

Linking Denitrification and Infiltration Rates during Managed Groundwater Recharge

Supporting Information

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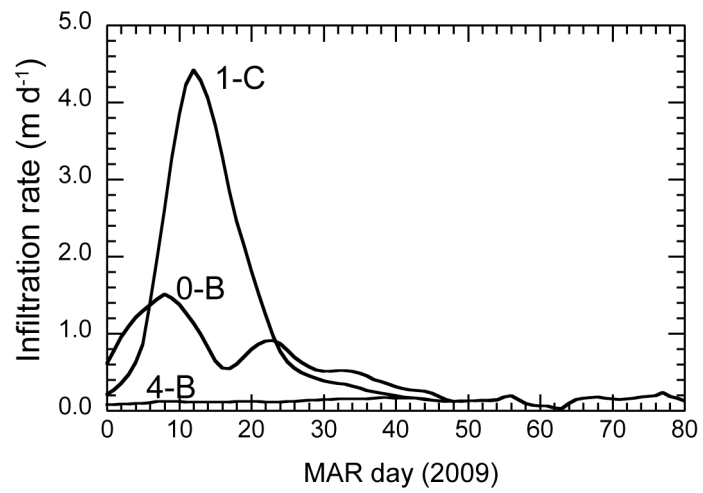
Pages: 5

Tables:1

Figures 3

Table S1. Enrichment of $\delta^{15}\text{N}$ and $\delta^{18}\text{O}$ of residual nitrate shown in figure 3. Changes in isotopic composition consistent with denitrification are presented for the dates and locations in figure 2 where nitrate concentration was reduced in pore fluids, provided that sufficient nitrate remained ($> 5 \mu\text{mol L}^{-1}$) to make isotopic measurements.

Date	Location	$[\text{NO}_3^-]$ ($\mu\text{mol L}^{-1}$)	$\delta^{15}\text{N}$ (‰)	$\delta^{18}\text{O}$ (‰)	$\Delta\delta^{15}\text{N}$ (‰)	$\Delta\delta^{18}\text{O}$ (‰)	I/R (m/d)	r ($\mu\text{mol L}^{-1} \text{d}^{-1}$)
1/16/08	Pond	258.57	12.4	11.6				
1/16/08	PZ-2BS	229.29	16.4	13.8	2.2	2.2	0.2	9
1/16/08	PZ-4DS	165.71	22.7	16.9	10.3	5.3	0.3	46
1/23/08	Pond	385.71	12.1	11.6				
1/23/08	PZ-1BS	174.64	12.6	11.9	0.5	0.2	0.6	259
1/23/08	PZ-1CS	276.79	12.9	12.5	0.8	0.9	0.5	115
1/23/08	PZ-1DS	221.43	12.7	12.1	0.6	0.4	0.6	206
1/23/08	PZ-2BS	145.71	26.6	19.4	14.5	7.8	0.2	102
1/23/08	PZ-2DS	179.29	32.7	24.7	20.6	13.1	0.2	66
1/23/08	PZ-4DS	125	21.6	18.9	9.5	7.3	0.3	135
1/30/08	Pond	262.50	13.0	9.8				
1/30/08	PZ-3CS	248.93	18.1	13.0	5.1	3.1	0.1	3
1/30/08	PZ-3DS	143.57	23.3	15.1	10.3	5.3	0.1	18
1/30/08	PZ-4DS	164.29	14.5	10.1	1.5	0.3	0.4	80
2/5/08	Pond	158.57	12.4	10.8				
2/5/08	PZ-3CS	144.29	15.1	13.0	2.8	2.2	0.1	4
2/5/08	PZ-3DS	70.93	23.3	15.1	11.0	4.4	0.1	18
2/14/08	Pond	24.12	8.4	8.3				
2/14/08	PZ-1BS	11.65	11.1	13.1	2.7	4.8	0.8	20
2/14/08	PZ-1DS	5.41	23.5	19.2	15.1	10.9	0.5	18
2/14/08	PZ-2DS	16.92	13.9	11.8	5.5	3.5	0.4	5
2/14/08	PZ-3CS	9.25	35.3	23.6	26.9	15.3	0.2	5
2/21/08	Pond	18.71	5.1	4.6				
2/21/08	PZ-2BS	11.43	23.3	17.4	18.2	12.8	0.9	13
2/21/08	PZ-2DS	9.79	21.5	17.0	16.4	12.4	0.4	7
2/21/08	PZ-3CS	5.97	10.8	8.6	5.7	4.0	0.2	5
2/21/08	PZ-3DS	9.41	29.8	20.8	24.7	16.2	0.3	5
2/27/08	PZ-2BS	25.57	31.6	22.5	26.5	18.0	0.6	49
2/27/08	PZ-2DS	39.54	14.6	9.4	9.5	4.9	0.4	26



S1. Infiltration rate at three locations co-located with fluid sampling during the 2009 operational year.

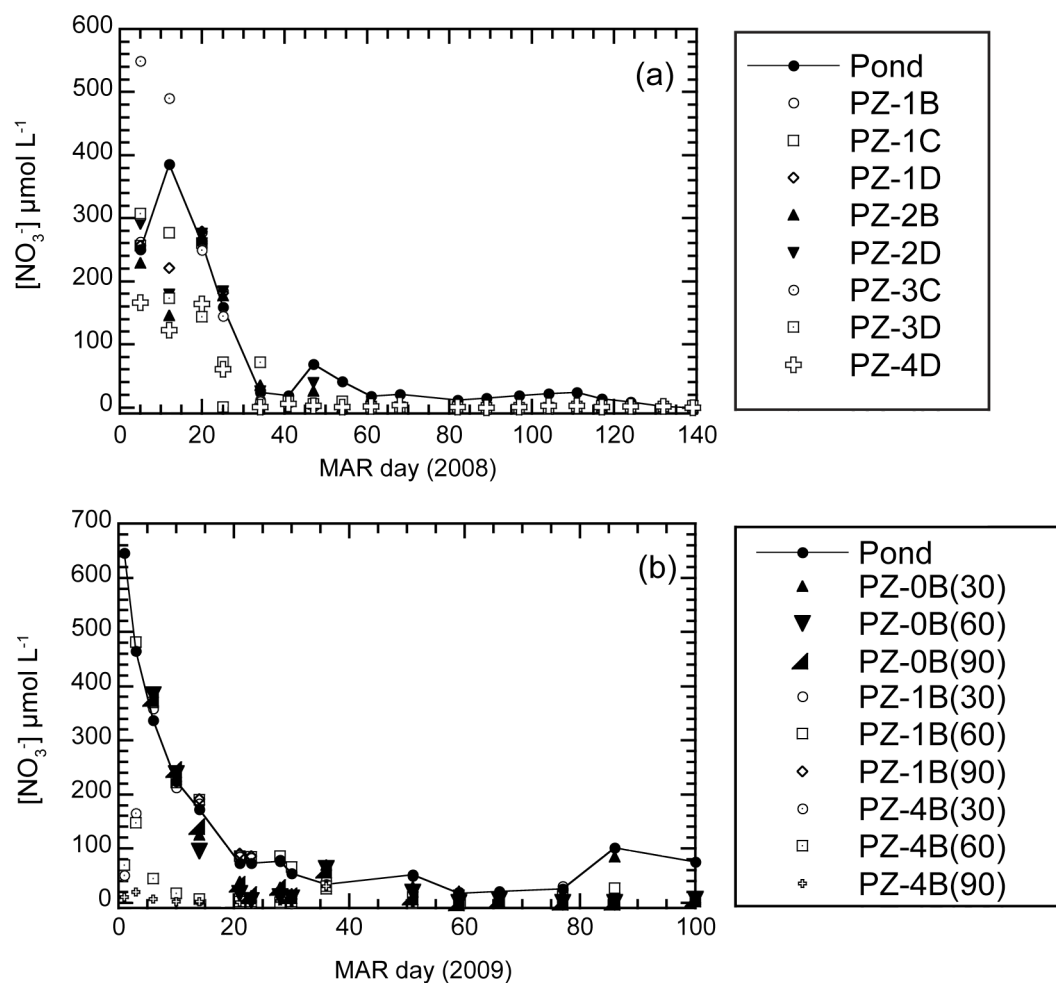


Figure S2. Concentration of nitrate in the Harkins Slough managed aquifer recharge (MAR) pond and in pore water below the pond, with time expressed as days since the start of MAR operations (diversion of slough water into the infiltration pond). (a) Nitrate concentrations in 2008, with pore water samples collected at 50 cm depth below the base of the pond. (b) Nitrate concentrations in 2009, with pore water samples collected at three depths (values in parentheses on figure legend in units of centimeters).

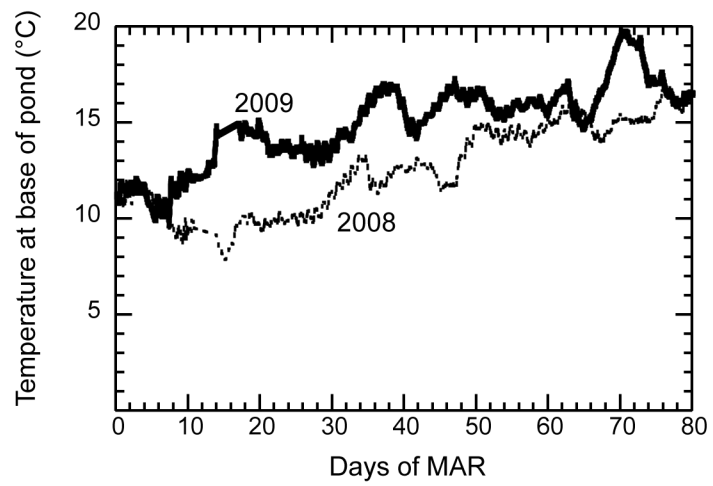


Figure S3. Temperature of water at the base of the pond in 2008 and 2009.

