

**Table 6.** Physical properties of sampling locations and chemical analyses of groundwater samples collected from temporary drive points below the pond bottom, Ashumet Pond, Cape Cod, Massachusetts, August 3–12, 2009.

[Easting and Northing: State plane coordinates are for North American Datum of 1983 (NAD83). Latitude and longitude in degrees (°), minutes (′), and seconds (″). Altitude refers to distance above or below the National Geodetic Vertical Datum of 1929. Source of phosphorus and nitrogen data: USGS National Water Quality Laboratory, Lakewood, Colorado. USGS, U.S. Geological Survey; ft, foot; m, meter; μS/cm, microsiemens per centimeter at 25 degrees Celsius; <, actual value less than value shown; -, no data; E, estimated value for constituent detected in the sample below the laboratory reporting level; MHE, MHE Products PushPoint sampler; KV, KV Associates Macho well-point sampler. Pond stage on 8/3/2009 was 45.87 ft. Locations of sites shown in figure 7]

USGS Station Name	USGS site ID	Date sampled	Easting (m)	Northing (m)	Latitude (° ′ ″)	Longitude (° ′ ″)	Distance from shore (ft)	Water depth (ft)	Drive-point method	Drive depth (ft)	Altitude of bottom of drive point (ft)
MA-FSW 710-A01	413804070322502	8/3/09	279961.968	820930.303	41 38 04.03	70 32 27.09	35	2.7	MHE	0.5	42.7
MA-FSW 710-A02	413804070322503	8/3/09	279969.697	820920.675	41 38 03.71	70 32 26.76	70	3.7	MHE	0.5	41.7
MA-FSW 710-A03	413805070322545	8/3/09	279965.544	820944.372	41 38 04.48	70 32 26.93	28	2.0	MHE	0.5	43.4
MA-FSW 710-A04	413805070322546	8/3/09	279974.663	820936.016	41 38 04.21	70 32 26.54	67	4.1	MHE	0.5	41.3
MA-FSW 710-A05	413805070322547	8/3/09	279972.402	820949.416	41 38 04.64	70 32 26.63	36	2.4	MHE	0.5	43.0
MA-FSW 710-A06	413805070322412	8/3/09	279985.417	820950.516	41 38 04.67	70 32 26.06	25	2.5	MHE	0.5	42.9
MA-FSW 710-A07	413805070322413	8/3/09	279990.636	820940.602	41 38 04.35	70 32 25.84	48	3.3	MHE	0.5	42.1
MA-FSW 710-A08	413805070322414	8/3/09	279996.523	820948.492	41 38 04.60	70 32 25.59	19	2.3	MHE	0.5	43.1
MA-FSW 710-A09	413805070322315	8/3/09	280005.380	820945.055	41 38 04.49	70 32 25.21	45	3.4	MHE	0.5	42.0
MA-FSW 710-A10	413805070322316	8/3/09	280008.424	820954.774	41 38 04.80	70 32 25.07	16	1.7	MHE	0.5	43.7
MA-FSW 710-A11	413806070322341	8/4/09	280019.298	820962.413	41 38 05.05	70 32 24.60	0	0.2	MHE	0.5	45.2
MA-FSW 710-A12	413805070322317	8/4/09	280021.246	820959.492	41 38 04.95	70 32 24.51	12	1.6	MHE	0.5	43.8
MA-FSW 710-A13	413805070322318	8/4/09	280022.984	820956.571	41 38 04.86	70 32 24.44	24	2.5	MHE	0.5	42.9
MA-FSW 710-A14	413805070322319	8/4/09	280025.001	820953.233	41 38 04.75	70 32 24.35	36	3.5	MHE	0.5	41.9
MA-FSW 710-A15	413805070322222	8/4/09	280026.949	820949.825	41 38 04.64	70 32 24.27	48	5.0	MHE	0.5	40.4
MA-FSW 710-A16	413806070322217	8/4/09	280027.435	820967.421	41 38 05.21	70 32 24.24	0	0.5	MHE	0.5	44.9
MA-FSW 710-A17	413806070322218	8/4/09	280029.452	820964.430	41 38 05.11	70 32 24.16	12	1.9	MHE	0.5	43.5
MA-FSW 710-A18	413805070322223	8/4/09	280030.565	820961.301	41 38 05.01	70 32 24.11	24	2.7	MHE	0.5	42.7
MA-FSW 710-A19	413805070322224	8/4/09	280032.930	820958.032	41 38 04.90	70 32 24.01	36	3.5	MHE	0.5	41.9
MA-FSW 710-A20	413805070322225	8/4/09	280034.668	820954.207	41 38 04.78	70 32 23.94	48	3.9	MHE	0.5	41.5
MA-FSW 710-A21	413806070322219	8/4/09	280032.058	820970.711	41 38 05.31	70 32 24.04	0	0.2	MHE	0.5	45.2
MA-FSW 710-A22	413806070322220	8/4/09	280033.311	820968.320	41 38 05.23	70 32 23.99	9	1.2	MHE	0.5	44.2
MA-FSW 710-A23	413806070322221	8/4/09	280035.016	820966.238	41 38 05.17	70 32 23.91	18	2.1	MHE	0.5	43.3
MA-FSW 710-A23	413806070322221	8/4/09	280035.016	820966.238	41 38 05.17	70 32 23.91	18	2.1	KV	1.5	42.3
MA-FSW 710-A23	413806070322221	8/4/09	280035.016	820966.238	41 38 05.17	70 32 23.91	18	2.1	KV	3.0	40.8
MA-FSW 710-A24	413806070322222	8/4/09	280037.103	820962.970	41 38 05.06	70 32 23.83	32	3.7	MHE	0.5	41.7
MA-FSW 710-A24	413806070322222	8/4/09	280037.103	820962.970	41 38 05.06	70 32 23.83	32	3.7	KV	1.5	40.7
MA-FSW 710-A24	413806070322222	8/4/09	280037.103	820962.970	41 38 05.06	70 32 23.83	32	3.7	KV	3.0	39.2
MA-FSW 710-A25	413805070322226	8/5/09	280039.398	820958.987	41 38 04.93	70 32 23.73	48	4.0	MHE	0.5	41.4
MA-FSW 710-A25	413805070322226	8/5/09	280039.398	820958.987	41 38 04.93	70 32 23.73	48	4.0	KV	1.5	40.4
MA-FSW 710-A25	413805070322226	8/5/09	280039.398	820958.987	41 38 04.93	70 32 23.73	48	4.0	KV	3.0	38.9
MA-FSW 710-A26	413805070322227	8/5/09	280041.762	820956.154	41 38 04.84	70 32 23.63	62	4.6	MHE	0.5	40.8
MA-FSW 710-A27	413806070322223	8/5/09	280040.889	820976.134	41 38 05.48	70 32 23.66	0	0.2	MHE	0.5	45.2
MA-FSW 710-A28	413806070322224	8/5/09	280042.040	820974.932	41 38 05.44	70 32 23.61	5	0.9	MHE	0.5	44.5
MA-FSW 710-A29	413806070322225	8/5/09	280043.910	820972.774	41 38 05.37	70 32 23.53	18	2.0	MHE	0.5	43.4
MA-FSW 710-A29	413806070322225	8/5/09	280043.910	820972.774	41 38 05.37	70 32 23.53	18	2.0	KV	1.5	42.4
MA-FSW 710-A29	413806070322225	8/5/09	280043.910	820972.774	41 38 05.37	70 32 23.53	18	2.0	KV	3.0	40.9
MA-FSW 710-A30	413806070322226	8/5/09	280046.526	820970.031	41 38 05.28	70 32 23.42	31	2.8	MHE	0.5	42.6
MA-FSW 710-A30	413806070322226	8/5/09	280046.526	820970.031	41 38 05.28	70 32 23.42	31	2.8	KV	1.5	41.6
MA-FSW 710-A30	413806070322226	8/5/09	280046.526	820970.031	41 38 05.28	70 32 23.42	31	2.8	KV	3.0	40.1
MA-FSW 710-A31	413806070322120	8/5/09	280049.057	820967.314	41 38 05.20	70 32 23.31	43	3.2	MHE	0.5	42.2
MA-FSW 710-A31	413806070322120	8/5/09	280049.057	820967.314	41 38 05.20	70 32 23.31	43	3.2	KV	1.5	41.2
MA-FSW 710-A31	413806070322120	8/5/09	280049.057	820967.314	41 38 05.20	70 32 23.31	43	3.2	KV	3.0	39.7
MA-FSW 710-A32	413806070322121	8/5/09	280052.342	820963.911	41 38 05.08	70 32 23.17	57	4.7	MHE	0.5	40.7
MA-FSW 710-A33	413806070322122	8/5/09	280047.517	820984.147	41 38 05.74	70 32 23.37	0	0.2	MHE	0.5	45.2
MA-FSW 710-A34	413806070322123	8/5/09	280048.195	820982.321	41 38 05.68	70 32 23.34	7	0.9	MHE	0.5	44.5
MA-FSW 710-A35	413806070322124	8/5/09	280050.411	820978.347	41 38 05.55	70 32 23.24	18	1.9	MHE	0.5	43.5
MA-FSW 710-A35	413806070322124	8/5/09	280050.411	820978.347	41 38 05.55	70 32 23.24	16	1.9	KV	1.5	42.5
MA-FSW 710-A35	413806070322124	8/5/09	280050.411	820978.347	41 38 05.55	70 32 23.24	16	1.9	KV	3.0	41.0
MA-FSW 710-A36	413806070322125	8/5/09	280052.612	820976.101	41 38 05.48	70 32 23.15	31	2.8	MHE	0.5	42.6
MA-FSW 710-A36	413806070322125	8/5/09	280052.612	820976.101	41 38 05.48	70 32 23.15	31	2.8	KV	1.5	41.6

**Table 6.** Physical properties of sampling locations and chemical analyses of groundwater samples collected from temporary drive points below the pond bottom, Ashumet Pond, Cape Cod, Massachusetts, August 3–12, 2009—continued

[Easting and Northing: State plane coordinates are for North American Datum of 1983 (NAD83). Latitude and longitude in degrees (°), minutes (′), and seconds (″). Altitude refers to distance above or below the National Geodetic Vertical Datum of 1929. Source of phosphorus and nitrogen data: USGS National Water Quality Laboratory, Lakewood, Colorado. USGS, U.S. Geological Survey; ft, foot; m, meter;  $\mu\text{S}/\text{cm}$ , microsiemens per centimeter at 25 degrees Celsius; <, actual value less than value shown; --, no data; E, estimated value for constituent detected in the sample below the laboratory reporting level; MHE, MHE Products PushPoint sampler; KV, KV Associates Macho well-point sampler. Pond stage on 8/3/2009 was 45.87 ft. Locations of sites shown in figure 7]

USGS Station Name	Drive depth (ft)	Measured in field, unfiltered				Measured in laboratory, filtered			
		Specific conductance ( $\mu\text{S}/\text{cm}$ )	Oxygen, dissolved (mg/L)	pH (standard units)	Orthophosphate (mg/L as P)	Phosphorus (mg/L as P)	Nitrite plus nitrate (mg/L as N)	Nitrite (mg/L as N)	Ammonia (mg/L as N)
MA-FSW 710-A01	0.5	218.0	0.149	6.10	0.509	0.558	<0.040	<0.002	0.415
MA-FSW 710-A02	0.5	176	.128	6.20	1.50	.506	<.040	<.002	.213
MA-FSW 710-A03	0.5	125	6.80	6.37	.737	.708	.104	.096	<.020
MA-FSW 710-A04	0.5	145	.282	6.57	1.01	1.07	<.040	<.002	.047
MA-FSW 710-A05	0.5	146	.181	6.04	.673	.677	<.040	<.002	<.020
MA-FSW 710-A06	0.5	131	.252	6.08	.451	.442	<.040	<.002	<sup>E</sup> .020
MA-FSW 710-A07	0.5	136	.081	6.09	<.224	.225	<.040	<.002	.100
MA-FSW 710-A08	0.5	157	.344	6.02	<.224	<sup>E</sup> .014	<.040	<.002	<sup>E</sup> .015
MA-FSW 710-A09	0.5	156	.166	5.98	.603	.594	<.040	<.002	<sup>E</sup> .017
MA-FSW 710-A10	0.5	209	.121	5.93	.510	.557	<.040	<.002	<.020
MA-FSW 710-A11	0.5	121	6.47	5.95	.244	.020	.055	.007	<sup>E</sup> .013
MA-FSW 710-A12	0.5	145	4.46	5.66	<.224	<.020	<.040	<.002	<.020
MA-FSW 710-A13	0.5	181	.179	5.75	.261	.216	<.040	<.002	<.020
MA-FSW 710-A14	0.5	178	.243	5.68	.282	.156	<.040	<.002	.024
MA-FSW 710-A15	0.5	179	.208	5.69	<.224	<sup>E</sup> .011	<.040	<.002	.021
MA-FSW 710-A16	0.5	91.8	4.69	5.78	.597	<.020	<sup>E</sup> .020	<.002	<sup>E</sup> .013
MA-FSW 710-A17	0.5	125	1.05	5.23	.298	<.020	<.040	<.002	.029
MA-FSW 710-A18	0.5	157	1.09	5.46	.395	<.020	<.040	.003	<sup>E</sup> .020
MA-FSW 710-A19	0.5	157	1.14	5.51	.307	<.020	<.040	<.002	.021
MA-FSW 710-A20	0.5	159	.295	5.66	<.224	<sup>E</sup> .011	<.040	<.002	.452
MA-FSW 710-A21	0.5	56.5	5.84	5.25	<.224	<.020	<.040	<.002	.024
MA-FSW 710-A22	0.5	200	.069	5.60	1.11	1.24	3.19	<.002	.048
MA-FSW 710-A23	0.5	173	.023	6.57	<.224	.068	<.040	<.002	.031
MA-FSW 710-A23	1.5	206	7.01	6.60	.337	.243	<.040	.002	.030
MA-FSW 710-A23	3.0	188	.386	5.94	.887	.650	.351	.039	<.020
MA-FSW 710-A24	0.5	224	.011	7.21	<.224	.054	<.040	<.002	<sup>E</sup> .013
MA-FSW 710-A24	1.5	213	.465	6.61	.626	.520	.410	.023	<.020
MA-FSW 710-A24	3.0	212	.707	5.77	.555	.560	.495	<.002	<.020
MA-FSW 710-A25	0.5	248	6.56	5.39	.754	.090	.838	<.002	<.020
MA-FSW 710-A25	1.5	247	6.64	5.42	<.224	.086	.841	<.002	<.020
MA-FSW 710-A25	3.0	246	6.55	5.41	.528	.071	.826	<.002	<sup>E</sup> .010
MA-FSW 710-A26	0.5	227	4.67	5.25	<.224	.065	.794	<.002	<.020
MA-FSW 710-A27	0.5	77.0	4.61	5.03	<.224	<.020	<.040	<.002	.027
MA-FSW 710-A28	0.5	111	3.12	5.87	.785	.809	1.87	<.002	<.020
MA-FSW 710-A29	0.5	173	.030	7.27	<.224	.030	<.040	.003	.111
MA-FSW 710-A29	1.5	245	5.82	6.83	<.224	<.020	<.040	.010	.338
MA-FSW 710-A29	3.0	222	3.17	6.26	.483	.371	1.11	<.002	.439
MA-FSW 710-A30	0.5	230	.002	7.19	<.224	.041	<.040	<.002	.021
MA-FSW 710-A30	1.5	226	4.43	5.92	.481	.426	.856	<.002	<.020
MA-FSW 710-A30	3.0	231	.039	6.09	.558	.534	.881	<.002	<.020
MA-FSW 710-A31	0.5	235	.204	7.08	<.224	.037	<.040	.008	.035
MA-FSW 710-A31	1.5	233	6.47	6.64	<.224	<.020	<.040	.007	.040
MA-FSW 710-A31	3.0	221	5.30	5.84	<.224	.160	.911	<.002	<.020
MA-FSW 710-A32	0.5	262	6.80	5.60	<.224	.091	.945	<.002	<.020
MA-FSW 710-A33	0.5	181	1.27	4.87	<.224	.080	<.040	<.002	.030
MA-FSW 710-A34	0.5	186	.659	5.92	1.58	1.46	2.88	.031	<.020
MA-FSW 710-A35	0.5	230	.019	7.08	<.224	.062	<.040	.003	.529
MA-FSW 710-A35	1.5	248	.930	6.76	1.80	1.31	<.040	.003	.628
MA-FSW 710-A35	3.0	214	.743	6.31	1.26	1.09	<.040	<.002	.591
MA-FSW 710-A36	0.5	228	.015	7.25	<.224	.077	<.040	<.002	.282
MA-FSW 710-A36	1.5	232	.209	6.70	.798	.721	.511	.008	.350

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USGS Station Name	USGS site ID	Date sampled	Easting (m)	Northing (m)	Latitude (° ′ ″)	Longitude (° ′ ″)	Distance from shore (ft)	Water depth (ft)	Drive-point method	Drive depth (ft)	Altitude of bottom of drive point (ft)
MA-FSW 710-A36	413806070322125	8/5/09	280052.612	820976.101	41 38 05.48	70 32 23.15	31	2.8	KV	3.0	40.1
MA-FSW 710-A37	413806070322126	8/5/09	280055.384	820973.583	41 38 05.40	70 32 23.03	43	3.5	KV	0.5	41.9
MA-FSW 710-A37	413806070322126	8/5/09	280055.384	820973.583	41 38 05.40	70 32 23.03	43	3.5	KV	1.5	40.9
MA-FSW 710-A37	413806070322126	8/5/09	280055.384	820973.583	41 38 05.40	70 32 23.03	43	3.5	KV	3.0	39.4
MA-FSW 710-A38	413806070322127	8/6/09	280058.053	820969.905	41 38 05.28	70 32 22.92	60	5.2	MHE	0.5	40.2
MA-FSW 710-A39	413806070322128	8/6/09	280052.212	820989.885	41 38 05.93	70 32 23.16	0	0.0	MHE	0.5	45.4
MA-FSW 710-A40	413806070322129	8/6/09	280054.179	820987.010	41 38 05.83	70 32 23.08	12	1.3	MHE	0.5	44.1
MA-FSW 710-A41	413806070322130	8/6/09	280056.067	820986.588	41 38 05.82	70 32 23.00	22	2.3	MHE	0.5	43.1
MA-FSW 710-A41	413806070322130	8/6/09	280056.067	820986.588	41 38 05.82	70 32 23.00	22	2.3	KV	1.5	42.1
MA-FSW 710-A41	413806070322130	8/6/09	280056.067	820986.588	41 38 05.82	70 32 23.00	22	2.3	KV	3.0	40.6
MA-FSW 710-A42	413806070322131	8/6/09	280059.814	820982.812	41 38 05.69	70 32 22.84	35	3.4	MHE	0.5	42.0
MA-FSW 710-A42	413806070322131	8/6/09	280059.814	820982.812	41 38 05.69	70 32 22.84	35	3.4	KV	1.5	41.0
MA-FSW 710-A42	413806070322131	8/6/09	280059.814	820982.812	41 38 05.69	70 32 22.84	35	3.4	KV	3.0	39.5
MA-FSW 710-A43	413806070322132	8/6/09	280062.178	820981.367	41 38 05.65	70 32 22.73	46	3.8	MHE	0.5	41.6
MA-FSW 710-A43	413806070322132	8/6/09	280062.178	820981.367	41 38 05.65	70 32 22.73	46	3.8	KV	1.5	40.6
MA-FSW 710-A43	413806070322132	8/6/09	280062.178	820981.367	41 38 05.65	70 32 22.73	46	3.8	KV	3.0	39.1
MA-FSW 710-A44	413806070322133	8/6/09	280066.660	820978.253	41 38 05.54	70 32 22.54	62	6.0	MHE	0.5	39.4
MA-FSW 710-A45	413807070322105	8/6/09	280057.271	820996.092	41 38 06.13	70 32 22.94	0	0.0	MHE	0.5	45.4
MA-FSW 710-A46	413807070322106	8/6/09	280060.148	820994.333	41 38 06.07	70 32 22.82	10	1.2	MHE	0.5	44.2
MA-FSW 710-A47	413806070322134	8/6/09	280062.784	820992.682	41 38 06.01	70 32 22.70	19	2.2	MHE	0.5	43.2
MA-FSW 710-A47	413806070322134	8/6/09	280062.784	820992.682	41 38 06.01	70 32 22.70	19	2.2	KV	1.5	42.2
MA-FSW 710-A47	413806070322134	8/6/09	280062.784	820992.682	41 38 06.01	70 32 22.70	19	2.2	KV	3.0	40.7
MA-FSW 710-A48	413806070322135	8/6/09	280065.482	820989.950	41 38 05.92	70 32 22.59	35	2.9	MHE	0.5	42.5
MA-FSW 710-A48	413806070322135	8/6/09	280065.482	820989.950	41 38 05.92	70 32 22.59	35	2.9	KV	1.5	41.5
MA-FSW 710-A48	413806070322135	8/6/09	280065.482	820989.950	41 38 05.92	70 32 22.59	35	2.9	KV	3.0	40.0
MA-FSW 710-A49	413806070322005	8/6/09	280068.046	820988.407	41 38 05.87	70 32 22.48	46	3.3	MHE	0.5	42.1
MA-FSW 710-A49	413806070322005	8/6/09	280068.046	820988.407	41 38 05.87	70 32 22.48	46	3.3	KV	1.5	41.1
MA-FSW 710-A49	413806070322005	8/6/09	280068.046	820988.407	41 38 05.87	70 32 22.48	46	3.3	KV	3.0	39.6
MA-FSW 710-A50	413806070322006	8/6/09	280073.702	820985.138	41 38 05.76	70 32 22.23	64	6.0	MHE	0.5	39.4
MA-FSW 710-A51	413807070322107	8/6/09	280062.005	821003.107	41 38 06.35	70 32 22.73	0	0.0	MHE	0.5	45.4
MA-FSW 710-A52	413807070322108	8/6/09	280064.162	821001.488	41 38 06.30	70 32 22.64	10	1.2	MHE	0.5	44.2
MA-FSW 710-A53	413807070322109	8/7/09	280066.426	820999.489	41 38 06.23	70 32 22.54	19	2.1	MHE	0.5	43.2
MA-FSW 710-A53	413807070322109	8/7/09	280066.426	820999.489	41 38 06.23	70 32 22.54	19	2.1	KV	1.5	42.2
MA-FSW 710-A53	413807070322109	8/7/09	280066.426	820999.489	41 38 06.23	70 32 22.54	19	2.1	KV	3.0	40.7
MA-FSW 710-A54	413807070322021	8/7/09	280069.976	820996.901	41 38 06.15	70 32 22.39	34	3.4	MHE	0.5	41.9
MA-FSW 710-A54	413807070322021	8/7/09	280069.976	820996.901	41 38 06.15	70 32 22.39	34	3.4	KV	1.5	40.9
MA-FSW 710-A54	413807070322021	8/7/09	280069.976	820996.901	41 38 06.15	70 32 22.39	34	3.4	KV	3.0	39.4
MA-FSW 710-A55	413807070322022	8/7/09	280073.790	820995.557	41 38 06.10	70 32 22.23	48	5.3	MHE	0.5	40.0
MA-FSW 710-A55	413807070322022	8/7/09	280073.790	820995.557	41 38 06.10	70 32 22.23	48	5.3	KV	1.5	39.0
MA-FSW 710-A55	413807070322022	8/7/09	280073.790	820995.557	41 38 06.10	70 32 22.23	48	5.3	KV	3.0	37.5
MA-FSW 710-A56	413806070322007	8/7/09	280077.966	820992.403	41 38 06.00	70 32 22.05	65	6.1	MHE	0.5	39.2
MA-FSW 710-A57	413807070322110	8/10/09	280066.308	821010.032	41 38 06.57	70 32 22.54	0	0.0	MHE	0.5	45.3
MA-FSW 710-A58	413807070322111	8/10/09	280068.328	821008.660	41 38 06.53	70 32 22.45	10	1.0	MHE	0.5	44.3
MA-FSW 710-A59	413807070322023	8/10/09	280071.693	821006.241	41 38 06.45	70 32 22.31	23	2.5	MHE	0.5	42.8
MA-FSW 710-A59	413807070322023	8/10/09	280071.693	821006.241	41 38 06.45	70 32 22.31	23	2.5	KV	1.5	41.8
MA-FSW 710-A59	413807070322023	8/10/09	280071.693	821006.241	41 38 06.45	70 32 22.31	23	2.5	KV	3.0	40.3
MA-FSW 710-A60	413807070322024	8/10/09	280075.879	821003.949	41 38 06.37	70 32 22.13	39	3.5	MHE	0.5	41.8
MA-FSW 710-A60	413807070322024	8/10/09	280075.879	821003.949	41 38 06.37	70 32 22.13	39	3.5	KV	1.5	40.8
MA-FSW 710-A60	413807070322024	8/10/09	280075.879	821003.949	41 38 06.37	70 32 22.13	39	3.5	KV	3.0	39.3
MA-FSW 710-A61	413807070322025	8/10/09	280079.204	821002.195	41 38 06.31	70 32 21.99	52	4.2	MHE	0.5	41.1
MA-FSW 710-A61	413807070322025	8/10/09	280079.204	821002.195	41 38 06.31	70 32 21.99	52	4.2	KV	1.5	40.1
MA-FSW 710-A61	413807070322025	8/10/09	280079.204	821002.195	41 38 06.31	70 32 21.99	52	4.2	KV	3.0	38.6
MA-FSW 710-A62	413807070322026	8/10/09	280081.906	820999.747	41 38 06.23	70 32 21.87	70	6.0	MHE	0.5	39.3
MA-FSW 710-A63	413807070322027	8/10/09	280070.807	821017.152	41 38 06.80	70 32 22.34	0	0.0	MHE	0.5	45.3
MA-FSW 710-A64	413807070322028	8/10/09	280072.607	821015.626	41 38 06.75	70 32 22.27	10	1.2	MHE	0.5	44.1
MA-FSW 710-A65	413807070322029	8/10/09	280075.462	821014.061	41 38 06.70	70 32 22.14	19	2.5	MHE	0.5	42.8
MA-FSW 710-A65	413807070322029	8/10/09	280075.462	821014.061	41 38 06.70	70 32 22.14	19	2.5	KV	1.5	41.8
MA-FSW 710-A65	413807070322029	8/10/09	280075.462	821014.061	41 38 06.70	70 32 22.14	19	2.5	KV	3.0	40.3
MA-FSW 710-A66	413807070322030	8/10/09	280080.821	821012.005	41 38 06.63	70 32 21.91	37	3.6	MHE	0.5	41.7
MA-FSW 710-A66	413807070322030	8/10/09	280080.821	821012.005	41 38 06.63	70 32 21.91	37	3.6	KV	1.5	40.7

**Table 6.** Physical properties of sampling locations and chemical analyses of groundwater samples collected from temporary drive points below the pond bottom, Ashumet Pond, Cape Cod, Massachusetts, August 3–12, 2009—continued

[Easting and Northing: State plane coordinates are for North American Datum of 1983 (NAD83). Latitude and longitude in degrees (°), minutes (′), and seconds (″). Altitude refers to distance above or below the National Geodetic Vertical Datum of 1929. Source of phosphorus and nitrogen data: USGS National Water Quality Laboratory, Lakewood, Colorado. USGS, U.S. Geological Survey; ft, foot; m, meter;  $\mu\text{S}/\text{cm}$ , microsiemens per centimeter at 25 degrees Celsius; <, actual value less than value shown; --, no data; E, estimated value for constituent detected in the sample below the laboratory reporting level; MHE, MHE Products PushPoint sampler; KV, KV Associates Macho well-point sampler. Pond stage on 8/3/2009 was 45.87 ft. Locations of sites shown in figure 7.]

USGS Station Name	Drive depth (ft)	Measured in field, unfiltered				Measured in laboratory, filtered			
		Specific conductance ( $\mu\text{S}/\text{cm}$ )	Oxygen, dissolved (mg/L)	pH (standard units)	Orthophosphate (mg/L as P)	Phosphorus (mg/L as P)	Nitrite plus nitrate (mg/L as N)	Nitrite (mg/L as N)	Ammonia (mg/L as N)
MA-FSW 710-A36	3.0	224.0	0.187	6.33	0.876	0.806	0.843	<0.002	0.390
MA-FSW 710-A37	0.5	204	.092	7.05	<.224	.046	<.040	<.002	.063
MA-FSW 710-A37	1.5	285	6.64	6.23	.271	.300	.988	<.002	<.020
MA-FSW 710-A37	3.0	277	6.23	6.06	.308	.409	.929	<.002	<.020
MA-FSW 710-A38	0.5	166	3.94	5.68	<.224	.113	.669	<sup>E</sup> .001	<.020
MA-FSW 710-A39	0.5	109	.053	5.51	<.224	<sup>E</sup> .013	<.040	<.002	.061
MA-FSW 710-A40	0.5	179	1.15	6.01	1.39	1.31	1.02	.042	.045
MA-FSW 710-A41	0.5	224	.015	7.32	<.224	--	<.040	<.002	.754
MA-FSW 710-A41	1.5	215	7.56	6.92	<.224	.088	<.040	<sup>E</sup> .001	.753
MA-FSW 710-A41	3.0	223	.264	6.34	1.51	1.50	<.040	<.002	.790
MA-FSW 710-A42	0.5	252	.016	7.32	<.224	.083	<.040	<.002	.686
MA-FSW 710-A42	1.5	249	.075	7.26	<.224	.024	<.040	<sup>E</sup> .002	.654
MA-FSW 710-A42	3.0	234	.353	6.24	.971	.941	<.040	<.002	.563
MA-FSW 710-A43	0.5	203	.024	7.18	<.224	.046	<.040	.003	.023
MA-FSW 710-A43	1.5	222	.009	7.26	<.224	.050	<.040	<sup>E</sup> .001	.031
MA-FSW 710-A43	3.0	205	2.04	6.42	.644	.589	.838	<.002	<.020
MA-FSW 710-A44	0.5	120	4.67	5.84	<.224	.209	.851	<.002	<.020
MA-FSW 710-A45	0.5	86.0	.011	5.42	<.224	<sup>E</sup> .018	<.040	<.002	.048
MA-FSW 710-A46	0.5	227	.359	5.95	1.13	1.01	2.43	.090	<.020
MA-FSW 710-A47	0.5	198	.002	7.07	<.224	.082	<.040	<sup>E</sup> .001	.545
MA-FSW 710-A47	1.5	237	.205	7.01	1.06	.910	<.040	.003	.599
MA-FSW 710-A47	3.0	209	.143	6.37	1.51	1.50	<.040	<.002	.613
MA-FSW 710-A48	0.5	246	.005	7.19	<.224	.101	<.040	<.002	.509
MA-FSW 710-A48	1.5	247	.000	7.16	<.224	.085	<.040	<.002	.524
MA-FSW 710-A48	3.0	234	.508	6.53	.947	.938	<.040	<.002	.496
MA-FSW 710-A49	0.5	234	.009	7.07	<.224	.054	<.040	.003	.030
MA-FSW 710-A49	1.5	249	.013	7.16	<.224	.050	<.040	.004	.026
MA-FSW 710-A49	3.0	209	5.80	6.31	.611	.692	.718	<.002	<.020
MA-FSW 710-A50	0.5	147	4.87	5.84	<.224	.234	.927	<.002	<.020
MA-FSW 710-A51	0.5	63.6	2.03	5.45	<.224	<.020	<.040	<.002	.031
MA-FSW 710-A52	0.5	198	.133	5.91	.853	.967	1.93	.115	<.020
MA-FSW 710-A53	0.5	209	.014	6.60	2.00	1.67	<.040	<.002	.446
MA-FSW 710-A53	1.5	217	.004	6.61	1.39	1.26	<.040	<.002	.464
MA-FSW 710-A53	3.0	203	.152	6.31	1.51	1.40	<.040	<.002	.453
MA-FSW 710-A54	0.5	270	.009	7.22	<.224	.077	<.040	<.002	.498
MA-FSW 710-A54	1.5	254	.127	6.61	1.20	1.05	<.040	<.002	.464
MA-FSW 710-A54	3.0	244	.677	6.45	.893	1.03	<.040	<.002	.452
MA-FSW 710-A55	0.5	256	.081	6.08	.640	.603	.296	.012	<.020
MA-FSW 710-A55	1.5	257	3.57	5.91	.398	.460	.745	<.002	<.020
MA-FSW 710-A55	3.0	238	4.78	5.96	.382	.381	.663	<.002	<.020
MA-FSW 710-A56	0.5	279	6.63	5.58	<.224	.144	1.08	<.002	<.020
MA-FSW 710-A57	0.5	69.1	.300	5.40	<.224	<.020	<.040	<.002	<sup>E</sup> .019
MA-FSW 710-A58	0.5	201	.287	5.82	.799	.758	1.81	.014	.027
MA-FSW 710-A59	0.5	247	.020	7.00	<.224	.077	<.040	.003	.523
MA-FSW 710-A59	1.5	238	.005	6.92	1.80	1.61	<.040	<sup>E</sup> .001	.544
MA-FSW 710-A59	3.0	225	.703	6.35	1.21	1.10	<.040	<.002	.502
MA-FSW 710-A60	0.5	198	.013	7.36	<.224	.104	<.040	<.002	.217
MA-FSW 710-A60	1.5	197	.258	7.30	<.224	.081	<.040	<.002	.221
MA-FSW 710-A60	3.0	190	7.13	6.65	.811	.671	<sup>E</sup> .029	<sup>E</sup> .002	.211
MA-FSW 710-A61	0.5	260	.098	7.06	<.224	.077	.113	.011	.044
MA-FSW 710-A61	1.5	228	6.25	6.06	<.224	.193	.737	.003	<.020
MA-FSW 710-A61	3.0	207	7.27	6.23	<.224	.268	.615	<.002	<.020
MA-FSW 710-A62	0.5	206	6.67	5.96	<.224	.192	1.06	<.002	<.020
MA-FSW 710-A63	0.5	90.0	1.69	5.84	<.224	<sup>E</sup> .013	<.040	<.002	.024
MA-FSW 710-A64	0.5	194	2.90	5.84	.633	.592	.792	.049	<.020
MA-FSW 710-A65	0.5	373	.026	7.02	<.224	.021	<.040	<sup>E</sup> .010	.518
MA-FSW 710-A65	1.5	242	.252	6.27	1.03	.880	<.040	<.002	.477
MA-FSW 710-A65	3.0	218	.890	6.20	.816	.766	<.040	<.002	.409
MA-FSW 710-A66	0.5	213	.084	7.10	<.224	.037	<.040	.005	<sup>E</sup> .016
MA-FSW 710-A66	1.5	195	2.80	6.86	<.224	.087	.383	.002	<.020

**Table 6.** Physical properties of sampling locations and chemical analyses of groundwater samples collected from temporary drive points below the pond bottom, Ashumet Pond, Cape Cod, Massachusetts, August 3–12, 2009—continued

[Easting and Northing: State plane coordinates are for North American Datum of 1983 (NAD83). Latitude and longitude in degrees (°), minutes (′), and seconds (″). Altitude refers to distance above or below the National Geodetic Vertical Datum of 1929. Source of phosphorus and nitrogen data: USGS National Water Quality Laboratory, Lakewood, Colorado. USGS, U.S. Geological Survey; ft, foot; m, meter; μS/cm, microsiemens per centimeter at 25 degrees Celsius; <, actual value less than value shown; -, no data; E, estimated value for constituent detected in the sample below the laboratory reporting level; MHE, MHE Products PushPoint sampler; KV, KV Associates Macho well-point sampler. Pond stage on 8/3/2009 was 45.87 ft. Locations of sites shown in figure 7]

USGS Station Name	USGS site ID	Date sampled	Easting (m)	Northing (m)	Latitude (° ′ ″)	Longitude (° ′ ″)	Distance from shore (ft)	Water depth (ft)	Drive-point method	Drive depth (ft)	Altitude of bottom of drive point (ft)
MA-FSW 710-A66	413807070322030	8/10/09	280080.821	821012.005	41 38 06.63	70 32 21.91	37	3.6	KV	3.0	39.2
MA-FSW 710-A67	413807070322031	8/10/09	280084.038	821010.615	41 38 06.59	70 32 21.78	50	4.5	MHE	0.5	40.8
MA-FSW 710-A67	413807070322031	8/10/09	280084.038	821010.615	41 38 06.59	70 32 21.78	50	4.5	KV	1.5	39.8
MA-FSW 710-A67	413807070322031	8/10/09	280084.038	821010.615	41 38 06.59	70 32 21.78	50	4.5	KV	3.0	38.3
MA-FSW 710-A68	413807070322032	8/10/09	280089.598	821007.185	41 38 06.47	70 32 21.54	68	6.0	MHE	0.5	39.3
MA-FSW 710-A69	413807070322033	8/11/09	280076.401	821025.993	41 38 07.09	70 32 22.10	0	0.0	MHE	0.5	45.2
MA-FSW 710-A70	413807070322034	8/11/09	280078.753	821024.950	41 38 07.05	70 32 22.00	9	1.2	MHE	0.5	44.0
MA-FSW 710-A71	413807070322035	8/11/09	280080.606	821024.271	41 38 07.03	70 32 21.92	19	2.4	MHE	0.5	42.8
MA-FSW 710-A71	413807070322035	8/11/09	280080.606	821024.271	41 38 07.03	70 32 21.92	19	2.4	KV	1.5	41.8
MA-FSW 710-A71	413807070322035	8/11/09	280080.606	821024.271	41 38 07.03	70 32 21.92	19	2.4	KV	3.0	40.3
MA-FSW 710-A72	413807070322036	8/11/09	280085.806	821022.731	41 38 06.98	70 32 21.69	34	3.2	MHE	0.5	42.0
MA-FSW 710-A72	413807070322036	8/11/09	280085.806	821022.731	41 38 06.98	70 32 21.69	34	3.2	KV	1.5	41.0
MA-FSW 710-A72	413807070322036	8/11/09	280085.806	821022.731	41 38 06.98	70 32 21.69	34	3.2	KV	3.0	39.5
MA-FSW 710-A73	413807070322037	8/11/09	280088.855	821022.173	41 38 06.96	70 32 21.56	47	3.8	MHE	0.5	41.4
MA-FSW 710-A73	413807070322037	8/11/09	280088.855	821022.173	41 38 06.96	70 32 21.56	47	3.8	KV	1.5	40.4
MA-FSW 710-A73	413807070322037	8/11/09	280088.855	821022.173	41 38 06.96	70 32 21.56	47	3.8	KV	3.0	38.9
MA-FSW 710-A74	413807070321906	8/11/09	280094.788	821020.007	41 38 06.89	70 32 21.31	65	5.7	MHE	0.5	39.5
MA-FSW 710-A75	413808070322007	8/11/09	280078.279	821033.621	41 38 07.33	70 32 22.01	0	0.0	MHE	0.5	45.2
MA-FSW 710-A76	413808070322008	8/11/09	280081.261	821032.716	41 38 07.30	70 32 21.88	10	0.8	MHE	0.5	44.4
MA-FSW 710-A77	413808070322009	8/11/09	280084.911	821031.815	41 38 07.27	70 32 21.73	21	2.6	MHE	0.5	42.6
MA-FSW 710-A77	413808070322009	8/11/09	280084.911	821031.815	41 38 07.27	70 32 21.73	21	2.6	KV	1.5	41.6
MA-FSW 710-A77	413808070322009	8/11/09	280084.911	821031.815	41 38 07.27	70 32 21.73	21	2.6	KV	3.0	40.1
MA-FSW 710-A78	413808070322010	8/11/09	280088.708	821030.173	41 38 07.22	70 32 21.56	36	3.5	MHE	0.5	41.7
MA-FSW 710-A78	413808070322010	8/11/09	280088.708	821030.173	41 38 07.22	70 32 21.56	36	3.5	KV	1.5	40.7
MA-FSW 710-A78	413808070322010	8/11/09	280088.708	821030.173	41 38 07.22	70 32 21.56	36	3.5	KV	3.0	39.2
MA-FSW 710-A79	413808070322011	8/11/09	280094.061	821027.749	41 38 07.14	70 32 21.33	52	4.3	MHE	0.5	40.9
MA-FSW 710-A79	413808070322011	8/11/09	280094.061	821027.749	41 38 07.14	70 32 21.33	52	4.3	KV	1.5	39.9
MA-FSW 710-A79	413808070322011	8/11/09	280094.061	821027.749	41 38 07.14	70 32 21.33	52	4.3	KV	3.0	38.4
MA-FSW 710-A80	413807070321907	8/11/09	280098.270	821026.697	41 38 07.10	70 32 21.15	70	5.5	MHE	0.5	39.7
MA-FSW 710-A81	413808070322012	8/12/09	280082.582	821041.524	41 38 07.59	70 32 21.82	0	0.0	MHE	0.5	45.2
MA-FSW 710-A82	413808070322013	8/12/09	280086.341	821039.900	41 38 07.53	70 32 21.66	12	1.1	MHE	0.5	44.1
MA-FSW 710-A83	413808070322014	8/12/09	280088.865	821038.591	41 38 07.49	70 32 21.55	24	2.3	MHE	0.5	42.9
MA-FSW 710-A84	413808070322015	8/12/09	280092.286	821037.153	41 38 07.44	70 32 21.41	36	3.2	MHE	0.5	42.0
MA-FSW 710-A85	413807070321903	8/12/09	280095.264	821036.287	41 38 07.41	70 32 21.28	48	4.1	MHE	0.5	41.1
MA-FSW 710-A86	413808070322016	8/12/09	280087.746	821050.952	41 38 07.89	70 32 21.60	0	0.0	MHE	0.5	45.2
MA-FSW 710-A87	413808070322017	8/12/09	280090.333	821049.876	41 38 07.86	70 32 21.48	12	1.3	MHE	0.5	43.9
MA-FSW 710-A88	413808070322018	8/12/09	280092.737	821048.897	41 38 07.82	70 32 21.38	24	2.4	MHE	0.5	42.8
MA-FSW 710-A89	413807070321904	8/12/09	280096.564	821047.675	41 38 07.78	70 32 21.22	36	3.5	MHE	0.5	41.7
MA-FSW 710-A90	413807070321905	8/12/09	280099.746	821046.324	41 38 07.74	70 32 21.08	48	4.5	MHE	0.5	40.7

**Table 6.** Physical properties of sampling locations and chemical analyses of groundwater samples collected from temporary drive points below the pond bottom, Ashumet Pond, Cape Cod, Massachusetts, August 3–12, 2009—continued

[Easting and Northing: State plane coordinates are for North American Datum of 1983 (NAD83). Latitude and longitude in degrees (°), minutes (′), and seconds (″). Altitude refers to distance above or below the National Geodetic Vertical Datum of 1929. Source of phosphorus and nitrogen data: USGS National Water Quality Laboratory, Lakewood, Colorado. USGS, U.S. Geological Survey; ft, foot; m, meter;  $\mu\text{S}/\text{cm}$ , microsiemens per centimeter at 25 degrees Celsius; <, actual value less than value shown; --, no data; E, estimated value for constituent detected in the sample below the laboratory reporting level; MHE, MHE Products PushPoint sampler; KV, KV Associates Macho well-point sampler. Pond stage on 8/3/2009 was 45.87 ft. Locations of sites shown in figure 7]

USGS Station Name	Drive depth (ft)	Measured in field, unfiltered				Measured in laboratory, filtered			
		Specific conductance ( $\mu\text{S}/\text{cm}$ )	Oxygen, dissolved (mg/L)	pH (standard units)	Orthophosphate (mg/L as P)	Phosphorus (mg/L as P)	Nitrite plus nitrate (mg/L as N)	Nitrite (mg/L as N)	Ammonia (mg/L as N)
MA-FSW 710-A66	3.0	190.0	6.090	5.94	0.493	0.488	0.670	<0.002	<0.020
MA-FSW 710-A67	0.5	213	.014	6.87	<.224	<.020	<.040	.007	<sup>E</sup> .036
MA-FSW 710-A67	1.5	192	5.37	5.83	<.224	<sup>E</sup> .018	.802	.004	<.020
MA-FSW 710-A67	3.0	189	7.30	5.67	<.224	.228	.816	<.002	<.020
MA-FSW 710-A68	0.5	75.9	5.85	5.77	<.224	.134	.497	<.002	<.020
MA-FSW 710-A69	0.5	72.1	2.13	5.77	<.224	<sup>E</sup> .015	<.040	<.002	<sup>E</sup> .010
MA-FSW 710-A70	0.5	173	1.33	5.81	.674	.665	<.040	<.002	<sup>E</sup> .010
MA-FSW 710-A71	0.5	183	.026	6.79	.268	.084	<.040	<.002	<.020
MA-FSW 710-A71	1.5	199	.088	6.80	.351	.267	<sup>E</sup> .034	<sup>E</sup> .004	<sup>E</sup> .010
MA-FSW 710-A71	3.0	168	3.13	6.04	.602	.493	.602	<.002	<.020
MA-FSW 710-A72	0.5	153	.153	6.75	<.224	.023	.073	.002	<sup>E</sup> .015
MA-FSW 710-A72	1.5	153	.061	7.03	<.224	<.020	.086	.006	.039
MA-FSW 710-A72	3.0	114	7.12	6.10	<.224	.101	.661	<.002	<.020
MA-FSW 710-A73	0.5	131	.399	6.60	<.224	<.020	.198	.008	.020
MA-FSW 710-A73	1.5	110	6.12	6.23	<.224	<sup>E</sup> .019	.529	<.002	<.020
MA-FSW 710-A73	3.0	93.6	7.63	5.85	.343	.212	.534	<.002	<.020
MA-FSW 710-A74	0.5	125	7.70	6.16	.247	.146	.538	<.002	<.020
MA-FSW 710-A75	0.5	63.8	4.86	5.75	.261	<.020	<.040	<.002	<.020
MA-FSW 710-A76	0.5	164	3.48	5.78	1.03	.579	<.040	<.002	<.020
MA-FSW 710-A77	0.5	185	2.09	6.73	<.224	.023	<.040	.002	.025
MA-FSW 710-A77	1.5	181	1.52	6.63	<.224	.037	.227	.005	<sup>E</sup> .017
MA-FSW 710-A77	3.0	152	7.07	6.04	.386	.284	.628	<.002	<.020
MA-FSW 710-A78	0.5	103	.014	6.84	<.224	<sup>E</sup> .013	.183	.006	.022
MA-FSW 710-A78	1.5	96.0	6.20	5.89	<.224	.165	.565	<sup>E</sup> .002	<.020
MA-FSW 710-A78	3.0	70.9	7.56	5.73	<.224	.266	.574	<.002	<.020
MA-FSW 710-A79	0.5	126	6.18	6.17	<.224	.152	.495	<.002	<.020
MA-FSW 710-A79	1.5	129	5.97	6.24	<.224	.063	.522	<.002	<.020
MA-FSW 710-A79	3.0	123	7.33	6.25	.266	.287	.525	<.002	<.020
MA-FSW 710-A80	0.5	124	7.40	6.30	<.224	.038	.453	<.002	<.020
MA-FSW 710-A81	0.5	58.0	2.66	5.71	<.224	<sup>E</sup> .015	<.040	<.002	<sup>E</sup> .015
MA-FSW 710-A82	0.5	197	3.16	5.80	<.224	.196	.090	.003	<.020
MA-FSW 710-A83	0.5	130	8.35	5.64	<.224	.207	.568	<.002	<.020
MA-FSW 710-A84	0.5	106	8.72	6.12	.622	.352	.502	<.002	<.020
MA-FSW 710-A85	0.5	124	8.31	6.21	.243	.227	.540	<.002	<.020
MA-FSW 710-A86	0.5	85.9	.564	5.16	<.224	<.020	<.040	<.002	<.020
MA-FSW 710-A87	0.5	182	7.94	5.74	<.224	.302	.672	<.002	<.020
MA-FSW 710-A88	0.5	101	8.99	5.88	<.224	.177	.412	<.002	<.020
MA-FSW 710-A89	0.5	90.0	8.58	6.12	<.224	.036	.545	<.002	<.020
MA-FSW 710-A90	0.5	125	7.40	6.20	<.224	.022	.484	<.002	<.020