

Table 18. Summary of field measurement, nutrient, carbon, major element, trace element, and biological component (table 3) data for the summer 2003 Boulder Creek, Colorado (BC) and Fourmile Creek, Iowa (FC) Lagrangian samplings. [Site identifier defined in table 2; U, upstream from wastewater treatment plant (WWTP); E, WWTP effluent; BC-D3.6, BC-D5.0, BC-D7.4, FC-D0.4, FC-D2.9, FC-D8.4, and FC-D10.6 are sites downstream from the WWTP indicating distance in kilometers; MC, Muchiknock Creek; R, unfiltered; F, filtered; <, less than method detection limit; --, not determined; m³/s, cubic meter per second; mg/L, milligram per liter; Std units, standard pH units; μS/cm, microsiemen per centimeter; deg C, degree Celsius; NTU, nephelometric turbidity units; mg/L N, milligram per liter nitrogen; mg/L P, milligram per liter phosphorous; mg/L C, milligram per liter carbon; mg/L CaCO₃, milligram per liter as calcium carbonate; UV254, ultraviolet light absorbance at 254 nanometers; UV280, ultraviolet light absorbance at 280 nanometers; cm, centimeter; μg/L, microgram per liter; pla/100 mL, plaque forming units per 100 milliliters; col/100 mL, colonies per 100 milliliters.]

Constituent	Unit	Boulder Creek						Fourmile Creek								
		BC-U	BC-E	BC-D3.6	BC-D5.0	BC-D7.4	Blank	FC-U	FC-E	FC-D0.4	FC-D2.9	FC-D8.4	FC-D10.6	FC-MC	Blank	
Date	--	9/3/2003	9/3/2003	9/3/2003	9/3/2003	9/3/2003	9/3/2003	8/5/2003	8/5/2003	8/5/2003	8/5/2003	8/6/2003	8/6/2003	8/6/2003	8/6/2003	
Time	--	0830	0915	1215	1330	1540	1639	1130	1245	1300	1845	0700	1130	0745	1110	
Field Measurements																
Discharge	m ³ /s	1.62	0.92	2.41	2.89	1.84	--	0.04	0.14	0.18	0.17	0.16	0.16	0.01	--	
Dissolved oxygen R	mg/L	6.6	6.2	7.1	8.6	7.5	--	9.0	7.9	8.8	8.2	6.2	9.0	7.2	--	
pH R field	Std units	8.00	7.50	8.10	8.10	8.20	--	8.19	7.27	7.51	7.96	7.85	8.14	7.92	--	
pH R lab	Std units	7.60	7.40	7.40	7.50	7.40	--	8.05	7.51	7.59	7.98	7.61	7.98	7.76	6.40	
Specific conductance R field	μS/cm	171	670	320	330	350	--	720	930	870	880	860	850	640	--	
Specific conductance R lab	μS/cm	171	650	309	320	330	--	700	890	840	830	860	830	610	3	
Temperature air	deg C	17.8	17.8	--	24	--	--	23	23	24	24	24	24	23	--	
Temperature water	deg C	17.2	21.7	20.0	20.4	20.8	--	22.3	20.1	21.2	23.1	20.9	23.1	21.5	--	
Turbidity R	NTU	7.1	3.4	7.4	6.5	6.2	--	--	--	--	--	--	--	--	--	
Nutrients																
Ammonia F	mg/L N	<0.04	8.5	1.4	1.3	0.79	--	<0.04	0.31	<0.2	0.15	0.03	<0.04	<0.04	<0.04	
Ammonia + organic nitrogen R	mg/L N	0.2	11	2.4	2.0	1.6	--	0.6	2.1	1.7	1.5	1.3	1.1	0.7	<0.1	
Ammonia + organic nitrogen F	mg/L N	0.1	11	2.2	2.0	1.4	--	0.5	1.8	1.4	1.3	1.2	1.0	0.6	<0.1	
Organic nitrogen F	mg/L N	--	2.6	0.8	0.8	0.6	--	--	1.5	--	1.2	1.2	--	--	<0.1	
Nitrate + nitrite F	mg/L N	0.10	8.2	2.9	2.8	3.1	--	3.3	14	11	11	10	8.5	0.87	<0.06	
Nitrate F	mg/L N	0.10	7.6	2.6	2.5	2.7	--	3.2	14	11	11	10	8.3	0.82	<0.06	
Nitrite F	mg/L N	0.005	0.57	0.30	0.32	0.34	--	0.045	0.25	0.22	0.20	0.22	0.18	0.049	<0.008	
Orthophosphate F	mg/L P	<0.007	2.7	0.71	0.55	0.55	--	0.006	5.1	3.6	3.8	3.9	3.0	0.055	<0.007	
Particulate nitrogen	mg/L N	0.07	0.35	0.11	0.20	0.10	--	0.21	0.40	0.30	0.21	0.18	0.18	0.13	<0.02	
Phosphorus R	mg/L P	0.028	3.0	0.83	0.77	0.76	--	0.054	5.6	4.4	4.2	4.4	3.4	0.17	0.002	
Phosphorus F	mg/L P	0.007	3.0	0.84	0.77	0.76	--	0.024	5.7	4.3	4.0	4.2	3.6	0.14	<0.004	
Carbon																
Absorbance UV254 F	cm	0.064	0.134	0.085	0.087	0.089	--	0.12	0.13	0.16	0.13	0.14	0.13	0.11	<0.004	
Absorbance UV280 F	cm	0.047	0.104	0.063	0.07	0.066	--	0.090	0.098	0.12	0.10	0.11	0.10	0.084	<0.004	
Bicarbonate F field	mg/L	--	--	--	--	--	--	220	160	170	180	200	--	--	--	
Carbonate F field	mg/L	--	--	--	--	--	--	<1	<1	<1	<1	<1	<1	<1	--	
Organic carbon F	mg/L C	2.3	7.5	3.6	3.7	4.0	--	5.2	6.6	6.4	6.3	6.1	5.3	4.7	0.5	
Particulate carbon inorganic + organic	mg/L C	0.6	2.0	0.7	1.6	1.0	--	1.2	2.2	1.5	1.1	0.9	1.0	0.9	<0.1	
Particulate carbon inorganic	mg/L C	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Particulate carbon organic	mg/L C	0.6	2.0	0.7	1.6	0.9	--	1.2	2.2	1.5	1.1	0.9	1.0	0.9	<0.1	
Major Ions																
Alkalinity F lab	mg/L CaCO ₃	47	130	67	81	68	--	190	140	150	150	160	180	260	<2	
Alkalinity F field	mg/L CaCO ₃	--	--	--	--	--	--	180	130	140	150	160	--	--	--	
Calcium F	mg/L	17	40	24	25	26	--	67	65	65	65	70	71	77	0.01	
Chloride F	mg/L	8.3	54	22	21	22	--	80	110	100	100	110	100	31	0.14	
Fluoride F	mg/L	0.2	1.0	0.4	0.5	0.5	--	0.4	1.0	0.8	0.8	0.8	0.8	0.3	<0.2	
Magnesium F	mg/L	5.3	14	7.9	10	11	--	30	23	24	24	25	24	30	<0.008	
Potassium F	mg/L	1.0	9.7	3.6	3.4	3.5	--	2.9	13	10	10	9.5	9.1	3.5	<0.16	
Residue on evaporation F	mg/L	99	380	180	190	200	--	400	570	560	590	530	560	380	<10	
Silica F	mg/L	4.3	9.3	5.7	5.7	5.6	--	6.7	18	15	14	14	13	13	0.05	
Sodium F	mg/L	7.3	52	21	21	21	--	31	79	67	68	65	62	12	<0.1	
Sulfate F	mg/L	21	80	37	41	43	--	41	80	70	71	73	69	33	<0.2	
Suspended sediment R	mg/L	9.0	3.0	13	10	12	--	5.0	6.0	5.0	11	8.0	9.0	48	--	
Trace Elements																
Arsenic F	μg/L	0.4	0.4	0.5	0.5	0.6	--	1.8	1.0	1.3	1.7	2.4	2.9	3.6	<0.3	
Boron F	μg/L	24	210	80	78	83	--	63	270	210	220	210	190	54	<7	
Iron F	μg/L	25	61	36	33	31	--	<8	79	50	22	14	8	14	<8	
Lithium F	μg/L	4.2	12	6.8	7.2	7.6	--	9.7	17	15	15	15	14	7.6	<0.5	
Selenium F	μg/L	0.3	0.7	0.4	0.3	0.3	--	1.5	1.9	1.8	1.9	1.8	1.8	1.0	<0.5	
Strontium F	μg/L	170	340	220	240	260	--	200	190	190	190	190	200	190	<0.2	
Vanadium F	μg/L	0.5	1.0	0.8	1.0	0.9	--	2.7	1.1	1.6	2.3	2.7	3.5	2.8	<0.1	
Biological Components																
Pheophytin a	μg/L	3.0	<0.1	2.8	3.1	3.7	--	--	--	--	--	--	--	--	--	
Chlorophyll a	μg/L	2.8	2.8	2.1	2.3	2.8	--	--	--	--	--	--	--	--	--	
Coliphage (<i>E. coli</i> CN-13 host)	pla/100mL	26	1700	160	160	92	--	62	1	37	29	32	43	380	--	
Coliphage (<i>E. coli</i> HS(pFamp)R host)	pla/100mL	<1	12000	1000	500	370	--	<1	4	1	2	1	<1	<1	--	
<i>E. coli</i>	col/100mL	280	16	110	92	92	--	430	11	440	240	450	160	550	--	
Enterococci	col/100mL	320	11	112	91	85	--	370	4	140	230	200	160	1000	--	