

**Major and trace element concentrations in hydrological Critical Zone compartments in the Conventwald (Black Forest, Germany)**

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Metric	Units	Sheet	Description
(X)	mg l <sup>-1</sup> , µg l <sup>-1</sup>	Table S1-S7	Concentrations of element X
$f_{GW}$ , $f_{SF1}$ , $f_{SF2}$ & $f_{SF3}$	dimensionless	Table S4, S5	Relative contribution of of groundwater ( $f_{GW}$ ) and subsurface flow ( $f_{SF1}$ , $f_{SF2}$ & $f_{SF3}$ ) to creek water and spring water
T	°C	Table S4-S6	water temperature

Table S1 Element concentrations in bulk precipitation (BP).

sample ID	sampling period	precipitation min.	precipitation max.	Major elements (ICP-OES)						Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>		Anion and dissolved organic elements <sup>1</sup>		
				Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON
		(l d <sup>-1</sup> )	(l d <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )
CON_BP_1	25.03.2015 - 27.03.2015	5.9	5.9	1.0	0.33	0.08	0.70	NA	0.72	7.5	NA	NA	8.7	9.7	NA	11	NA	79	10.0	0.85	NA	NA
CON_BP_2	27.03.2015 - 30.03.2015	28.2	28.2	1.1	1.2	0.07	0.44	NA	0.14	10	NA	NA	11	8.7	NA	13	NA	52	16	0.46	NA	NA
CON_BP_3	28.03.2015 - 30.03.2015	NA	NA	0.14	0.10	0.01	NA	NA	0.17	2.8	NA	NA	NA	2.7	NA	NA	NA	41	4.9	NA	NA	NA
CON_BP_4	30.03.2015 - 01.04.2015	7.4	7.4	0.40	0.45	0.21	2.29	NA	0.34	15	NA	NA	24	16	NA	NA	NA	112	8.4	NA	NA	NA
CON_BP_5	01.04.2015 - 03.04.2015	21.3	21.3	0.21	0.12	0.07	0.75	NA	0.15	9.4	NA	NA	7.6	5.5	NA	NA	NA	54	5.6	0.99	NA	NA
CON_BP_6	03.04.2015 - 06.04.2015	21.0	21.0	NA	NA	NA	NA	NA	NA	3.0	NA	NA	8.3	3.4	NA	NA	NA	42	4.2	0.12	NA	NA
CON_BP_7	10.04.2015 - 13.04.2015	3.9	3.9	0.79	0.58	0.05	0.43	NA	0.34	4.2	NA	NA	18	5.6	NA	5.2	NA	68	8.0	0.70	NA	NA
CON_BP_8	16.04.2015 - 20.04.2015	15.5	15.5	0.81	0.19	0.04	NA	0.11	0.33	11	NA	NA	6.6	6.8	NA	NA	NA	63	4.3	0.22	NA	NA
CON_BP_9	24.04.2015 - 27.04.2015	3.4	21.0	0.61	0.44	0.06	NA	NA	0.36	16	NA	NA	12	38	NA	5.4	NA	54	5.6	0.28	NA	NA
CON_BP_10	30.04.2015 - 04.05.2015	74.5	74.5	NA	NA	NA	NA	NA	NA	4.1	NA	NA	5.6	NA	NA	NA	NA	28	2.4	0.07	NA	NA
CON_BP_11	14.05.2015 - 16.05.2015	34.4	39.8	0.37	0.20	0.03	NA	NA	0.32	NA	NA	NA	18	3.8	NA	NA	NA	83	5.0	0.26	NA	NA
CON_BP_12	19.05.2015 - 21.05.2015	13.0	19.9	0.18	NA	0.02	NA	NA	0.15	4.2	NA	NA	24	NA	NA	NA	NA	55	1.4	0.36	NA	NA
CON_BP_13	04.06.2015 - 08.06.2015	1.1	1.1	1.1	0.13	0.08	NA	0.17	0.46	18	NA	NA	55	17	NA	13	NA	105	8.7	0.58	NA	NA
CON_BP_14	11.06.2015 - 15.06.2015	34.6	34.6	0.52	NA	0.03	NA	NA	0.25	9.3	NA	NA	21	4.3	NA	NA	NA	103	1.9	0.25	NA	NA
CON_BP_15	15.06.2015 - 18.06.2015	10.7	10.7	1.1	NA	0.08	0.52	NA	0.44	30	NA	NA	34	48	NA	9.4	NA	162	20	0.50	NA	NA
CON_BP_16	18.06.2015 - 22.06.2015	4.2	4.2	0.31	NA	0.04	NA	NA	0.30	12	NA	NA	31	16	NA	NA	NA	100	1.5	NA	NA	NA
CON_BP_17	22.06.2015 - 25.06.2015	1.3	1.3	0.32	NA	0.03	NA	NA	0.14	16	NA	NA	34	44	NA	NA	NA	93	3.2	0.26	NA	NA
CON_BP_18	25.06.2015 - 28.06.2015	0.1	0.3	0.43	0.79	0.06	NA	0.12	0.36	3.6	NA	NA	28	13	NA	7.6	NA	78	9.2	NA	NA	NA
CON_BP_19	17.07.2015 - 17.07.2015	0.0	3.3	8.8	1.7	0.70	0.79	0.89	1.4	121	NA	NA	71	19	NA	NA	13	63	55	0.73	NA	NA
CON_BP_20	20.07.2015 - 23.07.2015	25.5	25.5	1.8	0.16	0.15	NA	NA	0.30	8.8	NA	NA	33	2.4	NA	NA	NA	147	2.2	0.17	1.9	0.17
CON_BP_21	23.07.2015 - 27.07.2015	10.1	10.1	2.3	NA	0.36	NA	0.24	0.28	46	NA	NA	28	34	NA	NA	NA	110	7.3	0.28	2.1	0.19
CON_BP_22	28.07.2015 - 30.07.2015	7.5	7.5	1.4	NA	0.31	0.60	NA	0.27	20	NA	NA	19	2.9	NA	NA	NA	76	2.5	0.80	2.3	0.22
CON_BP_23	30.07.2015 - 03.08.2015	1.6	5.4	3.3	NA	0.89	0.54	0.33	0.32	80	NA	NA	45	6.6	NA	NA	NA	71	7.1	NA	1.7	0.10
CON_BP_24	13.08.2015 - 17.08.2015	34.2	34.2	0.73	NA	0.26	NA	NA	0.27	14	NA	NA	17	3.2	NA	NA	NA	108	1.6	NA	1.5	0.09
CON_BP_25	20.08.2015 - 24.08.2015	22.6	22.6	0.73	NA	0.25	NA	NA	0.17	7.9	NA	NA	19	2.6	NA	NA	NA	65	2.1	0.16	1.9	0.08
CON_BP_26	24.08.2015 - 27.08.2015	10.1	17.6	2.2	1.4	0.83	NA	0.23	0.19	19	NA	NA	33	19	NA	5.7	NA	63	59	NA	NA	NA
CON_BP_27	31.08.2015 - 03.09.2015	12.9	12.9	1.3	NA	0.36	NA	NA	0.31	36	NA	NA	18	36	NA	NA	NA	103	2.2	0.21	2.2	0.22
CON_BP_28	03.09.2015 - 07.09.2015	3.7	5.1	3.1	NA	0.39	NA	0.13	0.38	12	NA	NA	22	2.6	NA	NA	NA	379	1.9	3.2	2.4	0.16
CON_BP_29	12.09.2015 - 15.09.2015	28.4	28.4	0.72	NA	0.23	NA	NA	0.18	5.6	NA	NA	11	NA	NA	NA	NA	61	0.71	0.15	1.4	0.06
CON_BP_30	15.09.2015 - 17.09.2015	27.4	27.4	0.74	NA	0.26	NA	NA	0.19	8.2	NA	NA	8.7	4.7	NA	NA	NA	48	5.0	0.39	1.3	0.06
CON_BP_31	17.09.2015 - 21.09.2015	6.0	6.0	0.52	NA	0.19	NA	NA	NA	4.6	NA	NA	8.7	NA	NA	NA	NA	48	1.2	0.15	0.98	0.04
CON_BP_32	21.09.2015 - 24.09.2015	22.6	25.4	0.36	NA	0.11	NA	NA	0.12	5.5	NA	NA	21	4.7	NA	NA	NA	83	2.1	0.15	0.74	0.03
CON_BP_33	01.10.2015 - 05.10.2015	13.8	13.8	0.73	NA	0.25	NA	NA	0.20	8.6	NA	NA	18	7.5	NA	6.2	NA	99	1.7	0.09	1.8	0.10
CON_BP_34	05.10.2015 - 08.10.2015	13.0	14.2	0.59	NA	0.21	0.88	NA	NA	3.1	NA	NA	10	NA	NA	NA	NA	69	0.81	0.22	1.1	0.11
CON_BP_35	15.10.2015 - 19.10.2015	3.2	6.6	2.5	0.16	0.86	NA	NA	0.99	13	NA	NA	31	12	NA	39	NA	221	0.61	NA	1.4	0.10
CON_BP_36	26.10.2015 - 29.10.2015	12.0	12.0	0.11	NA	0.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	35	NA	NA	NA	NA
CON_BP_37	12.11.2015 - 16.11.2015	6.0	7.2	0.79	0.15	0.28	NA	NA	0.44	8.9	NA	NA	44	5.1	NA	10.1	NA	232	2.0	0.41	3.4	0.23
CON_BP_38	19.11.2015 - 20.11.2015	111.4	111.4	0.13	NA	0.02	NA	NA	NA	NA	NA	NA	24	NA	NA	NA	NA	79	2.4	0.08	0.32	0.04
CON_BP_39	20.11.2015 - 23.11.2015	3.2	7.0	0.34	0.19	0.10	NA	NA	0.12	2.9	NA	NA	40	2.5	NA	NA	NA	163	1.0	0.14	1.1	0.06
CON_BP_40	26.11.2015 - 30.11.2015	44.6	44.6	0.33	NA	0.11	0.44	NA	0.25	4.7	NA	NA	39	5.0	NA	5.4	NA	147	0.37	0.48	0.94	0.05
CON_BP_41	30.11.2015 - 03.12.2015	6.2	7.4	0.48	0.18	0.15	1.2	NA	0.38	7.8	NA	NA	30	9.0	NA	8.4	NA	136	3.5	1.8	NA	NA
CON_BP_42	07.12.2015 - 10.12.2015	13.8	13.8	0.20	NA	0.05	NA	NA	0.16	4.5	NA	NA	19	4.8	NA	NA	NA	57	1.1	NA	NA	NA
CON_BP_43	14.12.2015 - 17.12.2015	9.8	9.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.0	0.75	0.48	2.4	0.19
CON_BP_44	18.12.2015 - 23.12.2015	13.8	13.8	0.28	NA	0.05	NA	NA	0.27	6.4	NA	NA	50	27	NA	5.2	NA	98	NA	0.21	3.5	0.29
CON_BP_45	29.12.2015 - 04.01.2016	24.8	24.8	0.20	NA	0.05	NA	NA	0.18	8.8	NA	NA	53	15	NA	NA	NA	87	1.7	0.55	NA	NA
CON_BP_46	04.01.2016 - 07.01.2016	45.8	45.8	0.14	NA	0.04	0.49	NA	0.15	11	NA	NA	33	30	NA	NA	NA	54	3.0	0.62	0.65	0.04
CON_BP_47	08.01.2016 - 11.01.2016	39.8	39.8	NA	NA	0.01	NA	NA	NA	4.9	NA	NA	35	3.1	NA	NA	NA	62	1.0	0.22	0.35	0.03
CON_BP_48	11.01.2016 - 25.01.2016	74.6	74.6	0.16	0.31	0.04	1.8	NA	0.32	13	NA	NA	25	4.9	NA	NA	NA	70	1.9	1.6	1.9	0.08
CON_BP_49	25.01.2016 - 29.01.2016	17.6	17.6	0.23	NA	0.04	NA	0.14	0.30	9.6	NA	NA	44	5.7	NA	NA	NA	95	2.3	0.22	1.7	0.13
CON_BP_50	30.01.2016 - 01.02.2016	47.6	47.6	1.2	0.41	0.05	0.56	NA	0.34	8.0	NA	NA	38	4.5	NA	11	NA	209	54	0.74	2.4	0.17
CON_BP_51	01.02.2016 - 04.02.2016	17.2	58.8	1.4	0.37	0.16	2.1	NA	1.4	14	NA	NA	22	9.4	NA	NA	NA	70	2.8	1.1	3.1	0.16
CON_BP_52	12.02.2016 - 15.02.2016	25.4	25.4	0.62	0.18	0.07	0.96	NA	0.49	8.8	NA	NA	14	3.4	NA	NA	NA	45	1.1	NA	NA	NA
CON_BP_53	18.02.2016 - 22.02.2016	18.0	18.0	0.46	NA	0.06	0.53	NA	0.29	8.2	NA	NA	42	24	NA	NA	NA	94	1.0	0.46	1.7	0.04
CON_BP_54	22.02.2016 - 25.02.2016	13.4	13.4	0.28	NA	0.03	NA	NA	0.15	15	NA	NA	11	8.7	NA	NA	NA	53	0.61	0.15	0.87	0.08

NA = not a number (sample not available, sample consumed for other analyses, concentration below limit of detection, or element not analyzed)

<sup>1</sup> taken from Supplementary Material published in Sohr, J., Uhlig, D., Kaiser, K., Von Blanckenburg, F., Siemens, J., Seeger, S., Frick, D. A., Krüger, J., Lang, F., Weiler, M. (2019). Phosphorus fluxes in a temperate forested watershed: canopy leaching, runoff sources, and in-stream transformation. *Frontiers in forests and global change*, 2, 85

Table S2 Element concentrations in throughfall (TF).

		Major elements (ICP-OES)								Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>		Anion and dissolved organic elements <sup>2</sup>			
sample ID	sampling period	precipitation min.	precipitation max.	Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON	
		(l d <sup>-1</sup> )	(l d <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )
CON_TF_1	25.03.2015 - 27.03.2015	4.3	21.1	6.1	7.0	0.70	1.1	0.32	1.3	NA	30	NA	17	31	NA	142	16	131	NA	0.11	2.9	2.5	
CON_TF_2	27.03.2015 - 30.03.2015	23.9	23.9	0.63	0.66	0.05	0.23	0.05	0.13	NA	NA	NA	NA	NA	NA	NA	NA	63	NA	NA	0.3	NA	
CON_TF_3	30.03.2015 - 01.04.2015	3.2	3.2	1.4	1.5	0.15	0.36	0.12	0.20	NA	NA	NA	NA	NA	NA	NA	NA	52	NA	NA	2.1	NA	
CON_TF_4	01.04.2015 - 03.04.2015	20.0	20.0	0.83	0.83	0.15	1.1	0.06	0.22	NA	NA	NA	NA	NA	NA	NA	NA	42	17	NA	NA	NA	
CON_TF_5	03.04.2015 - 06.04.2015	15.7	15.7	1.0	3.4	0.07	0.20	0.11	0.07	NA	NA	NA	NA	NA	NA	NA	NA	41	6.0	NA	0.2	NA	
CON_TF_6	10.04.2015 - 13.04.2015	2.7	2.7	3.2	2.8	0.43	0.50	0.28	0.50	NA	31	NA	NA	16	NA	66	NA	62	17	NA	1.0	NA	
CON_TF_7	16.04.2015 - 20.04.2015	24.2	24.2	1.8	2.7	0.20	0.25	0.16	0.38	NA	NA	NA	23	15	NA	55	NA	77	13	NA	0.5	NA	
CON_TF_8	24.04.2015 - 27.04.2015	6.4	6.4	4.7	17	1.2	0.66	0.57	0.95	NA	29	NA	30	56	NA	442	NA	99	176	NA	2.6	NA	
CON_TF_9	27.04.2015 - 30.04.2015	20.7	20.7	0.41	1.7	0.12	0.07	0.09	0.08	NA	NA	NA	NA	18	NA	34	NA	18	28	NA	0.5	NA	
CON_TF_10	30.04.2015 - 04.05.2015	46.2	51.9	0.56	2.2	0.15	0.10	0.24	0.12	NA	NA	NA	26	NA	NA	42	NA	57	16	NA	0.1	NA	
CON_TF_11	14.05.2015 - 16.05.2015	25.0	29.1	0.96	4.3	0.27	0.35	0.10	0.49	17	9.3	NA	54	43	NA	83	2.8	99	NA	NA	0.5	NA	
CON_TF_12	19.05.2015 - 21.05.2015	9.5	9.5	0.74	3.5	0.24	0.41	0.25	0.37	NA	NA	NA	81	16	NA	69	NA	96	18	NA	0.9	NA	
CON_TF_13	25.05.2015 - 28.05.2015	5.0	6.9	1.2	5.5	0.34	0.51	0.41	0.48	52	15	NA	103	57	NA	104	3.7	122	61	NA	1.0	NA	
CON_TF_14	11.06.2015 - 15.06.2015	39.6	39.6	0.87	3.0	0.19	0.23	0.45	0.27	46	6.6	NA	64	33	NA	43	2.8	73	55	NA	0.4	NA	
CON_TF_15	15.06.2015 - 18.06.2015	7.8	7.8	1.5	2.6	0.24	0.47	NA	0.39	17	8.1	NA	42	7.8	NA	5.6	4.5	74	25	NA	0.8	NA	
CON_TF_16	18.06.2015 - 22.06.2015	4.0	4.0	1.1	2.5	0.23	0.35	0.33	0.38	21	12	NA	34	16	NA	38	3.4	54	58	NA	0.6	NA	
CON_TF_17	22.06.2015 - 25.06.2015	3.6	4.4	0.69	2.5	0.16	0.27	0.22	0.32	26	7.4	NA	55	16	NA	26	NA	95	41	NA	0.5	NA	
CON_TF_18	20.07.2015 - 23.07.2015	18.8	23.3	6.7	8.9	1.4	0.62	0.42	1.2	67	33	NA	85	60	NA	323	16	122	NA	0.5	1.1	11.2	
CON_TF_19	28.07.2015 - 30.07.2015	5.3	8.5	5.1	4.6	1.5	0.91	0.80	0.55	39	20	NA	57	59	NA	12	9.8	74	NA	0.35	1.9	9.0	
CON_TF_20	13.08.2015 - 17.08.2015	27.9	28.0	2.6	3.3	0.87	NA	0.28	0.43	30	12	NA	44	22	NA	25	4.9	65	113	0.25	NA	7.06	
CON_TF_21	20.08.2015 - 24.08.2015	9.6	9.6	3.2	4.7	1.1	0.23	0.67	0.47	30	18	NA	60	28	NA	69	6.0	81	417	0.39	0.3	6.39	
CON_TF_22	24.08.2015 - 27.08.2015	0.4	1.9	2.6	2.7	1.1	NA	0.39	0.26	23	13	NA	33	33	NA	8.8	3.8	50	145	0.43	0.2	5.97	
CON_TF_23	31.08.2015 - 03.09.2015	10.0	10.0	3.2	4.3	1.1	0.56	0.35	0.60	29	19	NA	37	26	NA	115	6.2	60	490	0.6	1.8	8.02	
CON_TF_24	03.09.2015 - 07.09.2015	1.6	1.6	6.4	7.2	2.3	0.62	1.2	0.86	51	35	NA	54	40	NA	32	11	86	463	0.8	1.1	10.38	
CON_TF_25	12.09.2015 - 15.09.2015	13.1	13.1	2.1	3.4	0.66	0.33	0.41	0.44	21	13	NA	38	21	NA	19	4.4	61	167	0.24	0.6	5.55	
CON_TF_26	15.09.2015 - 17.09.2015	15.8	15.8	2.1	4.1	0.70	0.53	0.45	0.56	24	14	NA	36	22	NA	33	4.7	44	245	0.3	1.4	4.4	
CON_TF_27	17.09.2015 - 21.09.2015	2.8	2.8	0.69	1.5	0.22	NA	0.15	0.13	8.7	4.9	NA	27	9.1	NA	NA	NA	41	NA	0.16	0.3	3.11	
CON_TF_28	21.09.2015 - 24.09.2015	17.9	18.0	0.81	2.6	0.26	NA	0.33	0.21	12	6.8	NA	46	12	NA	12	NA	64	44	0.2	0.2	3.08	
CON_TF_29	01.10.2015 - 05.10.2015	7.1	7.1	1.6	3.6	0.51	0.22	0.22	0.45	18	13	NA	35	15	NA	80	3.9	66	362	NA	NA	NA	
CON_TF_30	05.10.2015 - 08.10.2015	5.5	8.2	0.94	3.4	0.28	0.68	0.28	NA	15	7.7	NA	34	18	NA	13	NA	52	138	0.30	0.4	5.01	
CON_TF_31	24.10.2015 - 26.10.2015	0.1	0.1	6.8	24	2.2	0.42	1.7	2.1	105	63	NA	71	71	NA	313	17	185	1227	1.15	3.01	15.66	
CON_TF_32	26.10.2015 - 29.10.2015	6.2	6.2	1.3	13	0.42	NA	0.48	0.55	30	11	NA	53	27	NA	99	3.3	97	663	0.49	2.16	6.50	
CON_TF_33	05.11.2015 - 09.11.2015	0.7	0.7	0.40	1.0	0.10	NA	NA	0.10	6.1	3.3	NA	36	9.6	NA	3.6	NA	73	758	NA	NA	NA	
CON_TF_34	12.11.2015 - 16.11.2015	3.0	3.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	176	0.11	1.7	6.59	
CON_TF_35	19.11.2015 - 20.11.2015	73.8	73.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20	0.1	0.2	1.86	
CON_TF_36	20.11.2015 - 23.11.2015	0.8	0.8	0.69	0.77	0.21	NA	NA	0.10	6.3	3.7	NA	33	10.2	NA	NA	NA	68	39	0.1	0.1	1.7	
CON_TF_37	23.11.2015 - 26.11.2015	0.0	NA	NA	0.09	0.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.2	NA	0.4	NA	
CON_TF_38	26.11.2015 - 30.11.2015	34.8	34.8	0.53	0.62	0.17	0.24	NA	0.23	8.9	3.6	NA	32	11	NA	9.4	NA	61	14	0.06	0.48	1.34	
CON_TF_39	30.11.2015 - 03.12.2015	2.1	2.2	1.5	3.0	0.50	1.7	0.26	0.46	25	11	NA	44	19	NA	30	4.6	67	20	0.12	2.3	3.81	
CON_TF_40	07.12.2015 - 10.12.2015	9.1	9.1	0.45	0.94	0.14	0.25	NA	0.17	9.9	4.0	NA	14	6.0	NA	21	NA	25	33	NA	NA	NA	
CON_TF_41	14.12.2015 - 17.12.2015	4.8	4.8	1.23	2.3	0.39	0.55	0.30	0.31	150	17	NA	28	205	NA	94	4.5	65	128	0.1	1.9	3.8	
CON_TF_42	18.12.2015 - 23.12.2015	8.4	8.4	0.69	1.5	0.17	0.36	0.12	0.34	22	5.8	NA	57	28	NA	16	2.6	82	27	NA	0.9	NA	
CON_TF_43	29.12.2015 - 04.01.2016	12.5	12.5	0.80	1.8	0.22	0.50	0.20	0.26	24	7.9	NA	51	16	NA	25	3.1	73	NA	0.10	1.5	3.73	
CON_TF_44	11.01.2016 - 25.01.2016	NA	NA	1.1	1.1	0.33	1.5	NA	0.37	9.3	14	NA	30	5.7	NA	56	4.4	85	10	NA	NA	NA	
CON_TF_45	04.01.2016 - 07.01.2016	18.7	18.7	0.21	0.52	0.05	0.23	NA	NA	5.8	2.5	NA	19	4.5	NA	4.5	NA	34	11	0.07	0.9	2.5	
CON_TF_46	08.01.2016 - 11.01.2016	20.0	20.0	0.42	0.94	0.09	0.25	NA	0.14	13	6.6	NA	74	36	NA	8.2	NA	105	16	0.04	0.63	3.05	
CON_TF_47	11.01.2016 - 14.01.2016	8.2	8.2	0.34	0.77	0.08	0.47	NA	0.16	7.8	5.1	NA	49	15	NA	4.8	NA	66	16	0.08	0.88	4.59	
CON_TF_48	14.01.2016 - 18.01.2016	0.0	21.6	0.49	0.61	0.15	1.3	NA	0.26	31	6.3	NA	21	36	NA	9.5	NA	40	30	0.1	3.0	1.82	
CON_TF_49	25.01.2016 - 29.01.2016	11.8	11.8	0.56	1.5	0.14	0.47	0.13	0.34	14	9.8	NA	41	13	NA	43	NA	70	21	0.06	0.2	1.86	
CON_TF_50	30.01.2016 - 30.01.2016	9.0	25.7	0.25	0.65	0.05	NA	NA	0.12	8.0	5.0	NA	21	4.5	NA	9.1	NA	41	15				

Table S3 Element concentrations in subsurface flow (SF1, SF2, SF3).

sample ID	sampling date	Major elements (ICP-OES)						Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>		Anion and dissolved organic elements <sup>1</sup>		
		Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON
		(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )
<b>Subsurface flow SF1 (0 - 15 cm)</b>																				
CON_SF_1_1	01.03.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20	0.57
CON_SF_1_2	02.03.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.80	NA	NA
CON_SF_1_3	03.03.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.91	NA	NA
CON_SF_1_4	05.03.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.6	NA	NA
CON_SF_1_5	29.03.2015	3.7	8.9	0.74	0.67	2.4	0.57	NA	32	NA	31	91	NA	NA	NA	134	405	2.0	NA	NA
CON_SF_1_6	30.03.2015	5.1	9.1	0.76	0.66	2.4	0.59	NA	33	NA	30	93	NA	NA	16	142	423	2.0	NA	NA
CON_SF_1_7	31.03.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.2	NA	NA
CON_SF_1_8	01.04.2015	1.9	6.8	0.38	0.93	1.2	0.52	NA	16	NA	28	61	NA	NA	NA	97	237	2.5	NA	NA
CON_SF_1_9	02.04.2015	1.8	5.9	0.34	0.74	1.2	0.37	NA	NA	NA	25	59	NA	NA	NA	82	219	1.2	NA	NA
CON_SF_1_10	03.04.2015	1.2	4.7	0.25	0.63	0.89	0.23	NA	NA	NA	15	60	NA	16	NA	42	192	NA	NA	NA
CON_SF_1_11	17.04.2015	3.0	6.2	0.53	0.54	1.3	0.39	NA	26	NA	49	144	NA	17	NA	141	261	0.74	NA	NA
CON_SF_1_12	28.04.2015	3.3	6.8	0.65	0.49	1.3	0.44	NA	31	NA	46	105	NA	NA	NA	150	283	1.9	NA	NA
CON_SF_1_13	13.06.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	25	1.2
CON_SF_1_14	14.06.2015	6.6	6.2	1.4	0.63	2.3	0.71	149	77	NA	76	66	NA	11	26	187	482	1.2	NA	NA
CON_SF_1_15	15.06.2015	12	10.2	2.5	0.83	3.4	1.4	183	138	NA	98	94	NA	79	46	256	1077	2.3	NA	NA
CON_SF_1_16	18.06.2015	12	10.2	2.5	0.86	3.3	1.5	173	137	NA	63	79	NA	43	46	267	1087	2.2	NA	NA
CON_SF_1_17	22.06.2015	7.4	6.5	1.4	0.58	2.6	0.74	229	88	NA	60	126	NA	14	27	225	629	1.4	44	3.5
CON_SF_1_18	23.07.2015	12	12.0	2.7	0.86	3.1	1.6	209	107	NA	111	98	NA	204	47	388	1543	3.4	NA	NA
CON_SF_1_19	24.07.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	72	4.5
CON_SF_1_20	27.07.2015	19	17	3.8	1.3	5.4	2.3	398	178	NA	133	387	NA	145	71	558	2097	4.2	NA	NA
CON_SF_1_21	16.08.2015	4.6	4.7	1.1	NA	0.73	0.65	57	36	NA	38	32	NA	16	17	103	619	2.9	NA	NA
CON_SF_1_22	23.08.2015	17	9.9	3.3	0.76	5.0	1.2	366	155	NA	95	133	NA	33	64	337	1857	3.5	NA	NA
CON_SF_1_23	25.08.2015	11	7.0	2.0	0.63	4.8	0.84	329	110	NA	97	132	NA	20	41	255	1024	1.8	NA	NA
CON_SF_1_24	01.09.2015	15	11	3.0	0.80	4.0	1.5	325	134	NA	105	120	NA	61	56	440	1833	5.2	NA	NA
CON_SF_1_25	12.09.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	70	2.2
CON_SF_1_26	13.09.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	70	2.2
CON_SF_1_27	14.09.2015	15	7.6	2.7	0.69	5.5	1.1	344	137	NA	121	138	NA	50	53	276	961	2.5	70	2.2
CON_SF_1_28	16.09.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	68	2.2
CON_SF_1_29	17.09.2015	11	5.9	1.8	0.48	3.0	0.79	394	106	NA	146	149	NA	26	38	293	794	1.7	NA	NA
CON_SF_1_30	18.09.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	54	1.4
CON_SF_1_31	21.09.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	54	1.4
CON_SF_1_32	22.09.2015	7.5	4.5	1.3	NA	2.7	0.55	270	73	NA	89	117	NA	36	26	164	319	0.80	NA	NA
CON_SF_1_33	03.10.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	54	1.8
CON_SF_1_34	04.10.2015	9.0	6.1	1.8	0.62	2.9	0.88	226	86	NA	73	158	NA	12	32	194	850	1.5	NA	NA
CON_SF_1_35	28.10.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	60	2.4
CON_SF_1_36	29.10.2015	13	9.2	2.5	0.63	4.6	1.3	372	123	NA	148	132	NA	90	46	541	1291	4.9	NA	NA
CON_SF_1_37	15.11.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100	3.7
CON_SF_1_38	16.11.2015	23	11	4.3	1.4	7.0	2.5	621	183	NA	231	239	0.67	28	81	NA	1688	6.2	NA	NA
CON_SF_1_39	19.11.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	37	1.1
CON_SF_1_40	20.11.2015	0.65	0.68	0.11	NA	0.14	0.10	22	6.6	NA	13	14	NA	7.9	NA	26	50	1.6	NA	NA
CON_SF_1_41	24.11.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	116	3.4
CON_SF_1_42	25.11.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	116	3.4
CON_SF_1_43	26.11.2015	14	15	2.5	1.1	3.0	1.3	610	146	NA	96	319	NA	288	46	499	876	2.9	27	0.73
CON_SF_1_44	28.11.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	27	0.73
CON_SF_1_45	29.11.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	27	0.73
CON_SF_1_46	30.11.2015	3.4	4.0	0.62	NA	1.1	0.43	154	33	NA	107	82	NA	47	11	161	118	0.80	7.9	0.20
CON_SF_1_47	03.12.2015	1.3	1.7	0.32	0.60	1.6	0.55	59	12	NA	76	32	NA	9	4.9	110	36	0.98	NA	NA
CON_SF_1_48	10.12.2015	5.5	5.1	0.96	NA	1.9	0.51	213	60	NA	71	98	NA	15	19	171	126	1.8	NA	NA
CON_SF_1_49	17.12.2015	10.2	7.8	1.7	0.51	3.3	0.76	411	106	NA	143	192	NA	30	36	315	189	6.2	NA	NA
CON_SF_1_50	06.01.2016	5.8	4.2	1.01	0.42	2.2	0.53	280	61	NA	104	174	NA	30	21	200	88	1.3	NA	NA

continued on next page ...

Table S3 continued - Element concentrations in subsurface flow (SF1, SF2, SF3).

sample ID	sampling date	Major elements (ICP-OES)						Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>		Anion and dissolved organic elements <sup>1</sup>		
		Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON
		(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )
CON_SF_1_51	11.01.2016	0.12	0.41	0.02	NA	0.14	NA	19	NA	NA	NA	28	NA	NA	NA	8.3	16	0.82	NA	NA
CON_SF_1_52	11.01.2016	2.3	3.0	0.41	0.40	0.65	0.29	111	48	NA	93	91	NA	21	9.1	126	89	NA	NA	NA
CON_SF_1_53	25.01.2016	1.8	2.9	0.30	0.60	0.60	0.31	87	15	NA	49	64	NA	10	5.2	70	34	1.4	NA	NA
CON_SF_1_54	29.01.2016	1.5	2.6	0.28	0.60	0.49	0.29	69	268	NA	46	46	NA	9	15	82	150	1.1	NA	NA
CON_SF_1_55	01.02.2016	2.1	2.6	0.38	0.57	1.2	0.42	115	170	NA	55	68	NA	14	11	112	84	0.80	NA	NA
CON_SF_1_56	08.02.2016	2.4	3.2	0.44	0.83	1.1	0.45	157	26	NA	63	61	NA	7.3	8.8	110	53	1.4	NA	NA
CON_SF_1_57	11.02.2016	2.6	2.9	0.49	0.65	1.4	0.54	142	66	NA	84	102	NA	16	10.3	137	58	1.2	NA	NA
CON_SF_1_58	12.02.2016	3.8	3.7	0.69	0.70	1.5	0.41	201	85	NA	80	119	NA	24	15	133	58	1.6	NA	NA
CON_SF_1_59	19.02.2016	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	42	1.2	1.2
CON_SF_1_60	22.02.2016	4.5	4.0	0.78	0.61	1.7	0.48	234	80	NA	76	130	NA	33	16	136	79	1.3	NA	NA
CON_SF_1_61	25.02.2016	2.6	2.7	0.47	0.45	1.3	0.40	146	33	NA	53	67	NA	14	9.1	80	50	NA	NA	NA
CON_SF_1_62	28.02.2016	7.0	6.3	1.3	0.70	2.4	0.78	233	87	NA	80	112	1	43	30	199	558	NA	NA	NA
CON_SF_1_63	29.02.2016	0.90	0.59	0.18	0.04	0.26	0.09	26	9.8	NA	7.0	12	NA	10.2	3.6	22	95	NA	NA	NA
<b>Subsurface flow SF2 (15 - 150 cm)</b>																				
CON_SF_2_1	01.03.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.8	0.27
CON_SF_2_2	02.03.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	NA	NA
CON_SF_2_3	03.03.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4	NA	NA
CON_SF_2_4	05.03.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_SF_2_5	29.03.2015	4.5	1.7	1.2	1.5	2.7	1.2	NA	32	NA	17	19	NA	NA	23	104	68	1.9	NA	NA
CON_SF_2_6	30.03.2015	2.6	0.42	0.82	1.5	3.4	1.1	NA	21	NA	NA	NA	NA	NA	NA	56	28	2.0	NA	NA
CON_SF_2_7	31.03.2015	2.5	0.82	0.79	1.4	3.3	1.0	NA	24	NA	NA	19	NA	NA	NA	70	41	1.7	NA	NA
CON_SF_2_8	01.04.2015	3.2	1.1	0.92	1.5	3.0	1.01	NA	26	NA	NA	26	NA	NA	17	85	61	3.0	NA	NA
CON_SF_2_9	02.04.2015	2.2	1.2	0.70	1.3	3.1	0.97	NA	21	NA	17	25	NA	NA	NA	76	NA	1.8	NA	NA
CON_SF_2_10	03.04.2015	1.1	0.21	0.46	1.3	3.2	1.1	NA	NA	NA	NA	NA	NA	NA	NA	29	12	1.8	NA	NA
CON_SF_2_11	03.04.2015	0.94	0.46	0.30	0.55	1.3	0.39	NA	NA	NA	NA	NA	NA	NA	NA	31	20	NA	NA	NA
CON_SF_2_12	06.04.2015	1.3	0.35	0.51	1.4	3.2	1.0	NA	NA	NA	NA	NA	NA	NA	NA	36	13	1.2	NA	NA
CON_SF_2_13	17.04.2015	2.8	1.4	0.94	1.4	2.9	0.92	NA	30	NA	22	38	NA	NA	16	136	65	1.9	NA	NA
CON_SF_2_14	18.04.2015	1.8	0.42	0.69	1.3	3.1	0.92	NA	18	NA	NA	18	NA	NA	NA	86	21	1.3	NA	NA
CON_SF_2_15	28.04.2015	1.1	0.41	0.24	0.43	0.48	0.28	NA	NA	NA	NA	16	NA	NA	NA	37	71	2.8	NA	NA
CON_SF_2_16	07.05.2015	1.2	0.37	0.46	1.2	3.2	1.1	NA	20	NA	NA	19	NA	NA	NA	52	29	0.91	NA	NA
CON_SF_2_17	18.05.2015	0.19	0.06	0.09	0.27	0.28	0.20	5.5	3.1	NA	NA	NA	NA	NA	NA	13	3.23	1.0	NA	NA
CON_SF_2_18	25.05.2015	1.7	2.2	0.51	1.42	2.5	1.1	NA	22	NA	51	NA	NA	NA	NA	131	34	1.6	NA	NA
CON_SF_2_19	26.05.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.6	NA	NA
CON_SF_2_20	11.06.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.5	0.51
CON_SF_2_21	12.06.2015	5.5	3.4	1.8	1.5	3.7	0.92	96	146	NA	46	7.4	NA	27	42	253	116	3.0	6.3	0.45
CON_SF_2_22	14.06.2015	4.7	2.6	1.6	1.3	2.5	0.58	105	127	NA	36	16	NA	28	36	146	73	2.3	8.6	0.38
CON_SF_2_23	15.06.2015	3.1	2.8	1.0	1.3	2.5	0.63	103	87	NA	70	36	NA	29	24	171	64	1.8	NA	NA
CON_SF_2_24	15.06.2015	3.9	2.2	1.3	0.96	3.0	0.84	158	108	NA	33	29	NA	19	30	108	64	NA	NA	NA
CON_SF_2_25	15.06.2015	3.5	1.5	1.2	1.1	3.2	0.81	68	80	NA	37	9.7	NA	15	28	122	36	NA	NA	NA
CON_SF_2_26	15.06.2015	3.1	0.90	1.1	1.3	3.5	0.76	32	57	NA	33	6.1	NA	11	23	110	15	NA	NA	NA
CON_SF_2_27	15.06.2015	3.2	0.97	1.1	1.4	3.5	0.73	33	54	NA	44	6.9	NA	10	23	127	25	NA	NA	NA
CON_SF_2_28	18.06.2015	3.3	2.3	1.1	1.1	2.8	0.67	68	81	NA	34	27	NA	15	24	119	64	1.7	NA	NA
CON_SF_2_29	22.06.2015	3.0	0.91	1.0	1.3	3.6	0.81	40	46	NA	30	29	NA	7.9	21	140	22	1.5	NA	NA
CON_SF_2_30	23.06.2015	7.9	5.1	2.6	2.1	4.1	1.6	175	159	NA	86	35	NA	99	56	640	101	NA	NA	NA
CON_SF_2_31	22.07.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13	0.96
CON_SF_2_32	23.07.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.1	NA	NA
CON_SF_2_33	16.08.2015	4.2	3.9	1.2	0.67	1.3	0.76	100	66	NA	42	31	NA	43	20	121	192	2.1	NA	NA
CON_SF_2_34	24.08.2015	6.3	5.0	1.8	1.2	2.3	0.79	79	100	NA	85	29	NA	39	34	239	192	NA	NA	NA
CON_SF_2_35	25.08.2015	6.9	2.6	2.0	1.5	3.3	0.69	44	100	NA	35	11	NA	3.4	41	233	NA	4.9	NA	NA
CON_SF_2_36	16.09.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.2	0.30
CON_SF_2_37	17.09.2015	4.7	2.8	1.3	0.89	3.4	0.72	168	87	NA	60	44	NA	20	26	217	89	2.1	NA	NA

continued on next page ...

Table S3 continued - Element concentrations in subsurface flow (SF1, SF2, SF3).

sample ID	sampling date	Major elements (ICP-OES)						Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>		Anion and dissolved organic elements <sup>1</sup>		
		Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON
		(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )
CON_SF_2_38	22.09.2015	3.7	2.1	1.01	0.93	3.4	0.83	192	71	NA	50	66	NA	24	22	91	77	2.0	7.3	0.42
CON_SF_2_39	03.10.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	16	0.89
CON_SF_2_40	04.10.2015	6.3	4.7	1.8	1.2	3.9	1.2	172	83	NA	51	48	NA	35	32	123	414	3.4	NA	NA
CON_SF_2_41	28.10.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.2	0.54
CON_SF_2_42	29.10.2015	7.4	3.7	1.8	1.3	3.1	1.1	136	87	NA	48	27	NA	47	39	196	145	NA	NA	NA
CON_SF_2_43	19.11.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.3	0.44
CON_SF_2_44	20.11.2015	3.7	2.8	1.1	0.61	2.1	0.82	319	98	NA	63	42	NA	44	25	99	73	1.7	NA	NA
CON_SF_2_45	25.11.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.5	0.44
CON_SF_2_46	26.11.2015	4.2	2.2	1.3	1.4	3.5	NA	246	102	NA	33	37	NA	54	31	94	68	2.0	NA	NA
CON_SF_2_47	28.11.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.4	0.18
CON_SF_2_48	30.11.2015	1.7	1.01	0.55	0.82	2.5	1.1	131	37	NA	70	28	NA	16	13	103	21	1.1	3.6	0.11
CON_SF_2_49	03.12.2015	1.1	0.86	0.35	1.02	2.7	1.03	101	25	NA	57	23	NA	9.3	8.2	95	12	1.1	NA	NA
CON_SF_2_50	10.12.2015	1.9	1.4	0.60	1.01	3.0	0.94	215	40	NA	35	43	NA	16	14	93	33	2.1	NA	NA
CON_SF_2_51	17.12.2015	2.4	1.4	0.69	1.1	3.1	1.0	149	45	NA	33	39	NA	14	16	99	35	2.5	NA	NA
CON_SF_2_52	06.01.2016	2.0	1.8	0.51	0.78	2.6	1.1	227	38	NA	64	55	NA	14	12	123	50	1.7	NA	NA
CON_SF_2_53	11.01.2016	1.3	1.02	0.43	1.01	2.8	1.03	168	30	NA	51	28	NA	10	10	67	19	1.3	NA	NA
CON_SF_2_54	11.01.2016	1.3	1.2	0.42	0.88	2.4	1.01	188	31	NA	56	41	NA	12	9.5	77	24	1.6	NA	NA
CON_SF_2_55	25.01.2016	0.26	0.34	0.07	0.23	1.1	0.17	94	22	NA	18	3.4	NA	NA	NA	17	3.4	1.5	NA	NA
CON_SF_2_56	29.01.2016	1.2	1.2	0.37	1.1	2.1	0.97	120	26	NA	42	22	NA	10	8.3	84	8.2	1.3	NA	NA
CON_SF_2_57	01.02.2016	0.28	0.21	0.07	0.26	1.8	0.14	92	22	NA	17	3.4	NA	NA	2.8	21	3.9	NA	NA	NA
CON_SF_2_58	11.02.2016	1.5	1.5	0.42	1.00	2.4	1.04	229	29	NA	46	67	NA	12	9.4	65	22	1.3	NA	NA
CON_SF_2_59	12.02.2016	1.5	1.8	0.45	1.00	2.3	1.01	222	28	NA	49	43	NA	14	9.4	72	29	1.7	NA	NA
CON_SF_2_60	19.02.2016	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.8	0.38
CON_SF_2_61	22.02.2016	1.6	1.4	0.45	0.89	2.0	1.0	176	31	NA	42	31	NA	18	10.1	68	18	1.7	NA	NA
CON_SF_2_62	25.02.2016	1.6	1.6	0.43	0.81	2.1	0.87	309	33	NA	34	83	NA	11	9.4	81	NA	1.3	NA	NA
<b>Subsurface flow SF3 (150 - 320 cm)</b>																				
CON_SF_3_1	02.03.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.5	NA	NA
CON_SF_3_2	03.04.2015	1.3	0.22	0.54	1.4	3.3	1.4	NA	NA	NA	NA	21	NA	NA	NA	29	NA	1.2	NA	NA
CON_SF_3_3	06.04.2015	1.9	0.38	0.77	1.8	3.5	2.1	NA	NA	NA	NA	NA	NA	NA	NA	33	17	1.6	NA	NA
CON_SF_3_4	28.04.2015	2.9	0.43	0.89	8.7	2.5	6.5	NA	45	NA	18	19	NA	NA	15	93	148	0.43	NA	NA
CON_SF_3_5	07.05.2015	1.8	0.29	0.72	1.7	3.5	2.1	NA	15	NA	NA	NA	NA	NA	NA	43	15	1.3	NA	NA
CON_SF_3_6	18.05.2015	1.3	0.44	0.46	1.5	3.3	0.87	24	10	NA	25	15	NA	NA	10	66	9.2	1.2	NA	NA
CON_SF_3_7	18.05.2015	1.6	0.65	0.58	0.61	1.5	0.34	47	28	NA	30	10	NA	9.0	14	68	23	NA	NA	NA
CON_SF_3_8	15.06.2015	2.6	1.3	0.89	1.1	2.6	0.69	62	39	NA	32	25	NA	12	20	104	90	1.3	NA	NA
CON_SF_3_9	22.06.2015	6.3	2.8	1.8	1.2	2.8	1.02	71	82	NA	49	20	NA	56	37	204	155	1.3	NA	NA
CON_SF_3_10	16.09.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.7	0.38
CON_SF_3_11	17.09.2015	2.3	1.4	0.75	0.86	2.4	0.97	213	54	NA	68	47	NA	20	19	87	36	2.1	NA	NA
CON_SF_3_12	19.11.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.7	0.34
CON_SF_3_13	20.11.2015	1.8	0.84	0.64	1.2	3.1	1.04	110	34	NA	25	22	NA	12	14	61	28	1.8	7.7	0.34
CON_SF_3_14	25.11.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.7	0.36
CON_SF_3_15	26.11.2015	1.3	0.34	0.47	1.2	3.2	1.00	46	16	NA	48	15	NA	5	10.0	96	13	1.6	NA	NA
CON_SF_3_16	29.11.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.4	0.12
CON_SF_3_17	30.11.2015	1.5	0.51	0.48	1.4	3.1	1.01	60	13	NA	30	43	NA	17	9.6	71	15	1.4	2.1	0.13
CON_SF_3_18	03.12.2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	30	1.7	NA	NA
CON_SF_3_19	10.12.2015	2.3	1.03	0.76	1.1	3.5	0.95	310	31	NA	43	157	NA	18	17	139	29	2.1	NA	NA
CON_SF_3_20	06.01.2016	1.6	0.97	0.53	0.95	3.1	1.06	183	23	NA	59	60	NA	10	11	97	29	1.7	NA	NA
CON_SF_3_21	11.01.2016	0.58	0.91	0.18	0.45	0.11	0.28	39	11	NA	67	14	NA	50	2.9	99	17	0.83	NA	NA
CON_SF_3_22	11.01.2016	0.36	0.40	0.11	0.41	0.42	0.23	NA	NA	NA	NA	NA	NA	11	NA	78	1.00	NA	NA	NA
CON_SF_3_23	25.01.2016	0.14	NA	NA	NA	0.86	NA	NA	NA	NA	NA	NA	NA	NA	NA	31	0.61	1.6	NA	NA
CON_SF_3_24	29.01.2016	0.87	0.80	0.29	NA	0.94	0.6	NA	NA	NA	NA	NA	NA	NA	NA	73	33	1.2	NA	NA
CON_SF_3_25	11.02.2016	1.1	0.90	0.43	NA	3.0	1.18	NA	NA	NA	NA	NA	NA	NA	NA	61	32	1.7	NA	NA

NA = not a number (sample not available, sample consumed for other analyses, concentration below limit of detection, or element not analyzed)

<sup>1</sup> taken from Supplementary Material published in Sohr, J., Uhlig, D., Kaiser, K., Von Blanckenburg, F., Siemens, J., Seeger, S., Frick, D. A., Krüger, J., Lang, F., Weiler, M. (2019). Phosphorus fluxes in a temperate forested watershed: canopy leaching, runoff sources, and in-stream transformation. *Frontiers in forests and global change*, 2, 85

**Table S4** Element concentrations in creek water (CW) and relative contributions of groundwater ( $f_{\text{GW}}$ ) and subsurface flow ( $f_{\text{SF1}}$ ,  $f_{\text{SF2}}$  &  $f_{\text{SF3}}$ ) to creek water.

Major elements (ICP-OES)										Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>		Anion and dissolved organic elements <sup>1</sup>				End member mixing analyses (EMMA)		
sample ID	sampling date	discharge	T	Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON	f <sub>GW</sub>	f <sub>SF1</sub>	f <sub>SF2 &amp; SF3</sub>	
		(l s <sup>-1</sup> )	(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(%)	(%)	(%)	
CON_CW_1	3/1/2015	1.27	5.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.68	0.02	28%	0%	72%
CON_CW_2	3/2/2015	1.56	5.3	5.0	0.57	1.4	2.6	4.8	2.5	NA	13	NA	NA	16	NA	NA	17	NA	NA	NA	1.1	0.37	0.01	NA	NA	NA
CON_CW_3	3/3/2015	1.67	5.1	4.9	0.55	1.3	2.6	4.9	2.5	NA	NA	NA	NA	NA	NA	NA	17	41	NA	NA	1.1	NA	NA	40%	0%	60%
CON_CW_4	3/4/2015	1.46	5.2	5.2	0.56	1.4	2.7	5.0	2.6	NA	NA	NA	16	NA	NA	NA	18	47	NA	NA	1.1	0.50	0.02	38%	0%	58%
CON_CW_5	3/5/2015	1.20	5.1	5.3	0.56	1.4	2.7	5.0	2.7	NA	NA	NA	NA	NA	NA	NA	18	23	NA	NA	1.1	0.54	0.01	39%	0%	61%
CON_CW_6	3/6/2015	1.02	5.1	5.1	0.56	1.4	2.6	4.9	2.6	NA	NA	NA	NA	NA	NA	NA	18	23	NA	NA	1.1	0.51	0.01	38%	0%	57%
CON_CW_7	3/7/2015	0.90	5.3	5.4	0.56	1.5	2.7	5.0	2.6	NA	NA	NA	NA	NA	NA	NA	19	26	NA	NA	1.1	0.53	0.01	39%	0%	61%
CON_CW_8	3/8/2015	0.79	5.9	5.6	0.56	1.5	2.7	5.0	2.6	NA	NA	NA	NA	16	NA	NA	19	33	NA	NA	1.1	0.78	0.04	41%	0%	57%
CON_CW_9	3/9/2015	0.69	6.1	5.8	0.57	1.5	2.7	5.0	2.6	NA	NA	NA	NA	NA	NA	NA	20	34	NA	NA	1.2	0.65	0.02	42%	0%	56%
CON_CW_10	3/10/2015	0.59	6.2	5.9	0.57	1.6	2.7	5.0	2.6	NA	NA	NA	NA	NA	NA	NA	20	35	NA	NA	1.1	0.58	0.01	44%	0%	56%
CON_CW_11	3/11/2015	0.51	5.9	6.0	0.57	1.6	2.7	5.0	2.6	NA	NA	NA	NA	NA	NA	NA	20	40	13	NA	1.1	0.54	0.02	44%	0%	56%
CON_CW_12	3/12/2015	0.46	5.2	6.0	0.63	1.6	2.8	4.9	2.6	NA	NA	NA	NA	NA	NA	NA	20	38	17	NA	1.2	0.47	0.01	44%	0%	56%
CON_CW_13	3/13/2015	0.42	5.1	6.0	0.57	1.6	2.7	4.9	2.7	NA	NA	NA	NA	NA	NA	NA	20	30	16	NA	1.1	0.55	0.03	44%	0%	56%
CON_CW_14	3/14/2015	0.38	5.0	6.2	0.62	1.6	2.7	4.9	2.7	NA	NA	NA	NA	NA	NA	NA	20	33	18	NA	1.1	0.54	0.04	45%	0%	55%
CON_CW_15	3/15/2015	0.34	5.1	6.3	0.60	1.7	2.7	4.8	2.7	NA	NA	NA	NA	NA	NA	NA	21	32	16	NA	1.1	0.56	0.04	46%	0%	52%
CON_CW_16	3/16/2015	0.31	5.6	6.5	0.60	1.7	2.8	4.9	2.7	NA	NA	NA	NA	NA	NA	NA	21	38	16	NA	1.1	0.85	0.08	45%	0%	51%
CON_CW_17	3/17/2015	0.27	6.3	6.8	0.62	1.8	2.8	4.9	2.7	NA	NA	NA	NA	NA	NA	NA	22	31	15	NA	1.3	0.54	0.04	46%	0%	49%
CON_CW_18	3/18/2015	0.25	6.7	6.9	0.61	1.8	2.8	4.8	2.7	NA	15	NA	NA	NA	NA	NA	23	39	14	NA	1.2	0.67	0.04	45%	0%	48%
CON_CW_19	3/19/2015	0.23	6.6	7.0	0.62	1.9	2.8	4.8	2.7	NA	16	NA	NA	NA	NA	NA	23	33	16	NA	1.2	0.55	0.03	45%	0%	55%
CON_CW_20	3/20/2015	0.21	6.3	7.3	0.63	1.9	2.9	4.9	2.7	NA	16	NA	NA	NA	NA	NA	24	35	15	NA	1.2	0.76	0.04	45%	0%	55%
CON_CW_21	3/21/2015	0.20	6.0	7.4	0.66	2.0	2.9	4.9	2.8	NA	16	NA	NA	NA	NA	NA	24	62	14	NA	1.2	0.60	0.01	46%	0%	54%
CON_CW_22	3/22/2015	0.18	5.2	7.4	0.61	2.0	2.9	4.8	2.8	NA	16	NA	NA	NA	NA	NA	24	57	15	NA	1.2	0.61	0.02	44%	0%	43%
CON_CW_23	3/23/2015	0.17	5.6	7.3	0.60	2.0	2.8	4.8	2.8	NA	16	NA	NA	NA	NA	NA	24	45	17	NA	1.2	0.57	0.04	45%	0%	55%
CON_CW_24	3/24/2015	0.16	6.4	7.7	0.66	2.1	2.9	4.9	2.9	NA	17	NA	NA	NA	NA	NA	25	47	16	NA	1.2	0.51	0.02	NA	NA	NA
CON_CW_25	3/25/2015	0.16	6.3	8.0	0.66	2.1	3.0	5.0	2.9	NA	17	NA	NA	NA	NA	NA	26	55	19	NA	1.2	0.66	0.05	45%	0%	55%
CON_CW_26	3/26/2015	0.14	5.1	7.7	0.61	2.0	2.9	4.8	2.8	NA	17	NA	NA	NA	NA	NA	25	52	18	NA	1.2	0.47	0.02	46%	0%	45%
CON_CW_27	3/27/2015	0.11	5.3	7.7	0.61	2.0	2.9	4.8	2.9	NA	16	NA	NA	NA	NA	NA	25	40	3.4	NA	1.2	0.33	0.02	45%	0%	50%
CON_CW_28	3/28/2015	0.11	5.6	8.1	0.65	2.1	2.9	4.7	2.9	NA	17	NA	NA	NA	NA	NA	26	42	16	NA	1.3	0.70	0.05	NA	NA	NA
CON_CW_29	3/29/2015	0.13	6.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	0.53	0.04	46%	0%	56%
CON_CW_30	3/30/2015	0.37	6.0	8.2	0.65	2.2	2.9	4.7	2.9	NA	18	NA	NA	NA	NA	NA	26	34	19	NA	1.3	0.58	0.01	45%	0%	64%
CON_CW_31	3/31/2015	0.44	6.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	0.52	0.02	43%	0%	57%
CON_CW_32	4/1/2015	0.50	4.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	40%	0%	60%
CON_CW_33	4/2/2015	0.79	4.5	6.2	0.58	1.7	2.5	4.5	2.4	NA	NA	NA	NA	NA	NA	NA	20	43	18	NA	NA	0.64	0.05	30%	1%	69%
CON_CW_34	4/3/2015	1.62	5.3	5.3	0.55	1.4	2.2	4.3	2.0	NA	NA	NA	NA	NA	NA	NA	17	31	8.1	NA	NA	0.71	0.04	21%	1%	78%
CON_CW_35	4/4/2015	2.29	5.3	4.9	0.55	1.4	2.4	4.6	2.2	NA	NA	NA	NA	NA	NA	NA	16	40	18	NA	NA	3.0	0.05	10%	1%	89%
CON_CW_36	4/5/2015	3.16	5.2	4.7	0.54	1.3	2.3	4.5	2.2	NA	NA	NA	NA	NA	NA	NA	16	36	18	NA	1.05	2.3	0.12	6%	0%	91%
CON_CW_37	4/6/2015	3.37	5.3	4.7	0.54	1.3	2.5	4.8	2.4	NA	NA	NA	NA	NA	NA	NA	16	45	18	NA	NA	2.4	0.16	3%	0%	96%
CON_CW_38	4/7/2015	3.09	5.7	5.1	0.55	1.4	2.6	5.0	2.6	NA	NA	NA	NA	NA	NA	NA	17	52	19	NA	NA	2.1	0.11	2%	0%	98%
CON_CW_39	4/8/2015	2.82	6.1	5.3	0.56	1.4	2.6	5.0	2.6	NA	NA	NA	NA	NA	NA	NA	18	44	18	NA	1.1	2.1	0.18	1%	0%	99%
CON_CW_40	4/9/2015	2.68	6.7	5.5	0.60	1.5	2.7	5.0	2.6	NA	NA	NA	NA	NA	NA	NA	19	64	NA	NA	1.1	2.3	0.07	1%	0%	99%
CON_CW_41	4/10/2015	2.09	7.1	5.7	0.72	1.5	2.8	5.0	2.6	NA	NA	NA	NA	NA	NA	NA	19	68	17	NA	1.3	3.1	0.04	0%	0%	100%
CON_CW_42	4/11/2015	0.61	6.8	5.8	0.56	1.6	2.7	4.9	2.6	NA	NA	NA	NA	NA	NA	NA	19	43	13	NA	1.1	3.5	0.02	0%	2%	98%
CON_CW_43	4/12/2015	0.52	7.4	6.1	0.58	1.6	2.7	4.9	2.6	NA	NA	NA	NA	NA	NA	NA	20	46	13	NA	1.2	3.0	0.09	0%	2%	92%
CON_CW_44	4/13/2015	0.44	7.7	6.3	0.57	1.7	2.7	4.9	2.7	NA	NA	NA	NA	NA	NA	NA	21	58	8.7	NA	1.1	3.3	0.11	0%	4%	91%
CON_CW_45	4/14/2015	0.38	7.7	6.5	0.61	1.7	2.8	4.9	2.7	NA	15	NA	NA	NA	NA	NA	21	39	15	NA	1.2	3.1	0.24	0%	3%	90%
CON_CW_46	4/15/2015	0.36	8.3	6.6	0.58	1.8	2.8	4.9	2.7	NA	16	NA	NA	NA	NA	NA	22	49	15	NA	1.2	3.4	0.22	0%	5%	89%
CON_CW_47	4/16/2015	NA	8.2	6.6	0.62	1.8	2.8	4.9	2.7	NA	16	NA	NA	NA	NA	NA	22	54	17	NA	1.3	2.8	0.12	0%	5%	88%
CON_CW_48	4/17/2015	0.37	7.7	7.5	0.65	1.8	2.8	4.9	2.7	NA	16	NA	NA	NA	NA	NA	23	69	16	NA	1.2	3.2	0.11	0%	5%	88%
CON_CW_49	4/18/2015	0.41	6.8	6.2	0.59	1.6	2.5	4.6	2.3	NA	NA	NA	NA	NA	NA	NA	20	54	16	NA	0.81	2.6	0.26	3%	3%	94%
CON_CW_50	4/19/2015	0.44	6.8	6.9	0.61	1.6	2.6	4.6	2.4	NA	NA	NA	NA	NA	NA	NA	22	54	18	NA	1.1	2.1	0.03	7%	2%	92%
CON_CW_51	4/20/2015	0.47	7.2	6.2	0.58	1.7	2.6	4.7	2.4	NA	NA	NA	NA	NA	NA	NA	20	59	11	NA	1.05	2.1	0.03	13%	1%	86%

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**Table S4** continued - Element concentrations in creek water (CW) and relative contributions of groundwater ( $f_{GW}$ ) and subsurface flow ( $f_{SF1}$ ,  $f_{SF2}$  &  $f_{SF3}$ ) to creek water.

sample ID	sampling date	discharge	T	Major elements (ICP-OES)							Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>		Anion and dissolved organic elements <sup>1</sup>			End member mixing analyses (EMMA)		
				Ca	K	Mg	Na	Si	S		Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON	$f_{GW}$	$f_{SF1}$	$f_{SF2 \& SF3}$
		(l s <sup>-1</sup> )	(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )		(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(%)	(%)	(%)
CON_CW_52	4/21/2015	0.47	7.8	6.3	0.58	1.7	2.6	4.8	2.5		NA	NA	NA	NA	NA	NA	NA	21	45	19	1.1	1.7	0.09	12%	1%	88%
CON_CW_53	4/22/2015	0.45	7.9	7.2	0.58	1.7	2.7	4.9	2.6		NA	15	NA	NA	NA	NA	NA	22	67	22	1.1	2.0	0.04	12%	0%	88%
CON_CW_54	4/23/2015	0.44	7.4	10.5	0.58	1.7	2.7	4.8	2.6		NA	17	NA	NA	NA	NA	NA	29	107	27	1.1	2.3	0.09	7%	0%	93%
CON_CW_55	4/24/2015	0.39	7.7	6.6	0.63	1.8	2.7	4.9	2.6		NA	16	NA	NA	NA	NA	NA	22	64	18	1.2	2.6	0.04	NA	NA	NA
CON_CW_56	4/25/2015	0.36	7.8	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	2.6	0.09	NA	NA	NA
CON_CW_57	4/26/2015	0.32	8.2	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	NA	0.25	NA	NA	NA
CON_CW_58	4/27/2015	0.29	8.3	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	2.2	0.08	NA	NA	NA
CON_CW_59	4/28/2015	0.28	6.9	7.2	0.60	1.9	2.8	4.9	2.7		NA	17	NA	NA	NA	NA	NA	23	72	16	1.1	2.3	0.15	NA	NA	NA
CON_CW_60	4/29/2015	0.24	7.0	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	1.9	0.08	6%	2%	92%
CON_CW_61	4/30/2015	0.23	7.3	5.5	0.58	1.5	2.8	5.1	2.6		NA	NA	NA	NA	NA	NA	NA	19	92	16	1.1	1.9	0.15	3%	2%	91%
CON_CW_62	5/1/2015	0.59	7.3	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	1.9	0.05	NA	NA	NA
CON_CW_63	5/2/2015	1.41	7.4	7.2	0.59	1.9	2.7	4.7	2.6		NA	17	NA	NA	NA	NA	NA	23	54	18	0.46	1.9	0.09	NA	NA	NA
CON_CW_64	5/3/2015	2.01	7.8	5.0	0.54	1.3	2.1	4.2	1.8		NA	NA	NA	NA	NA	NA	NA	17	54	16	1.03	NA	NA	2%	3%	90%
CON_CW_65	5/4/2015	2.48	8.0	4.8	0.55	1.3	2.4	4.7	2.3		NA	NA	NA	NA	23	NA	NA	17	68	15	1.1	2.0	0.12	NA	NA	NA
CON_CW_66	5/5/2015	1.95	8.1	4.7	0.54	1.3	2.4	4.7	2.3		NA	NA	NA	NA	56	NA	NA	17	103	20	1.1	2.2	0.11	NA	NA	NA
CON_CW_67	5/6/2015	1.35	7.9	4.7	0.55	1.3	2.6	5.0	2.5		NA	NA	NA	NA	NA	NA	NA	17	80	15	1.1	2.1	0.03	1%	1%	89%
CON_CW_68	5/7/2015	1.08	7.7	5.0	0.55	1.4	2.7	5.1	2.6		NA	NA	NA	NA	NA	NA	NA	18	67	16	1.1	2.0	0.08	1%	1%	98%
CON_CW_69	5/8/2015	0.88	8.1	5.2	0.55	1.5	2.7	5.1	2.6		NA	NA	NA	NA	NA	NA	NA	18	73	16	1.1	2.0	0.14	NA	NA	NA
CON_CW_70	5/9/2015	0.68	8.2	5.7	0.60	1.5	2.8	5.1	2.6		NA	NA	NA	NA	NA	NA	NA	19	89	13	1.2	1.9	0.08	1%	0%	98%
CON_CW_71	5/10/2015	0.55	8.3	6.0	0.57	1.6	2.8	5.0	2.7		NA	15	NA	NA	NA	NA	NA	20	66	13	1.1	1.9	0.13	2%	0%	98%
CON_CW_72	5/11/2015	0.47	9.0	6.2	0.58	1.7	2.8	5.1	2.7		NA	16	NA	NA	NA	NA	NA	21	64	12	1.4	2.1	0.09	2%	0%	98%
CON_CW_73	5/12/2015	0.41	9.7	6.4	0.59	1.7	2.9	5.0	2.7		NA	16	NA	NA	NA	NA	NA	21	61	17	1.2	2.0	0.07	2%	0%	98%
CON_CW_74	5/13/2015	0.36	9.5	6.5	0.60	1.7	2.9	4.9	2.8		NA	16	NA	NA	NA	NA	NA	22	68	11	1.7	2.0	0.16	1%	0%	99%
CON_CW_75	5/14/2015	0.32	9.2	6.7	0.57	1.8	2.9	4.9	2.7		NA	17	NA	NA	NA	NA	NA	22	68	15	1.1	2.2	0.14	NA	NA	NA
CON_CW_76	5/15/2015	0.51	8.1	6.7	0.57	1.8	2.8	4.8	2.6		NA	16	NA	NA	NA	NA	NA	22	65	6.8	1.1	2.2	0.15	1%	3%	96%
CON_CW_77	5/16/2015	0.62	8.5	5.7	0.59	1.5	2.3	4.4	2.1		NA	NA	NA	NA	NA	NA	NA	19	67	14	1.1	NA	NA	1%	7%	92%
CON_CW_78	5/17/2015	0.75	8.6	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.0	0.09	NA	NA	NA
CON_CW_79	5/18/2015	0.82	8.7	5.7	0.56	1.6	2.6	4.9	2.5		NA	15	NA	NA	NA	NA	NA	19	91	14	1.1	1.9	0.14	0%	10%	90%
CON_CW_80	5/19/2015	0.74	8.3	5.8	0.57	1.6	2.7	5.0	2.5		NA	15	NA	NA	NA	NA	NA	20	75	14	1.1	3.0	0.13	0%	8%	92%
CON_CW_81	5/20/2015	0.67	7.6	6.0	0.57	1.6	2.7	5.0	2.6		NA	16	NA	NA	NA	NA	NA	20	79	8.8	1.2	NA	NA	0%	4%	96%
CON_CW_82	5/21/2015	NA	7.6	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.9	0.09	0%	2%	97%
CON_CW_83	5/22/2015	0.49	7.9	6.4	0.56	1.7	2.8	5.0	2.6		NA	16	NA	NA	NA	NA	NA	21	63	12	1.1	2.7	0.17	0%	1%	98%
CON_CW_84	5/23/2015	0.45	8.3	6.5	0.56	1.8	2.8	4.9	2.7		NA	16	NA	NA	NA	NA	NA	22	66	8.2	NA	2.6	0.13	0%	1%	99%
CON_CW_85	5/24/2015	0.41	8.7	6.7	0.60	1.8	2.8	5.0	2.6		NA	17	NA	NA	NA	NA	NA	22	80	11	1.2	2.4	0.10	1%	0%	99%
CON_CW_86	5/25/2015	0.36	8.8	6.9	0.57	1.9	2.8	5.0	2.7		NA	17	NA	NA	NA	NA	NA	23	100	5.9	1.1	2.4	0.11	2%	0%	98%
CON_CW_87	5/26/2015	0.33	8.2	7.0	0.63	1.9	2.9	4.9	2.7		NA	18	NA	20	NA	NA	NA	23	75	11	1.2	2.3	0.09	NA	NA	NA
CON_CW_88	5/27/2015	0.29	7.8	7.3	0.63	1.9	2.9	5.0	2.7		NA	18	NA	19	NA	NA	NA	24	83	12	1.1	2.3	0.08	3%	0%	97%
CON_CW_89	5/28/2015	0.27	8.4	6.9	0.59	1.9	3.3	4.7	2.8		NA	17	NA	10	NA	NA	NA	22	68	14	1.7	2.5	0.17	4%	0%	96%
CON_CW_90	5/29/2015	0.24	9.1	7.2	0.62	2.0	3.3	4.9	2.8		13	18	NA	6.9	NA	NA	NA	22	70	12	1.2	2.4	0.15	6%	0%	94%
CON_CW_91	5/30/2015	0.20	8.8	7.2	0.64	2.0	3.3	4.7	2.8		NA	17	NA	9.7	NA	NA	NA	23	70	15	1.1	2.2	0.16	NA	NA	NA
CON_CW_92	5/31/2015	0.17	9.1	7.7	0.66	2.1	3.4	4.9	2.9		NA	19	NA	12	NA	NA	NA	24	65	12	1.2	NA	NA	10%	0%	90%
CON_CW_93	6/1/2015	0.15	9.6	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.9	0.09	13%	0%	87%
CON_CW_94	6/2/2015	0.13	10.0	7.9	0.63	2.2	3.4	4.8	2.9		NA	19	NA	10.7	NA	NA	NA	24	76	11	1.2	1.9	0.05	13%	0%	87%
CON_CW_95	6/3/2015	0.12	10.7	8.0	0.63	2.2	3.4	4.8	3.0		NA	19	NA	10	NA	NA	NA	25	73	12	1.2	2.1	0.08	11%	0%	89%
CON_CW_96	6/4/2015	0.11	11.3	8.1	0.63	2.2	3.4	4.7	3.0		NA	19	NA	12	NA	NA	NA	25	79	14	1.3	2.1	0.11	10%	0%	90%
CON_CW_97	6/5/2015	0.10	12.7	8.2	0.62	2.2	3.4	4.7	2.9		NA	19	NA	7.8	NA	NA	NA	25	63	12	1.1	2.1	0.06	9%	0%	91%
CON_CW_98	6/6/2015	0.09	13.0	8.4	0.63	2.3	3.4	4.7	3.0		NA	19	NA	8.2	NA	NA	NA	26	67	8.9	1.2	2.2	0.15	12%	0%	88%
CON_CW_99	6/7/2015	0.08	12.8	8.6	0.64	2.3	3.4	4.7	3.0		NA	20	NA	9.1	NA	NA	NA	26	68	11	1.2	2.0	0.14	13%	0%	87%
CON_CW_100	6/8/2015	0.08	11.4	8.9	0.64	2.4	3.4	4.8	3.0		NA	20	NA	12	NA	NA	NA	27	87	11	1.2	1.6	0.06	19%	0%	81%
CON_CW_101	6/9/2015	0.08	10.1	9.0	0.66	2.5	3.5	4.8	3.1		37	21	NA	15	33	NA	NA	27	77	12	1.2	2.0	0.08	25%	0%	75%
CON_CW_102	6/10/2015	0.08	10.1	9.2	0.63	2.5	3.5	4.7	3.1		NA	21	NA	13	NA	NA	NA	28	117	12	1.2	1.04	0.02	29%	0%	71%
CON_CW_103	6/11/2015	0.07	11.4	9.1	0.63	2.5	3.4	4.7	3.1		NA	21	NA	12	NA	NA	NA	28	84	11	1.2	0.68	0.05	28%	0%	72%

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**Table S4** continued - Element concentrations in creek water (CW) and relative contributions of groundwater ( $f_{GW}$ ) and subsurface flow ( $f_{SF1}$ ,  $f_{SF2}$  &  $f_{SF3}$ ) to creek water.

				Major elements (ICP-OES)						Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>	Anion and dissolved organic elements <sup>1</sup>			End member mixing analyses (EMMA)				
sample ID	sampling date	discharge	T	Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON	f <sub>GW</sub>	f <sub>SF1</sub>	f <sub>SF2 &amp; SF3</sub>	
		(l s <sup>-1</sup> )	(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(%)	(%)	(%)
CON_CW_104	6/12/2015	0.08	12.3	9.1	0.64	2.5	3.5	4.6	3.1	NA	20	NA	9.7	NA	NA	NA	27	77	7.8	1.2	2.3	0.11	25%	0%	75%	
CON_CW_105	6/13/2015	0.07	12.0	8.3	0.74	2.2	3.1	4.2	2.7	35	21	NA	16	25	NA	NA	26	78	7.1	1.03	0.82	0.03	NA	NA	NA	
CON_CW_106	6/14/2015	0.10	12.1	9.4	0.62	2.5	3.4	4.5	3.0	NA	21	NA	8.5	NA	NA	NA	28	82	8.9	1.1	2.6	0.08	NA	NA	NA	
CON_CW_107	6/15/2015	0.33	10.7	8.4	0.72	2.3	3.1	4.9	2.2	79	21	NA	18	38	NA	NA	26	90	16	0.9	0.79	0.02	27%	0%	73%	
CON_CW_108	6/16/2015	0.20	10.5	8.0	0.63	2.1	2.8	4.6	2.2	21	19	NA	13	37	NA	NA	26	87	16	NA	0.63	0.04	25%	0%	75%	
CON_CW_109	6/17/2015	0.17	10.3	8.0	0.61	2.2	2.9	4.6	2.4	NA	20	NA	8.7	NA	NA	NA	25	70	14	NA	0.72	0.03	27%	0%	73%	
CON_CW_110	6/18/2015	0.18	10.1	8.1	0.63	2.2	3.0	4.7	2.5	NA	20	NA	13	NA	NA	NA	25	85	14	NA	0.85	0.07	27%	0%	73%	
CON_CW_111	6/19/2015	0.23	9.9	7.8	0.66	2.2	3.0	4.5	2.5	20	19	NA	8.5	NA	NA	NA	24	65	14	1.1	0.78	0.04	31%	0%	69%	
CON_CW_112	6/20/2015	0.22	9.4	8.3	0.66	2.3	2.9	4.7	2.6	16	20	NA	12	NA	NA	NA	26	83	14	1.1	0.85	0.05	33%	0%	67%	
CON_CW_113	6/21/2015	0.21	9.6	8.2	0.65	2.3	3.0	4.6	2.5	15	20	NA	11	NA	NA	NA	26	78	12	1.1	0.65	0.02	36%	0%	64%	
CON_CW_114	6/22/2015	0.21	10.2	8.3	0.63	2.3	3.1	4.7	2.6	NA	20	NA	12	NA	NA	NA	26	101	6.2	1.1	0.69	0.02	37%	0%	63%	
CON_CW_115	6/23/2015	0.21	9.4	8.6	0.72	2.4	3.2	4.7	2.7	19	21	NA	13	NA	NA	NA	27	84	14	1.1	0.58	0.02	37%	0%	63%	
CON_CW_116	6/24/2015	0.20	9.7	11	0.77	2.9	3.6	5.9	3.3	27	27	NA	8.9	21	NA	NA	33	88	7.5	1.1	1.2	0.06	37%	0%	63%	
CON_CW_117	6/25/2015	NA	10.5	8.8	0.63	2.4	3.1	4.8	2.7	NA	21	NA	11	NA	NA	NA	27	78	16	1.1	0.84	0.06	38%	0%	62%	
CON_CW_118	6/26/2015	0.17	11.1	8.7	0.64	2.4	3.2	4.8	2.8	NA	21	NA	9.5	NA	NA	NA	27	88	7.6	1.2	0.71	0.04	NA	NA	NA	
CON_CW_119	6/27/2015	0.16	11.5	9.1	0.64	2.5	3.3	4.9	2.9	NA	21	NA	9.5	NA	NA	NA	28	84	9.5	1.2	0.64	0.05	40%	0%	60%	
CON_CW_120	6/28/2015	0.14	11.2	9.0	0.65	2.5	3.3	4.8	2.8	19	22	NA	12	NA	NA	NA	28	79	11	1.2	0.58	0.01	41%	0%	59%	
CON_CW_121	6/29/2015	0.13	11.9	9.2	0.61	2.5	3.3	4.8	2.9	13	21	NA	9.9	NA	NA	NA	28	86	12	1.2	0.57	0.03	39%	0%	61%	
CON_CW_122	6/30/2015	0.07	12.9	9.2	0.60	2.5	3.3	4.7	2.9	NA	21	NA	9.2	NA	NA	NA	28	70	12	1.2	0.55	0.01	38%	0%	62%	
CON_CW_123	7/1/2015	0.07	13.8	9.4	0.59	2.6	3.4	4.8	3.0	NA	22	NA	8.7	NA	NA	NA	29	75	9.1	1.1	1.7	0.14	36%	0%	64%	
CON_CW_124	7/2/2015	0.06	14.9	9.3	0.58	2.5	3.3	4.7	3.0	NA	21	NA	11	NA	NA	NA	28	78	11	1.2	0.86	0.14	38%	0%	62%	
CON_CW_125	7/3/2015	0.06	15.6	9.4	0.61	2.6	3.4	4.7	3.1	17	22	NA	9.1	NA	NA	NA	28	70	8.5	1.2	0.91	0.06	38%	0%	62%	
CON_CW_126	7/4/2015	0.06	15.7	9.8	0.57	2.7	3.4	4.8	3.1	32	22	NA	8.2	22	NA	NA	30	72	5.3	1.3	0.70	0.05	NA	NA	NA	
CON_CW_127	7/5/2015	0.05	16.2	9.6	0.63	2.6	3.5	4.6	3.1	16	22	NA	10.2	NA	NA	NA	29	67	10.0	1.5	0.71	0.04	40%	0%	60%	
CON_CW_128	7/6/2015	0.05	15.0	9.7	0.60	2.7	3.5	4.6	3.2	17	22	NA	11	NA	NA	NA	29	86	16	1.3	0.69	0.01	40%	0%	60%	
CON_CW_129	7/7/2015	0.05	15.6	10.1	0.60	2.7	3.5	4.7	3.3	13	22	NA	12	NA	NA	NA	30	79	7.8	1.4	0.67	0.02	43%	0%	57%	
CON_CW_130	7/8/2015	0.05	13.9	10.3	0.71	2.8	3.7	4.8	3.4	13	22	NA	27	NA	NA	NA	31	95	11	1.5	0.68	0.03	46%	0%	54%	
CON_CW_131	7/9/2015	0.05	12.4	10.1	0.61	2.7	3.5	4.7	3.3	13	23	NA	15	NA	NA	NA	30	88	22	1.2	0.64	0.05	49%	0%	51%	
CON_CW_132	7/10/2015	0.04	12.4	10.3	0.58	2.8	3.4	4.7	3.2	13	23	NA	17	NA	NA	NA	31	85	6.2	1.2	0.51	0.01	NA	NA	NA	
CON_CW_133	7/11/2015	0.04	13.6	10.3	0.60	2.8	3.5	4.7	3.3	12	23	NA	15	NA	NA	NA	31	84	8.0	1.3	0.49	0.04	47%	0%	53%	
CON_CW_134	7/12/2015	0.04	13.8	10.2	0.61	2.8	3.6	4.6	3.3	NA	22	NA	16	NA	NA	NA	30	90	8.3	1.2	0.51	0.05	43%	0%	57%	
CON_CW_135	7/13/2015	0.04	13.4	10	0.61	2.8	3.5	4.6	3.4	11	23	NA	17	NA	NA	NA	31	95	9.4	1.2	3.8	NA	39%	0%	61%	
CON_CW_136	7/14/2015	0.04	13.8	10.2	0.63	2.8	3.6	4.5	3.3	11	22	NA	14	NA	NA	NA	30	68	6.9	1.3	NA	NA	NA	NA	NA	
CON_CW_137	7/15/2015	0.04	14.2	10.4	0.68	2.8	3.7	4.5	3.3	18	22	NA	20	NA	NA	NA	31	77	8.3	1.4	1.4	0.11	35%	0%	65%	
CON_CW_138	7/16/2015	0.05	15.2	10.4	0.63	2.8	3.6	4.6	3.3	13	23	NA	20	NA	NA	NA	31	78	9.6	1.3	1.5	0.06	34%	0%	66%	
CON_CW_139	7/17/2015	0.05	15.9	10	0.59	2.8	3.6	4.6	3.4	NA	22	NA	17	NA	NA	NA	31	90	6.6	1.3	1.5	0.09	33%	0%	67%	
CON_CW_140	7/18/2015	0.05	15.7	11	0.59	2.9	3.7	4.6	3.5	NA	23	NA	8.4	NA	NA	NA	31	72	5.8	1.2	1.7	0.16	33%	0%	67%	
CON_CW_141	7/19/2015	0.04	15.6	11	0.59	2.9	3.6	4.6	3.4	NA	23	NA	14	NA	NA	NA	32	90	7.0	1.2	1.7	0.13	NA	NA	NA	
CON_CW_142	7/20/2015	0.04	15.6	11	0.61	2.8	3.6	4.5	3.4	NA	22	NA	22	NA	NA	NA	31	98	9.2	1.2	1.6	0.08	NA	NA	NA	
CON_CW_143	7/21/2015	0.05	16.1	11	0.60	2.9	3.7	4.6	3.5	19	23	NA	10.1	NA	NA	NA	32	66	6.6	1.3	1.4	0.10	NA	NA	NA	
CON_CW_144	7/22/2015	0.05	16.7	11	0.62	2.9	3.7	4.5	3.5	21	23	NA	9.4	NA	NA	NA	32	61	7.0	1.3	1.6	0.11	31%	0%	69%	
CON_CW_145	7/23/2015	0.06	15.2	11	0.64	2.9	3.7	4.5	3.5	17	23	NA	11	NA	NA	NA	31	68	9.5	1.3	1.5	0.13	31%	0%	69%	
CON_CW_146	7/24/2015	0.05	15.5	11	0.62	2.9	3.6	4.5	3.3	NA	24	NA	11	NA	NA	NA	31	70	8.2	1.2	1.2	0.08	32%	0%	39%	
CON_CW_147	7/25/2015	0.05	14.3	11	0.63	2.9	3.6	4.5	3.4	NA	23	NA	12	NA	NA	NA	32	70	8.4	1.2	1.4	0.09	38%	0%	35%	
CON_CW_148	7/26/2015	0.04	12.5	11	0.64	2.9	3.7	4.5	3.5	NA	24	NA	9.4	NA	NA	NA	32	82	8.9	1.2	1.6	0.11	45%	0%	30%	
CON_CW_149	7/27/2015	0.04	12.6	11	0.65	3.0	3.8	4.6	3.5	NA	25	NA	12	NA	NA	NA	34	76	9.9	1.3	0.40	0.03	53%	0%	47%	
CON_CW_150	7/28/2015	0.04	12.6	11	0.61	2.9	3.6	4.5	3.5	NA	24	NA	7.1	NA	NA	NA	32	68	7.2	1.3	0.38	0.04	58%	0%	19%	
CON_CW_151	7/29/2015	0.05	11.7	12	0.59	3.1	3.6	4.6	3.5	NA	24	NA	11	NA	NA	NA	34	73	8.6	1.2	0.35	0.03	61%	0%	39%	
CON_CW_152	7/30/2015	0.04	11.4	12	0.63	3.2</																				

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**Table S4** continued - Element concentrations in creek water (CW) and relative contributions of groundwater ( $f_{GW}$ ) and subsurface flow ( $f_{SF1}$ ,  $f_{SF2}$  &  $f_{SF3}$ ) to creek water.

				Major elements (ICP-OES)						Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>		Anion and dissolved organic elements <sup>1</sup>				End member mixing analyses (EMMA)		
sample ID	sampling date	discharge	T	Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON	f <sub>GW</sub>	f <sub>SF1</sub>	f <sub>SF2 &amp; SF3</sub>	
		(l s <sup>-1</sup> )	(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(%)	(%)	(%)	
CON_CW_156	8/3/2015	0.04	14.5	12	0.60	3.1	3.8	4.6	3.7	NA	24	NA	12	3.2	1.2	NA	33	90	8.4	1.2	0.34	0.03	NA	NA	NA	
CON_CW_157	8/4/2015	0.03	14.9	12	0.56	3.2	3.7	4.8	3.6	42	25	NA	12	48	1.4	NA	35	73	7.3	1.3	0.34	0.03	67%	0%	10%	
CON_CW_158	8/5/2015	0.03	14.9	12	0.64	3.2	3.9	4.7	3.8	26	27	NA	12	2.9	1.0	NA	34	69	7.5	1.3	0.34	0.03	66%	0%	34%	
CON_CW_159	8/6/2015	0.03	16.3	12	0.59	3.1	3.8	4.7	3.7	14	24	NA	13	NA	1.2	NA	34	78	8.0	1.2	0.42	0.04	66%	0%	9%	
CON_CW_160	8/7/2015	0.03	17.2	12	0.69	3.2	3.9	4.8	3.8	16	25	NA	23	3.0	1.3	NA	35	74	6.1	1.4	0.34	0.02	64%	0%	8%	
CON_CW_161	8/8/2015	0.03	17.1	12	0.60	3.1	3.8	4.6	3.8	NA	24	NA	13	NA	0.92	NA	33	70	5.1	1.3	0.35	0.02	63%	0%	8%	
CON_CW_162	8/9/2015	0.03	16.7	12	0.63	3.2	3.9	4.7	3.8	NA	25	NA	17	2.6	1.3	NA	35	71	7.1	1.3	0.49	0.03	62%	0%	8%	
CON_CW_163	8/10/2015	0.03	16.1	12	0.75	3.2	4.0	4.6	3.8	NA	24	NA	28	4.5	25	NA	34	100	12	1.5	0.47	0.03	61%	0%	8%	
CON_CW_164	8/11/2015	0.04	16.2	13	0.62	3.3	3.8	4.7	3.8	15	26	NA	11	NA	1.4	NA	36	56	7.3	1.2	0.40	0.03	60%	0%	7%	
CON_CW_165	8/12/2015	0.03	17.0	12	0.59	3.2	3.7	4.7	3.7	11	25	NA	9.9	NA	1.3	NA	35	62	7.2	1.3	0.59	0.02	57%	0%	8%	
CON_CW_166	8/13/2015	0.03	17.3	13	0.59	3.3	3.8	4.8	3.9	12	25	NA	8.8	NA	1.4	NA	36	71	9.2	1.3	0.50	0.04	NA	NA	NA	
CON_CW_167	8/14/2015	0.03	15.9	12	0.59	3.3	3.9	4.7	3.9	20	25	NA	9.6	26	0.93	NA	34	83	8.0	1.3	0.51	0.01	56%	0%	44%	
CON_CW_168	8/15/2015	0.03	14.3	12	0.58	3.1	3.6	4.6	3.3	NA	25	NA	10.2	NA	1.3	NA	34	73	6.7	1.1	0.49	0.03	58%	0%	42%	
CON_CW_169	8/16/2015	0.03	13.1	13	0.59	3.3	3.6	4.7	3.5	NA	26	NA	12	2.9	1.4	NA	36	78	8.3	1.2	0.48	0.02	62%	0%	38%	
CON_CW_170	8/17/2015	0.03	12.6	13	0.59	3.3	3.6	4.7	3.4	18	27	NA	11	12	1.4	NA	36	93	7.8	1.2	0.39	0.03	59%	0%	6%	
CON_CW_171	8/18/2015	0.03	12.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	0.38	0.03	NA	NA	NA	
CON_CW_172	8/19/2015	0.03	12.5	13	0.64	3.3	3.8	4.7	3.6	NA	27	NA	12	2.6	1.4	NA	36	93	8.2	1.2	0.38	0.03	NA	NA	NA	
CON_CW_173	8/20/2015	0.03	12.6	13	0.62	3.4	3.8	4.8	3.7	NA	28	NA	12	2.8	1.4	NA	37	86	7.7	1.2	0.39	0.03	NA	NA	NA	
CON_CW_174	8/21/2015	0.03	13.2	13	0.65	3.2	3.8	4.7	3.6	NA	26	NA	17	4.8	1.3	NA	35	89	5.1	1.3	0.40	0.03	NA	NA	NA	
CON_CW_175	8/22/2015	0.03	13.7	13	0.62	3.3	3.8	4.7	3.7	NA	27	NA	13	9.9	1.4	NA	36	77	5.6	1.2	0.36	0.02	57%	0%	43%	
CON_CW_176	8/23/2015	0.03	13.7	13	0.63	3.3	3.8	4.7	3.8	NA	27	NA	17	NA	1.3	NA	36	85	6.3	1.2	0.42	0.04	54%	0%	5%	
CON_CW_177	8/24/2015	0.03	13.2	13	0.65	3.4	3.8	4.8	3.8	NA	27	NA	15	5.8	1.4	NA	37	90	6.1	1.3	0.40	0.03	60%	0%	40%	
CON_CW_178	8/25/2015	0.04	12.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	0.44	0.04	63%	0%	5%	
CON_CW_179	8/26/2015	0.04	12.9	13	0.65	3.3	3.7	4.7	3.6	NA	27	NA	15	3.3	1.4	NA	36	78	6.7	1.2	0.38	0.02	66%	0%	5%	
CON_CW_180	8/27/2015	0.04	14.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	0.44	0.02	NA	NA	NA	
CON_CW_181	8/28/2015	0.04	15.2	11	0.52	2.9	3.3	4.2	3.2	NA	23	NA	16	3.8	1.2	NA	32	60	3.8	1.3	0.41	0.04	68%	0%	5%	
CON_CW_182	8/29/2015	0.05	16.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4	0.39	0.01	64%	0%	5%	
CON_CW_183	8/30/2015	0.04	16.7	13	0.62	3.3	3.9	4.7	3.9	NA	26	NA	17	4.4	1.4	NA	36	68	4.6	1.4	0.44	0.01	55%	0%	45%	
CON_CW_184	8/31/2015	0.04	16.7	13	0.57	3.3	3.7	4.7	3.8	NA	26	NA	18	3.0	1.4	NA	36	93	8.4	1.3	1.6	0.13	49%	0%	4%	
CON_CW_185	9/1/2015	0.04	15.8	13	0.59	3.3	3.8	4.7	3.9	NA	26	NA	14	NA	1.3	NA	36	69	5.4	1.3	0.45	0.02	45%	0%	4%	
CON_CW_186	9/2/2015	0.03	13.6	13	0.62	3.4	3.8	4.7	3.8	NA	26	NA	14	NA	1.3	NA	37	74	7.4	1.2	0.35	0.02	51%	0%	49%	
CON_CW_187	9/3/2015	0.03	13.1	13	0.58	3.4	3.7	4.7	3.8	NA	27	NA	12	NA	1.4	NA	38	68	9.1	1.2	1.5	0.06	54%	0%	46%	
CON_CW_188	9/4/2015	0.03	12.1	14	0.61	3.5	3.7	4.8	3.8	NA	27	NA	16	NA	1.4	NA	38	65	8.8	1.3	1.5	0.06	61%	0%	9%	
CON_CW_189	9/5/2015	0.03	11.1	13	0.62	3.3	3.8	4.7	3.9	12	26	NA	19	20	1.3	NA	36	76	8.9	1.3	1.6	0.09	64%	0%	36%	
CON_CW_190	9/6/2015	0.03	10.3	12	0.57	3.1	3.7	4.5	3.9	NA	23	NA	12	NA	1.2	NA	33	61	10.0	1.2	1.5	0.07	69%	0%	17%	
CON_CW_191	9/7/2015	0.03	9.9	11	0.53	2.9	3.5	4.4	3.9	NA	21	NA	13	15	1.2	NA	32	75	11	1.2	1.2	0.10	71%	0%	21%	
CON_CW_192	9/8/2015	0.03	10.6	12	0.58	3.0	3.6	4.5	3.9	NA	22	NA	12	NA	1.2	NA	33	60	10.0	1.3	2.1	0.09	73%	0%	27%	
CON_CW_193	9/9/2015	0.03	10.9	12	0.60	3.1	3.7	4.5	4.0	NA	23	NA	7.9	2.9	1.2	NA	33	49	9.7	1.3	1.4	0.12	74%	0%	26%	
CON_CW_194	9/10/2015	0.03	10.7	12	0.59	3.2	3.6	4.6	4.0	NA	24	NA	9.2	NA	1.3	NA	35	67	9.4	1.3	1.5	0.13	70%	0%	30%	
CON_CW_195	9/11/2015	0.03	10.9	12	0.61	3.1	3.7	4.6	4.0	NA	23	NA	16	5.2	1.3	NA	34	72	11	1.3	1.2	0.04	69%	0%	32%	
CON_CW_196	9/12/2015	0.03	12.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	1.3	0.09	68%	0%	32%	
CON_CW_197	9/13/2015	0.03	12.8	13	0.62	3.4	3.8	4.6	4.0	NA	26	NA	10.5	NA	1.3	NA	37	70	8.1	1.3	1.1	0.07	71%	0%	29%	
CON_CW_198	9/14/2015	0.03	12.1	14	0.62	3.5	3.8	4.7	4.0	48	38	NA	20	145	1.4	5.1	38	169	12	1.2	1.1	0.05	NA	NA	NA	
CON_CW_199	9/15/2015	0.03	11.0	14	0.66	3.6	3.8	4.7	3.9	NA	28	NA	9.7	NA	1.3	NA	39	42	13	1.2	1.4	0.05	70%	0%	31%	
CON_CW_200	9/16/2015	0.05	11.9	14	0.65	3.5	3.9	4.7	4.0	26	28	NA	10.2	79	1.4	NA	38	60	11	1.2	1.4	0.09	68%	0%	31%	
CON_CW_201	9/17/2015	0.05	12.0	13	0.63	3.3	3.8	4.6	4.0	NA	26	NA	8.7	2.8	1.3	NA	36	58	9.8	1.1	1.4	0.10	NA	NA	NA	
CON_CW_202	9/18/2015	0.03	11.2	13	0.62	3.4	3.5	4.5	3.1	NA	27	NA	10.3	2.9	1.4	NA	37	53	8.1	1.1	1.3	0.10	68%	0%	32%	
CON_CW_203	9/19/2015	0.04	11.0	14	0.63	3.4	3.6	4.7	3.4	40	28	NA	11	55	1.4	NA	38	98	10.1	1.1	1.3	0.05	69%	0%	30%	
CON_CW_204	9/20/2015	0.03	10.8	14	0.63	3.5	3.7	4.8	3.5	36	282															

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**Table S4** continued - Element concentrations in creek water (CW) and relative contributions of groundwater ( $f_{GW}$ ) and subsurface flow ( $f_{SF1}$ ,  $f_{SF2}$  &  $f_{SF3}$ ) to creek water.

				Major elements (ICP-OES)						Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>	Anion and dissolved organic elements <sup>1</sup>				End member mixing analyses (EMMA)		
sample ID	sampling date	discharge	T	Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON	f <sub>GW</sub>	f <sub>SF1</sub>	f <sub>SF2 &amp; SF3</sub>
		(l s <sup>-1</sup> )	(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(%)	(%)	(%)
CON_CW_208	9/24/2015	0.04	9.7	11	0.54	2.8	3.2	4.4	2.9	NA	22	NA	12	4.5	1.3	NA	32	69	10.3	1.1	1.4	0.14	NA	NA	NA
CON_CW_209	9/25/2015	0.03	10.1	12	0.59	3.0	3.3	4.6	3.1	NA	26	NA	11	NA	1.4	NA	34	55	14	1.1	1.3	0.10	NA	NA	NA
CON_CW_210	9/26/2015	0.03	10.5	12	0.56	3.0	3.3	4.5	3.3	NA	26	NA	12	NA	1.4	NA	34	70	9.1	1.2	1.3	0.12	74%	0%	26%
CON_CW_211	9/27/2015	0.03	10.1	12	0.58	3.1	3.3	4.5	3.4	NA	25	NA	15	NA	1.3	NA	34	84	9.4	1.2	1.3	0.09	75%	0%	31%
CON_CW_212	9/28/2015	0.03	9.2	12	0.58	3.1	3.4	4.6	3.5	NA	25	NA	16	NA	1.3	NA	34	83	9.4	1.2	1.3	0.08	77%	0%	31%
CON_CW_213	9/29/2015	0.03	8.7	12	0.53	2.9	3.4	4.5	3.6	NA	23	NA	12	6.9	1.2	NA	33	74	9.7	1.2	2.3	0.17	77%	0%	32%
CON_CW_214	9/30/2015	0.03	8.7	11	0.52	2.9	3.3	4.4	3.7	NA	22	NA	11	NA	1.2	NA	32	68	10.1	1.3	1.3	0.06	78%	0%	32%
CON_CW_215	10/1/2015	0.04	8.0	11	0.50	2.8	3.3	4.4	3.8	NA	21	NA	12	NA	1.2	NA	31	83	9.6	1.2	1.4	0.10	80%	0%	20%
CON_CW_216	10/2/2015	0.03	8.9	11	0.61	2.8	3.4	4.2	3.8	NA	21	NA	18	3.0	1.2	NA	32	73	13	1.3	1.4	0.09	79%	0%	33%
CON_CW_217	10/3/2015	0.03	10.0	12	0.60	3.0	3.4	4.5	3.9	NA	24	NA	23	NA	1.3	NA	34	79	12	1.2	1.5	0.10	78%	0%	22%
CON_CW_218	10/4/2015	0.03	10.0	11	0.61	2.9	3.3	4.3	3.8	NA	23	NA	21	NA	1.2	NA	33	88	9.1	1.3	1.3	0.12	77%	0%	23%
CON_CW_219	10/5/2015	0.04	10.3	12	0.56	3.1	3.5	4.5	3.9	NA	25	NA	17	NA	1.3	NA	35	80	12	1.3	1.5	0.11	NA	NA	NA
CON_CW_220	10/6/2015	0.03	11.5	12	0.91	3.1	4.3	4.6	61	NA	25	NA	12	3.8	1.3	NA	34	87	8.9	1.5	1.4	0.11	NA	NA	NA
CON_CW_221	10/7/2015	0.03	10.9	13	0.60	3.3	4.4	4.5	59	NA	26	NA	14	3.9	1.3	NA	36	87	6.6	1.3	1.3	0.12	NA	NA	NA
CON_CW_222	10/8/2015	0.03	9.9	13	0.58	3.4	4.4	4.6	62	12	26	NA	11	22	1.3	NA	37	84	10.3	1.2	1.1	0.10	78%	0%	22%
CON_CW_223	10/9/2015	0.03	9.8	13	0.60	3.3	3.7	4.4	3.9	NA	24	NA	9.5	5.0	1.2	NA	35	73	10.4	1.2	1.1	0.10	78%	0%	22%
CON_CW_224	10/10/2015	0.03	9.9	13	0.58	3.3	3.6	4.5	3.9	NA	26	NA	8.9	NA	1.2	NA	36	72	10.3	1.2	1.2	0.05	78%	0%	22%
CON_CW_225	10/11/2015	0.03	9.5	13	0.59	3.3	3.6	4.6	3.9	NA	26	NA	7.6	2.8	1.3	NA	37	76	10.4	1.2	1.1	0.04	79%	0%	21%
CON_CW_226	10/12/2015	0.03	8.7	12	0.56	3.1	3.6	4.4	4.0	NA	23	NA	9.5	NA	1.2	NA	34	74	11	1.2	1.1	0.06	78%	0%	22%
CON_CW_227	10/13/2015	0.04	8.4	12	0.57	3.0	3.6	4.4	4.1	NA	22	NA	9.1	2.8	1.1	NA	33	52	12	1.3	1.1	0.07	78%	0%	22%
CON_CW_228	10/14/2015	0.03	6.7	11	0.52	2.9	3.3	4.4	4.1	87	22	NA	14	141	1.2	NA	31	94	19	1.2	NA	NA	79%	0%	21%
CON_CW_229	10/15/2015	0.04	5.9	10	0.50	2.6	3.3	4.1	4.1	14	18	NA	6.4	2.7	1.02	NA	28	71	11	1.2	NA	NA	79%	0%	32%
CON_CW_230	10/15/2015	0.04	5.5	11	0.59	2.7	3.4	4.2	4.1	59	19	NA	9.7	73	1.1	NA	29	58	20	1.3	1.1	0.10	79%	0%	30%
CON_CW_231	10/17/2015	0.05	5.3	10.1	0.49	2.6	3.3	4.0	4.1	11	18	NA	7.0	NA	0.96	NA	27	50	13	1.2	1.1	0.10	NA	NA	NA
CON_CW_232	10/18/2015	0.04	5.6	10.2	0.51	2.6	3.4	4.1	4.2	15	18	NA	6.8	3.5	0.95	NA	28	53	13	1.3	1.04	0.08	79%	0%	21%
CON_CW_233	10/19/2015	0.03	6.1	11	0.49	2.7	3.3	4.1	4.2	NA	18	NA	9.0	NA	0.99	NA	29	68	16	1.3	1.1	0.10	NA	NA	NA
CON_CW_234	10/20/2015	0.03	6.1	11	0.53	2.7	3.4	4.2	4.2	NA	19	NA	14	3.1	1.00	NA	29	70	15	1.3	2.8	0.17	80%	0%	20%
CON_CW_235	10/21/2015	0.03	6.3	11	0.55	2.7	3.4	4.1	4.2	NA	19	NA	13	6.9	1.00	NA	29	85	14	1.3	1.7	0.12	82%	0%	18%
CON_CW_236	10/22/2015	0.03	6.8	11	0.54	2.8	3.5	4.2	4.3	12	20	NA	17	5.6	1.02	NA	30	89	13	1.4	1.5	0.13	80%	0%	20%
CON_CW_237	10/23/2015	0.03	7.4	11	0.51	2.9	3.5	4.2	4.2	12	20	NA	8.1	NA	1.03	NA	31	64	12	1.3	1.4	0.13	81%	0%	19%
CON_CW_238	10/24/2015	0.03	8.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	1.3	0.12	80%	0%	20%
CON_CW_239	10/25/2015	0.03	8.9	11	0.53	2.8	3.5	4.2	4.3	NA	21	NA	8.0	2.9	1.03	NA	30	65	10.1	1.3	1.4	0.10	81%	0%	19%
CON_CW_240	10/26/2015	0.03	8.8	12	0.54	3.0	3.5	4.2	4.3	12	21	NA	9.7	3.8	1.04	NA	32	68	11	1.4	1.3	0.09	81%	0%	19%
CON_CW_241	10/27/2015	0.05	8.9	12	0.53	3.0	3.5	4.3	4.2	NA	23	NA	8.9	NA	1.1	NA	33	78	12	1.2	1.3	0.13	79%	0%	21%
CON_CW_242	10/28/2015	0.03	9.0	13	0.54	3.1	3.6	4.2	4.1	NA	24	NA	9.2	8.1	1.2	NA	35	70	10.0	1.2	1.5	0.15	77%	0%	23%
CON_CW_243	10/29/2015	0.03	8.8	12	0.64	3.0	3.5	4.3	4.2	NA	24	NA	13	NA	1.1	NA	33	73	12	1.3	1.3	0.08	NA	NA	NA
CON_CW_244	10/30/2015	0.03	8.6	13	0.63	3.2	3.7	4.3	4.2	33	23	NA	15	38	1.2	NA	35	76	5.8	1.4	1.3	0.10	78%	0%	22%
CON_CW_245	10/31/2015	0.03	8.5	12	0.59	3.1	3.7	4.3	4.2	NA	23	NA	15	NA	1.1	NA	34	67	12	1.3	NA	NA	81%	0%	19%
CON_CW_246	11/1/2015	0.03	8.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_CW_247	11/2/2015	0.03	8.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.59	0.04	84%	0%	16%
CON_CW_248	11/3/2015	0.03	8.3	12	0.55	3.1	3.6	4.3	4.2	13	23	NA	6.9	4.4	1.1	NA	34	80	9.9	1.2	0.36	0.03	85%	0%	15%
CON_CW_249	11/4/2015	0.03	9.1	12	0.57	3.1	3.4	4.3	4.3	NA	24	NA	7.0	3.1	1.2	NA	34	63	10.3	1.2	0.33	0.03	85%	0%	15%
CON_CW_250	11/5/2015	0.03	9.6	12	0.54	3.0	3.5	4.2	4.2	NA	23	NA	10.1	2.8	1.1	NA	32	87	10.4	1.3	0.41	0.03	84%	0%	32%
CON_CW_251	11/6/2015	0.03	9.9	12	0.55	3.1	3.6	4.2	4.2	20	25	NA	10.3	3.8	1.2	NA	34	83	8.2	1.2	0.38	0.04	83%	0%	17%
CON_CW_252	11/7/2015	0.03	10.6	13	0.55	3.2	3.7	4.2	4.2	NA	25	NA	8.2	NA	1.2	NA	35	70	8.1	1.3	0.37	0.04	84%	0%	16%
CON_CW_253	11/8/2015	0.03	11.1	13	0.58	3.2	3.7	4.3	4.2	NA	25	NA	9.6	NA	1.1	NA	35	78	9.9	1.3	1.3	0.08	85%	0%	21%
CON_CW_254	11/9/2015	0.03	10.8	13	0.61	3.4	3.9	4.4	4.4	NA	26	NA	8.6	3.0	1.2	NA	37	62	11	1.4	1.3	0.04	NA	NA	NA
CON_CW_255	11/10/2015	0.03	10.0	13	0.63	3.4	3.9	4.3	4.2	NA	25	NA	11	NA	1.1	NA	36	78	9.3	1.3	NA	NA	87%	0%	17%
CON_CW_256	11/11/2015	0.03	9.0	13	0.59	3.3	3.7	4.3	4.3	NA	23	NA	10.5	3.6	1.1	NA	35	59	11	1.3	1.3	0.04	85%	0%	12%
CON_CW_257	11/12/2015	0.03	8.8	NA	NA	NA	NA	NA	NA	NA															

continued on next page ...

**Table S4** continued - Element concentrations in creek water (CW) and relative contributions of groundwater ( $f_{GW}$ ) and subsurface flow ( $f_{SF1}$ ,  $f_{SF2}$  &  $f_{SF3}$ ) to creek water.

				Major elements (ICP-OES)						Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>		Anion and dissolved organic elements <sup>1</sup>				End member mixing analyses (EMMA)		
sample ID	sampling date	discharge	T	Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON	f <sub>GW</sub>	f <sub>SF1</sub>	f <sub>SF2 &amp; SF3</sub>	
		(l s <sup>-1</sup> )	(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(%)	(%)	(%)	
CON_CW_260	11/15/2015	0.03	8.1	12	0.56	3.1	3.6	4.2	4.3	12	22	NA	9.3	NA	1.1	NA	33	65	11	1.2	1.2	0.09	87%	0%	13%	
CON_CW_261	11/16/2015	0.03	8.7	12	0.58	3.1	3.6	4.2	4.3	NA	24	NA	11	3.1	1.1	NA	34	80	11	1.2	1.3	0.08	87%	0%	13%	
CON_CW_262	11/17/2015	0.03	8.7	12	0.57	3.2	3.4	4.2	4.3	15	23	NA	10.3	NA	1.1	NA	34	75	9.9	1.2	2.7	0.19	86%	0%	14%	
CON_CW_263	11/18/2015	0.03	9.1	13	0.58	3.2	3.6	4.3	4.4	12	24	NA	11	NA	1.1	NA	35	65	10.3	1.3	NA	NA	78%	0%	22%	
CON_CW_264	11/19/2015	0.03	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	0.10	67%	0%	33%	
CON_CW_265	11/20/2015	0.40	9.2	12	0.60	3.2	3.7	4.2	4.3	11	24	NA	9.2	2.9	1.2	NA	34	70	11	1.3	2.4	0.22	NA	NA	NA	
CON_CW_266	11/21/2015	0.50	7.6	6.4	0.69	1.6	2.1	3.6	1.5	28	15	NA	14	14	0.98	NA	19	77	13	1.0	0.77	0.03	NA	NA	NA	
CON_CW_267	11/22/2015	0.20	6.0	7.0	0.78	1.7	2.8	4.1	2.1	NA	15	NA	14	2.9	0.95	NA	20	143	2.8	1.6	NA	NA	51%	0%	49%	
CON_CW_268	11/23/2015	0.13	5.6	7.0	0.54	1.8	2.6	4.1	2.3	NA	15	NA	11	3.5	0.93	NA	20	102	9.0	1.0	1.94	0.16	NA	NA	NA	
CON_CW_269	11/24/2015	0.10	4.9	7.4	0.56	1.9	2.8	4.3	2.5	21	15	NA	11	20	0.97	NA	21	73	14	1.1	NA	NA	NA	NA	NA	
CON_CW_270	11/25/2015	0.09	4.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.44	0.02	43%	0%	26%	
CON_CW_271	11/26/2015	0.10	4.6	8.0	0.54	2.0	2.8	4.1	2.7	13	16	NA	12	6.7	0.98	NA	23	71	12	1.04	0.51	0.03	NA	NA	NA	
CON_CW_272	11/27/2015	0.09	4.6	8.2	0.55	2.1	2.9	4.2	2.6	14	16	NA	9.9	9.3	0.97	NA	23	65	15	1.1	0.48	0.03	NA	NA	NA	
CON_CW_273	11/28/2015	0.10	4.3	8.0	0.56	2.1	2.9	4.2	2.6	36	16	NA	11	54	0.98	NA	23	86	16	1.1	0.47	0.03	NA	NA	NA	
CON_CW_274	11/29/2015	0.15	4.8	8.1	0.56	2.1	2.9	4.2	2.6	NA	16	NA	9.3	3.7	0.96	NA	23	67	14	1.1	0.76	0.02	38%	0%	62%	
CON_CW_275	11/30/2015	0.97	6.8	7.4	0.54	1.9	2.6	4.0	1.9	30	16	NA	10.0	31	0.97	NA	21	64	15	1.00	0.61	0.04	43%	0%	28%	
CON_CW_276	12/1/2015	1.15	7.2	4.7	0.57	1.3	2.2	3.8	1.7	17	12	NA	14	9.5	0.86	NA	14	68	24	1.1	0.46	0.04	NA	NA	NA	
CON_CW_277	12/2/2015	0.93	7.2	4.9	0.57	1.4	2.7	4.4	2.2	13	12	NA	12	7.5	0.87	NA	15	63	26	1.1	NA	NA	NA	NA	NA	
CON_CW_278	12/4/2015	0.72	7.1	5.6	0.57	1.6	2.9	4.5	2.5	NA	13	NA	12	4.0	0.89	NA	17	87	14	NA	0.40	0.03	NA	NA	NA	
CON_CW_279	12/5/2015	0.55	7.2	6.0	0.55	1.7	2.8	4.5	2.5	NA	14	NA	8.3	NA	0.93	NA	18	78	16	1.1	0.38	0.02	NA	NA	NA	
CON_CW_280	12/6/2015	0.46	7.4	6.2	0.56	1.7	2.9	4.5	2.6	NA	14	NA	11	3.1	0.94	NA	18	79	15	1.1	0.37	0.01	49%	0%	51%	
CON_CW_281	12/7/2015	0.39	7.6	6.5	0.59	1.8	3.0	4.5	2.7	NA	15	NA	8.4	3.6	0.91	NA	19	71	15	1.1	0.40	0.02	51%	0%	49%	
CON_CW_282	12/8/2015	0.32	7.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	NA	NA	53%	0%	47%	
CON_CW_283	12/9/2015	0.27	7.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	54%	0%	38%	
CON_CW_284	12/10/2015	0.25	7.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.38	0.02	56%	0%	44%	
CON_CW_285	12/10/2015	0.26	6.6	7.5	0.65	2.0	3.2	4.6	3.0	NA	16	NA	8.9	4.0	1.00	NA	21	41	18	1.1	0.37	0.02	NA	NA	NA	
CON_CW_286	12/11/2015	0.26	6.5	7.4	0.62	2.0	3.1	4.4	2.9	NA	17	NA	7.4	3.0	0.98	NA	21	63	16	1.1	0.35	0.01	57%	0%	43%	
CON_CW_287	12/12/2015	0.26	6.8	7.4	0.61	2.0	3.1	4.4	2.9	NA	16	NA	6.8	NA	0.95	NA	21	74	15	1.1	0.44	0.01	59%	0%	43%	
CON_CW_288	12/13/2015	0.24	6.7	7.4	0.68	2.0	3.2	4.4	3.0	NA	16	NA	14	2.9	0.91	NA	21	55	26	1.2	0.35	0.03	61%	0%	42%	
CON_CW_289	12/14/2015	0.22	6.9	7.4	0.64	2.0	3.1	4.3	3.0	NA	16	NA	7.4	2.9	0.93	NA	21	61	16	1.1	0.32	0.02	60%	0%	41%	
CON_CW_290	12/15/2015	0.20	7.2	7.6	0.63	2.0	3.1	4.3	3.0	NA	17	NA	7.2	3.4	0.91	NA	22	50	15	1.1	0.33	0.02	61%	0%	39%	
CON_CW_291	12/16/2015	0.18	7.6	7.8	0.68	2.1	3.2	4.4	3.0	NA	17	NA	9.3	NA	0.91	NA	22	62	15	1.2	0.37	0.03	61%	0%	39%	
CON_CW_292	12/17/2015	0.16	8.1	8.2	0.66	2.2	3.3	4.5	3.2	12	19	NA	7.7	4.9	0.94	NA	23	46	17	1.1	0.38	0.02	63%	0%	37%	
CON_CW_293	12/18/2015	0.16	8.0	8.4	0.69	2.2	3.4	4.5	3.2	NA	18	NA	14	3.7	0.92	NA	23	68	14	1.1	0.36	0.02	63%	0%	37%	
CON_CW_294	12/19/2015	0.15	7.8	8.4	0.69	2.2	3.3	4.4	3.1	NA	18	NA	11	3.4	0.92	NA	23	73	14	1.2	0.39	0.01	64%	0%	36%	
CON_CW_295	12/20/2015	0.17	8.2	8.4	0.69	2.2	3.3	4.4	3.1	NA	18	NA	9.7	NA	0.91	NA	23	65	13	1.1	0.33	0.02	NA	NA	NA	
CON_CW_296	12/21/2015	0.16	7.7	8.9	0.70	2.4	3.4	4.5	3.2	NA	18	NA	11	3.4	0.94	NA	25	77	14	1.2	0.35	0.03	64%	0%	36%	
CON_CW_297	12/22/2015	0.16	7.4	8.1	0.68	2.2	3.2	4.3	3.0	NA	17	NA	11	7.3	0.91	NA	23	62	13	1.1	0.33	0.02	NA	NA	NA	
CON_CW_298	12/23/2015	0.16	7.6	7.9	0.67	2.1	3.1	4.3	3.0	NA	17	NA	9.8	2.9	0.95	NA	22	81	16	1.1	0.34	0.02	66%	0%	34%	
CON_CW_299	12/24/2015	0.16	7.7	8.1	0.70	2.2	3.2	4.3	3.0	NA	18	NA	7.3	7.4	0.86	NA	22	49	20	1.2	0.32	0.03	67%	0%	33%	
CON_CW_300	12/25/2015	0.15	7.9	8.5	0.66	2.3	3.2	4.5	3.0	NA	18	NA	9.6	2.9	0.94	NA	24	51	18	1.2	0.32	0.01	68%	0%	36%	
CON_CW_301	12/26/2015	0.14	7.7	8.7	0.68	2.3	3.3	4.5	3.1	NA	18	NA	10.5	NA	1.04	NA	24	55	18	1.2	0.49	0.03	69%	0%	31%	
CON_CW_302	12/27/2015	0.13	7.5	8.6	0.68	2.3	3.3	4.4	3.1	NA	18	NA	11	2.8	0.97	NA	24	61	19	1.1	0.36	0.04	69%	0%	35%	
CON_CW_303	12/28/2015	0.15	7.5	8.4	0.67	2.3	3.2	4.4	3.0	NA	18	NA	7.2	NA	1.1	NA	23	58	17	1.1	0.33	0.01	69%	0%	31%	
CON_CW_304	12/29/2015	0.17	7.4	8.7	0.69	2.4	3.3	4.5	3.0	NA	18	NA	9.1	NA	0.96	NA	24	66	17	1.1	0.33	0.02	69%	0%	31%	
CON_CW_305	12/30/2015	0.18	7.0	8.6	0.67	2.3	3.3	4.4	3.1	NA	18	NA	13	2.7	1.1	NA	24	74	15	1.1	0.33	0.04	69%	0%	34%	
CON_CW_306	12/31/2015	0.17	7.0	8.3	0.65	2.2	3.2	4.3	3.1	15	18	NA	9.5	23	0.97	NA	23	56	17	1.1	0.33	0.03	65%	0%	33%	
CON_CW_307	1/1/2016	0.17	6.7	8.5	0.65	2.3	3.3	4.4	3.2	NA	18	NA	10.4	3.2	1.01	NA	23	74	17	1.2	0.33	0.02	58%	0%	33%	
CON_CW_30																										

continued on next page ...

**Table S4** continued - Element concentrations in creek water (CW) and relative contributions of groundwater ( $f_{GW}$ ) and subsurface flow ( $f_{SF1}$ ,  $f_{SF2}$  &  $f_{SF3}$ ) to creek water.

				Major elements (ICP-OES)						Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>		Anion and dissolved organic elements <sup>1</sup>				End member mixing analyses (EMMA)		
sample ID	sampling date	discharge	T	Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON	f <sub>GW</sub>	f <sub>SF1</sub>	f <sub>SF2 &amp; SF3</sub>	
		(l s <sup>-1</sup> )	(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(%)	(%)	(%)
CON_CW_312	1/6/2016	0.27	5.4	8.1	0.65	2.2	3.2	4.4	3.1	NA	17	NA	9.5	4.4	0.94	NA	22	63	17	1.1	0.45	0.04	45%	0%	55%	
CON_CW_313	1/7/2016	0.58	6.1	8.3	0.67	2.2	3.3	4.5	3.2	NA	17	NA	10.4	3.0	0.98	NA	23	66	16	1.2	0.57	0.04	43%	0%	57%	
CON_CW_314	1/8/2016	1.05	6.4	5.7	0.58	1.5	2.5	3.9	2.1	NA	12	NA	11	3.9	0.86	NA	16	60	16	1.1	0.48	0.03	42%	0%	58%	
CON_CW_315	1/9/2016	1.43	6.8	4.7	0.55	1.3	2.6	4.2	2.3	NA	11	NA	11	5.0	0.80	NA	14	69	17	1.02	0.46	0.01	41%	0%	59%	
CON_CW_316	1/10/2016	1.45	6.8	4.9	0.57	1.4	2.8	4.4	2.4	16	12	NA	12	18	0.85	NA	14	65	17	1.01	0.44	0.02	39%	0%	61%	
CON_CW_317	1/11/2016	1.56	6.6	5.9	0.62	1.5	2.8	5.0	2.5	5.2	13	NA	11	NA	NA	NA	17	62	16	1.02	NA	NA	37%	0%	63%	
CON_CW_318	1/12/2016	1.93	6.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
CON_CW_319	1/13/2016	2.11	6.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
CON_CW_320	1/14/2016	1.80	6.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.51	0.05	38%	0%	62%	
CON_CW_321	1/15/2016	1.37	6.0	5.3	0.57	1.4	3.0	4.6	2.4	NA	12	NA	8.2	NA	NA	NA	17	26	14	1.2	NA	NA	NA	NA	NA	
CON_CW_322	1/16/2016	1.05	5.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
CON_CW_323	1/17/2016	0.85	5.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.45	0.01	39%	0%	35%	
CON_CW_324	1/18/2016	0.75	5.1	6.2	0.60	1.5	3.1	5.1	2.6	8.8	14	NA	12	6.1	NA	NA	19	52	15	1.2	NA	NA	NA	NA	NA	
CON_CW_325	1/19/2016	0.67	5.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
CON_CW_326	1/20/2016	0.55	5.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.58	0.03	NA	NA	NA	
CON_CW_327	1/21/2016	0.45	4.9	6.4	0.61	1.6	3.1	5.0	2.6	5.7	14	NA	12	NA	NA	NA	19	54	14	1.1	NA	NA	NA	NA	NA	
CON_CW_328	1/22/2016	0.40	4.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.50	0.01	NA	NA	NA	
CON_CW_329	1/23/2016	0.40	5.4	6.8	0.60	1.6	3.2	4.9	2.6	8.2	15	NA	12	3.5	NA	NA	20	81	15	1.1	0.50	0.02	39%	0%	61%	
CON_CW_330	1/24/2016	0.43	5.4	6.7	0.60	1.6	3.1	4.8	2.5	37	14	NA	12	40	NA	NA	20	75	18	1.1	0.53	0.03	38%	0%	62%	
CON_CW_331	1/25/2016	0.66	5.7	6.7	0.63	1.6	3.0	4.9	2.4	54	14	NA	13	72	NA	NA	19	86	20	1.2	0.56	0.02	37%	0%	63%	
CON_CW_332	1/26/2016	1.22	6.2	5.6	0.58	1.4	2.6	4.5	2.1	8.8	12	NA	11	4.0	NA	NA	16	64	15	1.2	0.57	0.05	35%	0%	65%	
CON_CW_333	1/27/2016	1.56	6.6	5.3	0.66	1.3	2.9	4.8	2.3	8.1	12	NA	14	5.3	NA	NA	16	78	15	1.2	0.54	0.03	31%	0%	69%	
CON_CW_334	1/28/2016	1.42	6.9	5.5	0.61	1.4	3.0	5.0	2.4	5.0	13	NA	15	2.5	NA	NA	17	79	14	1.1	0.54	0.01	27%	0%	73%	
CON_CW_335	1/29/2016	1.24	6.6	5.6	0.59	1.4	3.1	5.0	2.4	9.0	13	NA	11	3.8	NA	NA	17	61	14	1.1	0.56	0.02	28%	0%	72%	
CON_CW_336	1/30/2016	1.21	6.4	4.9	0.58	1.2	2.9	4.8	2.3	10.0	12	NA	8.1	3.9	NA	NA	15	70	15	1.1	0.59	0.02	29%	0%	71%	
CON_CW_337	1/31/2016	1.70	6.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	0.47	0.02	31%	0%	69%	
CON_CW_338	2/1/2016	2.79	7.0	5.6	0.59	1.4	3.1	5.0	2.5	7.0	13	NA	9.4	NA	NA	NA	17	58	14	1.1	0.62	0.04	31%	0%	69%	
CON_CW_339	2/2/2016	2.44	7.1	5.1	0.60	1.3	3.2	5.1	2.5	6.7	13	NA	8.0	3.5	NA	NA	17	78	13	1.2	0.56	0.03	31%	0%	69%	
CON_CW_340	2/3/2016	1.69	6.6	5.4	0.61	1.3	3.3	5.2	2.5	14	13	NA	9.2	13	NA	NA	17	73	13	1.2	0.63	0.03	32%	0%	53%	
CON_CW_341	2/4/2016	1.36	6.2	5.5	0.60	1.4	3.1	5.1	2.5	7.9	13	NA	8.9	3.7	NA	NA	17	71	13	1.2	0.54	0.05	33%	0%	54%	
CON_CW_342	2/5/2016	1.32	6.5	5.4	0.59	1.3	3.2	5.2	2.5	8.6	12	NA	6.3	4.3	NA	NA	17	85	12	1.3	0.51	0.01	35%	0%	56%	
CON_CW_343	2/6/2016	1.53	6.7	5.5	0.60	1.3	3.1	5.1	2.5	5.5	13	NA	8.3	NA	NA	NA	17	76	12	1.2	0.47	0.04	35%	0%	57%	
CON_CW_344	2/7/2016	1.52	6.7	5.6	0.61	1.4	3.2	5.2	2.5	15	13	NA	9.8	7.3	NA	NA	17	79	13	1.2	0.42	0.01	34%	0%	59%	
CON_CW_345	2/8/2016	1.17	6.6	5.7	0.63	1.4	3.3	5.3	2.7	5.6	13	NA	9.3	2.7	NA	NA	18	84	13	1.3	0.57	0.05	33%	0%	67%	
CON_CW_346	2/9/2016	1.01	6.6	5.8	0.61	1.4	3.2	5.2	2.6	8.9	13	NA	8.8	2.8	NA	NA	18	80	14	1.2	0.66	0.04	34%	0%	66%	
CON_CW_347	2/10/2016	1.16	5.7	5.7	0.61	1.4	3.2	5.1	2.6	8.7	13	NA	8.7	4.7	NA	NA	17	65	14	1.2	0.41	0.05	34%	0%	66%	
CON_CW_348	2/11/2016	1.03	5.8	5.6	0.60	1.4	3.2	5.0	2.5	8.6	12	NA	6.9	3.1	NA	NA	17	58	15	1.3	0.59	0.03	33%	0%	67%	
CON_CW_349	2/12/2016	0.99	5.7	5.8	0.61	1.4	3.2	5.0	2.6	5.3	12	NA	9.2	NA	NA	NA	17	74	15	1.3	0.45	0.03	33%	0%	62%	
CON_CW_350	2/13/2016	0.91	6.0	5.8	0.62	1.4	3.2	5.0	2.6	10.2	12	NA	11	NA	NA	NA	17	69	15	1.2	0.57	0.04	33%	0%	61%	
CON_CW_351	2/14/2016	0.68	6.0	6.0	0.64	1.4	3.2	5.0	2.6	6.5	13	NA	13	NA	NA	NA	18	62	14	1.3	0.59	0.04	34%	0%	66%	
CON_CW_352	2/15/2016	0.61	5.5	6.0	0.62	1.4	3.2	5.0	2.5	7.9	13	NA	10.0	NA	NA	NA	17	70	14	1.2	0.54	0.03	35%	0%	60%	
CON_CW_353	2/16/2016	0.62	5.3	6.0	0.61	1.4	3.2	5.0	2.6	6.9	13	NA	7.5	NA	NA	NA	17	62	15	1.2	0.43	0.04	36%	0%	64%	
CON_CW_354	2/17/2016	0.70	5.3	6.0	0.61	1.4	3.2	5.0	2.6	6.6	12	NA	6.6	NA	NA	NA	17	66	8.2	1.2	0.40	0.02	37%	0%	63%	
CON_CW_355	2/18/2016	0.69	5.6	6.1	0.63	1.5	3.3	5.2	2.6	6.8	12	NA	8.0	NA	NA	NA	18	68	14	1.2	0.48	0.04	35%	0%	65%	
CON_CW_356	2/19/2016	0.63	5.2	6.7	0.68	1.5	3.4	5.2	2.7	7.9	13	NA	6.7	NA	NA	NA	19	50	21	1.2	NA	NA	37%	0%	59%	
CON_CW_357	2/19/2016	0.56	5.2	6.9	0.72	1.6	3.4	5.3	2.7	6.7	14	NA	7.3	NA	NA	NA	20	62	19	1.2	0.54	0.04	37%	0%	59%	
CON_CW_358	2/21/2016	0.51	6.3	4.5	0.45	1.0	2.4	3.4	1.9	5.9	NA	NA	5.9	NA	NA	NA	13	69	7.9	1.3	0.41	0.02	NA	NA	NA	
CON_CW_359	2/22/2016	0.52	6.7	6.1	0.60	1.4	3.3	5.1	2.7	10.1	12	NA	7.2	2.5	NA	NA	18	63	14	1.2	0.40	0.02	39%	0%	61%	
CON_CW_360	2/23/2016	0.51	5.7	6.6	0.62	1.5	3.2	4.9	2.6	8.2	13	NA	5.7	NA	NA	NA	19	55	15	1.2	0.40	0.03	39%	0%	61%	
CON_CW_361	2/24/2016	0.51	5.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	0.41	0.02	40%	0%	60%	
CON_CW_362	2/25/2016	0.55	5.0	5.9	0.57	1.4	3.0	4.8	2.5	13	12	NA	NA	3.8	NA	NA	17	46	15	1.2	NA	NA	NA	NA	NA	

NA = not a number (sample not available, sample consumed for other analyses, concentration below limit of detection, or element not analyzed)

<sup>1</sup> taken from Supplementary Material published in Sohr, J., Uhlig, D., Kaiser, K., Von Blanckenburg, F., Siemens, J., Seeger, S., Frick, D. A., Krüger, J., Lang, F., Weiler, M. (2019). Phosphorus fluxes in a temperate forested watershed: canopy leaching, runoff sources, and in-stream transformation. *Frontiers in forests and global change*, 2, 85

**Table S5** Element concentrations in spring water (SW) and relative contributions of groundwater ( $f_{GW}$ ) and subsurface flow ( $f_{SFL}$ ,  $f_{SF2}$  &  $f_{SF3}$ ) to spring water.

sample ID	sampling date	discharge	T	Major elements (ICP-OES)						Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>		Anion and dissolved organic elements <sup>1</sup>				End member mixing analyses (EMMA)		
				Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON	f <sub>GW</sub>	f <sub>SF1</sub>	f <sub>SF2 &amp; SF3</sub>	
				(l s <sup>-1</sup> )	(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(%)	(%)	(%)	
CON_SW_1	3/1/2015	1.27	8.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.68	0.02	32%	0%	68%			
CON_SW_2	3/2/2015	6.17	8.2	5.0	0.48	1.2	2.7	4.7	3.0	NA	20	NA	NA	23	NA	NA	20	35	NA	1.2	0.47	0.03	44%	0%	56%	
CON_SW_3	3/3/2015	7.52	8.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	0.65	0.02	NA	NA	NA	
CON_SW_4	3/4/2015	6.98	8.3	4.4	0.46	1.2	2.4	4.6	2.9	NA	17	NA	23	44	NA	NA	18	59	NA	1.1	0.76	0.02	42%	0%	58%	
CON_SW_5	3/5/2015	5.63	8.2	4.2	0.43	1.1	2.4	4.6	2.9	NA	15	NA	NA	NA	NA	NA	17	27	NA	1.1	0.64	0.01	38%	0%	62%	
CON_SW_6	3/6/2015	4.74	8.2	4.3	0.42	1.1	2.4	4.7	3.0	NA	15	NA	NA	NA	NA	NA	18	17	NA	1.2	0.74	0.04	43%	0%	57%	
CON_SW_7	3/7/2015	4.13	8.2	4.5	0.44	1.2	2.5	4.8	3.0	NA	16	NA	NA	NA	NA	NA	18	45	NA	1.2	1.04	0.06	42%	0%	58%	
CON_SW_8	3/8/2015	3.60	8.1	4.6	0.45	1.2	2.5	4.8	3.1	NA	17	NA	NA	NA	NA	NA	19	32	NA	1.3	0.82	0.04	43%	0%	57%	
CON_SW_9	3/9/2015	3.17	8.1	4.7	0.43	1.2	2.5	4.7	3.0	NA	17	NA	NA	NA	NA	NA	19	22	NA	1.1	0.77	0.04	44%	0%	56%	
CON_SW_10	3/10/2015	2.82	8.1	4.8	0.44	1.2	2.6	4.8	3.1	NA	16	NA	NA	NA	NA	NA	19	16	16	1.2	0.76	0.04	45%	0%	55%	
CON_SW_11	3/11/2015	2.61	8.1	4.8	0.46	1.2	2.6	4.8	3.1	NA	16	NA	NA	NA	NA	NA	19	19	16	1.2	0.69	0.01	46%	0%	54%	
CON_SW_12	3/12/2015	2.50	8.0	4.8	0.42	1.2	2.6	4.7	3.1	NA	16	NA	NA	NA	NA	NA	19	32	13	1.2	0.65	0.01	47%	0%	53%	
CON_SW_13	3/13/2015	2.37	8.0	4.8	0.42	1.2	2.6	4.7	3.1	NA	16	NA	NA	NA	NA	NA	19	24	14	1.1	0.95	0.04	47%	0%	53%	
CON_SW_14	3/14/2015	2.21	7.9	4.9	0.46	1.3	2.6	4.7	3.1	NA	16	NA	NA	NA	NA	NA	20	36	15	1.2	0.79	0.02	48%	0%	52%	
CON_SW_15	3/15/2015	2.05	7.9	5.0	0.44	1.3	2.6	4.8	3.1	NA	16	NA	NA	NA	NA	NA	20	26	15	1.2	0.74	0.05	48%	0%	52%	
CON_SW_16	3/16/2015	1.86	7.9	5.1	0.43	1.3	2.6	4.8	3.2	NA	17	NA	NA	NA	NA	NA	20	32	10.2	1.3	0.75	0.04	49%	0%	51%	
CON_SW_17	3/17/2015	1.65	7.9	5.3	0.52	1.3	2.7	4.8	3.2	NA	17	NA	NA	NA	NA	NA	21	38	13	1.3	0.77	0.02	51%	0%	49%	
CON_SW_18	3/18/2015	1.50	7.9	5.3	0.45	1.3	2.7	4.8	3.2	NA	17	NA	NA	NA	NA	NA	21	49	14	1.2	0.90	0.06	52%	0%	48%	
CON_SW_19	3/19/2015	1.42	7.9	5.4	0.50	1.3	2.7	4.8	3.3	NA	17	NA	NA	NA	NA	NA	21	35	14	1.3	0.93	0.05	53%	0%	47%	
CON_SW_20	3/20/2015	1.37	7.9	5.5	0.47	1.3	2.7	4.8	3.3	NA	17	NA	NA	NA	NA	NA	21	41	14	1.2	0.92	0.04	54%	0%	46%	
CON_SW_21	3/21/2015	1.35	7.9	5.5	0.48	1.4	2.7	4.8	3.3	NA	18	NA	NA	NA	NA	NA	22	55	13	1.2	0.83	0.06	55%	0%	45%	
CON_SW_22	3/22/2015	1.37	7.8	5.5	0.46	1.4	2.7	4.8	3.3	NA	17	NA	NA	NA	NA	NA	21	57	14	1.2	0.89	0.02	57%	0%	43%	
CON_SW_23	3/23/2015	1.28	7.8	5.4	0.48	1.3	2.8	4.8	3.3	NA	17	NA	NA	NA	NA	NA	21	52	13	1.3	0.84	0.01	59%	0%	41%	
CON_SW_24	3/24/2015	1.15	7.8	5.7	0.55	1.4	2.9	4.8	3.3	NA	18	NA	NA	NA	NA	NA	22	46	13	1.3	NA	NA	60%	0%	40%	
CON_SW_25	3/25/2015	1.13	7.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.02	0.07	55%	0%	45%	
CON_SW_26	3/26/2015	1.24	7.8	5.8	0.55	1.4	2.8	4.7	3.4	NA	18	NA	NA	NA	NA	NA	22	47	14	1.3	0.92	0.05	50%	0%	50%	
CON_SW_27	3/27/2015	1.15	7.6	5.5	0.43	1.3	2.7	4.6	3.4	NA	17	NA	NA	NA	NA	NA	22	45	13	NA	0.97	0.04	43%	0%	56%	
CON_SW_28	3/28/2015	1.04	7.6	5.6	0.46	1.4	2.7	4.7	3.4	NA	18	NA	NA	NA	NA	NA	22	32	14	1.3	0.80	0.03	NA	NA	NA	
CON_SW_29	3/29/2015	1.02	7.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	2.7	0.06	36%	0%	64%	
CON_SW_30	3/30/2015	2.06	7.7	5.5	0.58	1.3	2.6	4.1	2.9	NA	18	NA	NA	NA	NA	NA	21	43	20	1.3	0.22	0.01	NA	NA	NA	
CON_SW_31	3/31/2015	1.76	7.7	5.5	0.46	1.4	2.6	4.6	3.2	NA	18	NA	NA	NA	NA	NA	22	42	12	1.2	0.84	0.08	NA	NA	NA	
CON_SW_32	4/1/2015	1.98	7.6	5.4	0.47	1.4	2.6	4.6	3.2	NA	17	NA	NA	NA	NA	NA	21	44	12	1.2	0.91	0.04	NA	NA	NA	
CON_SW_33	4/2/2015	2.71	7.5	5.2	0.48	1.3	2.6	4.6	3.2	NA	17	NA	NA	NA	NA	NA	21	43	11	1.3	1.1	0.04	NA	NA	NA	
CON_SW_34	4/3/2015	3.44	7.7	4.9	0.45	1.3	2.4	4.4	2.9	NA	16	NA	NA	NA	NA	NA	20	42	11	1.1	1.0	0.02	29%	0%	71%	
CON_SW_35	4/4/2015	5.05	7.9	4.8	0.48	1.3	2.5	4.4	3.0	NA	16	NA	NA	NA	NA	NA	20	41	11	1.2	3.3	0.06	20%	0%	80%	
CON_SW_36	4/5/2015	6.72	8.0	4.4	0.46	1.2	2.3	4.3	2.7	NA	16	NA	NA	NA	NA	NA	18	43	12	1.1	2.9	0.09	17%	0%	83%	
CON_SW_37	4/6/2015	7.17	8.1	4.3	0.44	1.2	2.3	4.4	2.8	NA	16	NA	NA	NA	NA	NA	18	45	9.5	1.1	2.5	0.12	14%	0%	86%	
CON_SW_38	4/7/2015	5.83	8.1	4.3	0.42	1.2	2.4	4.6	2.9	NA	16	NA	NA	NA	NA	NA	18	41	10.0	1.0	2.5	0.19	11%	0%	89%	
CON_SW_39	4/8/2015	4.66	8.1	4.5	0.43	1.2	2.4	4.6	2.9	NA	15	NA	NA	NA	NA	NA	18	52	13	1.1	2.6	0.19	9%	0%	91%	
CON_SW_40	4/9/2015	3.77	8.1	4.6	0.46	1.2	2.5	4.7	3.0	NA	16	NA	NA	NA	NA	NA	19	56	12	1.1	2.5	0.08	NA	NA	NA	
CON_SW_41	4/10/2015	3.15	8.1	4.6	0.52	1.2	2.5	4.7	3.0	NA	16	NA	NA	NA	NA	NA	19	66	12	1.2	3.2	0.04	6%	0%	94%	
CON_SW_42	4/11/2015	2.78	8.2	4.8	0.52	1.2	2.7	4.7	3.0	NA	16	NA	NA	NA	NA	NA	19	53	8.6	1.3	3.3	0.08	6%	0%	94%	
CON_SW_43	4/12/2015	2.33	8.1	4.9	0.55	1.2	2.7	4.7	3.0	NA	17	NA	NA	NA	NA	NA	20	46	11	1.3	3.4	0.12	5%	0%	95%	
CON_SW_44	4/13/2015	2.03	8.2	5.0	0.50	1.3	2.7	4.7	3.0	NA	17	NA	NA	NA	NA	NA	20	52	11	1.2	3.7	0.05	5%	0%	95%	
CON_SW_45	4/14/2015	1.84	8.2	5.0	0.44	1.3	2.6	4.8	3.1	NA	17	NA	NA	NA	NA	NA	20	56	8.5	1.2	3.5	0.13	5%	0%	95%	
CON_SW_46	4/15/2015	1.64	8.2	5.2	0.47	1.3	2.7	4.7	3.3	NA	17	NA	NA	NA	NA	NA	20	52	11	1.2	3.8	0.17	6%	0%	94%	
CON_SW_47	4/16/2015	1.55	NA	5.1	0.45	1.3	2.6	4.7	3.1	NA	17	NA	NA	NA	NA	NA	20	53	13	1.2	3.5	0.16	8%	0%	92%	
CON_SW_48	4/17/2015	2.15	8.3	5.2	0.50	1.3	2.7	4.8	3.2	NA	17	NA	NA	NA	NA	NA	21	64	8.7	1.2	3.7	0.19	9%	0%	91%	
CON_SW_49	4/18/2015	2.38	8.2	5.1	0.48	1.3	2.5	4.6	3.0	NA	17	NA	NA	NA	NA	NA	20	59	8.9	1.2	3.8	0.14	10%	0%	90%	
CON_SW_50	4/19/2015	2.28	8.1	5.1	0.51	1.3	2.6	4.6	3.1	NA	17	NA	NA	NA	NA	NA	20	63	12	1.2	3.2	0.11	11%	0%	89%	
CON_SW_51	4/20/2015	2.18	8.1	5.2	0.46	1.3	2.6	4.7	3.1	NA	17	NA	NA	NA	NA	NA	21	53	13	1.2	2.4	0.03	12%	0%	88%	

continued on next page ...

**Table S5** continued - Element concentrations in spring water (SW) and relative contributions of groundwater ( $f_{GW}$ ) and subsurface flow ( $f_{SF1}$ ,  $f_{SF2}$  &  $f_{SF3}$ ) to spring water.

sample ID	sampling date	discharge	T	Major elements (ICP-OES)						Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>	Anion and dissolved organic elements <sup>1</sup>				End member mixing analyses (EMMA)		
				Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON	$f_{GW}$	$f_{SF1}$	$f_{SF2 \& SF3}$
		(l s <sup>-1</sup> )	(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(%)	(%)	(%)
CON_SW_52	4/21/2015	2.08	8.2	5.7	0.46	1.3	2.6	4.7	3.1	NA	17	NA	NA	NA	NA	NA	22	60	9.1	1.2	2.1	0.03	12%	0%	88%
CON_SW_53	4/22/2015	1.99	8.2	5.2	0.48	1.3	2.7	4.7	3.1	NA	17	NA	NA	NA	NA	NA	21	57	12	1.2	1.7	0.02	NA	NA	NA
CON_SW_54	4/23/2015	1.98	8.2	5.1	0.44	1.3	2.6	4.7	3.1	NA	17	NA	NA	NA	NA	NA	21	61	12	1.2	2.8	0.04	10%	0%	90%
CON_SW_55	4/24/2015	1.82	8.3	4.9	0.42	1.2	2.4	4.4	2.9	NA	16	NA	NA	NA	NA	NA	20	57	12	1.1	NA	NA	NA	NA	NA
CON_SW_56	4/25/2015	1.72	8.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_SW_57	4/26/2015	1.56	8.3	4.3	0.37	1.1	2.1	3.2	2.5	NA	NA	NA	NA	NA	NA	NA	17	49	8.7	NA	4.0	0.25	NA	NA	NA
CON_SW_58	4/27/2015	1.48	8.4	4.5	0.38	1.1	2.2	4.1	2.7	NA	NA	NA	NA	NA	NA	NA	18	61	11	1.2	3.0	0.13	9%	0%	91%
CON_SW_59	4/28/2015	1.95	8.3	3.3	0.29	0.8	1.6	2.2	1.9	NA	NA	NA	NA	NA	NA	NA	NA	25	6.8	0.4	2.7	0.22	NA	NA	NA
CON_SW_60	4/29/2015	1.59	8.2	3.6	0.32	0.9	1.8	3.0	2.2	NA	NA	NA	NA	NA	NA	NA	NA	36	7.6	1.1	2.5	0.14	8%	0%	92%
CON_SW_61	4/30/2015	1.54	8.2	5.5	0.47	1.4	2.7	4.3	3.2	NA	18	NA	NA	NA	NA	NA	22	46	12	0.7	3.2	0.19	NA	NA	NA
CON_SW_62	5/1/2015	4.15	8.2	5.2	0.49	1.3	2.5	4.2	2.9	NA	17	NA	NA	NA	NA	NA	21	42	9.6	1.1	3.9	0.05	8%	0%	92%
CON_SW_63	5/2/2015	7.53	8.2	1.2	0.14	0.3	0.6	1.1	0.6	NA	NA	NA	NA	16	NA	NA	NA	NA	5.8	1.0	2.8	0.11	NA	NA	NA
CON_SW_64	5/3/2015	9.71	8.3	2.5	0.30	0.7	1.3	2.6	1.5	NA	NA	NA	NA	NA	NA	NA	NA	32	5.6	1.1	3.3	0.14	NA	NA	NA
CON_SW_65	5/4/2015	11.08	8.3	3.9	0.47	1.1	2.2	4.4	2.6	NA	16	NA	NA	NA	NA	NA	17	61	9.9	1.00	2.7	0.23	6%	0%	94%
CON_SW_66	5/5/2015	9.21	8.4	6.3	0.47	1.5	3.1	5.0	3.6	11	21	NA	18	7.7	1.8	NA	24	84	11	0.98	2.6	0.17	7%	0%	93%
CON_SW_67	5/6/2015	6.28	8.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.08	2.4	0.08	8%	0%	92%
CON_SW_68	5/7/2015	4.65	8.4	4.1	0.44	1.2	2.4	4.8	2.8	NA	16	NA	NA	NA	NA	NA	18	56	12	1.1	2.4	0.03	9%	0%	91%
CON_SW_69	5/8/2015	3.62	8.4	4.3	0.46	1.2	2.4	4.8	2.8	NA	16	NA	NA	NA	NA	NA	18	61	12	1.6	NA	NA	10%	0%	90%
CON_SW_70	5/9/2015	2.95	8.4	4.4	0.51	1.2	2.4	4.8	2.9	NA	16	NA	NA	NA	NA	NA	19	63	10.2	1.2	2.4	0.11	11%	0%	89%
CON_SW_71	5/10/2015	2.44	8.5	4.5	0.44	1.2	2.5	4.8	2.9	NA	16	NA	NA	NA	NA	NA	19	71	14	1.1	4.0	0.23	10%	0%	90%
CON_SW_72	5/11/2015	2.04	8.5	4.6	0.46	1.3	2.5	4.9	3.0	NA	17	NA	NA	NA	NA	NA	19	77	13	1.2	2.5	0.20	10%	0%	90%
CON_SW_73	5/12/2015	1.71	8.6	4.6	0.45	1.3	2.5	4.8	3.0	NA	17	NA	NA	NA	NA	NA	19	68	14	1.1	2.5	0.16	10%	0%	90%
CON_SW_74	5/13/2015	1.59	8.7	4.8	0.46	1.3	2.6	4.9	3.0	NA	17	NA	NA	NA	NA	NA	20	72	11	1.2	2.7	0.07	9%	0%	91%
CON_SW_75	5/14/2015	1.82	8.7	4.9	0.51	1.3	2.6	4.8	3.0	NA	18	NA	NA	NA	NA	NA	20	50	18	NA	3.9	0.20	8%	0%	92%
CON_SW_76	5/15/2015	3.49	8.7	4.5	0.51	1.1	2.3	4.0	2.5	NA	16	NA	18	37	NA	NA	18	63	16	0.96	2.8	0.09	7%	0%	93%
CON_SW_77	5/16/2015	3.52	8.5	4.7	0.48	1.3	2.4	4.5	2.6	NA	17	NA	17	NA	NA	NA	20	60	14	1.03	2.5	0.13	NA	NA	NA
CON_SW_78	5/17/2015	3.66	8.5	4.7	0.47	1.3	2.4	4.7	2.8	NA	17	NA	NA	NA	NA	NA	19	63	7.5	1.04	NA	NA	7%	0%	93%
CON_SW_79	5/18/2015	3.44	8.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.0	0.28	7%	0%	93%
CON_SW_80	5/19/2015	3.13	8.5	4.6	0.53	1.3	2.5	4.8	2.9	NA	17	NA	17	NA	NA	NA	19	63	14	1.1	4.2	0.16	6%	0%	94%
CON_SW_81	5/20/2015	3.06	8.5	4.7	0.46	1.3	2.5	4.8	2.9	NA	17	NA	NA	NA	NA	NA	19	79	15	1.1	3.5	0.11	NA	NA	NA
CON_SW_82	5/21/2015	2.57	8.4	4.7	0.46	1.2	2.6	4.8	2.9	NA	17	NA	16	NA	NA	NA	19	74	14	1.2	3.0	0.10	7%	0%	93%
CON_SW_83	5/22/2015	2.18	8.4	4.8	0.43	1.3	2.5	4.9	2.9	NA	17	NA	NA	NA	NA	NA	20	56	11	1.1	3.3	0.16	8%	0%	92%
CON_SW_84	5/23/2015	1.91	8.5	5.0	0.44	1.3	2.6	4.9	3.0	NA	17	NA	NA	NA	NA	NA	20	56	12	NA	2.9	0.18	9%	0%	91%
CON_SW_85	5/24/2015	1.72	8.5	5.1	0.43	1.3	2.6	4.8	3.0	NA	17	NA	NA	NA	NA	NA	20	55	17	1.1	2.9	0.09	9%	0%	91%
CON_SW_86	5/25/2015	1.61	8.6	5.1	0.42	1.3	2.6	4.9	3.0	NA	18	NA	NA	NA	NA	NA	20	64	15	1.1	3.0	0.23	10%	0%	90%
CON_SW_87	5/26/2015	1.56	8.6	5.3	0.51	1.2	3.0	4.3	3.0	6.4	17	NA	23	2.6	NA	NA	21	74	12	1.2	5.1	0.20	11%	0%	89%
CON_SW_88	5/27/2015	1.42	8.6	5.4	0.49	1.2	3.0	4.1	3.0	4.5	17	NA	20	NA	NA	NA	21	75	14	1.3	2.9	0.24	13%	0%	87%
CON_SW_89	5/28/2015	1.25	8.6	5.4	0.46	1.4	2.9	4.9	3.1	11	18	NA	15	3.1	1.6	NA	21	82	12	1.2	2.8	0.17	14%	0%	86%
CON_SW_90	5/29/2015	1.12	8.6	5.3	0.47	1.3	2.8	4.9	3.1	7.4	18	NA	13	2.6	1.6	NA	21	69	14	1.4	2.9	0.17	16%	0%	84%
CON_SW_91	5/30/2015	1.09	8.7	5.4	0.48	1.3	2.8	4.7	3.1	4.8	18	NA	17	NA	1.6	NA	21	77	13	1.2	2.6	0.22	18%	0%	82%
CON_SW_92	5/31/2015	0.98	8.7	5.2	0.44	1.3	2.9	3.9	3.0	16	16	NA	23	44	1.5	NA	19	83	16	1.2	2.6	0.17	NA	NA	NA
CON_SW_93	6/1/2015	0.89	8.8	5.4	0.46	1.3	3.0	3.8	3.1	4.3	18	NA	18	5.9	1.6	NA	21	80	12	1.2	2.3	0.05	20%	0%	80%
CON_SW_94	6/2/2015	0.80	8.9	5.4	0.45	1.3	2.8	4.8	3.2	7.5	18	NA	15	4.9	1.6	NA	21	69	14	1.2	2.1	0.03	21%	0%	79%
CON_SW_95	6/3/2015	0.68	9.0	5.4	0.43	1.3	2.8	4.9	3.3	16	19	NA	18	16	1.6	NA	21	68	18	1.2	2.5	0.11	22%	0%	78%
CON_SW_96	6/4/2015	0.59	9.1	5.6	0.43	1.4	2.8	4.9	3.2	13	19	NA	17	38	1.6	NA	22	84	21	1.2	2.4	0.06	24%	0%	76%
CON_SW_97	6/5/2015	0.48	9.3	5.6	0.50	1.4	2.9	4.9	3.3	18	19	NA	21	16	1.7	NA	22	67	17	1.3	2.9	0.13	27%	0%	73%
CON_SW_98	6/6/2015	0.43	9.5	5.6	0.53	1.4	3.1	4.9	3.2	8.7	19	NA	19	10.4	1.6	NA	22	86	17	1.2	2.7	0.13	32%	0%	68%
CON_SW_99	6/7/2015	0.40	9.7	5.7	0.44	1.4	3.0	4.8	3.3	10.3	19	NA	17	2.7	1.6	NA	22	96	16	1.1	2.6	0.14	36%	0%	64%
CON_SW_100	6/8/2015	0.45	9.6	5.7	0.45	1.4	3.1	4.9	3.3	6.0	19	NA	12	3.4	1.6	NA	22	84	19	1.2	2.3	0.04	40%	0%	60%
CON_SW_101	6/9/2015	0.51	9.5	5.8	0.44	1.4	3.1	4.9	3.4	11	19	NA	22	2.7	1.7	NA	22	82	17	1.2	2.6	0.06	44%	0%	56%
CON_SW_102	6/10/2015	0.49	9.5	5.9	0.46	1.4	3.1	4.8	3.3	12	19	NA	25	2.8	1.6	NA	22	82	19	1.3	1.3	0.01	48%	0%	52%
CON_SW_103	6/11/2015	0.41	9.5	6.0	0.43	1.4	3.1	4.9	3.4	17	19	NA	17	29	1.6	NA	23	85	20	1.2	1.2	0.09	49%	0%	51%

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**Table S5** continued - Element concentrations in spring water (SW) and relative contributions of groundwater ( $f_{GW}$ ) and subsurface flow ( $f_{SF1}$ ,  $f_{SF2}$  &  $f_{SF3}$ ) to spring water.

sample ID	sampling date	discharge	T	Major elements (ICP-OES)						Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>	Anion and dissolved organic elements <sup>1</sup>				End member mixing analyses (EMMA)		
				Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON	$f_{GW}$	$f_{SF1}$	$f_{SF2 \& SF3}$
		(l s <sup>-1</sup> )	(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(%)	(%)	(%)
CON_SW_104	6/12/2015	0.52	9.7	5.7	0.42	1.4	3.0	4.7	3.2	6.0	18	NA	12	2.7	1.6	NA	22	62	17	1.3	2.1	0.11	NA	NA	NA
CON_SW_105	6/13/2015	0.42	9.8	5.9	0.50	1.4	3.0	4.6	3.2	6.7	20	NA	14	4.5	1.6	NA	23	65	15	1.2	1.7	0.09	50%	0%	50%
CON_SW_106	6/14/2015	0.69	9.9	4.1	0.31	1.0	2.1	2.8	2.3	5.7	14	NA	9.5	NA	1.2	NA	16	59	7.8	1.4	7.3	0.25	NA	NA	NA
CON_SW_107	6/15/2015	1.99	9.5	5.2	0.77	1.2	2.2	3.4	2.0	34	19	NA	31	20	1.3	NA	21	65	22	1.1	1.8	0.14	50%	0%	50%
CON_SW_108	6/16/2015	1.24	9.5	5.6	0.47	1.4	2.6	4.7	2.9	14	19	NA	16	8.1	1.6	NA	22	71	11	1.2	1.9	0.07	52%	0%	48%
CON_SW_109	6/17/2015	1.12	9.4	5.5	0.43	1.4	2.9	4.7	3.0	7.9	18	NA	13	5.7	1.6	NA	21	57	13	1.8	1.5	0.04	51%	0%	49%
CON_SW_110	6/18/2015	1.18	9.4	5.7	0.44	1.4	3.0	4.8	3.2	8.3	18	NA	15	9.7	1.2	NA	22	94	15	1.1	2.2	0.08	51%	0%	49%
CON_SW_111	6/19/2015	1.15	9.4	5.6	0.46	1.4	2.9	4.6	2.9	19	19	NA	12	16	1.6	NA	22	51	17	1.3	1.5	0.12	53%	0%	47%
CON_SW_112	6/20/2015	1.13	9.4	5.7	0.44	1.5	3.0	4.8	3.1	16	18	NA	11	14	1.6	NA	22	59	16	1.4	1.5	0.08	54%	0%	46%
CON_SW_113	6/21/2015	1.06	9.4	5.7	0.43	1.5	3.0	4.8	3.1	27	18	NA	11	20	1.1	NA	22	58	16	1.1	1.5	0.09	56%	0%	44%
CON_SW_114	6/22/2015	0.95	9.4	5.8	0.45	1.5	3.1	4.8	3.1	13	19	NA	10.4	2.7	1.7	NA	22	69	16	1.1	1.2	0.03	NA	NA	NA
CON_SW_115	6/23/2015	1.08	9.4	5.7	0.44	1.4	3.2	4.8	3.2	8.4	18	NA	9.7	2.9	1.6	NA	22	60	16	1.3	1.2	0.10	NA	NA	NA
CON_SW_116	6/24/2015	0.91	9.4	5.8	0.43	1.5	3.1	4.8	3.2	13	19	NA	10.0	8.7	1.6	NA	22	67	15	1.2	1.5	0.08	57%	0%	43%
CON_SW_117	6/25/2015	0.79	NA	6.0	0.44	1.5	3.2	4.8	3.2	27	19	NA	13	37	1.7	NA	23	107	18	1.2	1.5	0.14	60%	0%	40%
CON_SW_118	6/26/2015	0.69	9.5	5.8	0.45	1.4	3.2	4.6	3.3	7.3	19	NA	12	NA	1.6	NA	22	78	14	1.2	1.2	0.06	63%	0%	37%
CON_SW_119	6/27/2015	0.63	9.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	1.3	0.12	63%	0%	37%
CON_SW_120	6/28/2015	0.60	9.7	6.0	0.45	1.5	3.2	4.8	3.3	7.7	19	NA	12	2.9	1.7	NA	23	90	15	1.2	1.2	0.03	64%	0%	36%
CON_SW_121	6/29/2015	0.53	9.8	5.9	0.45	1.4	3.2	4.8	3.3	29	19	NA	16	31	1.7	3.6	22	88	20	1.2	1.2	0.02	65%	0%	35%
CON_SW_122	6/30/2015	0.44	10.0	5.9	0.47	1.5	3.3	4.8	3.4	17	19	NA	17	3.8	1.6	NA	22	67	15	1.2	1.2	0.06	65%	0%	35%
CON_SW_123	7/1/2015	0.37	10.2	5.9	0.48	1.4	3.2	4.8	3.4	8.1	19	NA	18	3.0	1.2	NA	22	92	14	1.3	1.7	0.09	66%	0%	34%
CON_SW_124	7/2/2015	0.29	10.5	6.0	0.44	1.5	3.2	4.9	3.4	12	20	NA	13	NA	1.7	NA	23	67	21	1.2	1.4	0.09	66%	0%	34%
CON_SW_125	7/3/2015	0.24	10.7	6.0	0.47	1.4	3.2	4.9	3.4	8.4	20	NA	12	2.7	1.7	NA	23	73	15	1.3	1.5	0.10	67%	0%	33%
CON_SW_126	7/4/2015	0.21	10.9	6.2	0.51	1.5	3.3	4.9	3.5	45	21	NA	21	50	1.8	5.6	23	81	19	1.3	1.4	0.05	69%	0%	31%
CON_SW_127	7/5/2015	0.19	11.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	1.3	0.06	70%	0%	30%
CON_SW_128	7/6/2015	0.20	11.2	6.4	0.46	1.5	3.3	4.9	3.6	20	21	NA	16	12	1.8	NA	24	77	23	1.3	1.5	0.12	72%	0%	28%
CON_SW_129	7/7/2015	0.18	11.3	6.5	0.49	1.6	3.2	4.9	3.7	14	20	NA	20	4.0	1.7	NA	24	86	24	1.3	1.4	0.08	NA	NA	NA
CON_SW_130	7/8/2015	0.21	11.2	6.6	0.49	1.6	3.5	5.0	3.8	16	21	NA	16	3.2	1.8	NA	25	77	21	1.3	1.2	0.02	73%	0%	27%
CON_SW_131	7/9/2015	0.25	11.1	6.4	0.53	1.5	3.2	4.9	3.7	16	20	NA	21	2.8	1.3	NA	24	71	22	1.5	1.1	0.10	72%	0%	28%
CON_SW_132	7/10/2015	0.24	11.0	6.6	0.42	1.6	3.4	4.8	3.7	7.5	20	NA	15	NA	1.7	NA	25	63	21	1.2	1.1	0.03	70%	0%	30%
CON_SW_133	7/11/2015	0.19	11.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	1.2	0.08	68%	0%	32%
CON_SW_134	7/12/2015	0.18	11.2	6.9	0.45	1.6	3.2	5.1	3.9	8.4	21	NA	16	NA	1.3	NA	26	79	21	1.3	1.2	0.04	65%	0%	35%
CON_SW_135	7/13/2015	0.18	11.2	6.8	0.46	1.6	3.2	4.9	3.9	24	21	NA	16	25	1.8	NA	25	101	23	1.3	1.9	0.18	62%	0%	38%
CON_SW_136	7/14/2015	0.17	11.3	6.8	0.44	1.6	3.4	4.9	3.8	19	22	NA	14	2.6	1.7	NA	26	44	18	1.2	2.0	0.10	NA	NA	NA
CON_SW_137	7/15/2015	0.15	11.4	6.9	0.67	1.6	3.6	4.9	3.9	21	22	NA	23	3.2	1.8	2.9	26	73	20	1.5	2.0	0.04	58%	0%	42%
CON_SW_138	7/16/2015	0.14	11.5	6.9	0.44	1.6	3.4	4.9	3.9	18	22	NA	17	NA	1.8	3.5	26	59	23	1.2	2.0	0.10	57%	0%	43%
CON_SW_139	7/17/2015	0.13	11.7	7.0	0.49	1.6	3.5	4.9	3.9	14	22	NA	14	3.4	1.8	NA	26	60	20	1.3	2.4	0.14	55%	0%	45%
CON_SW_140	7/18/2015	0.13	11.9	7.1	0.50	1.6	3.3	4.9	4.0	15	22	NA	17	3.1	1.8	3.9	26	72	19	1.4	2.0	0.05	55%	0%	45%
CON_SW_141	7/19/2015	0.13	11.9	7.2	0.47	1.7	3.3	4.9	4.0	18	22	NA	13	4.1	1.3	3.4	27	61	23	1.3	2.0	0.05	NA	NA	NA
CON_SW_142	7/20/2015	0.13	11.9	7.2	0.46	1.7	3.3	4.9	4.0	16	23	NA	14	2.7	1.8	9.1	27	80	24	1.3	2.1	0.06	55%	0%	45%
CON_SW_143	7/21/2015	0.12	12.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	2.0	0.04	54%	0%	46%
CON_SW_144	7/22/2015	0.12	12.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	2.3	0.09	57%	0%	43%
CON_SW_145	7/23/2015	0.23	12.2	7.6	0.52	1.8	3.6	4.9	4.1	66	24	NA	23	59	1.9	7.8	28	88	25	1.4	2.4	0.23	61%	0%	39%
CON_SW_146	7/24/2015	0.13	12.2	7.5	0.63	1.7	3.4	4.9	3.9	16	23	NA	22	4.9	1.8	NA	28	73	17	1.5	2.2	0.05	65%	0%	35%
CON_SW_147	7/25/2015	0.13	12.1	7.5	0.56	1.7	3.4	4.9	4.1	16	23	NA	21	3.2	1.3	NA	28	85	17	1.3	2.1	0.11	70%	0%	30%
CON_SW_148	7/26/2015	0.15	11.9	7.6	0.54	1.8	3.5	5.0	4.2	7.5	23	NA	17	3.1	1.7	NA	28	78	25	1.3	2.2	0.13	75%	0%	25%
CON_SW_149	7/27/2015	0.16	11.8	7.4	0.55	1.7	3.3	4.7	4.0	7.0	22	NA	19	3.3	1.7	NA	28	73	21	1.4	1.0	0.06	81%	0%	19%
CON_SW_150	7/28/2015	0.15	11.7	7.4	0.50	1.7	3.3	4.7	4.0	10.4	22	NA	18	3.4	1.7	9.0	27	59	17	1.3	0.90	0.06	84%	0%	16%
CON_SW_151	7/29/2015	0.18	11.5	7.6	0.49	1.8	3.4	4.8	4.1	12	22	NA	18	3.1	1.2	4.6	28	101	19	1.4	1.1	0.07	86%	0%	14%
CON_SW_152	7/30/2015	0.17	11.4	7.4	0.50	1.7	3.3	4.7	3.9	14	22	NA	21	3.4	1.6	3.7	27	97	21	1.3	0.82	0.05	88%	0%	12%
CON_SW_153	7/31/2015	0.15	11.4	7.8	0.47	1.8	3.4	4.8	4.1	33	23	NA	19	22	1.7	2.4	29	88	22	1.3	0.85	0.06	90%	0%	10%
CON_SW_154	8/1/2015	0.14	11.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	0.95	0.06	91%	0%	9%
CON_SW_155	8/2/2015	0.13	11.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	0.85	0.09	91%	0%	9%

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**Table S5** continued - Element concentrations in spring water (SW) and relative contributions of groundwater ( $f_{\text{GW}}$ ) and subsurface flow ( $f_{\text{SF1}}$ ,  $f_{\text{SF2}}$  &  $f_{\text{SF3}}$ ) to spring water.

				Major elements (ICP-OES)							Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>		Anion and dissolved organic elements <sup>1</sup>			End member mixing analyses (EMMA)		
sample ID	sampling date	discharge	T	Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON	f <sub>GW</sub>	f <sub>SF1</sub>	f <sub>SF2 &amp; SF3</sub>	
		(l s <sup>-1</sup> )	(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(%)	(%)	(%)	
CON_SW_156	8/3/2015	0.13	11.9	7.7	0.48	1.7	3.7	4.7	4.1	NA	24	NA	12	NA	2.0	NA	29	73	22	1.2	0.90	0.04	92%	0%	8%	
CON_SW_157	8/4/2015	0.12	12.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	0.87	0.08	92%	0%	8%	
CON_SW_158	8/5/2015	0.13	12.2	8.0	0.48	1.8	3.7	4.7	4.2	14	24	NA	13	NA	1.8	NA	30	79	20	1.3	0.92	0.09	92%	0%	8%	
CON_SW_159	8/6/2015	0.14	12.5	8.0	0.47	1.8	3.5	4.8	4.3	12	25	NA	16	NA	1.8	NA	30	90	24	1.3	0.90	0.02	92%	0%	8%	
CON_SW_160	8/7/2015	0.15	12.8	8.0	0.50	1.8	3.7	4.9	4.3	14	25	NA	16	NA	1.8	NA	31	74	22	1.3	0.88	0.03	93%	0%	7%	
CON_SW_161	8/8/2015	0.15	13.0	8.0	0.52	1.8	3.8	4.8	4.3	15	25	NA	16	5.2	1.8	5.5	31	82	25	1.3	0.95	0.05	92%	0%	8%	
CON_SW_162	8/9/2015	0.14	13.1	8.2	0.52	1.8	3.6	4.9	4.4	11	26	NA	16	NA	1.9	5.2	31	81	21	1.4	1.3	0.05	NA	NA	NA	
CON_SW_163	8/10/2015	0.13	13.0	8.4	0.56	1.9	3.5	4.8	4.3	12	26	NA	27	6.1	1.8	6.0	32	89	28	1.4	1.03	0.04	93%	0%	7%	
CON_SW_164	8/11/2015	0.14	13.1	8.2	0.54	1.8	3.5	4.8	4.3	27	26	NA	17	28	1.8	11	31	74	24	1.4	1.04	0.07	93%	0%	7%	
CON_SW_165	8/12/2015	0.15	13.3	8.3	0.56	1.8	3.6	4.9	4.4	NA	26	NA	16	NA	1.9	11	32	80	27	1.3	1.4	0.13	93%	0%	7%	
CON_SW_166	8/13/2015	0.16	13.4	8.3	0.54	1.8	3.6	4.8	4.4	NA	26	NA	16	NA	1.8	11	31	82	29	1.3	1.3	0.05	94%	0%	6%	
CON_SW_167	8/14/2015	0.23	13.2	4.5	0.30	1.0	2.0	2.0	2.3	NA	14	NA	9	NA	1.0	NA	17	45	24	1.3	1.3	0.08	94%	0%	6%	
CON_SW_168	8/15/2015	0.13	12.9	8.1	0.52	1.8	3.4	4.8	4.2	19	25	NA	14	9.3	1.7	7.6	31	78	25	1.4	1.6	0.05	95%	0%	5%	
CON_SW_169	8/16/2015	0.17	12.6	8.4	0.60	1.9	3.5	4.7	4.0	17	26	NA	23	9.9	1.7	8.6	32	115	20	1.3	1.3	0.03	95%	0%	5%	
CON_SW_170	8/17/2015	0.14	12.3	8.2	0.56	1.8	3.4	4.7	4.1	NA	26	NA	18	NA	1.7	6.8	32	77	25	1.3	1.0	0.05	NA	NA	NA	
CON_SW_171	8/18/2015	0.13	12.2	8.2	0.47	1.8	3.4	4.7	4.0	NA	24	NA	13	NA	1.7	6.0	31	77	21	1.3	0.94	0.05	95%	0%	5%	
CON_SW_172	8/19/2015	0.13	12.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	0.92	0.07	95%	0%	5%	
CON_SW_173	8/20/2015	0.13	12.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	0.90	0.07	95%	0%	5%	
CON_SW_174	8/21/2015	0.12	12.3	7.5	0.39	1.6	3.1	4.0	3.8	NA	21	NA	10.3	NA	1.5	5.2	29	65	18	1.3	0.89	0.03	95%	0%	5%	
CON_SW_175	8/22/2015	0.12	12.5	11.7	0.38	1.5	3.1	3.3	3.1	85	18	NA	11	18	1.4	8.5	32	67	26	1.3	0.88	0.07	96%	0%	4%	
CON_SW_176	8/23/2015	0.13	12.5	8.4	0.47	1.9	3.6	4.7	4.4	NA	25	NA	12	NA	1.7	8.1	32	88	23	1.3	2.4	0.08	96%	0%	4%	
CON_SW_177	8/24/2015	0.16	12.4	8.2	0.54	1.8	3.4	4.1	3.8	NA	24	NA	17	6.3	1.6	7.5	31	79	25	1.3	1.6	0.07	NA	NA	NA	
CON_SW_178	8/25/2015	0.14	12.2	8.2	0.47	1.8	3.5	4.3	4.0	NA	24	NA	13	NA	1.7	NA	31	57	20	1.3	1.1	0.03	96%	0%	4%	
CON_SW_179	8/26/2015	0.13	12.3	8.3	0.47	1.9	3.4	4.5	4.3	NA	24	NA	18	9.3	1.6	NA	31	82	18	1.3	0.98	0.04	NA	NA	NA	
CON_SW_180	8/27/2015	0.13	12.6	8.3	0.51	1.9	3.7	4.6	4.2	NA	24	NA	18	NA	1.7	5.9	31	74	18	1.3	0.98	0.03	96%	0%	4%	
CON_SW_181	8/28/2015	0.13	12.8	7.1	0.47	1.6	3.3	3.9	3.6	13	21	NA	14	9.1	1.5	NA	27	43	17	1.5	0.92	0.07	NA	NA	NA	
CON_SW_182	8/29/2015	0.15	13.1	8.5	0.53	1.9	3.6	4.7	4.4	NA	25	NA	15	NA	1.8	NA	32	72	17	1.4	0.91	0.01	94%	0%	6%	
CON_SW_183	8/30/2015	0.16	13.4	8.7	0.53	1.9	3.7	4.8	4.5	20	27	NA	15	17	1.8	NA	33	81	19	1.3	0.97	0.04	91%	0%	9%	
CON_SW_184	8/31/2015	0.17	13.7	8.7	0.53	1.9	3.7	4.8	4.5	NA	26	NA	18	NA	1.8	NA	33	84	22	1.3	2.1	0.14	87%	0%	13%	
CON_SW_185	9/1/2015	0.15	13.5	8.8	0.53	1.9	3.7	4.8	4.6	NA	26	NA	15	6.7	1.9	NA	34	66	22	1.3	2.9	0.23	83%	0%	17%	
CON_SW_186	9/2/2015	0.12	13.2	8.6	0.55	1.9	3.5	4.6	4.2	13	25	NA	24	8.7	1.8	NA	33	77	22	1.4	2.0	0.20	79%	0%	21%	
CON_SW_187	9/3/2015	0.12	12.9	8.8	0.48	1.9	3.6	4.7	4.5	NA	25	NA	16	NA	1.7	NA	34	82	21	1.3	2.0	0.17	72%	0%	28%	
CON_SW_188	9/4/2015	0.12	12.7	7.9	0.46	1.8	3.4	4.8	4.2	45	25	NA	15	42	1.8	NA	30	81	17	1.3	1.2	0.11	70%	0%	30%	
CON_SW_189	9/5/2015	0.13	12.3	8.6	0.45	1.9	3.4	4.2	4.5	NA	24	NA	22	NA	1.6	NA	33	86	19	1.3	1.2	0.12	68%	0%	32%	
CON_SW_190	9/6/2015	0.13	12.0	8.5	0.53	1.9	3.7	4.5	4.5	NA	24	NA	20	NA	1.6	NA	32	86	19	1.3	1.1	0.06	68%	0%	32%	
CON_SW_191	9/7/2015	0.13	11.8	8.5	0.45	1.9	3.5	4.5	4.4	NA	24	NA	17	NA	1.6	NA	32	91	19	1.3	1.00	0.06	68%	0%	32%	
CON_SW_192	9/8/2015	0.13	11.8	8.3	0.43	1.8	3.5	4.3	4.5	NA	23	NA	11	NA	1.5	NA	31	48	18	1.3	0.94	0.03	68%	0%	32%	
CON_SW_193	9/9/2015	0.13	11.7	8.5	0.42	1.9	3.6	4.5	4.6	NA	24	NA	12	NA	1.6	NA	32	57	20	1.3	0.98	0.06	69%	0%	31%	
CON_SW_194	9/10/2015	0.12	11.6	8.5	0.42	1.9	3.6	4.5	4.6	NA	24	NA	9.6	11	1.1	NA	32	57	19	1.3	0.90	0.06	69%	0%	31%	
CON_SW_195	9/11/2015	0.12	11.8	8.6	0.42	1.9	3.7	4.4	4.7	NA	24	NA	14	NA	1.6	NA	32	69	17	1.3	1.01	0.09	NA	NA	NA	
CON_SW_196	9/12/2015	0.13	12.0	8.7	0.46	1.9	3.6	4.5	4.7	NA	24	NA	12	NA	1.6	NA	33	59	20	1.3	1.7	0.07	70%	0%	30%	
CON_SW_197	9/13/2015	0.12	12.1	8.8	0.52	1.9	3.6	4.5	4.4	NA	25	NA	20	8.9	1.2	NA	33	67	22	1.4	1.1	0.06	70%	0%	30%	
CON_SW_198	9/14/2015	0.14	12.1	8.8	0.45	1.9	3.6	4.5	4.6	11	25	NA	14	21	1.7	NA	34	83	22	1.3	1.5	0.11	71%	0%	29%	
CON_SW_199	9/15/2015	0.12	11.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	1.1	0.06	71%	0%	29%	
CON_SW_200	9/16/2015	0.12	12.0	8.8	0.44	1.9	3.4	4.5	4.4	NA	25	NA	12	NA	1.6	NA	34	54	19	1.3	1.3	0.04	70%	0%	30%	
CON_SW_201	9/17/2015	0.23	11.9	8.7	0.45	1.9	3.5	4.5	4.5	NA	25	NA	11	NA	1.7	NA	33	67	20	1.3	2.8	0.17	69%	0%	31%	
CON_SW_202	9/18/2015	0.14	11.7	8.8	0.53	2.0	3.4	4.3	3.8	NA	25	NA	15	NA	1.7	NA	33	52	18	1.3	1.3	0.06	69%	0%	31%	
CON_SW_203	9/19/2015	0.13	11.6	8.9	0.48	2.0	3.4	4.5	4.1	NA	25	NA	14	8.1	1.1	NA	34	56	19	1.2	1.3	0.12	68%	0%	32%	
CON_SW_204	9/20/2015	0.13	11.5	8.8	0.47	2.0	3.7	4.4	4.1	NA	25	NA	17	11	1.6	NA	33	57	18	1.2	1.1	0.08	68%	0%	32%	
CON_SW_205	9/21/2015	0.13	11.5	8.9	0.46	2.0	3.7	4.4	4.3	NA	25															

continued on next page ...

**Table S5** continued - Element concentrations in spring water (SW) and relative contributions of groundwater ( $f_{\text{GW}}$ ) and subsurface flow ( $f_{\text{SF1}}$ ,  $f_{\text{SF2}}$  &  $f_{\text{SF3}}$ ) to spring water.

sample ID	sampling date	discharge	T	Major elements (ICP-OES)						Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>		Anion and dissolved organic elements <sup>1</sup>			End member mixing analyses (EMMA)		
				Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON	f <sub>GW</sub>	f <sub>SF1</sub>	f <sub>SF2 &amp; SF3</sub>
				(t s <sup>-1</sup> )	(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(%)	(%)
CON_SW_208	9/24/2015	0.20	11.0	8.6	0.52	1.9	3.4	4.3	3.8	16	25	NA	15	12	1.6	NA	32	50	17	1.3	1.3	0.09	67%	0%	33%
CON_SW_209	9/25/2015	0.15	11.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	1.2	0.03	67%	0%	33%
CON_SW_210	9/26/2015	0.13	11.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	1.04	0.07	66%	0%	34%
CON_SW_211	9/27/2015	0.13	11.1	8.9	0.47	2.0	3.5	4.5	4.2	NA	25	NA	16	NA	1.1	NA	34	53	16	1.3	0.97	0.08	65%	0%	35%
CON_SW_212	9/28/2015	0.14	11.0	8.8	0.46	2.0	3.4	4.4	4.3	NA	25	NA	14	NA	1.6	NA	33	69	18	1.3	0.93	0.06	64%	0%	36%
CON_SW_213	9/29/2015	0.13	10.8	8.8	0.44	2.0	3.4	4.4	4.4	NA	24	NA	12	NA	1.5	NA	33	59	16	1.3	0.90	0.07	64%	0%	36%
CON_SW_214	9/30/2015	0.15	10.7	8.7	0.43	1.9	3.6	4.3	4.4	NA	24	NA	13	NA	1.5	NA	33	58	24	NA	0.88	0.07	65%	0%	35%
CON_SW_215	10/1/2015	0.14	10.5	8.6	0.43	1.9	3.7	4.3	4.4	NA	24	NA	12	NA	1.5	NA	32	72	23	1.2	0.84	0.07	66%	0%	34%
CON_SW_216	10/2/2015	0.13	10.7	8.6	0.43	1.9	3.4	4.3	4.5	NA	24	NA	12	NA	1.5	NA	32	74	23	NA	0.83	0.03	67%	0%	33%
CON_SW_217	10/3/2015	0.13	10.9	8.7	0.44	1.9	3.4	4.3	4.5	NA	24	NA	11	NA	1.5	NA	33	59	24	1.2	0.81	0.02	68%	0%	32%
CON_SW_218	10/4/2015	0.20	10.9	8.8	0.43	1.9	3.5	4.4	4.5	39	25	NA	14	38	1.6	6.1	33	76	27	1.3	1.00	0.05	70%	0%	30%
CON_SW_219	10/5/2015	0.15	11.1	8.8	0.47	2.0	3.4	4.4	4.4	NA	25	NA	14	NA	1.5	NA	33	53	25	1.3	1.01	0.08	NA	NA	NA
CON_SW_220	10/6/2015	0.14	11.3	8.9	0.56	2.0	4.0	4.5	47.0	NA	25	NA	13	6.0	1.6	13	34	49	23	1.4	1.2	0.09	NA	NA	NA
CON_SW_221	10/7/2015	0.13	11.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	1.0	0.05	NA	NA	NA
CON_SW_222	10/8/2015	0.13	11.0	9.1	0.53	2.0	4.3	4.4	64.0	NA	25	NA	16	NA	1.6	NA	34	64	22	1.3	0.95	0.03	70%	0%	30%
CON_SW_223	10/9/2015	0.13	11.0	9.0	0.49	2.0	3.6	4.4	4.5	22	24	NA	10.1	NA	1.5	NA	34	64	19	1.3	0.87	0.05	70%	0%	30%
CON_SW_224	10/10/2015	0.13	10.9	9.0	0.46	2.0	3.5	4.4	4.5	NA	25	NA	8.3	NA	1.5	NA	34	40	22	1.3	0.89	0.04	69%	0%	31%
CON_SW_225	10/11/2015	0.13	10.8	9.0	0.47	2.0	3.6	4.3	4.6	NA	24	NA	8.0	NA	1.5	NA	34	50	21	1.3	0.91	0.03	69%	0%	31%
CON_SW_226	10/12/2015	0.15	10.5	9.1	0.47	2.0	3.5	4.3	4.6	NA	25	NA	8.8	NA	1.5	NA	34	54	23	1.3	0.89	0.05	69%	0%	31%
CON_SW_227	10/13/2015	0.15	10.4	8.9	0.44	2.0	3.5	4.4	4.6	18	24	NA	9.9	6.2	1.5	NA	33	53	21	1.3	0.99	0.05	68%	0%	32%
CON_SW_228	10/14/2015	0.18	9.7	8.8	0.42	2.0	3.4	4.3	4.6	15	24	NA	12	13	1.5	NA	33	68	21	1.3	0.93	0.03	NA	NA	NA
CON_SW_229	10/15/2015	0.21	9.4	8.5	0.41	1.9	3.6	4.1	4.6	NA	23	NA	8.1	NA	1.4	NA	31	69	21	1.3	0.95	0.04	NA	NA	NA
CON_SW_230	10/16/2015	0.21	9.2	8.5	0.39	1.9	3.3	4.3	4.6	14	23	NA	9.2	21	1.4	NA	32	56	19	1.4	0.76	0.06	66%	0%	34%
CON_SW_231	10/17/2015	0.21	9.0	8.3	0.41	1.9	3.5	4.1	4.6	NA	22	NA	11	NA	1.3	NA	31	88	20	1.2	0.81	0.07	65%	0%	35%
CON_SW_232	10/18/2015	0.20	8.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	0.96	0.04	65%	0%	35%
CON_SW_233	10/19/2015	0.19	8.8	8.4	0.41	1.9	3.5	4.2	4.7	11	22	NA	9.9	NA	1.3	NA	31	76	19	1.3	NA	NA	64%	0%	36%
CON_SW_234	10/20/2015	0.18	8.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	0.74	0.04	64%	0%	36%
CON_SW_235	10/21/2015	0.18	8.8	8.5	0.46	1.9	3.4	4.2	4.7	29	23	NA	16	37	1.4	NA	31	93	21	1.3	0.68	0.03	64%	0%	36%
CON_SW_236	10/22/2015	0.17	8.9	8.5	0.42	1.9	3.6	4.2	4.7	40	23	NA	12	40	1.4	NA	32	94	26	1.3	0.82	0.03	64%	0%	36%
CON_SW_237	10/23/2015	0.16	9.1	8.7	0.43	1.9	3.4	4.1	4.8	NA	23	NA	10	5.7	1.4	NA	32	63	18	1.3	0.76	0.01	NA	NA	NA
CON_SW_238	10/24/2015	0.15	9.3	8.9	0.46	1.9	3.4	4.2	4.7	NA	24	NA	11	NA	1.4	NA	33	64	20	1.3	0.93	0.06	65%	0%	35%
CON_SW_239	10/25/2015	0.17	9.6	8.8	0.48	1.9	3.5	4.2	4.7	NA	23	NA	15	NA	1.4	NA	32	88	20	1.3	0.75	0.03	65%	0%	35%
CON_SW_240	10/26/2015	0.14	9.6	9.1	0.46	2.0	3.8	4.2	4.8	13	24	NA	11	6.2	1.4	NA	33	71	19	1.3	0.74	0.04	68%	0%	32%
CON_SW_241	10/27/2015	0.14	9.7	8.9	0.46	2.0	3.5	4.2	4.7	12	24	NA	14	6.2	1.4	NA	33	80	19	1.3	0.83	0.05	71%	0%	29%
CON_SW_242	10/28/2015	0.14	9.9	9.1	0.46	2.0	3.8	4.2	4.7	NA	24	NA	7.3	NA	1.4	NA	33	81	15	1.3	0.84	0.06	74%	0%	26%
CON_SW_243	10/29/2015	0.18	9.8	9.1	0.46	2.0	3.6	4.3	4.7	NA	24	NA	11	NA	1.4	NA	33	80	20	1.3	0.97	0.09	79%	0%	21%
CON_SW_244	10/30/2015	0.17	9.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.5	0.91	0.06	83%	0%	17%
CON_SW_245	10/31/2015	0.16	9.7	9.2	0.60	2.0	3.7	4.3	4.9	NA	25	NA	23	8.8	1.4	NA	34	84	18	1.5	0.84	0.06	NA	NA	NA
CON_SW_246	11/1/2015	0.17	9.8	9.4	0.58	2.1	3.7	4.4	4.7	NA	25	NA	21	NA	1.4	NA	35	84	19	1.4	0.78	0.03	NA	NA	NA
CON_SW_247	11/2/2015	0.17	9.7	10.5	0.57	2.1	4.0	4.5	4.7	14	26	NA	18	9.5	1.3	NA	36	76	5.1	1.4	0.74	0.04	88%	0%	12%
CON_SW_248	11/3/2015	0.14	9.6	9.6	0.49	2.1	3.6	4.4	4.7	18	26	NA	9.1	NA	NA	NA	36	104	18	1.3	0.76	0.03	88%	0%	12%
CON_SW_249	11/4/2015	0.14	9.8	9.6	0.46	2.1	3.6	4.4	4.7	NA	25	NA	11	NA	NA	NA	36	72	19	1.3	0.75	0.06	86%	0%	14%
CON_SW_250	11/5/2015	0.15	10.0	9.7	0.48	2.1	3.6	4.5	4.7	NA	25	NA	11	NA	NA	NA	36	80	18	1.3	0.77	0.05	85%	0%	15%
CON_SW_251	11/6/2015	0.23	10.2	9.7	0.50	2.1	3.7	4.5	4.8	NA	26	NA	9.0	NA	NA	NA	36	75	18	NA	0.95	0.07	83%	0%	17%
CON_SW_252	11/7/2015	0.17	10.5	9.8	0.47	2.1	3.6	4.5	4.7	15	26	NA	12	NA	NA	NA	37	71	18	NA	0.83	0.05	80%	0%	20%
CON_SW_253	11/8/2015	0.13	10.8	9.8	0.54	2.1	3.8	4.6	4.8	19	27	NA	13	NA	NA	NA	36	105	18	1.4	0.85	0.05	77%	0%	23%
CON_SW_254	11/9/2015	0.13	10.7	9.9	0.50	2.1	3.7	4.6	4.8	13	26	NA	16	NA	NA	NA	37	93	18	1.4	0.83	0.08	76%	0%	24%
CON_SW_255	11/10/2015	0.19	10.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	0.75	0.04	NA	NA	NA
CON_SW_256	11/11/2015	0.23	10.2	9.9	0.48	2.1	3.7	4.5	4.8	NA	26	NA	13	NA	NA	NA	37	77	7.8	1.3	0.82	0.08	NA	NA	NA
CON_SW_257	11/12/2015	0.24	10.1	9.7	0.48	2.1	3.5	4.4	4.8	NA	25	NA	14	NA	NA	NA	37	90	18	1.3	0.74	0.02	NA	NA	NA
CON_SW_258	11/13/2015	0.26	10.1	9.7	0.46	2.1	3.6	4.5	4.7	13	25	NA	15	NA	NA	NA	36	85	19	1.3	0.97	0.05</			

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**Table S5** continued - Element concentrations in spring water (SW) and relative contributions of groundwater ( $f_{\text{GW}}$ ) and subsurface flow ( $f_{\text{SF1}}$ ,  $f_{\text{SF2}}$  &  $f_{\text{SF3}}$ ) to spring water.

				Major elements (ICP-OES)						Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>		Anion and dissolved organic elements <sup>1</sup>			End member mixing analyses (EMMA)		
sample ID	sampling date	discharge	T	Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON	f <sub>GW</sub>	f <sub>SF1</sub>	f <sub>SF2 &amp; SF3</sub>
		(l s <sup>-1</sup> )	(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(%)	(%)	(%)
CON_SW_260	11/15/2015	0.27	9.9	9.6	0.49	2.1	3.6	4.4	4.8	NA	25	NA	17	NA	NA	NA	36	84	20	1.4	0.76	0.06	75%	0%	25%
CON_SW_261	11/16/2015	0.21	10.0	9.6	0.48	2.1	3.6	4.4	4.8	13	25	NA	16	NA	NA	NA	36	90	17	1.4	0.69	0.05	74%	0%	26%
CON_SW_262	11/17/2015	0.19	9.9	9.5	0.46	2.1	3.6	4.4	4.8	NA	24	NA	11	NA	NA	7.2	35	59	17	1.4	0.72	0.05	73%	0%	27%
CON_SW_263	11/18/2015	0.16	10.0	9.4	0.46	2.0	3.5	4.3	4.7	13	24	NA	10.0	NA	NA	NA	35	65	17	1.3	0.76	0.07	NA	NA	NA
CON_SW_264	11/19/2015	0.15	10.0	9.6	0.46	2.1	3.6	4.5	4.8	13	25	NA	13	NA	NA	NA	36	80	18	1.3	0.73	0.05	72%	0%	28%
CON_SW_265	11/20/2015	3.25	10.0	7.7	0.39	1.6	2.9	3.5	3.9	NA	20	NA	14	NA	NA	NA	29	75	18	1.3	2.9	0.15	NA	NA	NA
CON_SW_266	11/21/2015	2.29	9.7	5.2	0.83	1.4	2.2	2.3	1.7	66	15	NA	42	97	NA	NA	21	80	14	1.6	1.9	0.13	NA	NA	NA
CON_SW_267	11/22/2015	1.37	9.5	6.8	0.74	1.7	2.8	4.2	3.0	33	21	NA	22	22	NA	5.5	27	148	14	1.4	1.2	0.09	NA	NA	NA
CON_SW_268	11/23/2015	0.95	9.2	6.5	0.53	1.6	2.8	4.3	3.5	15	20	NA	17	NA	NA	NA	26	72	4.2	1.4	NA	NA	71%	0%	29%
CON_SW_269	11/24/2015	0.80	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_SW_270	11/25/2015	0.82	8.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	0.06	67%	0%	33%
CON_SW_271	11/26/2015	0.80	8.6	6.6	0.49	1.5	2.8	4.2	3.5	NA	19	NA	17	NA	NA	NA	26	63	12	1.3	NA	NA	64%	0%	36%
CON_SW_272	11/27/2015	0.71	8.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	62%	0%	38%
CON_SW_273	11/28/2015	0.69	8.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	60%	0%	40%
CON_SW_274	11/29/2015	1.34	8.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.8	0.12	57%	0%	43%
CON_SW_275	11/30/2015	3.43	8.9	5.2	0.57	1.4	2.7	3.9	2.6	19	18	NA	13	NA	NA	NA	22	35	12	1.3	1.4	0.07	NA	NA	NA
CON_SW_276	12/1/2015	4.02	9.1	5.3	0.49	1.4	2.7	4.1	2.7	17	18	NA	20	13	NA	NA	22	85	11	1.3	NA	NA	57%	0%	43%
CON_SW_277	12/2/2015	3.26	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_SW_278	12/3/2015	2.51	9.1	4.9	0.46	1.3	2.7	4.4	2.9	NA	17	NA	13	NA	NA	NA	21	66	7.9	1.2	NA	NA	58%	0%	42%
CON_SW_279	12/4/2015	2.00	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	59%	0%	41%
CON_SW_280	12/5/2015	1.67	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	59%	0%	41%
CON_SW_281	12/6/2015	1.45	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.77	0.05	59%	0%	41%
CON_SW_282	12/7/2015	1.25	9.0	5.9	0.51	1.4	2.9	4.6	3.2	NA	20	NA	18	NA	NA	NA	24	49	11	1.3	0.71	0.05	NA	NA	NA
CON_SW_283	12/8/2015	1.14	9.0	5.9	0.47	1.4	2.8	4.7	3.2	NA	18	NA	18	NA	NA	NA	24	83	11	1.2	0.71	0.01	NA	NA	NA
CON_SW_284	12/9/2015	1.28	9.0	6.0	0.46	1.4	2.9	4.6	3.2	NA	18	NA	16	NA	NA	NA	24	83	12	1.3	0.79	0.03	61%	0%	39%
CON_SW_285	12/10/2015	1.16	8.8	5.6	0.44	1.3	2.7	4.3	3.2	13	17	NA	13	NA	NA	NA	22	62	14	1.2	0.72	0.06	61%	0%	39%
CON_SW_286	12/11/2015	1.09	8.8	5.8	0.42	1.4	2.8	4.6	3.3	NA	17	NA	13	NA	NA	NA	23	61	15	1.2	0.70	0.02	62%	0%	38%
CON_SW_287	12/12/2015	1.02	8.8	5.9	0.44	1.4	2.9	4.6	3.4	NA	17	NA	13	NA	NA	NA	23	65	13	1.2	0.77	0.03	62%	0%	38%
CON_SW_288	12/13/2015	1.00	8.8	6.0	0.42	1.4	2.9	4.7	3.4	NA	18	NA	14	NA	NA	NA	24	61	15	1.2	0.67	0.06	63%	0%	37%
CON_SW_289	12/14/2015	0.94	8.7	6.0	0.42	1.4	2.9	4.7	3.4	NA	18	NA	14	NA	NA	NA	24	64	15	1.2	0.76	0.07	64%	0%	36%
CON_SW_290	12/15/2015	0.87	8.7	6.2	0.44	1.5	2.9	4.7	3.4	18	19	NA	16	16	NA	NA	24	82	14	1.2	0.64	0.05	64%	0%	36%
CON_SW_291	12/16/2015	0.91	8.8	6.4	0.43	1.5	2.9	4.7	3.5	NA	19	NA	13	NA	NA	NA	25	73	14	1.2	0.73	0.06	65%	0%	35%
CON_SW_292	12/17/2015	0.80	8.8	6.5	0.54	1.5	3.1	4.7	3.4	NA	19	NA	17	NA	NA	NA	25	70	13	1.3	0.72	0.04	65%	0%	35%
CON_SW_293	12/18/2015	0.78	8.9	6.6	0.45	1.5	3.1	4.8	3.5	NA	19	NA	19	NA	NA	NA	26	101	14	1.2	0.67	0.08	66%	0%	34%
CON_SW_294	12/19/2015	0.77	8.9	6.6	0.46	1.5	3.1	4.8	3.6	NA	19	NA	16	NA	NA	NA	26	88	13	1.2	0.65	0.03	66%	0%	34%
CON_SW_295	12/20/2015	0.72	8.9	6.6	0.44	1.5	3.1	4.7	3.6	NA	18	NA	16	NA	NA	NA	25	81	14	1.3	0.65	0.04	NA	NA	NA
CON_SW_296	12/21/2015	0.91	8.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	0.75	0.04	66%	0%	34%
CON_SW_297	12/22/2015	0.85	8.9	6.4	0.44	1.5	3.0	4.3	3.4	NA	19	NA	17	NA	NA	NA	25	81	7.3	1.2	NA	NA	67%	0%	33%
CON_SW_298	12/23/2015	0.82	8.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.67	0.05	67%	0%	33%
CON_SW_299	12/24/2015	0.80	8.9	6.7	0.46	1.5	3.1	4.7	3.5	NA	19	NA	18	NA	NA	NA	26	66	15	1.3	0.63	0.05	68%	0%	32%
CON_SW_300	12/25/2015	0.76	8.9	6.7	0.45	1.5	3.0	4.7	3.4	NA	19	NA	17	NA	NA	NA	26	66	13	1.3	0.64	0.03	68%	0%	32%
CON_SW_301	12/26/2015	0.76	8.9	6.7	0.43	1.5	3.0	4.7	3.5	NA	19	NA	16	NA	NA	NA	26	68	14	1.2	0.61	0.06	69%	0%	31%
CON_SW_302	12/27/2015	0.76	8.9	6.8	0.44	1.6	3.1	4.8	3.6	NA	19	NA	11	NA	NA	NA	26	56	14	1.2	0.64	0.02	69%	0%	31%
CON_SW_303	12/28/2015	0.75	8.9	6.7	0.42	1.5	3.0	4.7	3.5	NA	19	NA	15	NA	NA	NA	26	60	14	1.2	0.67	0.01	69%	0%	31%
CON_SW_304	12/29/2015	0.76	8.9	6.8	0.43	1.5	2.9	4.7	3.5	NA	19	NA	14	NA	NA	NA	26	76	13	1.3	0.66	0.02	68%	0%	32%
CON_SW_305	12/30/2015	0.77	8.8	6.7	0.43	1.5	3.0	4.7	3.6	NA	19	NA	12	NA	NA	NA	26	56	13	1.2	0.65	0.04	68%	0%	32%
CON_SW_306	12/31/2015	0.80	8.8	6.6	0.41	1.5	3.0	4.7	3.6	NA	19	NA	10.2	NA	NA	NA	26	58	15	1.3	0.68	0.02	67%	0%	33%
CON_SW_307	1/1/2016	0.78	8.7	6.7	0.44	1.5	3.2	4.8	3.7	NA	19	NA	11	NA	NA	NA	26	61	13	1.2	0.63	0.02	65%	0%	35%
CON_SW_308	1/2/2016	0.91	8.7	6.4	0.41	1.5	3.0	4.8	3.6	NA	19	NA	10.5	NA	NA	NA	25	59	6.2	1.2	0.94	0.09	61%	0%	39%
CON_SW_309	1/3/2016	0.89	8.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	58%	0%	42%
CON_SW_310	1/4/2016	0.96	8.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.98	0.07	NA	NA	NA
CON_SW_311	1/5/2016	0.96	8.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	0.97	0.06	56%	0%	44%

continued on next page ...

**Table S5** continued - Element concentrations in spring water (SW) and relative contributions of groundwater ( $f_{GW}$ ) and subsurface flow ( $f_{SF1}$ ,  $f_{SF2}$  &  $f_{SF3}$ ) to spring water.

sample ID	sampling date	discharge	T	Major elements (ICP-OES)							Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>				Anion and dissolved organic elements <sup>1</sup>				End member mixing analyses (EMMA)		
				Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON	f <sub>GW</sub>	f <sub>SF1</sub>	f <sub>SF2 &amp; SF3</sub>				
				(l s <sup>-1</sup> )	(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(%)	(%)	(%)			
CON_SW_312	1/6/2016	1.30	8.4	6.1	0.44	1.4	3.2	4.6	3.6	NA	18	NA	17	NA	NA	NA	24	74	8.5	1.2	1.4	0.05	52%	0%	48%				
CON_SW_313	1/7/2016	2.26	8.5	5.9	0.48	1.4	3.0	4.3	3.1	17	18	NA	36	NA	NA	NA	23	92	14	1.3	1.1	0.06	50%	0%	50%				
CON_SW_314	1/8/2016	2.78	8.7	5.6	0.45	1.4	2.8	4.3	3.0	NA	17	NA	22	NA	NA	NA	22	78	18	1.2	1.1	0.07	49%	0%	51%				
CON_SW_315	1/9/2016	3.25	8.8	5.2	0.45	1.3	2.8	4.5	3.0	NA	16	NA	20	NA	NA	NA	21	74	12	1.1	0.87	0.07	49%	0%	51%				
CON_SW_316	1/10/2016	3.45	8.8	5.2	0.44	1.3	2.9	4.6	3.1	NA	17	NA	22	NA	NA	NA	21	83	12	1.1	0.85	0.06	50%	0%	50%				
CON_SW_317	1/11/2016	4.71	8.8	5.0	0.42	1.3	2.8	4.5	3.0	NA	16	NA	17	NA	NA	NA	20	73	9.9	1.2	1.02	0.04	NA	NA	NA				
CON_SW_318	1/12/2016	6.14	8.8	4.7	0.46	1.2	2.7	4.6	2.8	11	16	NA	17	NA	NA	NA	19	75	13	1.2	NA	NA	NA	NA	NA	NA			
CON_SW_319	1/13/2016	6.71	8.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
CON_SW_320	1/14/2016	6.09	8.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.77	0.03	49%	0%	51%			
CON_SW_321	1/15/2016	4.97	8.8	4.3	0.44	1.1	2.8	3.1	2.9	NA	15	NA	18	NA	NA	NA	17	61	12	1.2	NA	NA	NA	NA	NA	NA			
CON_SW_322	1/16/2016	3.98	8.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
CON_SW_323	1/17/2016	3.36	8.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.73	0.05	49%	0%	51%			
CON_SW_324	1/18/2016	2.97	8.6	4.5	0.45	1.1	2.9	4.7	3.0	NA	15	NA	18	NA	NA	NA	18	56	13	1.3	NA	NA	NA	NA	NA	NA			
CON_SW_325	1/19/2016	2.63	8.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
CON_SW_326	1/20/2016	2.36	8.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.72	0.07	48%	0%	52%			
CON_SW_327	1/21/2016	2.11	8.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	NA	NA	NA	NA	NA			
CON_SW_328	1/22/2016	1.94	8.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0%	53%			
CON_SW_329	1/23/2016	2.17	8.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	0.89	0.06	46%	0%	54%			
CON_SW_330	1/24/2016	2.16	8.2	4.9	0.42	1.2	2.9	4.3	3.0	NA	15	NA	23	NA	NA	NA	19	88	8.7	1.2	0.96	0.08	44%	0%	56%				
CON_SW_331	1/25/2016	2.93	8.2	5.0	0.42	1.2	2.9	4.6	3.0	NA	16	NA	14	NA	NA	NA	20	85	12	1.2	0.94	0.08	43%	0%	57%				
CON_SW_332	1/26/2016	4.16	8.4	4.9	0.50	1.3	2.8	4.5	2.9	39	16	NA	21	44	NA	NA	20	77	13	1.3	0.93	0.08	41%	0%	59%				
CON_SW_333	1/27/2016	5.34	8.6	4.7	0.42	1.2	2.8	4.6	2.9	NA	15	NA	18	NA	NA	NA	19	77	12	1.1	0.81	0.05	40%	0%	60%				
CON_SW_334	1/28/2016	5.31	8.7	4.4	0.43	1.1	2.8	4.6	2.9	NA	15	NA	16	NA	NA	NA	18	76	8.0	1.2	1.1	0.09	40%	0%	60%				
CON_SW_335	1/29/2016	4.90	8.7	4.5	0.48	1.2	2.9	4.6	2.9	38	16	NA	22	46	NA	NA	18	97	12	1.1	1.1	0.07	39%	0%	61%				
CON_SW_336	1/30/2016	4.51	8.6	4.1	0.46	1.1	2.7	4.4	2.7	12	14	NA	15	NA	NA	NA	17	69	11	1.3	1.2	0.04	NA	NA	NA	NA			
CON_SW_337	1/31/2016	6.90	8.6	4.2	0.46	1.1	2.7	4.4	2.7	11	15	NA	20	NA	NA	NA	17	78	12	1.2	0.80	0.06	39%	0%	61%				
CON_SW_338	2/1/2016	9.44	8.8	4.4	0.39	1.1	2.6	4.6	2.9	NA	15	NA	11	NA	NA	NA	18	71	13	1.2	0.85	0.02	38%	0%	62%				
CON_SW_339	2/2/2016	8.62	8.8	3.9	0.41	1.1	2.4	4.6	2.8	11	15	NA	11	NA	NA	NA	16	58	13	1.2	0.83	0.02	39%	0%	61%				
CON_SW_340	2/3/2016	6.70	8.8	3.9	0.41	1.0	2.5	4.6	2.7	NA	14	NA	12	NA	NA	NA	16	70	13	1.1	0.89	0.01	40%	0%	60%				
CON_SW_341	2/4/2016	5.29	8.7	4.1	0.40	1.1	2.5	4.5	2.8	12	14	NA	12	NA	NA	NA	17	70	13	1.3	0.99	0.07	40%	0%	60%				
CON_SW_342	2/5/2016	5.18	8.6	4.0	0.39	1.1	2.5	4.6	2.8	13	15	NA	15	NA	NA	NA	17	66	12	1.1	0.79	0.04	41%	0%	59%				
CON_SW_343	2/6/2016	5.66	8.7	4.2	0.39	1.1	2.5	4.6	2.8	NA	15	NA	12	NA	NA	NA	17	74	6.3	1.2	0.73	0.06	41%	0%	59%				
CON_SW_344	2/7/2016	5.56	8.7	4.1	0.40	1.1	2.6	4.7	2.9	NA	15	NA	13	NA	NA	NA	17	77	9.6	1.1	0.70	0.03	41%	0%	59%				
CON_SW_345	2/8/2016	4.77	8.7	4.1	0.39	1.1	2.6	4.7	2.9	NA	15	NA	8.9	NA	NA	NA	17	55	13	1.1	0.95	0.04	41%	0%	59%				
CON_SW_346	2/9/2016	4.20	8.6	4.2	0.44	1.1	2.7	4.8	3.0	NA	15	NA	15	NA	NA	NA	17	80	12	1.2	0.86	0.06	41%	0%	59%				
CON_SW_347	2/10/2016	4.03	8.6	4.2	0.41	1.1	2.7	4.7	2.9	NA	14	NA	13	NA	NA	NA	17	71	12	1.2	0.76	0.04	42%	0%	58%				
CON_SW_348	2/11/2016	3.93	8.6	4.2	0.42	1.1	2.7	4.6	2.9	NA	14	NA	12	NA	NA	NA	17	67	13	1.2	0.83	0.04	42%	0%	58%				
CON_SW_349	2/12/2016	4.25	8.5	4.3	0.43	1.1	2.8	4.6	3.1	NA	14	NA	17	NA	NA	NA	17	83	11	1.2	0.80	0.02	43%	0%	57%				
CON_SW_350	2/13/2016	4.32	8.5	4.2	0.42	1.1	2.8	4.6	3.0	NA	14	NA	13	NA	NA	NA	16	63	12	1.5	0.83	0.03	44%	0%	56%				
CON_SW_351	2/14/2016	4.53	8.5	4.3	0.44	1.1	2.8	4.5	3.0	NA	14	NA	12	NA	NA	NA	17	65	12	1.2	0.87	0.03	46%	0%	54%				
CON_SW_352	2/15/2016	4.42	8.4	4.3	0.43	1.1	2.8	4.4	3.0	NA	14	NA	13	NA	NA	NA	17	68	12	1.1	0.79	0.04	47%	0%	53%				
CON_SW_353	2/16/2016	4.30	8.4	4.1	0.41	1.1	2.8	4.4	3.0	NA	14	NA	11	NA	NA	NA	16	63	12	1.1	0.72	0.04	48%	0%	52%				
CON_SW_354	2/17/2016	4.70	8.4	4.3	0.41	1.1	2.9	4.4	3.1	11	15	NA	12	NA	NA	NA	16	63	11	1.1	0.68	0.06	48%	0%	52%				
CON_SW_355	2/18/2016	4.81	8.4	4.2	0.40	1.1	2.8	4.5	3.1	NA	15	NA	12	NA	NA	NA	17	66	13	1.1	0.86	0.05	NA	NA	NA	NA			
CON_SW_356	2/19/2016	4.69	8.4	4.4	0.41	1.2	2.9	4.5	3.1	NA	14	NA	9.0	NA	NA	NA	17	44	17	1.2	0.78	0.02	NA	NA	NA	NA			
CON_SW_357	2/20/2016	4.45	8.3	4.4	0.40	1.1	2.8	4.5	3.1	NA	15	NA	11	NA	NA	NA	17	56	16	1.1	0.89	0.08	NA	NA	NA	NA			
CON_SW_358	2/21/2016	4.11	8.3	4.4	0.48	1.1	2.9	4.5	3.1	NA	15	NA	13	NA	NA	NA	17	58	17	1.4	NA	NA	51%	0%	49%				
CON_SW_359	2/22/2016	3.32	8.3	4.7	0.44	1.2	2.9	4.6	3.1	NA	16	NA	13	NA	NA	NA	18	66	17	1.2	0.64	0.02	55%	0%	45%				
CON_SW_360	2/23/2016	2.50	8.3	4.7	0.43	1.2	2.9	4.5	3.2	NA	15	NA	9.0	NA	NA	NA	18	58	14	1.2	0.73	0.02	NA	NA	NA	NA			
CON_SW_361	2/24/2016	2.68	8.2	4.3	0.40	1.1	2.8	4.3	3.1	12	14	NA	10.4	NA	NA	NA	17	65	13	1.1	0.73	0.03	51%	0%	49%				
CON_SW_362	2/25/2016	2.83	8.2	4.4	0.40	1.1	2.8	4.4	3.1	13	14	NA	10.2	NA	NA	NA	17	63	12	1.1	NA	NA	NA	NA	NA	NA			

NA = not a number (sample not available, sample consumed for other analyses, concentration below limit of detection, or element not analyzed)

<sup>1</sup> taken from Supplementary Material published in Sohr, J., Uhlig, D., Kaiser, K., Von Blanckenburg, F., Siemens, J., Seeger, S., Frick, D. A., Krüger, J., Lang, F., Weiler, M. (2019). Phosphorus fluxes in a temperate forested watershed: canopy leaching, runoff sources, and in-stream transformation. *Frontiers in forests and global change*, 2, 85

Table S6 Element concentrations in groundwater (GW).

sample ID	sampling date	T	Major elements (ICP-OES)						Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>		Anion and dissolved organic elements <sup>1</sup>		
			Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON
		(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )
CON_GW_1	3/1/2015	8.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.71	0.02
CON_GW_2	3/2/2015	8.9	9.2	0.70	1.6	3.0	5.3	3.0	NA	NA	NA	22	98	NA	NA	28	54	NA	1.2	0.58	0.02
CON_GW_3	3/3/2015	8.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	0.47	0.02
CON_GW_4	3/4/2015	8.8	8.1	0.63	1.5	2.9	5.4	3.1	NA	NA	NA	NA	36	NA	NA	25	43	NA	1.2	0.49	0.02
CON_GW_5	3/5/2015	8.8	8.6	0.64	1.6	2.9	5.3	3.1	NA	NA	NA	NA	89	NA	NA	26	32	NA	1.1	0.48	0.01
CON_GW_6	3/6/2015	8.9	8.5	0.59	1.5	2.9	5.2	3.0	NA	NA	NA	NA	NA	NA	NA	25	NA	NA	1.2	0.55	0.02
CON_GW_7	3/7/2015	8.8	8.5	0.60	1.6	2.8	5.2	3.1	NA	NA	NA	NA	NA	NA	NA	26	68	NA	1.2	1.03	0.05
CON_GW_8	3/8/2015	8.8	8.5	0.60	1.6	2.8	5.2	3.1	NA	NA	NA	NA	NA	NA	NA	26	61	NA	1.2	0.55	0.02
CON_GW_9	3/9/2015	8.8	8.6	0.60	1.6	2.8	5.2	3.1	NA	NA	NA	NA	18	NA	NA	26	43	NA	1.2	0.83	0.01
CON_GW_10	3/10/2015	8.8	8.9	0.61	1.6	2.9	5.2	3.1	NA	NA	NA	NA	NA	NA	NA	27	44	12	1.1	0.60	0.01
CON_GW_11	3/11/2015	8.8	9.4	0.60	1.7	2.9	5.2	3.2	NA	NA	NA	NA	NA	NA	NA	28	72	5.8	1.2	0.77	0.03
CON_GW_12	3/12/2015	8.8	10.4	0.66	1.7	3.0	5.2	3.6	NA	NA	NA	NA	65	NA	NA	31	65	7.6	1.3	0.76	0.02
CON_GW_13	3/13/2015	8.8	10.2	0.67	1.7	2.9	5.2	3.6	NA	NA	NA	NA	54	NA	NA	31	55	6.9	1.3	0.68	0.04
CON_GW_14	3/14/2015	8.8	11	0.68	1.8	3.0	5.2	3.3	NA	NA	NA	NA	NA	NA	NA	32	66	8.8	1.2	0.50	0.02
CON_GW_15	3/15/2015	8.8	11	0.67	1.8	3.1	5.1	3.3	NA	NA	NA	NA	NA	NA	NA	33	41	5.7	1.2	0.55	0.03
CON_GW_16	3/16/2015	8.8	12	0.67	1.9	3.1	5.1	3.4	NA	NA	NA	NA	NA	NA	NA	34	64	9.1	1.2	0.91	0.08
CON_GW_17	3/17/2015	8.8	12	0.67	1.9	3.1	5.1	3.4	NA	NA	NA	NA	NA	NA	NA	35	56	7.0	1.2	0.57	0.03
CON_GW_18	3/18/2015	8.7	13	0.69	2.0	3.2	5.1	3.5	NA	NA	NA	NA	NA	NA	NA	36	51	9.2	1.2	0.59	0.05
CON_GW_19	3/19/2015	8.7	13	0.70	2.0	3.1	5.1	3.5	NA	NA	NA	NA	NA	NA	NA	37	36	12	1.2	0.82	0.08
CON_GW_20	3/20/2015	8.7	14	0.76	2.0	3.2	5.1	3.5	NA	NA	NA	NA	NA	NA	NA	38	37	NA	1.3	0.74	0.04
CON_GW_21	3/21/2015	8.7	14	0.69	2.0	3.2	5.0	3.6	NA	NA	NA	NA	NA	NA	NA	38	37	NA	1.3	0.67	0.01
CON_GW_22	3/22/2015	8.7	14	0.70	2.1	3.2	5.1	3.6	NA	NA	NA	NA	23	NA	NA	39	52	5.2	1.3	0.55	0.01
CON_GW_23	3/23/2015	8.7	14	0.69	2.1	3.2	5.1	3.6	NA	NA	NA	NA	NA	NA	NA	40	55	7.5	1.2	NA	NA
CON_GW_24	3/24/2015	8.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_25	3/25/2015	8.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.53	0.04
CON_GW_26	3/26/2015	8.7	15	0.74	2.1	3.2	5.1	3.6	NA	NA	NA	NA	NA	NA	NA	41	45	9.4	1.3	0.50	0.02
CON_GW_27	3/27/2015	8.7	15	0.73	2.1	3.2	5.0	3.6	NA	NA	NA	NA	NA	NA	NA	41	46	8.0	0.10	1.2	0.05
CON_GW_28	3/28/2015	8.7	15	0.74	2.2	3.2	5.0	3.7	NA	NA	NA	NA	NA	NA	NA	42	38	8.1	9.0	0.31	0.03
CON_GW_29	3/29/2015	8.7	14	0.67	2.0	3.0	4.6	3.4	NA	NA	NA	NA	NA	NA	NA	39	39	8.5	1.3	0.54	0.05
CON_GW_30	3/30/2015	8.7	15	0.85	2.1	3.2	4.9	3.8	NA	NA	NA	NA	NA	NA	NA	42	58	7.3	1.4	0.69	0.03
CON_GW_31	3/31/2015	8.7	16	0.77	2.1	3.2	5.0	3.7	NA	NA	NA	NA	NA	NA	NA	42	44	9.6	1.3	0.48	0.01
CON_GW_32	4/1/2015	8.7	15	0.71	2.1	3.2	5.0	3.7	NA	NA	NA	NA	NA	NA	NA	42	31	9.0	1.3	0.51	0.03
CON_GW_33	4/2/2015	8.7	9.6	0.91	1.5	2.8	5.0	3.4	NA	NA	NA	NA	NA	NA	NA	28	77	3.9	1.3	NA	NA
CON_GW_34	4/3/2015	8.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.60	0.02
CON_GW_35	4/4/2015	8.6	5.9	0.52	1.1	2.1	4.0	2.2	NA	NA	NA	NA	NA	NA	NA	18	48	7.2	1.5	2.7	0.10
CON_GW_36	4/5/2015	8.6	7.7	0.59	1.5	2.8	5.3	2.9	NA	NA	NA	NA	NA	NA	NA	24	46	8.8	1.2	2.1	0.14
CON_GW_37	4/6/2015	8.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.2	0.16
CON_GW_38	4/7/2015	8.6	7.9	0.60	1.5	2.8	5.2	3.0	NA	NA	NA	NA	NA	NA	NA	24	68	NA	1.1	2.2	0.04
CON_GW_39	4/8/2015	8.6	8.4	0.65	1.5	2.9	5.1	3.1	NA	NA	NA	NA	NA	NA	NA	25	60	5.0	1.2	NA	NA
CON_GW_40	4/9/2015	8.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5	0.03
CON_GW_41	4/10/2015	8.6	8.9	0.71	1.6	3.1	5.2	3.0	NA	NA	NA	NA	NA	NA	NA	26	69	4.2	1.2	2.7	0.07
CON_GW_42	4/11/2015	8.6	9.3	0.67	1.6	3.0	5.2	3.1	NA	NA	NA	NA	NA	NA	NA	27	81	5.9	1.4	3.3	0.19
CON_GW_43	4/12/2015	8.6	9.9	0.61	1.7	3.0	5.2	3.2	NA	NA	NA	NA	NA	NA	NA	29	69	8.7	1.5	3.0	0.06
CON_GW_44	4/13/2015	8.6	11	0.63	1.7	3.0	5.2	3.3	NA	NA	NA	NA	NA	NA	NA	30	72	4.6	1.2	NA	NA
CON_GW_45	4/14/2015	8.6	11	0.63	1.8	3.0	5.2	3.4	NA	NA	NA	NA	NA	NA	NA	32	66	4.9	1.2	2.7	0.15
CON_GW_46	4/15/2015	8.6	12	0.64	1.8	3.0	5.1	3.3	NA	NA	NA	NA	NA	NA	NA	33	59	7.2	1.2	2.9	0.04
CON_GW_47	4/16/2015	8.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	2.6	0.05
CON_GW_48	4/17/2015	8.6	12	0.73	1.9	3.1	5.1	3.5	NA	NA	NA	NA	NA	NA	NA	36	81	5.1	1.2	2.7	0.14
CON_GW_49	4/18/2015	8.6	12	0.68	1.8	3.0	5.1	3.4	NA	NA	NA	NA	NA	NA	NA	34	71	7.0	1.3	2.9	0.19
CON_GW_50	4/19/2015	8.6	12	0.72	1.8	3.1	5.2	3.3	NA	NA	NA	NA	NA	NA	NA	34	66	7.8	1.3	2.6	0.03
CON_GW_51	4/20/2015	8.6	12	0.67	1.8	3.1	5.3	3.4	NA	NA	NA	NA	NA	NA	NA	33	52	5.0	1.3	1.7	0.08

continued on next page ...

Table S6 continued - Element concentrations in groundwater (GW).

sample ID	sampling date	T	Major elements (ICP-OES)						Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>		Anion and dissolved organic elements <sup>1</sup>		
			Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON
		(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )
CON_GW_52	4/21/2015	8.5	11	0.68	1.7	3.2	5.1	3.3	NA	NA	NA	NA	NA	NA	NA	32	65	14	1.2	1.8	0.08
CON_GW_53	4/22/2015	8.5	11	0.64	1.7	3.0	5.1	3.3	NA	NA	NA	NA	NA	NA	NA	32	78	5.6	0.18	2.3	0.08
CON_GW_54	4/23/2015	8.5	11	1.05	1.7	7.1	2.1	3.0	NA	NA	NA	NA	NA	NA	NA	20	31	24	1.2	1.7	0.08
CON_GW_55	4/24/2015	8.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.48	2.6	0.04
CON_GW_56	4/25/2015	8.5	14	0.68	2.0	3.1	5.1	3.6	NA	NA	NA	NA	NA	NA	NA	38	30	5.1	NA	NA	NA
CON_GW_57	4/26/2015	8.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.36	NA	NA
CON_GW_58	4/27/2015	8.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.0	0.04
CON_GW_59	4/28/2015	8.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	2.0	0.12
CON_GW_60	4/29/2015	8.5	10.3	0.58	1.5	2.4	3.5	2.8	NA	NA	NA	NA	65	NA	NA	29	49	8.1	1.3	2.2	0.14
CON_GW_61	4/30/2015	8.5	14	0.73	2.1	3.2	5.0	3.5	NA	NA	NA	NA	NA	NA	NA	39	53	6.7	1.2	1.8	0.12
CON_GW_62	5/1/2015	8.5	10.1	0.68	1.6	2.8	5.0	3.1	NA	NA	NA	NA	NA	NA	NA	29	73	4.5	1.3	1.9	0.17
CON_GW_63	5/2/2015	8.4	7.7	0.62	1.4	2.8	5.2	2.8	NA	NA	NA	NA	NA	NA	NA	23	70	8.3	1.3	2.0	0.10
CON_GW_64	5/3/2015	8.4	7.6	0.62	1.4	2.7	5.2	2.7	NA	NA	NA	NA	NA	NA	NA	23	69	5.7	1.1	2.1	0.10
CON_GW_65	5/4/2015	8.4	7.4	0.65	1.5	2.9	5.3	2.7	NA	NA	NA	NA	NA	NA	NA	23	87	11	1.1	2.3	0.16
CON_GW_66	5/5/2015	8.4	7.5	0.63	1.5	3.0	5.5	2.9	NA	NA	NA	NA	NA	NA	NA	23	77	8.8	1.2	2.2	0.09
CON_GW_67	5/6/2015	8.4	8.4	0.75	1.6	3.0	5.2	3.0	NA	NA	NA	NA	NA	NA	NA	25	72	4.5	1.1	NA	NA
CON_GW_68	5/7/2015	8.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.5	1.9	0.07
CON_GW_69	5/8/2015	8.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	2.0	0.11
CON_GW_70	5/9/2015	8.4	8.8	0.61	1.6	3.0	5.2	3.0	NA	NA	NA	NA	NA	NA	NA	26	79	9.5	1.2	1.8	0.04
CON_GW_71	5/10/2015	8.4	9.5	0.63	1.7	3.0	5.2	3.1	NA	NA	NA	NA	NA	NA	NA	28	81	11	1.2	2.3	0.11
CON_GW_72	5/11/2015	8.4	10.2	0.63	1.7	3.1	5.2	5.3	NA	NA	NA	NA	NA	NA	NA	30	65	15	1.2	1.9	0.14
CON_GW_73	5/12/2015	8.4	11	0.64	1.8	3.1	5.2	3.3	NA	NA	NA	NA	NA	NA	NA	32	69	6.3	1.2	1.9	0.11
CON_GW_74	5/13/2015	8.4	12	0.68	1.9	3.2	5.2	3.4	NA	NA	NA	28	23	NA	NA	33	66	7.1	1.2	2.0	0.06
CON_GW_75	5/14/2015	8.4	12	0.69	1.8	3.1	5.1	3.3	NA	NA	NA	NA	NA	NA	NA	33	60	9.5	1.2	NA	NA
CON_GW_76	5/15/2015	8.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.0	0.09
CON_GW_77	5/16/2015	8.4	12	0.71	1.9	3.2	5.2	3.6	NA	NA	NA	NA	NA	NA	NA	35	83	7.9	1.3	1.8	0.08
CON_GW_78	5/17/2015	8.4	9.9	0.61	1.7	3.0	5.2	3.2	NA	NA	NA	NA	NA	NA	NA	29	59	3.5	1.3	1.8	0.10
CON_GW_79	5/18/2015	8.4	9.6	0.63	1.6	3.0	5.3	3.1	NA	NA	NA	NA	NA	NA	NA	28	64	6.3	1.2	NA	NA
CON_GW_80	5/19/2015	8.4	9.5	0.62	1.6	3.0	5.2	3.2	NA	NA	NA	16	NA	NA	NA	28	88	12	1.1	3.2	0.23
CON_GW_81	5/20/2015	8.4	10.0	0.65	1.7	3.1	5.2	3.1	NA	NA	NA	15	NA	NA	NA	29	65	NA	1.2	NA	NA
CON_GW_82	5/21/2015	8.4	10.4	0.69	1.7	3.4	5.2	3.3	NA	NA	NA	NA	NA	NA	NA	30	87	9.3	1.2	NA	NA
CON_GW_83	5/22/2015	8.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5	0.17
CON_GW_84	5/23/2015	8.4	11	0.63	1.8	3.1	5.2	3.3	NA	NA	NA	NA	NA	NA	NA	31	63	NA	1.1	2.5	0.18
CON_GW_85	5/24/2015	8.4	11	0.64	1.8	3.1	5.1	3.3	NA	NA	NA	NA	NA	NA	NA	32	73	NA	1.2	2.5	0.17
CON_GW_86	5/25/2015	8.4	21	1.12	2.9	5.6	9.2	5.7	56	17	NA	11	7.2	NA	NA	56	124	NA	1.2	NA	NA
CON_GW_87	5/26/2015	8.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_88	5/27/2015	8.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.4	0.19
CON_GW_89	5/28/2015	8.4	17	0.88	2.3	4.5	6.3	4.3	21	14	NA	14	11	NA	NA	43	54	6.3	1.2	2.3	0.11
CON_GW_90	5/29/2015	8.4	19	1.37	2.4	5.0	6.6	4.6	12	14	NA	11	5.7	NA	NA	45	102	5.7	1.4	2.3	0.15
CON_GW_91	5/30/2015	8.4	20	0.95	2.5	5.1	6.7	4.5	13	15	NA	18	9.2	2.7	NA	47	101	6.4	1.3	2.2	0.12
CON_GW_92	5/31/2015	8.4	19	1.03	2.4	4.7	6.3	4.4	21	14	NA	18	55	NA	NA	47	87	21	1.2	2.0	0.10
CON_GW_93	6/1/2015	8.4	21	1.02	2.6	5.1	6.5	4.7	11	15	NA	30	50	2.5	NA	51	116	14	1.3	1.8	0.05
CON_GW_94	6/2/2015	8.4	21	0.95	2.5	4.9	6.3	4.5	31	14	NA	28	28	NA	NA	49	92	8.0	1.3	3.3	0.24
CON_GW_95	6/3/2015	8.4	21	0.95	2.6	4.9	6.4	4.8	53	14	NA	38	30	2.5	NA	51	107	4.7	1.3	2.1	0.13
CON_GW_96	6/4/2015	8.5	22	0.96	2.6	5.0	6.3	4.8	23	15	NA	24	5.8	NA	NA	51	97	6.9	1.2	1.8	0.08
CON_GW_97	6/5/2015	8.5	22	0.90	3.0	4.5	6.8	4.9	30	16	NA	12	3.1	NA	NA	63	79	5.9	1.3	2.0	0.16
CON_GW_98	6/6/2015	8.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	1.9	0.12
CON_GW_99	6/7/2015	8.5	22	0.86	2.9	4.3	6.5	4.8	25	15	NA	16	24	2.7	NA	62	88	5.5	1.3	2.0	0.04
CON_GW_100	6/8/2015	8.5	24	0.92	3.2	4.8	7.1	5.2	30	16	NA	15	45	2.7	NA	68	102	8.6	1.3	1.6	0.04
CON_GW_101	6/9/2015	8.5	21	0.86	2.9	4.2	6.3	4.7	22	15	NA	11	12	2.4	NA	61	76	5.1	1.2	2.5	0.09
CON_GW_102	6/10/2015	8.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	0.73	0.05
CON_GW_103	6/11/2015	8.5	23	0.87	2.9	4.4	6.7	4.9	14	15	NA	13	3	2.5	NA	64	81	5.0	1.3	0.91	0.07

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Table S6 continued - Element concentrations in groundwater (GW).

sample ID	sampling date	T	Major elements (ICP-OES)						Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>		Anion and dissolved organic elements <sup>1</sup>		
			Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON
		(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )
CON_GW_104	6/12/2015	8.5	35	1.37	4.5	6.6	9.8	7.4	26	24	NA	23	12.0	4.0	NA	97	137	8.6	1.3	0.72	0.05
CON_GW_105	6/13/2015	8.5	37	1.47	4.5	6.9	10.0	7.7	17	24	NA	22	7.8	4.0	NA	98	130	8.4	1.2	0.71	0.05
CON_GW_106	6/14/2015	8.5	52	3.48	6.5	15	14	11	22	33	NA	17	9.0	4.6	NA	141	118	17	1.3	0.59	0.02
CON_GW_107	6/15/2015	8.6	36	1.67	5.0	7.5	11	8.2	27	28	NA	33	7.8	4.7	NA	113	69	26	1.2	0.58	0.06
CON_GW_108	6/16/2015	8.5	39	1.44	4.5	6.7	9.5	7.2	36	25	NA	23	3.0	4.2	NA	100	67	18	1.2	0.77	0.04
CON_GW_109	6/17/2015	8.4	37	1.41	4.4	6.5	9.3	7.2	34	25	NA	25	2.9	4.1	NA	98	78	17	1.2	0.74	0.03
CON_GW_110	6/18/2015	8.4	35	1.41	4.2	6.6	9.5	7.3	30	23	NA	28	9.6	3.5	NA	92	73	14	1.3	NA	NA
CON_GW_111	6/19/2015	8.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_112	6/20/2015	8.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_113	6/21/2015	8.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.64	0.05
CON_GW_114	6/22/2015	8.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	0.55	0.03
CON_GW_115	6/23/2015	NA	36	1.43	4.4	6.8	9.9	7.4	40	24	NA	25	2.9	3.8	NA	95	118	17	1.2	0.61	0.03
CON_GW_116	6/24/2015	8.6	40	1.70	5.2	7.6	12	8.8	43	27	NA	33	NA	4.6	NA	112	142	27	1.3	0.79	0.03
CON_GW_117	6/25/2015	8.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	0.80	0.03
CON_GW_118	6/26/2015	8.6	38	1.53	4.6	6.7	11	8.0	34	25	NA	23	36	4.2	NA	100	146	13	1.3	0.58	0.03
CON_GW_119	6/27/2015	8.6	36	1.48	4.2	6.1	9.6	7.4	22	22	NA	18	NA	3.8	NA	93	112	14	1.2	0.61	0.02
CON_GW_120	6/28/2015	8.6	34	1.30	4.0	5.7	9.0	7.0	29	21	NA	20	NA	3.6	NA	87	122	14	1.3	0.61	0.04
CON_GW_121	6/29/2015	8.6	39	1.57	4.8	7.1	11	8.4	39	26	NA	24	NA	4.4	NA	105	145	16	1.3	0.60	0.02
CON_GW_122	6/30/2015	8.6	39	1.54	4.7	6.8	10.6	8.1	37	25	NA	21	NA	4.3	NA	103	117	11	1.4	0.61	0.02
CON_GW_123	7/1/2015	8.6	38	1.48	4.6	6.6	10.4	7.9	35	25	NA	19	NA	4.2	NA	102	125	9.8	1.3	0.90	0.07
CON_GW_124	7/2/2015	8.6	42	1.67	5.2	7.8	12	9.0	36	27	NA	25	NA	4.5	NA	114	163	13	1.2	NA	NA
CON_GW_125	7/3/2015	8.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_126	7/4/2015	8.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_127	7/5/2015	8.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.60	0.02
CON_GW_128	7/6/2015	8.6	38	1.60	5.1	7.2	11	8.8	41	28	NA	18	40	4.7	NA	114	106	20	1.3	0.85	0.04
CON_GW_129	7/7/2015	8.6	38	1.54	4.6	6.5	10.0	8.1	33	25	NA	32	28	4.2	NA	102	193	7.7	1.4	0.94	0.03
CON_GW_130	7/8/2015	8.7	21	0.82	2.6	3.8	5.9	4.6	30	13	NA	18	36	NA	NA	57	126	3.7	1.3	1.7	0.04
CON_GW_131	7/9/2015	8.7	18	0.71	2.3	3.3	5.0	4.0	12	11	NA	12	NA	NA	NA	49	72	5.1	1.3	2.8	0.19
CON_GW_132	7/10/2015	8.7	19	1.05	2.3	3.5	5.1	4.1	19	12	NA	15	NA	NA	NA	51	74	9.1	1.5	2.0	0.12
CON_GW_133	7/11/2015	8.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4	1.6	0.10
CON_GW_134	7/12/2015	8.7	19	0.72	2.2	3.4	4.9	4.0	9.0	11	NA	9.5	NA	NA	NA	50	47	6.5	1.3	1.5	0.08
CON_GW_135	7/13/2015	8.8	18	0.73	2.3	3.4	4.9	4.0	5.8	11	NA	8.1	NA	NA	NA	50	44	3.8	1.3	1.5	0.12
CON_GW_136	7/14/2015	8.7	19	0.74	2.3	3.4	5.0	4.1	18	12	NA	24	NA	NA	NA	51	54	6.5	1.3	1.4	0.11
CON_GW_137	7/15/2015	8.7	19	0.73	2.3	3.5	5.1	4.2	19	12	NA	15	NA	NA	NA	51	54	4.8	1.4	1.3	0.08
CON_GW_138	7/16/2015	8.7	19	0.72	2.3	3.4	5.0	4.0	22	12	NA	13	NA	NA	NA	51	46	6.3	1.3	1.3	0.05
CON_GW_139	7/17/2015	8.7	19	0.75	2.3	3.4	5.0	4.0	11	11	NA	15	NA	NA	NA	50	62	4.3	1.3	1.3	0.09
CON_GW_140	7/18/2015	8.7	19	0.77	2.3	3.5	5.0	4.1	13	12	NA	18	NA	NA	NA	51	65	4.7	1.3	1.3	0.10
CON_GW_141	7/19/2015	8.7	19	0.75	2.3	3.4	5.0	4.0	12	12	NA	15	NA	NA	NA	51	68	4.7	1.3	1.3	0.09
CON_GW_142	7/20/2015	NA	18	0.76	2.3	3.4	4.9	4.1	6.3	11	NA	15	NA	NA	NA	50	70	5.0	1.4	1.3	0.06
CON_GW_143	7/21/2015	NA	18	0.73	2.3	3.4	4.9	4.0	14	11	NA	10.1	NA	NA	NA	49	67	4.3	1.3	1.2	0.07
CON_GW_144	7/22/2015	NA	19	0.72	2.3	3.3	4.9	4.0	17	11	NA	12	NA	NA	NA	49	66	6.0	1.3	1.3	0.12
CON_GW_145	7/23/2015	NA	19	0.83	2.3	3.5	5.1	4.2	16	12	NA	10.3	NA	NA	NA	50	90	6.5	1.3	1.4	0.09
CON_GW_146	7/24/2015	NA	18	0.80	2.2	3.4	4.8	4.0	15	11	NA	18	NA	NA	NA	48	76	5.8	1.3	2.0	0.13
CON_GW_147	7/25/2015	NA	19	0.78	2.3	3.4	4.9	4.1	12	11	NA	14	NA	NA	NA	49	84	5.1	1.3	1.5	0.08
CON_GW_148	7/26/2015	NA	18	0.77	2.2	3.3	4.9	4.1	15	11	NA	19	NA	NA	NA	48	85	5.2	1.4	1.4	0.10
CON_GW_149	7/27/2015	NA	18	0.80	2.3	3.4	4.9	4.1	11	11	NA	19	NA	NA	NA	49	83	9.9	1.4	0.55	0.01
CON_GW_150	7/28/2015	NA	18	0.84	2.2	3.4	4.9	4.2	14	11	NA	21	NA	NA	NA	48	102	3.5	1.5	0.46	0.04
CON_GW_151	7/29/2015	NA	18	0.83	2.2	3.4	4.8	4.1	13	11	NA	23	NA	NA	NA	48	92	6.5	1.4	0.47	0.03
CON_GW_152	7/30/2015	NA	18	0.76	2.2	3.3	4.9	4.1	29	13	NA	18	35	NA	NA	47	100	6.5	1.3	0.39	0.02
CON_GW_153	7/31/2015	NA	18	0.72	2.2	3.3	4.8	4.0	15	11	NA	13	NA	NA	NA	47	80	3.3	1.3	0.35	0.03
CON_GW_154	8/1/2015	NA	18	0.75	2.2	3.4	4.9	4.2	35	12	NA	19	62	NA	NA	47	128	5.4	1.3	0.41	0.02
CON_GW_155	8/2/2015	NA	18	0.75	2.3	3.8	5.1	4.3	22	13	2.8	16	18	NA	NA	45	86	4.2	1.3	0.41	0.04

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Table S6 continued - Element concentrations in groundwater (GW).

sample ID	sampling date	T	Major elements (ICP-OES)							Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>	Anion and dissolved organic elements <sup>1</sup>			
			Ca	K	Mg	Na	Si	S		Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON
		(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )		(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )
CON_GW_156	8/3/2015	NA	18	0.74	2.2	3.5	5.2	4.2		18	12	3.0	16	19	NA	NA	46	106	5.6	1.3	0.44	0.02
CON_GW_157	8/4/2015	NA	19	0.75	2.3	3.8	5.1	4.3		11	13	2.9	13	19	NA	NA	46	92	4.9	1.3	0.49	0.03
CON_GW_158	8/5/2015	NA	19	0.75	2.3	3.6	5.2	4.4		NA	13	2.7	18	23	NA	NA	47	103	4.4	1.3	0.38	0.02
CON_GW_159	8/6/2015	NA	19	0.76	2.3	3.6	5.2	4.2		14	13	NA	13	11	NA	NA	48	72	7.2	NA	NA	NA
CON_GW_160	8/7/2015	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_161	8/8/2015	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_162	8/9/2015	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.34	0.01
CON_GW_163	8/10/2015	NA	19	0.81	2.3	3.8	5.3	4.2		16	12	NA	16	31	NA	NA	47	61	8.4	1.3	0.38	0.02
CON_GW_164	8/11/2015	NA	19	0.78	2.3	3.5	5.2	4.2		19	12	NA	14	34	NA	NA	48	68	6.0	1.3	0.48	0.05
CON_GW_165	8/12/2015	NA	18	0.82	2.2	3.5	5.2	4.2		12	13	4.4	17	54	NA	2.9	47	101	3.1	1.3	0.43	0.03
CON_GW_166	8/13/2015	NA	19	0.81	2.4	3.6	5.3	4.2		128	17	NA	17	165	2.5	4.5	49	86	10.4	1.3	NA	NA
CON_GW_167	8/14/2015	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_168	8/15/2015	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_169	8/16/2015	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.46	0.03
CON_GW_170	8/17/2015	NA	19	0.76	2.3	3.5	5.1	4.2		17	12	2.5	14	59	NA	NA	47	44	5.9	1.3	0.85	0.06
CON_GW_171	8/18/2015	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	0.50	0.04
CON_GW_172	8/19/2015	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	0.40	0.01
CON_GW_173	8/20/2015	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	0.49	0.02
CON_GW_174	8/21/2015	NA	18	0.74	2.4	3.0	5.0	4.1		7.2	13	NA	20	NA	NA	NA	51	92	4.1	1.3	0.47	0.01
CON_GW_175	8/22/2015	NA	18	0.74	2.3	3.0	5.0	4.0		9.0	13	NA	16	36	NA	NA	50	72	3.0	1.3	0.43	0.05
CON_GW_176	8/23/2015	NA	18	0.77	2.3	3.1	5.0	4.0		7.0	13	NA	15	NA	NA	NA	50	63	3.8	1.2	0.51	0.03
CON_GW_177	8/24/2015	NA	18	0.75	2.3	3.1	5.1	4.0		11	13	NA	15	48	NA	NA	49	77	5.0	1.3	0.42	0.02
CON_GW_178	8/25/2015	NA	18	0.75	2.3	3.2	5.1	4.0		8.3	13	NA	20	33	NA	NA	50	97	2.9	1.3	0.42	0.03
CON_GW_179	8/26/2015	NA	19	0.77	2.4	3.2	5.0	4.1		8.0	13	NA	13	26	NA	NA	50	65	2.1	1.2	0.46	0.04
CON_GW_180	8/27/2015	NA	19	0.77	2.3	3.2	5.0	4.1		31	13	NA	18	92	NA	NA	49	90	1.4	1.2	0.43	0.04
CON_GW_181	8/28/2015	NA	19	0.75	2.4	3.1	5.0	4.0		4.8	13	NA	6.9	29	NA	NA	50	79	2.0	1.3	0.48	0.03
CON_GW_182	8/29/2015	NA	19	0.75	2.4	3.1	5.1	4.1		6.0	13	NA	19	109	NA	NA	50	105	4.3	1.4	0.43	0.02
CON_GW_183	8/30/2015	NA	17	0.76	2.3	3.0	5.0	3.9		7.2	13	NA	21	107	NA	NA	48	101	4.2	1.3	0.47	0.01
CON_GW_184	8/31/2015	NA	18	0.71	2.4	3.0	4.9	3.8		8.0	12	NA	14	NA	NA	NA	49	65	5.1	1.3	NA	NA
CON_GW_185	9/1/2015	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_186	9/2/2015	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4	0.13
CON_GW_187	9/3/2015	NA	18	0.73	2.3	3.0	5.0	3.8		9.2	13	NA	17	44	NA	NA	48	83	4.2	1.3	NA	NA
CON_GW_188	9/4/2015	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_189	9/5/2015	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_190	9/6/2015	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	0.07
CON_GW_191	9/7/2015	8.7	18	0.73	2.3	3.1	4.9	3.9		7.9	13	NA	16	NA	NA	NA	48	67	3.8	1.3	1.2	0.07
CON_GW_192	9/8/2015	8.7	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	1.4	0.10
CON_GW_193	9/9/2015	8.7	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	1.3	0.12
CON_GW_194	9/10/2015	8.7	14	0.56	1.9	2.5	2.8	3.4		5.3	9.7	NA	11	30	NA	NA	38	82	4.6	1.2	1.2	0.09
CON_GW_195	9/11/2015	8.8	18	0.71	2.3	3.0	5.0	3.9		5.1	12	NA	13	56	NA	NA	47	101	5.7	1.3	1.3	0.06
CON_GW_196	9/12/2015	8.8	17	0.75	2.3	2.9	4.9	4.0		12	12	NA	18	91	NA	NA	46	115	4.9	1.2	1.5	0.12
CON_GW_197	9/13/2015	8.8	17	0.70	2.2	3.0	4.9	3.9		6.4	12	NA	11	60	NA	NA	46	85	5.6	1.3	1.5	0.11
CON_GW_198	9/14/2015	8.8	18	0.71	2.3	3.0	4.9	3.9		7.3	13	NA	6.0	51	NA	NA	46	72	5.2	1.2	1.4	0.11
CON_GW_199	9/15/2015	8.8	18	0.71	2.3	3.0	5.0	4.0		6.8	13	NA	9.6	55	NA	NA	47	93	5.5	1.3	1.4	0.10
CON_GW_200	9/16/2015	8.8	18	0.73	2.3	3.1	4.9	4.1		7.1	14	NA	14	40	NA	NA	49	88	4.5	1.2	1.2	0.11
CON_GW_201	9/17/2015	8.8	18	0.74	2.3	3.1	5.0	4.0		7.9	13	NA	17	41	NA	NA	51	88	5.2	1.2	1.2	0.05
CON_GW_202	9/18/2015	8.8	18	0.74	2.3	3.0	5.0	3.9		6.6	13	NA	12	NA	NA	NA	49	81	4.6	1.2	1.2	0.04
CON_GW_203	9/19/2015	8.8	18	0.75	2.3	3.1	5.0	4.0		6.4	13	NA	8.5	NA	NA	NA	49	68	NA	1.2	1.2	0.08
CON_GW_204	9/20/2015	8.8	18	0.73	2.3	3.1	4.9	4.0		7.5	13	NA	9.7	NA	NA	NA	49	63	5.5	1.3	1.2	0.12
CON_GW_205	9/21/2015	8.8	18	0.73	2.3	3.1	5.0	4.0		9.7	14	NA	12	42	NA	NA	49	78	5.9	1.2	NA	NA
CON_GW_206	9/22/2015	8.8	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_207	9/23/2015	8.8	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Table S6 continued - Element concentrations in groundwater (GW).

sample ID	sampling date	T	Major elements (ICP-OES)						Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>		Anion and dissolved organic elements <sup>1</sup>		
			Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON
		(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )
CON_GW_208	9/24/2015	8.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_209	9/25/2015	8.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_210	9/26/2015	8.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_211	9/27/2015	8.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	0.10
CON_GW_212	9/28/2015	8.8	18	0.76	2.3	3.1	5.0	4.0	8.4	13	NA	19	NA	NA	NA	49	102	7.1	1.3	1.1	0.08
CON_GW_213	9/29/2015	8.8	19	0.75	2.4	3.1	5.0	4.0	6.7	13	NA	9.9	NA	NA	NA	50	71	6.0	1.2	1.9	0.08
CON_GW_214	9/30/2015	8.8	19	0.75	2.4	3.1	5.0	4.1	7.9	13	NA	11	NA	NA	NA	49	70	6.5	1.2	1.9	0.18
CON_GW_215	10/1/2015	8.8	19	0.75	2.3	3.1	5.1	4.1	13	13	NA	9.8	NA	NA	NA	49	71	6.7	1.2	1.7	0.16
CON_GW_216	10/2/2015	8.8	19	0.76	2.3	3.1	5.0	4.1	6.5	13	NA	13	NA	NA	NA	49	89	4.7	1.2	1.6	0.14
CON_GW_217	10/3/2015	8.9	18	0.77	2.3	3.1	5.0	4.1	7.7	13	NA	16	NA	NA	NA	48	71	6.3	1.2	1.5	0.08
CON_GW_218	10/4/2015	8.9	18	0.77	2.3	3.1	5.0	4.1	6.3	13	NA	14	NA	NA	NA	48	77	8.3	1.2	1.6	0.13
CON_GW_219	10/5/2015	8.9	19	0.78	2.3	3.1	5.0	4.1	6.2	13	NA	19	25	NA	NA	48	92	7.3	1.2	1.4	0.16
CON_GW_220	10/6/2015	8.9	19	0.78	2.3	3.8	5.0	65.7	11	13	NA	14	NA	NA	NA	48	75	6.3	1.3	1.5	0.08
CON_GW_221	10/7/2015	8.9	19	0.79	2.3	3.2	5.0	4.2	7.2	13	NA	13	NA	NA	NA	48	108	6.3	1.3	1.4	0.11
CON_GW_222	10/8/2015	8.9	19	0.75	2.3	3.1	5.0	4.1	7.5	13	NA	12	NA	NA	NA	49	90	7.1	1.2	1.4	0.11
CON_GW_223	10/9/2015	8.9	19	0.76	2.4	3.1	5.1	4.1	20	14	NA	10.3	NA	NA	NA	50	91	7.5	1.3	1.5	0.06
CON_GW_224	10/10/2015	8.9	19	0.77	2.4	3.2	5.0	4.2	9.6	14	NA	8.5	NA	2.4	NA	50	81	7.3	1.2	1.4	0.11
CON_GW_225	10/11/2015	8.9	19	0.77	2.4	3.2	5.0	4.1	9.1	13	NA	9.0	NA	NA	NA	50	87	7.6	1.2	1.5	0.11
CON_GW_226	10/12/2015	8.9	19	0.77	2.4	3.2	5.0	4.2	7.1	14	NA	10.1	NA	2.4	NA	50	96	8.0	1.3	1.4	0.14
CON_GW_227	10/13/2015	8.9	19	0.77	2.4	3.2	5.0	4.2	17	14	NA	10.0	NA	2.5	NA	51	84	5.0	1.2	1.5	0.13
CON_GW_228	10/14/2015	8.9	19	0.76	2.4	3.2	5.1	4.1	22	14	NA	9.4	NA	2.5	NA	50	84	5.6	1.2	1.4	0.12
CON_GW_229	10/15/2015	8.9	19	0.83	2.4	3.3	5.0	4.3	10.3	13	NA	11	NA	NA	NA	55	69	5.9	1.3	0.47	0.01
CON_GW_230	10/16/2015	8.9	19	0.75	2.4	3.3	5.0	4.3	5.9	13	NA	10.2	25	NA	NA	54	85	5.6	1.2	1.5	0.14
CON_GW_231	10/17/2015	8.9	19	0.76	2.3	3.3	4.9	4.3	8.3	12	NA	8.7	NA	NA	NA	53	82	6.7	1.2	1.4	0.11
CON_GW_232	10/18/2015	8.9	19	0.76	2.3	3.4	5.0	4.3	12	12	NA	8.5	27	NA	NA	53	92	7.2	1.2	1.4	0.07
CON_GW_233	10/19/2015	9.0	19	0.76	2.4	3.4	4.9	4.3	11	12	NA	8.3	34	NA	NA	53	76	7.0	NA	0.44	0.01
CON_GW_234	10/20/2015	9.0	19	0.74	2.4	3.5	5.0	4.3	7.7	12	NA	9.6	32	NA	NA	53	71	11	1.2	1.4	0.07
CON_GW_235	10/21/2015	9.0	20	0.77	2.4	3.5	5.0	4.3	31	13	NA	8.5	50	NA	NA	50	86	7.8	1.3	1.3	0.11
CON_GW_236	10/22/2015	9.0	19	0.76	2.4	3.5	5.0	4.4	20	13	8.3	9.0	97	NA	NA	50	81	8.0	1.2	1.4	0.08
CON_GW_237	10/23/2015	9.0	20	0.80	2.4	3.6	5.1	4.4	9.1	13	NA	8.1	11	NA	NA	51	64	8.0	1.2	1.4	0.12
CON_GW_238	10/24/2015	9.0	19	0.75	2.4	3.5	5.0	4.3	9.2	13	NA	7.9	NA	NA	NA	49	77	8.3	1.3	1.4	0.06
CON_GW_239	10/25/2015	9.0	19	0.76	2.4	3.6	5.0	4.4	12	13	NA	12	14	NA	NA	50	97	7.4	1.2	1.4	0.10
CON_GW_240	10/26/2015	9.0	19	0.75	2.4	3.5	4.9	4.3	13	13	NA	10.5	NA	NA	NA	49	99	6.4	1.3	1.4	0.13
CON_GW_241	10/27/2015	9.0	20	0.76	2.4	3.6	5.0	4.3	13	13	NA	9.8	NA	NA	NA	50	82	7.6	1.2	1.5	0.14
CON_GW_242	10/28/2015	9.0	19	0.75	2.4	3.6	4.9	4.3	14	13	NA	11	NA	NA	NA	50	86	7.6	1.2	1.3	0.06
CON_GW_243	10/29/2015	9.0	20	0.77	2.4	3.5	5.0	4.3	11	12	NA	9.7	NA	NA	NA	50	70	7.4	1.2	1.3	0.13
CON_GW_244	10/30/2015	9.0	20	0.82	2.4	3.6	5.0	4.3	15	13	NA	15	NA	NA	NA	50	76	6.0	1.3	1.4	0.09
CON_GW_245	10/31/2015	9.0	19	0.83	2.4	3.6	5.0	4.3	15	13	NA	16	NA	NA	NA	50	81	5.9	1.3	1.5	0.13
CON_GW_246	11/1/2015	9.0	20	0.86	2.4	3.6	4.9	4.3	8.6	12	NA	16	NA	NA	NA	53	80	7.7	1.4	1.4	0.06
CON_GW_247	11/2/2015	9.0	20	0.74	2.3	3.5	4.9	4.2	5.8	12	NA	8.8	NA	NA	NA	52	76	9.8	1.3	1.5	0.13
CON_GW_248	11/3/2015	9.0	20	0.75	2.3	3.6	4.9	4.3	16	12	NA	9.9	NA	NA	NA	52	82	6.2	1.3	NA	NA
CON_GW_249	11/4/2015	9.0	20	0.75	2.3	3.6	4.8	4.3	18	12	NA	9.7	9.8	NA	NA	52	103	5.5	1.3	1.4	0.09
CON_GW_250	11/5/2015	9.1	20	0.72	2.3	3.5	4.8	4.3	16	12	NA	8.9	16	NA	NA	54	48	5.7	1.3	1.6	0.07
CON_GW_251	11/6/2015	9.0	20	0.80	2.2	3.6	4.8	4.3	18	12	NA	18	36	NA	NA	51	147	4.9	1.3	1.7	0.13
CON_GW_252	11/7/2015	9.1	20	0.82	2.3	3.6	4.8	4.3	7.2	12	NA	18	5.6	NA	NA	51	110	5.6	1.3	1.6	0.07
CON_GW_253	11/8/2015	9.1	20	0.94	2.2	3.7	4.8	4.3	12	12	NA	37	7.5	NA	NA	51	187	3.0	1.4	NA	NA
CON_GW_254	11/9/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_255	11/10/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_256	11/11/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.52	0.05
CON_GW_257	11/12/2015	9.1	20	0.94	2.3	3.8	4.8	4.3	7.8	13	NA	31	14	NA	12	52	2168	13	1.4	NA	NA
CON_GW_258	11/13/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_259	11/14/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Table S6 continued - Element concentrations in groundwater (GW).

sample ID	sampling date	T	Major elements (ICP-OES)						Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>		Anion and dissolved organic elements <sup>1</sup>		
			Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON
			(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )
CON_GW_260	11/15/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
CON_GW_261	11/16/2015	9.1	21	1.04	2.4	3.9	4.8	4.4	26	14	NA	30	26	NA	6.1	52	1262	19.4	1.7	NA	NA
CON_GW_262	11/17/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
CON_GW_263	11/18/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
CON_GW_264	11/19/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.88	0.06	
CON_GW_265	11/20/2015	9.1	21	0.89	2.2	3.8	5.0	4.5	10.1	13	NA	12	3.5	NA	5.5	52	267	1.9	NA	NA	NA
CON_GW_266	11/21/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
CON_GW_267	11/22/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.6	NA	
CON_GW_268	11/23/2015	9.1	21	0.89	2.1	3.8	4.9	4.4	23	13	NA	14	39	NA	NA	50	552	9.6	1.3	NA	NA
CON_GW_269	11/24/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
CON_GW_270	11/25/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.70	0.04	
CON_GW_271	11/26/2015	9.1	21	0.88	2.1	3.8	4.9	4.5	11	11	NA	15	19	NA	NA	50	247	11	1.3	NA	NA
CON_GW_272	11/27/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
CON_GW_273	11/28/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
CON_GW_274	11/29/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.9	0.18	
CON_GW_275	11/30/2015	9.1	21	0.85	2.1	3.9	4.9	4.7	14	11	NA	15	8.5	NA	NA	50	240	12	1.4	NA	NA
CON_GW_276	12/1/2015	9.1	21	0.90	2.1	3.9	4.9	4.5	19	11	NA	33	15	NA	NA	51	223	6.9	NA	0.43	0.05
CON_GW_277	12/2/2015	9.2	21	0.87	2.1	3.8	5.0	5.6	18	11	NA	21	10.1	NA	NA	50	117	7.3	1.3	0.58	0.05
CON_GW_278	12/3/2015	9.1	17	0.88	1.8	3.7	5.0	4.8	12	9.8	NA	23	6.0	NA	NA	41	84	27	1.3	0.50	0.03
CON_GW_279	12/4/2015	9.1	16	0.79	1.7	3.5	5.0	4.2	7.8	NA	NA	12	3.4	NA	NA	38	76	5.7	1.2	0.41	0.02
CON_GW_280	12/5/2015	9.1	17	0.77	1.8	3.6	5.2	4.0	16	10.1	NA	12	27	NA	NA	41	79	5.9	1.2	0.42	0.01
CON_GW_281	12/6/2015	9.1	17	0.77	1.8	3.6	5.2	4.0	11	10.2	NA	10.4	4.9	NA	NA	41	76	4.8	1.2	0.38	0.03
CON_GW_282	12/7/2015	9.1	17	0.76	1.9	3.7	5.2	4.1	9.3	10.3	NA	10.5	8.6	NA	NA	43	84	5.4	1.3	NA	NA
CON_GW_283	12/8/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_284	12/9/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.42	0.03	
CON_GW_285	12/10/2015	9.1	19	0.85	2.0	3.8	5.2	4.2	159	12	NA	15	217	NA	5.0	46	598	13	1.3	NA	NA
CON_GW_286	12/11/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_287	12/12/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_288	12/13/2015	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.36	0.02	
CON_GW_289	12/14/2015	9.1	19	0.93	2.0	3.8	5.0	4.3	14	11	NA	13	11	NA	NA	47	142	7.9	1.5	0.41	0.02
CON_GW_290	12/15/2015	9.1	20	0.79	2.0	3.8	5.0	4.3	7.4	11	NA	13	NA	NA	NA	48	159	1.7	1.2	0.42	0.02
CON_GW_291	12/16/2015	9.1	20	0.80	2.0	3.8	5.0	4.3	6.6	11	NA	12	NA	NA	NA	48	107	5.5	1.2	0.35	0.03
CON_GW_292	12/17/2015	9.1	20	0.77	2.0	3.7	5.0	4.3	10	11	NA	12	4.8	NA	NA	47	109	6.6	1.3	0.38	0.04
CON_GW_293	12/18/2015	9.1	20	0.80	2.0	3.7	4.9	4.3	9.3	11	NA	20	NA	NA	NA	47	86	6.1	1.3	0.37	0.04
CON_GW_294	12/19/2015	9.1	20	0.77	2.3	3.7	5.0	4.3	8.5	12	NA	18	NA	2.0	NA	47	94	4.9	1.2	0.40	0.03
CON_GW_295	12/20/2015	9.1	20	0.73	2.3	3.6	5.0	4.3	25	16	NA	11	23	2.1	NA	47	88	4.5	1.3	0.33	0.02
CON_GW_296	12/21/2015	9.1	20	0.74	2.3	3.6	5.0	4.3	8.9	12	NA	12	NA	2.0	NA	47	82	4.3	1.2	0.39	0.01
CON_GW_297	12/22/2015	9.1	20	0.74	2.3	3.6	5.0	4.3	9.2	12	NA	11	NA	1.9	NA	47	78	4.5	1.2	0.35	0.04
CON_GW_298	12/23/2015	9.1	20	0.75	2.2	3.6	5.0	4.3	9.3	12	NA	11	NA	1.9	NA	47	81	5.6	1.3	0.35	0.03
CON_GW_299	12/24/2015	9.1	20	0.75	2.3	3.6	5.0	4.3	8.3	12	NA	13	3.5	1.9	NA	47	82	4.6	1.3	0.35	0.03
CON_GW_300	12/25/2015	9.1	20	0.73	2.3	3.6	4.9	4.3	8.4	12	NA	16	NA	1.9	NA	47	79	5.3	NA	0.37	0.01
CON_GW_301	12/26/2015	9.1	20	0.74	2.3	3.6	4.9	4.4	11	12	NA	12	7.8	1.8	NA	47	89	4.4	1.3	0.33	0.02
CON_GW_302	12/27/2015	9.1	20	0.73	2.3	3.6	4.9	4.3	14	12	NA	13	16	2.0	NA	47	76	3.9	1.3	0.34	0.03
CON_GW_303	12/28/2015	9.1	20	0.75	2.3	3.6	4.9	4.3	5.9	14	NA	13	NA	1.8	NA	47	89	4.0	1.3	0.42	0.03
CON_GW_304	12/29/2015	9.1	20	0.76	2.2	3.7	4.9	4.3	7.4	12	NA	16	NA	1.7	NA	46	110	3.4	1.3	0.39	0.03
CON_GW_305	12/30/2015	9.1	20	0.77	2.2	3.6	4.8	4.3	8.4	13	NA	15	NA	1.7	NA	46	76	4.8	1.3	0.36	0.01
CON_GW_306	12/31/2015	9.1	21	0.77	2.2	3.7	4.9	4.3	7.9	12	NA	11	NA	1.7	NA	46	82	5.0	1.3	0.36	0.02
CON_GW_307	1/1/2016	9.1	21	0.78	2.2	3.7	4.9	4.3	9.7	12	NA	16	NA	1.7	NA	46	75	4.8	1.3	0.33	0.02
CON_GW_308	1/2/2016	9.1	21	0.77	2.2	3.6	4.8	4.3	9.7	12	NA	14	2.9	1.7	NA	46	73	7.0	1.2	0.33	0.03
CON_GW_309	1/3/2016	9.1	20	0.75	2.2	3.6	4.8	4.2	8.7	12	NA	11	NA	1.7	NA	45	64	6.9	NA	0.41	0.01
CON_GW_310	1/4/2016	9.1	21	0.75	2.2	3.6	4.8	4.3	8.4	12	NA	17	NA	1.7	NA	45	73	7.0	NA	0.60	0.04
CON_GW_311	1/5/2016	9.1	21	0.76	2.2	3.7	4.8	4.3	8.6	12	NA	12	2.7	1.7	NA	45	80	5.2	NA	0.43	0.02

continued on next page ...

Table S6 continued - Element concentrations in groundwater (GW).

sample ID	sampling date	T	Major elements (ICP-OES)							Trace elements (ICP-OES)								Trace element (ICP-MS) <sup>1</sup>	Anion and dissolved organic elements <sup>1</sup>		
			Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn	P	Cl	DOC	DON
			(°C)	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(μg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )
CON_GW_312	1/6/2016	9.1	20	0.75	2.2	3.6	4.8	4.3	35	12	NA	NA	37	1.7	NA	45	79	8.9	1.2	0.51	0.03
CON_GW_313	1/7/2016	9.1	20	0.75	2.2	3.6	4.7	4.2	9.1	12	NA	12	NA	1.7	NA	45	79	4.8	NA	NA	NA
CON_GW_314	1/8/2016	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_315	1/9/2016	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_316	1/10/2016	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.52	0.06
CON_GW_317	1/11/2016	9.0	11	0.69	1.5	3.3	5.1	3.1	7.3	10.2	NA	16	4.4	1.0	NA	26	188	1.2	NA	NA	NA
CON_GW_318	1/12/2016	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_319	1/13/2016	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_320	1/14/2016	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_321	1/15/2016	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_322	1/16/2016	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	NA	NA	NA
CON_GW_323	1/17/2016	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_324	1/18/2016	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_325	1/19/2016	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_326	1/20/2016	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	0.55	0.03
CON_GW_327	1/21/2016	9.0	12	0.70	1.7	3.4	5.2	3.3	8.7	11	NA	11	3.1	1.1	NA	29	124	6.1	NA	NA	NA
CON_GW_328	1/22/2016	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_329	1/23/2016	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_330	1/24/2016	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	0.53	0.03
CON_GW_331	1/25/2016	9.2	18	0.76	2.0	3.6	4.9	3.9	9.0	12	NA	NA	NA	1.5	NA	41	31	5.8	NA	NA	NA
CON_GW_332	1/26/2016	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_333	1/27/2016	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_334	1/28/2016	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.45	0.02
CON_GW_335	1/29/2016	9.0	9.1	0.64	1.4	3.2	5.2	2.9	8.9	9.7	NA	10.3	16	0.84	7.3	23	274	3.6	NA	NA	NA
CON_GW_336	1/30/2016	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_337	1/31/2016	9.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.83	0.07
CON_GW_338	2/1/2016	9.0	10.9	0.72	1.5	3.2	5.2	2.9	17	11	NA	15	17	0.93	4.2	27	73	3.8	1.3	1.6	0.10
CON_GW_339	2/2/2016	9.0	8.3	0.67	1.4	3.1	5.2	2.7	7.9	8.3	NA	14	4.8	0.63	NA	21	108	2.7	1.3	0.70	0.03
CON_GW_340	2/3/2016	9.0	8.2	0.62	1.4	3.0	5.3	2.8	NA	8.6	NA	12	3.0	0.66	NA	21	121	4.5	1.2	0.60	0.01
CON_GW_341	2/4/2016	9.0	8.2	0.60	1.4	3.2	5.2	2.8	17	8.5	NA	21	18	0.66	NA	21	125	5.9	1.2	0.56	0.03
CON_GW_342	2/5/2016	9.0	8.5	0.62	1.4	3.1	5.1	2.8	7.3	8.6	NA	13	2.4	0.65	NA	21	137	3.2	1.2	0.68	0.05
CON_GW_343	2/6/2016	9.0	8.5	0.63	1.3	3.1	5.0	2.8	6.1	8.1	NA	17	3.3	NA	NA	20	134	4.0	1.3	0.68	0.07
CON_GW_344	2/7/2016	9.0	8.6	0.62	1.3	3.1	5.1	2.8	5.0	8.6	NA	16	4.1	NA	NA	20	120	3.7	1.2	0.56	0.02
CON_GW_345	2/8/2016	9.0	8.6	0.61	1.4	3.0	5.2	2.9	4.8	8.7	NA	15	4.0	0.60	NA	21	131	4.3	1.2	0.57	0.04
CON_GW_346	2/9/2016	9.0	8.8	0.62	1.4	3.2	5.2	3.0	6.2	8.7	NA	13	4.2	0.60	NA	21	117	4.2	1.3	0.76	0.04
CON_GW_347	2/10/2016	9.0	8.7	0.60	1.4	3.0	5.1	2.9	7.2	9.0	NA	12	3.7	0.62	NA	21	131	4.7	1.2	0.63	0.03
CON_GW_348	2/11/2016	8.9	8.9	0.62	1.4	3.0	5.1	2.9	6.4	8.8	NA	12	3.1	0.63	NA	21	98	4.1	1.3	0.69	0.03
CON_GW_349	2/12/2016	8.9	9.4	0.60	1.4	3.2	5.2	3.0	5.0	9.4	NA	12	NA	0.66	NA	22	185	1.4	1.2	0.69	0.04
CON_GW_350	2/13/2016	8.9	9.4	0.59	1.4	3.2	5.1	3.0	5.8	9.3	NA	17	3.2	0.66	NA	23	148	3.9	1.2	0.44	0.05
CON_GW_351	2/14/2016	8.9	9.7	0.63	1.5	3.1	5.2	3.0	10.1	9.9	NA	17	8.8	0.71	NA	23	148	4.4	1.2	NA	NA
CON_GW_352	2/15/2016	8.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	NA	NA
CON_GW_353	2/16/2016	8.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CON_GW_354	2/17/2016	8.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.52	0.04
CON_GW_355	2/18/2016	8.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	0.48	0.02
CON_GW_356	2/19/2016	8.9	10.1	0.60	1.5	3.2	5.1	3.0	6.0	9.5	NA	NA	3.2	0.73	NA	24	156	3.7	1.3	NA	NA
CON_GW_357	2/20/2016	8.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.69	0.04
CON_GW_358	2/21/2016	8.9	11	0.61	1.5	3.2	5.0	3.1	5.4	9.7	NA	NA	3.1	0.76	NA	25	111	4.0	1.1	0.48	0.05
CON_GW_359	2/22/2016	8.9	11	0.63	1.6	3.3	5.1	3.2	7.4	10.3	NA	12	11	0.85	NA	26	122	16	1.2	0.51	0.05
CON_GW_360	2/23/2016	8.9	12	0.63	1.6	3.3	5.1	3.2	25	11	NA	9.7	18	0.87	NA	27	106	4.6	1.4	0.44	0.05
CON_GW_361	2/24/2016	8.9	12	0.64	1.5	3.1	5.1	3.2	8.2	9.9	NA	12	NA	0.83	NA	26	123	5.0	1.2	0.42	0.03

NA = not a number (sample not available, sample consumed for other analyses, concentration below limit of detection, or element not analyzed)

<sup>1</sup> taken from Supplementary Material published in Sohr, J., Uhlig, D., Kaiser, K., Von Blanckenburg, F., Siemens, J., Seeger, S., Frick, D. A., Krüger, J., Lang, F., Weiler, M. (2019). Phosphorus fluxes in a temperate forested watershed: canopy leaching, runoff sources, and in-stream transformation. Frontiers in forests and global change, 2, 8!

Table S7 Data quality control

Standard Reference Material	Major elements (ICP-OES)						Trace elements (ICP-OES)								
	Ca	K	Mg	Na	Si	S	Al	Ba	Cr	Cu	Fe	Li	Mn	Sr	Zn
	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(mg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )	(µg l <sup>-1</sup> )
International reference materials for data quality control															
SLRS-5 river water (a)	11	0.89	2.6	5.5	2.0	2.4	n.d.	15	<10	18	95	<10	<10	54	<10
SLRS-5 river water (b)	11	0.89	2.6	5.4	2.0	2.4	n.d.	15	<10	18	95	<10	<10	54	<10
SLRS-5 river water (c)	10	0.92	2.5	5.7	2.0	2.3	51	14	<10	17	91	<10	<10	50	<10
SLRS-5 river water (d)	10	0.85	2.5	5.7	1.9	2.4	52	14	<10	16	90	<10	<10	50	<10
SLRS-5 river water (e)	11	0.88	2.6	6.1	2.0	2.6	55	15	<10	18	91	<10	<10	49	<10
SLRS-5 river water (f)	11	0.88	2.6	5.5	2.0	2.3	51	15	<10	17	95	<10	<10	52	<10
SLRS-5 river water (g)	11	0.88	2.6	5.1	2.0	2.3	49	15	<10	16	94	<10	<10	53	<10
SLRS-5 river water (h)	11	0.87	2.4	5.7	2.0	2.2	50	14	<10	17	92	<10	<10	52	<10
SLRS-5 river water (i)	11	0.90	2.5	5.8	2.0	2.4	49	14	<10	17	95	<10	<10	50	<10
SLRS-5 river water (j)	11	0.89	2.3	5.7	2.0	2.4	52	14	<10	17	94	<10	<10	54	<10
SLRS-5 river water mean	11	0.88	2.5	5.6	2.0	2.4	51	15	n.d.	17	93	n.d.	n.d.	52	n.d.
SLRS-5 river water 2SD	0.82	0.04	0.17	0.54	0.07	0.19	4.0	0.69	n.d.	1.3	4.0	n.d.	n.d.	3.7	n.d.
SLRS-5 river water RSD	8%	4%	7%	10%	3%	8%	8%	5%	n.d.	7%	4%	n.d.	n.d.	7%	n.d.
SLRS-5 river water certified value*	10.5	0.84	2.5	5.4	n.r.	2.4	50	14	0.21	17	91	n.r.	4.3	54	0.85
SLRS-5 river water absolute uncertainty	0.40	0.04	0.16	0.10	n.r.	n.r.	0.50	0.50	0.02	1.3	5.8	n.r.	0.18	1.3	0.10
relative difference (measured value/certified value) (%)	2%	5%	-1%	4%	n.r.	0%	3%	5%	n.d.	-1%	2%	n.d.	n.d.	-4%	n.d.
SRM1640a natural water (a)	5.6	0.59	1.0	3.2	5.2	1.6	n.d.	151	40	85	38	<10	40	123	56
SRM1640a natural water (b)	5.6	0.59	1.1	3.2	5.2	1.6	n.d.	151	40	85	38	<10	40	124	56
SRM1640a natural water (c)	5.5	0.63	1.0	3.4	5.0	1.6	57	148	39	81	37	<10	39	118	58
SRM1640a natural water (d)	5.6	0.59	1.0	3.5	5.1	1.6	59	149	39	82	37	<10	40	120	56
SRM1640a natural water mean	5.6	0.60	1.1	3.3	5.1	1.6	58	150	40	83	37	n.d.	40	121	57
SRM1640a natural water 2SD	0.12	0.04	0.04	0.31	0.18	0.03	2.6	3.5	1.1	4.7	1.7	n.d.	1.4	5.8	1.9
SRM1640a natural water RSD	2%	7%	4%	9%	3%	2%	4%	2%	3%	6%	5%	n.d.	4%	5%	3%
SRM1640a natural water certified value	5.6	0.58	1.1	3.1	5.2	n.r.	53	150	40	85	37	n.r.	40	125	55
SRM1640a natural water absolute uncertainty	0.02	0.00	0.00	0.03	0.02	n.r.	0.18	0.74	0.28	0.48	1.7	n.r.	0.35	0.86	0.32
relative difference (measured value/certified value) (%)	0%	4%	0%	7%	-1%	n.d.	10%	0%	-2%	-2%	2%	n.d.	-1%	-3%	2%
USGS M212 (a)	5.7	0.62	2.1	8.6	2.9	2.0	n.d.	<0.01	<10	<10	<10	<10	<10	17	<10
USGS M212 (b)	5.8	0.62	2.1	8.5	2.9	2.0	n.d.	13	<10	<10	<10	<10	<10	17	<10
USGS M212 (c)	5.5	0.66	2.0	9.1	2.8	2.0	16	13	<10	<10	<10	<10	<10	16	<10
USGS M212 (d)	5.5	0.62	2.0	9.0	2.8	2.0	18	13	<10	<10	<10	<10	<10	16	<10
USGS M212 (e)	5.3	0.62	2.0	9.1	2.8	2.1	18	12	<10	<10	<10	<10	<10	15	<10
USGS M212 (f)	5.7	0.62	2.1	9.5	3.0	1.9	17	13	<10	<10	<10	<10	<10	16	<10
USGS M212 (g)	5.6	0.61	2.0	8.3	2.9	1.8	15	13	<10	<10	<10	<10	<10	17	<10
USGS M212 (h)	5.7	0.61	1.9	9.1	2.8	1.8	16	13	<10	<10	<10	<10	<10	16	<10
USGS M212 (i)	6.1	0.63	1.9	9.2	2.9	1.9	16	13	<10	<10	<10	<10	<10	16	<10
USGS M212 (j)	6.2	0.64	1.9	9.3	3.0	2.0	17	12	<10	<10	<10	<10	<10	17	<10
USGS M212 (k)	5.6	0.64	1.9	9.1	2.9	2.0	17	13	<10	<10	<10	<10	<10	17	<10
USGS M212 mean	5.7	0.63	2.0	9.0	2.9	2.0	17	13	n.d.	n.d.	n.d.	n.d.	n.d.	16	n.d.
USGS M212 2SD	0.52	0.03	0.15	0.74	0.15	0.14	2.0	0.84	n.d.	n.d.	n.d.	n.d.	n.d.	1.4	n.d.
USGS M212 RSD	9%	5%	8%	8%	5%	7%	12%	7%	n.d.	n.d.	n.d.	n.d.	n.d.	9%	n.d.
USGS M212 certified value	5.6	0.59	2.0	8.7	2.8	1.9	n.r.	n.r.	n.r.	n.r.	n.r.	n.r.	n.r.	18	n.r.
USGS M212 absolute uncertainty	0.29	0.03	0.10	0.46	0.11	0.10	n.r.	n.r.	n.r.	n.r.	n.r.	n.r.	n.r.	0.96	n.r.
relative difference (measured value/certified value) (%)	3%	7%	-2%	3%	2%	2%	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-7%	n.d.
USGS T187 (a)	4.0	9.1	12	17	3.1	0.92	n.d.	69	<10	<10	53	<10	<10	23	n.d.
USGS T187 (b)	4.0	9.2	13	17	3.1	0.94	n.d.	70	<10	<10	54	<10	<10	24	n.d.
USGS T187 (c)	3.8	9.7	13	18	2.9	0.92	64	67	<10	<10	50	<10	<10	22	n.d.
USGS T187 (d)	3.7	9.0	12	18	2.9	0.93	65	66	<10	<10	49	<10	<10	22	n.d.
USGS T187 (e)	3.9	9.0	13	19	2.9	0.99	67	66	<10	<10	49	<10	<10	21	22
USGS T187 (f)	4.0	9.1	13	19	3.1	0.89	62	70	<10	<10	52	<10	<10	22	12
USGS T187 (g)	4.0	9.2	12	17	3.1	0.88	62	72	<10	<10	52	<10	<10	23	12
USGS T187 (h)	4.1	9.4	12	18	3.0	0.87	63	68	<10	<10	52	<10	<10	23	12
USGS T187 (i)	4.3	9.5	12	19	3.1	0.92	62	69	<10	<10	51	<10	<10	22	12
USGS T187 (j)	4.2	9.3	13	18	3.1	0.91	66	68	<10	<10	52	<10	<10	23	12
USGS T187 (k)	3.9	9.5	13	19	3.1	0.93	67	69	<10	<10	52	<10	<10	22	14
USGS T187 mean	4.0	9.3	13	18	3.0	0.9	64	69	n.d.	n.d.	51	n.d.	n.d.	22	14
USGS T187 2SD	0.35	0.45	0.56	1.4	0.16	0.07	4.5	3.7	n.d.	n.d.	3.0	n.d.	n.d.	1.8	7.4
USGS T187 RSD	9%	5%	4%	8%	5%	7%	7%	5%	n.d.	n.d.	6%	n.d.	n.d.	8%	53%
USGS T187 certified value	3.9	8.7	13	18	3.0	n.r.	63	68	0.70	2.0	52	4.0	6.0	24	12
USGS T187 absolute uncertainty	0.13	0.28	0.39	0.78	0.36	n.r.	4.0	2.3	0.14	0.13	6.2	0.20	0.27	0.89	0.82
relative difference (measured value/certified value) (%)	2%	7%	-2%	1%	2%	n.d.	2%	1%	n.d.	n.d.	0%	n.d.	n.d.	-5%	14%
In-house material for data quality control															
GFZ River Water matrix (a)	5.5	0.6	1.0	3.2	5.3	n.d.	n.d.	n.d.	97	98	97	96	98	98	96
GFZ River Water matrix (b)	5.5	0.6	1.0	3.2	5.2	n.d.	n.d.	n.d.	97	98	97	96	98	98	95
GFZ River Water matrix (c)	5.6	0.6	1.0	3.3	5.3	n.d.	n.d.	n.d.	99	98	98	97	99	98	99
GFZ River Water matrix (d)	5.6	0.6	1.0	3.3	5.3	n.d.	n.d.	n.d.	98	97	98	97	99	98	98
GFZ River Water matrix (e)	5.6	0.6	1.0	3.3	5.3	n.d.	n.d.	n.d.	99	98	99	96	100	99	99
GFZ River Water matrix (f)	5.5	0.6	1.0	3.2	5.3	n.d.	n.d.	n.d.	98	98	97	95	99	98	97
GFZ River Water matrix (g)	5.6	0.6	1.0	3.2	5.3	n.d.	n.d.	n.d.	98	98	97	95	99	98	98
GFZ River Water matrix (h)	5.6	0.6	1.0	3.3	5.4	n.d.	n.d.	n.d.	99	98	99	97	100	98	99
GFZ River Water matrix (i)	5.6	0.6	1.0	3.3	5.4	n.d.	n.d.	n.d.	99	99	99	97	100	98	99
GFZ River Water matrix (j)	5.6	0.6	1.0	3.3	5.4	n.d.	n.d.	n.d.	99	99	99	96	101	99	99
GFZ River Water matrix mean	5.6	0.6	1.0	3.3	5.3	n.d.	n.d.	n.d.	98	98	98	96	99	98	98
GFZ River Water matrix 2SD	0.1	0.0	0.0	0.1	0.1	n.d.	n.d.	n.d.	1.9	1.0	1.6	1.3	1.8	1.0	2.9
GFZ River Water matrix RSD	2%	3%	4%	2%	3%	n.d.	n.d.	n.d.	2%	1%	2%	1%	2%	1%	3%
GFZ River Water matrix expected value	5.6	0.56	0.99	3.2	5.3	-	-	-	98	98	97	97	99	98	97
relative difference (measured value/expected value) (%)	0%	4%	1%	2%	0%	n.d.	n.d.	n.d.	0%	1%	1%	-1%	1%	0%	1%

\* from GeoReM database; n.r. = not reported; n.d. = not determined