WL8920(012)							
D3WL8920(018)							
D3WL8920(024)							
scgpa09sd-2005		SC8920	DSC8920GPA09S	2	1640	410	0.546
	D3SC8920						
	D3SC8920(006)						

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
GPA river network specific-conductance models—Continued							
scgpa09sd-2005 (cont.)	D3SC8920(012)						
	D3SC8920(018)						
	D3SC8920(024)						
	WL8920						
	D3WL8920						
	D3WL8920(006)						
	D3WL8920(012)						
	D3WL8920(018)						
	D3WL8920(024)						
scgpa10bd-2005	SC8920	DSC8920GPA10B	2	2335	625	0.919	0.908
	D3SC8920						
	D3SC8920(006)						
	D3SC8920(012)						
	D3SC8920(018)						
	D3SC8920(024)						
	WL8920						
	D3WL8920						
	D3WL8920(006)						
	D3WL8920(012)						
	D3WL8920(018)						
	D3WL8920(024)						
	scgpa10sd-2005	SC8920	DSC8920GPA10S	2	1609	410	0.899
D3SC8920							
D3SC8920(006)							
D3SC8920(012)							
D3SC8920(018)							
D3SC8920(024)							
WL8920							
D3WL8920							
D3WL8920(006)							
D3WL8920(012)							
D3WL8920(018)							
D3WL8920(024)							
scgpa11bd-2005		SC89791	DSC89791GPA11B	2	1777	470	0.534
	D3SC89791						
	D3SC89791(006)						
	D3SC89791(012)						
	D3SC89791(018)						
	D3SC89791(024)						
	WL8979						

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
GPA river network specific-conductance models—Continued							
scgpa11bd-2005 (cont.)	D3WL8979 D3WL8979(006) D3WL8979(012) D3WL8979(018) D3WL8979(024)						
scgpa11rbd-2005	SC8920 D3SC8920 D3SC8920(006) D3SC8920(012) D3SC8920(018) D3SC8920(024) WL8920 D3WL8920 D3WL8920(006) D3WL8920(012) D3WL8920(018) D3WL8920(024)	DSC8920GPA11RB	2	1288	326	0.662	0.743
scgpa12bd-2005	SC8920 D3SC8920 D3SC8920(006) D3SC8920(012) D3SC8920(018) D3SC8920(024) WL8920 D3WL8920 D3WL8920(006) D3WL8920(012) D3WL8920(018) D3WL8920(024)	DSC8920GPA12B	2	3003	787	0.986	0.985
scgpa12rsd-2005	SC8920 D3SC8920 D3SC8920(006) D3SC8920(012) D3SC8920(018) D3SC8920(024) WL8920 D3WL8920 D3WL8920(006) D3WL8920(012) D3WL8920(018) D3WL8920(024)	DSC8920GPA12RS	2	1455	367	0.847	0.861

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
GPA river network specific-conductance models—Continued							
scgpa13bd-2005	SC89791	DSC89791GPA13B	2	2120	561	0.408	0.502
	D3SC89791						
	D3SC89791(006)						
	D3SC89791(012)						
	D3SC89791(018)						
	D3SC89791(024)						
	WL8979						
	D3WL8979						
	D3WL8979(006)						
	D3WL8979(012)						
	D3WL8979(018)						
	D3WL8979(024)						
	scgpa14bd-2005	SC8840	DSC8840GPA14B	2	4502	1169	0.662
D3SC8840							
D3SC8840(006)							
D3SC8840(012)							
D3SC8840(018)							
D3SC8840(024)							
WL8840							
D3WL8840							
D3WL8840(006)							
D3WL8840(012)							
D3WL8840(018)							
D3WL8840(024)							
scgpa15sd-2005		SC89791	DSC89791GPA15S	2	5540	1359	0.555
	D3SC89791						
	D3SC89791(006)						
	D3SC89791(012)						
	D3SC89791(018)						
	D3SC89791(024)						
	WL8979						
	D3WL8979						
	D3WL8979(006)						
	D3WL8979(012)						
	D3WL8979(018)						
	D3WL8979(024)						
	scgpa21bd-2005	SC8920	DSC8920GPA21B	2	1759	427	0.577
D3SC8920							
D3SC8920(006)							
D3SC8920(012)							

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
GPA river network specific-conductance models—Continued							
scgpa21bd-2005 (cont.)	D3SC8920(018)						
	D3SC8920(024)						
	WL8977						
	D3WL8977						
	D3WL8977(006)						
	D3WL8977(012)						
	D3WL8977(018)						
	D3WL8977(024)						
scgpa21sd-2005	SC8920	DSC8920GPA21S	3	2396	597	0.606	0.594
	D3SC8920						
	D3SC8920(006)						
	D3SC8920(012)						
	D3SC8920(018)						
	D3SC8920(024)						
	WL8977						
	D3WL8977						
	D3WL8977(006)						
	D3WL8977(012)						
	D3WL8977(018)						
	D3WL8977(024)						
scgpa22bd-2005	SC8920	DSC8920GPA22B	2	1328	334	0.329	0.269
	D3SC8920						
	D3SC8920(006)						
	D3SC8920(012)						
	D3SC8920(018)						
	D3SC8920(024)						
	WL8920						
	D3WL8920						
	D3WL8920(006)						
	D3WL8920(012)						
	D3WL8920(018)						
	D3WL8920(024)						
scgpa22sd-2005	SC8920	DSC8920GPA22S	2	1602	393	0.627	0.627
	D3SC8920						
	D3SC8920(006)						
	D3SC8920(012)						
	D3SC8920(018)						
	D3SC8920(024)						
	WL8920						
	D3WL8920						

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
GPA river network specific-conductance models—Continued							
scgpa22sd-2005 (cont.)	D3WL8920(006) D3WL8920(012) D3WL8920(018) D3WL8920(024)						
GPA marsh network water-level models							
ps1canalwl-2005	FWL8840 DFWL8840 LG3DFWL8840 LG6DFWL8840 FWLDIF8977 FWLDIF8979 FWLDIF8920	S1CANALWL	2	815	7911	0.983	0.983
ps1marshwl-2005	FWL8840 DFWL8840 LG3DFWL8840 LG6DFWL8840 FWLDIF8977 FWLDIF8979 FWLDIF8920	S1MARSHWL	3	1726	7208	0.648	0.610
1ps1marshwlat-2005	FWL8840 DFWL8840 LG3DFWL8840 LG6DFWL8840 FWLDIF8977 FWLDIF8979 FWLDIF8920	S1MARSHWLAT	2	1371		0.672	
ps2canalwl-2005	FWL8840 DFWL8840 LG3DFWL8840 LG6DFWL8840 FWLDIF8977 FWLDIF8979 FWLDIF8920	S2CANALWL	2	613	2398	0.922	0.936
ps2marshwl-2005	FWL8840 DFWL8840 LG3DFWL8840 LG6DFWL8840 FWLDIF8977 FWLDIF8979 FWLDIF8920	S2MARSHWL	2	796	2306	0.741	0.740

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
GPA marsh network water-level models—Continued							
ps3canalwl-2005	FWL8840	S3CANALWL	2	877	12699	0.976	0.961
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FWLDIF8977						
	FWLDIF8979						
	FWLDIF8920						
ps3marshwl-2005	FWL8840	S3MARSHW	2	2077	12595	0.891	0.806
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FWLDIF8977						
	FWLDIF8979						
	FWLDIF8920						
ps4canalwl-2005	FWL8840	S4CANALWL	2	809	7784	0.986	0.985
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FWLDIF8977						
	FWLDIF8979						
	FWLDIF8920						
ps4marshwl-2005	FWL8840	S4MARSHWL	3	1764	7762	0.902	0.858
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FWLDIF8977						
	FWLDIF8979						
	FWLDIF8920						
ps5canalwl-2005	FWL8840	S5CANALWL	1	4805	5784	0.989	0.619
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FWLDIF8977						
	FWLDIF8979						
	FWLDIF8920						
ps5marshwl-2005	FWL8840	S5MARSHWL	3	1965	10219	0.911	0.891
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FWLDIF8977						
	FWLDIF8979						
	FWLDIF8920						

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
GPA marsh network water-level models—Continued							
ps6canalwl-2005	FWL8840	S6CANALWL	3	791	7408	0.990	0.983
	DOWL8840						
	LG3DOWL8840						
	LG6DOWL8840						
	FWLDIF8977						
	FWLDIF8979						
	FWLDIF8920						
ps6marshwl-2005	FWL8840	S6MARSHWL	3	1647	6637	0.804	0.763
	DOWL8840						
	LG3DOWL8840						
	LG6DOWL8840						
	FWLDIF8977						
	FWLDIF8979						
	FWLDIF8920						
1ps6marshwlat-2005	FWL8840	S6MARSHWLAT	2	1720		0.960	
	DOWL8840						
	LG3DOWL8840						
	LG6DOWL8840						
	FWLDIF8977						
	FWLDIF8979						
	FWLDIF8920						
ps7canalwl-2005	FWL8840	S7CANALWL	3	572	2739	0.924	0.933
	DOWL8840						
	LG3DOWL8840						
	LG6DOWL8840						
	FWLDIF8977						
	FWLDIF8979						
	FWLDIF8920						
1ps7marshwl-2005	FWL8840	S7MARSHWL	2	2822		0.701	
	DOWL8840						
	LG3DOWL8840						
	LG6DOWL8840						
	FWLDIF8977						
	FWLDIF8979						
	FWLDIF8920						
1ps8canalwl-2005	FWL8840	S8CANALWL	1	430		0.996	
	DOWL8840						
	LG3DOWL8840						
	LG6DOWL8840						
	FWLDIF8977						
	FWLDIF8979						
	FWLDIF8920						

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
GPA marsh network water-level models—Continued							
ps9canalwl-2005	FWL8840	S9CANALWL	2	805	7829	0.991	0.988
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FWLDIF8977						
	FWLDIF8979						
	FWLDIF8920						
ps9marshwl-2005	FWL8840	S9MARSHWL	3	1801	7882	0.827	0.762
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FWLDIF8977						
	FWLDIF8979						
	FWLDIF8920						
ps10canalwl-2005	FWL8840	S10CANALWL	2	694	5982	0.982	0.980
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FWLDIF8977						
	FWLDIF8979						
	FWLDIF8920						
ps10marshwl-2005	FWL8840	S10MARSHWL	3	1530	5985	0.906	0.904
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FWLDIF8977						
	FWLDIF8979						
	FWLDIF8920						
GPA marsh network specific-conductance models							
ps1canalsc-2005	FWL8840	S1CANALSC	3	750	7559	0.926	0.885
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FSC89791						
	DFSC89791						
	LG3DFSC89791						
	LG6DFSC89791						
	FSCDIF8840						
	FSCDIF8920						

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
GPA marsh network specific-conductance models—Continued							
ps1marshsc-2005	FWL8840	S1MARSHSC	2	1441	3990	0.726	0.722
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FSC89791						
	DFSC89791						
	LG3DFSC89791						
	LG6DFSC89791						
	FSCDIF8840						
	FSCDIF8920						
ps2canalsc-2005	FWL8840	S2CANALSC	3	1301	6355	0.913	0.897
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FSC89791						
	DFSC89791						
	LG3DFSC89791						
	LG6DFSC89791						
	FSCDIF8840						
	FSCDIF8920						
ps2marshsc-2005	FWL8840	S2MARSHSC	3	902	2733	0.882	0.876
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FSC89791						
	DFSC89791						
	LG3DFSC89791						
	LG6DFSC89791						
	FSCDIF8840						
	FSCDIF8920						
ps3canalsc-2005	FWL8840	S3CANALSC	3	2118	11954	0.812	0.813
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FSC89791						
	DFSC89791						
	LG3DFSC89791						
	LG6DFSC89791						
	FSCDIF8840						
	FSCDIF8920						

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
GPA marsh network specific-conductance models—Continued							
ps3marshsc-2005	S3CANALSC	S3MARSHSC	3	2062	11025	0.845	0.826
	FWL8840						
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FSC89791						
	DFSC89791						
	LG3DFSC89791						
	LG6DFSC89791						
	FSCDIF8840						
	FSCDIF8920						
ps4canalsc-2005	FWL8840	S4CANALSC	3	1798	7463	0.865	0.839
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FSC89791						
	DFSC89791						
	LG3DFSC89791						
	LG6DFSC89791						
	FSCDIF8840						
	FSCDIF8920						
	ps4marshsc-2005	FWL8840	S4MARSHSC	2	1658	5535	0.897
DFWL8840							
LG3DFWL8840							
LG6DFWL8840							
FSC89791							
DFSC89791							
LG3DFSC89791							
LG6DFSC89791							
FSCDIF8840							
FSCDIF8920							
ps5canalsc-2005		FWL8840	S5CANALSC	2	1500	4312	0.814
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FSC89791						
	DFSC89791						
	LG3DFSC89791						
	LG6DFSC89791						
	FSCDIF8840						
	FSCDIF8920						

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
GPA marsh network specific-conductance models—Continued							
ps5marshsc-2005	FWL8840	S5MARSHSC	3	4108	12677	0.630	0.548
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FSC89791						
	DFSC89791						
	LG3DFSC89791						
	LG6DFSC89791						
	FSCDIF8840						
	FSCDIF8920						
ps6canalsc-2005	FWL8840	S6CANALSC	3	1617	6115	0.834	0.825
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FSC89791						
	DFSC89791						
	LG3DFSC89791						
	LG6DFSC89791						
	FSCDIF8840						
	FSCDIF8920						
ps6marshsc-2005	FWL8840	S6MARSHSC	3	1673	5953	0.859	0.814
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FSC89791						
	DFSC89791						
	LG3DFSC89791						
	LG6DFSC89791						
	FSCDIF8840						
	FSCDIF8920						
ps7canalsc-2005	FWL8840	S7CANALSC	3	3665	3049	0.873	0.000
	DFWL8840						
	LG3DFWL8840						
	LG6DFWL8840						
	FSC89791						
	DFSC89791						
	LG3DFSC89791						
	LG6DFSC89791						
	FSCDIF8840						
	FSCDIF8920						

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
GPA marsh network specific-conductance models—Continued							
prs7marshpwc	RSC10S_12RS_A1WK RSC10S_11RB_A1WK RSC10S_11B_A1WK PSCGPA10S_FLR_A1WK	RS7MARSHPWC	1	1539	6136	0.150	0.141
ps7marshpwc-2005-2	FSC89791A4WK FSC89791A24DA4WK AQ8500A168L72	S7MARSHPWC	1	4270	4260	0.650	0.679
ps7marshsc-2005	FWL8840 DFWL8840 LG3DFWL8840 LG6DFWL8840 FSC89791 DFSC89791 LG3DFSC89791 LG6DFSC89791 FSCDIF8840 FSCDIF8920	S7MARSHSC	2	3386	3118	0.685	0.000
ps8canalsc-2005	FWL8840 DFWL8840 LG3DFWL8840 LG6DFWL8840 FSC89791 DFSC89791 LG3DFSC89791 LG6DFSC89791 FSCDIF8840 FSCDIF8920	S8CANALSC	2	1458	4752	0.871	0.831
ps9canalsc-2005	FWL8840 DFWL8840 LG3DFWL8840 LG6DFWL8840 FSC89791 DFSC89791 LG3DFSC89791 LG6DFSC89791 FSCDIF8840 FSCDIF8920	S9CANALSC	3	1806	6905	0.847	0.826
prs9marshpwc	RSC10S_12RS_A1WK RSC10S_11RB_A1WK RSC10S_11B_A1WK PSCGPA10S_FLR_A1WK	RS9MARSHPWC	1	1519	6052	0.098	0.097

Appendix II. Model summary of artificial neural network models used in the Model-to-Marsh application.—Continued

[R², coefficient of determination]

Model	Input variables	Output variable	Number of hidden neurons	Training matrix size	Testing matrix size	R ² training	R ² testing
GPA marsh network specific-conductance models—Continued							
ps9marshpwc-2005-2	FSC89791A4WK FSC89791A24DA4WK AQ8500A168L72	S9MARSHPWSC	1	4221	4205	0.518	0.556
prs10marshpwc	RSC10S_12RS_A1WK RSC10S_11RB_A1WK RSC10S_11B_A1WK PSCGPA10S_FLR_A1WK	RS10MARSHPWC	1	1460	5797	0.100	0.101
ps10marshswsc-2005	FWL8840 DFWL8840 LG3DFWL8840 LG6DFWL8840 FSC89791 DFSC89791 LG3DFSC89791 LG6DFSC89791 FSCDIF8840 FSCDIF8920	S10MARSHSWSC	3	1810	6718	0.896	0.855

¹ Due to data quality concerns, data set was not bifurcated into training and testing datasets.

Appendix III. Variables used in artificial neural network models.

[SC, specific conductance; USGS, U.S. Geological Survey; WL, water level; GPA, Georgia Ports Authority; XWL, tidal range; MWA, moving window average]

Variable	Description
AQ8500A168L72	168-hour average flow at station 02198500—lagged 72 hours
B1MSC	Hourly SC at USGS marsh site B1
B1MWL	SC at station B1—hourly
B2MSC	Hourly SC at USGS marsh site B2
B3MSC	Hourly SC at USGS marsh site B3
B4MSC	Hourly SC at USGS marsh site B4
D3SC8840	3-hour difference in SC at station 02198840
D3SC8840(006)	3-hour difference in SC at station 02198840—lagged 6 hours
D3SC8840(012)	3-hour difference in SC at station 02198840—lagged 12 hours
D3SC8840(018)	3-hour difference in SC at station 02198840—lagged 18 hours
D3SC8840(024)	3-hour difference in SC at station 02198840—lagged 24 hours
D3SC8920	3-hour difference in SC at station 02198920
D3SC8920(006)	3-hour difference in SC at station 02198920—lagged 6 hours
D3SC8920(012)	3-hour difference in SC at station 02198920—lagged 12 hours
D3SC8920(018)	3-hour difference in SC at station 02198920—lagged 18 hours
D3SC8920(024)	3-hour difference in SC at station 02198920—lagged 24 hours
D3SC89791	3-hour difference in SC at station 021989791
D3SC89791(006)	3-hour difference in SC at station 021989791—lagged 6 hours
D3SC89791(012)	3-hour difference in SC at station 021989791—lagged 12 hours
D3SC89791(018)	3-hour difference in SC at station 021989791—lagged 18 hours
D3SC89791(024)	3-hour difference in SC at station 021989791—lagged 24 hours
D3WL8840	3-hour difference in WL at station 02198840
D3WL8840(006)	3-hour difference in WL at station 02198840—lagged 6 hours
D3WL8840(012)	3-hour difference in WL at station 02198840—lagged 12 hours
D3WL8840(018)	3-hour difference in WL at station 02198840—lagged 18 hours
D3WL8840(024)	3-hour difference in WL at station 02198840—lagged 24 hours
D3WL8920	3-hour difference in WL at station 02198920
D3WL8920(006)	3-hour difference in WL at station 02198920—lagged 6 hours
D3WL8920(012)	3-hour difference in WL at station 02198920—lagged 12 hours
D3WL8920(018)	3-hour difference in WL at station 02198920—lagged 18 hours
D3WL8920(024)	3-hour difference in WL at station 02198920—lagged 24 hours
D3WL8977	3-hour difference in WL at station 02198977
D3WL8977(006)	3-hour difference in WL at station 02198977—lagged 6 hours
D3WL8977(012)	3-hour difference in WL at station 02198977—lagged 12 hours
D3WL8977(018)	3-hour difference in WL at station 02198977—lagged 18 hours

Appendix III. Variables used in artificial neural network models.—Continued

[SC, specific conductance; USGS, U.S. Geological Survey; WL, water level; GPA, Georgia Ports Authority; XWL, tidal range; MWA, moving window average]

Variable	Description
D3WL8977(024)	3-hour difference in WL at station 0219897—lagged 24 hours
D3WL8979	3-hour difference in WL at station 02198979
D3WL8979(006)	3-hour difference in WL at station 02198979—lagged 6 hours
D3WL8979(012)	3-hour difference in WL at station 02198979—lagged 12 hours
D3WL8979(018)	3-hour difference in WL at station 02198979—lagged 18 hours
D3WL8979(024)	3-hour difference in WL at station 02198979—lagged 24 hours
DAQ16	16-day change in daily flow at station 02198500
DAQ2	2-day change in daily flow at station 02198500
DAQ30	30-day change in daily flow at station 02198500
DFSC89791	1-day difference in filtered SC at station 021989791
DFSC89791DA48	1-day difference in filtered 48-hour differences of SC at station 021989791
DFWL8840	1-day difference in filtered WL at station 02198840
DQ8500A	1-day difference in daily average flow at station 02198500
DSC8840GPA14B	Difference in SC between 02198840 and GPA14b
DSC8920GPA04B	Difference in SC between 02198920 and GPA04b
DSC8920GPA04S	Difference in SC between 02198920 and GPA04s
DSC8920GPA05B	Difference in SC between 02198920 and GPA05b
DSC8920GPA06B	Difference in SC between 02198920 and GPA06b
DSC8920GPA06S	Difference in SC between 02198920 and GPA06s
DSC8920GPA08B	Difference in SC between 02198920 and GPA08b
DSC8920GPA08S	Difference in SC between 02198920 and GPA08s
DSC8920GPA09B	Difference in SC between 02198920 and GPA09b
DSC8920GPA09S	Difference in SC between 02198920 and GPA09s
DSC8920GPA10B	Difference in SC between 02198920 and GPA10b
DSC8920GPA10S	Difference in SC between 02198920 and GPA10s
DSC8920GPA11RB	Difference in SC between 02198920 and GPA11b
DSC8920GPA12B	Difference in SC between 02198920 and GPA12b
DSC8920GPA12RS	Difference in SC between 02198920 and GPA12rs
DSC8920GPA21B	Difference in SC between 02198920 and GPA21b
DSC8920GPA21S	Difference in SC between 02198920 and GPA21s
DSC8920GPA22B	Difference in SC between 02198920 and GPA22b
DSC8920GPA22S	Difference in SC between 02198920 and GPA22s
DSC89791GPA07B	Difference in SC between 021989791 and GPA07b
DSC89791GPA07S	Difference in SC between 021989791 and GPA07s
DSC89791GPA11B	Difference in SC between 021989791 and GPA11b

Appendix III. Variables used in artificial neural network models.—Continued

[SC, specific conductance; USGS, U.S. Geological Survey; WL, water level; GPA, Georgia Ports Authority; XWL, tidal range; MWA, moving window average]

Variable	Description
DSC89791GPA13B	Difference in SC between 021989791 and GPA15s
DSC89791GPA15S	Difference in SC between 021989791 and GPA13b
DWL8840GPA14	Difference in WL between 02198840 and GPA14
DWL8920GPA07	Difference in WL between 02198920 and GPA07
DWL8920GPA08	Difference in WL between 02198920 and GPA08
DWL8920GPA09	Difference in WL between 02198920 and GPA09
DWL8920GPA10	Difference in WL between 02198920 and GPA10
DWL8920GPA11R	Difference in WL between 02198920 and GPA11r
DWL8920GPA12	Difference in WL between 02198920 and GPA12
DWL8920GPA22	Difference in WL between 02198920 and GPA22
DWL8977GPA04	Difference in WL between 02198977 and GPA04
DWL8977GPA05	Difference in WL between 02198977 and GPA05
DWL8977GPA06	Difference in WL between 02198977 and GPA06
DWL8977GPA21	Difference in WL between 02198977 and GPA21
DWL8977GPA23	Difference in WL between 02198977 and GPA23
DWL8977GPA24M	Difference in WL between 02198977 and GPA24m
DWL8977GPA25M	Difference in WL between 02198977 and GPA25m
DWL8977GPA26	Difference in WL between 02198977 and GPA26
DWL8979GPA11	Difference in WL between 02198979 and GPA11
DWL8979GPA13	Difference in WL between 02198979 and GPA13
DWLA	1-day change in WL
DWLAD1	1-day change in WL, lagged 1 day
DXWLA	1-day change in tidal range (XWL)
DXWLAD1	1-day change in tide range, lagged 1 day
F1MSC	Hourly SC at USGS marsh site F1M
FB2MWL	Filtered WL at station F2—hourly
FB3MWL	Filtered WL at station B3—hourly
FB4MWL-0P1	Filtered WL at station B4—hourly
FF1MWL	Filtered WL at station F1—hourly
FM1MWL	Filtered WL at station M1—hourly
FSC89791	Filtered SC at station 021989791
FSC89791A1WKD2WK	Difference between 1- and 2-week lagged MWAs of FSC89791
FSC89791A24DA4WK	Difference between 24-day and 2-week lagged MWAs of FSC89791
FSC89791A48D1WK	Difference between 2-day and 1-week and lagged MWAs of FSC89791
FSC89791A4WK	4-week MWA of FSC89791

Appendix III. Variables used in artificial neural network models.—Continued

[SC, specific conductance; USGS, U.S. Geological Survey; WL, water level; GPA, Georgia Ports Authority; XLW, tidal range; MWA, moving window average]

Variable	Description
FSC89791DA48	Difference between hourly and 2-day MWA of FSC89791
FSCDIF8840	Difference with SC at station 02198840 and station 021989791
FSCDIF8920	Difference with SC station 02198840 and station 02198920
FWL8840	Filled WL at station 02198840
FWL8980A	Filled, filtered daily WL
FWLDIF8920	Filled WL difference between station 02198840 and station 02198920
FWLDIF8977	Filled WL difference between station 02198840 and station 02198977
FWLDIF8979	Filled WL difference between station 02198840 and station 02198979
LAQ2	2-day lag of the daily flow at station 02198500
LG10D3NWL	10-hour lag in the 3 hour change in WL at station 02198980
LG13D3NWL	13-hour lag in the 3 hour change in WL at station 02198980
LG1D3NWL	1-hour lag in the 3 hour change in WL at station 02198980
LG1NWL	1-hour lag in the in hourly WL at station 02198980
LG2DWLA	1-day change in WL, lagged 2 day at station 02198980
LG2DXWLA	1-day change in tidal range, lagged 2 days at station 02198980
LG3DFSC89791	1-day change in SC at station 021989791 lagged 3 hours
LG3DFSC89791DA48	48-hour average of 1-day change in SC at station 021989791 lagged 3 hours
LG3DFWL8840	Difference with WL at station 02198840 lagged 3 days
LG4D3NWL	4-hour lag in the 3 hour change in WL
LG672FSC89791A4WKD4WK	Difference between 4-week and lagged 4-week MWAs of SC at station 021989791
LG6DFSC89791	SC difference at 021989791 lagged 6 hours
LG6DFWL8840	WL difference at 02198840 lagged 6 days
LG7D3NWL	7-hour lag in the 3 hour change in WL at station 02198980
M1MSC	Hourly SC at marsh site M1
M2MSC	Hourly SC at marsh site M2
M2MWL	Hourly WL at marsh site M2
NXWL	Tidal range at station 02198980
PSC8840A	Predicted daily SC at station 02198840
PSC8920A	Predicted daily SC at station 02198920
PSC89784A	Predicted daily SC at station 021989784
PSC89791A	Predicted daily SC at station 021989791
PSCGPA10S_FLR_A1WK	1-week MWA of floored predicted hourly SC at GPA10S
PSCGPA11B_FLR_A1WK	1-week MWA of floored predicted hourly SC at GPA11B
PSCGPA11RB_FLR_A1WK	1-week MWA of floored predicted hourly SC at GPA11RB
PSCGPA12RS_FLR_A1WK	1-week MWA of floored predicted hourly SC at GPA12RS

Appendix III. Variables used in artificial neural network models.—Continued

[SC, specific conductance; USGS, U.S. Geological Survey; WL, water level; GPA, Georgia Ports Authority; XWL, tidal range; MWA, moving window average]

Variable	Description
PWL8840A	Predicted daily WL at station 02198840
PWL8920A	Predicted daily WL at station 02198920
PWL8977A	Predicted daily WL at station 02198977
PWL8979A	Predicted daily WL at station 02198979
Q8500A	Daily average flow at station 02198500
RB1MSC	Residual error of predicted hourly SC at USGS marsh site B1
RB2MSC	Residual error of predicted hourly SC at USGS marsh site B2
RB3MSC	Residual error of predicted hourly SC at USGS marsh site B3
RB4MSC	Residual error of predicted hourly SC at USGS marsh site B4
RF1MSC	Residual error of predicted hourly SC at USGS marsh site F1
RM1MSC	Residual error of predicted hourly SC at USGS marsh site M1
RM2MSC	Residual error of predicted hourly SC at USGS marsh site M2
RS10MARSHPWC	Residual error of predicted hourly SC at USGS marsh site S10
RS7MARSHPWC	Residual error of predicted hourly SC at USGS marsh site S7
RS9MARSHPWC	Residual error of predicted hourly SC at USGS marsh site S9
RSC10S_11B_A1WK	Residual error of predicted weekly average floored SCGPA11B (for decorrelation)
RSC10S_11B_A1WK	Residual error of predicted weekly average floored SCGPA11B (for decorrelation)
RSC10S_11RB_A1WK	Residual error of predicted weekly average floored SCGPA11RB (for decorrelation)
RSC10S_11RB_A1WK	Residual error of predicted weekly average floored SCGPA11RB (for decorrelation)
RSC10S_12RS_A1WK	Residual error of predicted weekly average floored SCGPA12RS (for decorrelation)
S10CANALWL	Hourly WL at GPA marsh site S10 canal porewater
S10MARSHWSC	Hourly SC at GPA marsh site S10 surface water
S10MARSHWL	Hourly WL at GPA marsh site S10
S1CANALSC	Hourly SC at GPA marsh site S1 canal
S1CANALWL	Hourly WL at GPA marsh site S1 canal
S1MARSHSC	Hourly SC at GPA marsh site S1
S1MARSHWL	Hourly WL at GPA marsh site S1
S1MARSHWLAT	Hourly WL at GPA marsh site S1 aquatape
S2CANALSC	Hourly SC at GPA marsh site S2 canal
S2CANALWL	Hourly WL at GPA marsh site S2 canal
S2MARSHSC	Hourly SC at GPA marsh site S2 canal
S2MARSHWL	Hourly WL at GPA marsh site S2
S3CANALSC	Hourly SC at GPA marsh site S3
S3CANALWL	Hourly WL at GPA marsh site S3 canal
S3MARSHSC	Hourly SC at GPA marsh site S3

Appendix III. Variables used in artificial neural network models.—Continued

[SC, specific conductance; USGS, U.S. Geological Survey; WL, water level; GPA, Georgia Ports Authority; XWL, tidal range; MWA, moving window average]

Variable	Description
S3MARSHWL	Hourly WL at GPA marsh 3
S4CANALSC	Hourly SC at GPA marsh site S4 canal
S4CANALWL	Hourly WL at GPA marsh site S4 canal
S4MARSHSC	Hourly SC at GPA marsh site S4
S4MARSHWL	Hourly WL at GPA marsh site S4
S5CANALSC	Hourly SC at GPA marsh site S5 canal
S5CANALWL	Hourly WL at GPA marsh site S5 canal
S5MARSHSC	Hourly SC at GPA marsh site S5
S5MARSHWL	Hourly WL at GPA marsh site S5 canal
S6CANALSC	Hourly SC at GPA marsh site S6 canal
S6CANALWL	Hourly WL at GPA marsh site S6 canal
S6MARSHSC	Hourly SC at GPA marsh site S6 canal
S6MARSHWL	Hourly WL at GPA marsh site S6 canal
S6MARSHWLAT	Hourly WL at GPA marsh site S6 aquatape
S7CANALSC	Hourly SC at GPA marsh site S7 canal
S7CANALWL	Hourly WL at GPA marsh site S7 canal
S7MARSHPWSC	Hourly SC at GPA marsh site S7 porewater
S7MARSHSC	Hourly SC at GPA marsh site S7
S7MARSHWL	Hourly WL at GPA marsh site S7
S8CANALSC	Hourly SC at GPA marsh site S8 canal
S8CANALWL	Hourly WL at GPA marsh site S8 canal
S9CANALSC	Hourly SC at GPA marsh site S9 canal
S9CANALWL	Hourly WL at GPA marsh site S9 canal
S9MARSHPWSC	Hourly SC at GPA marsh site S9 porewater
S9MARSHWL	Hourly WL at GPA marsh site S9
SC8840	SC at station 02198840—hourly data
SC8840A	SC at 02198840—daily data
SC8920	SC at station 02198920—hourly data
SC8920A	SC at station 02198920—daily data
SC89784	SC at station 021989784—hourly data
SC89784A	SC at station 021989784—daily data
SC89791	SC at station 021989791—hourly data
SC89791A	SC at station 021989791—daily data
SCDIF8840	Difference between daily (filtered) SC at gages 89791 and 8840
WL8840	WL at station 02198840—hourly data

Appendix III. Variables used in artificial neural network models.—Continued

[SC, specific conductance; USGS, U.S. Geological Survey; WL, water level; GPA, Georgia Ports Authority; XWL, tidal range; MWA, moving window average]

Variable	Description
WL8840A	WL at station 02198840—daily data
WL8920	WL at station 02198920—hourly data
WL8920A	WL at station 02198920—daily data
WL8977	WL at station 02198977—hourly data
WL8977A	WL at station 02198977—daily data
WL8979	WL at station 02198979—daily data
WL8979A	WL at station 02198979—hourly data
XWL8980A	Daily tidal range

