

1 **Supporting information:**

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4 **Modeling of gas generation from the river adjacent to the manufactured**
5 **gas plant**

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Table. S1 Darcy velocities measured at the sediment-water interface

| No. | Date | Flow direction | Darcy V (cm/day) | K_s at 0-1.2 m (cm s ⁻¹) | n | Temperature (°C) | River Stage (m) | Hydraulic Head (m) | | | | <i>i</i> (m/m) | | |
|------|-----------------------|-----------------------|---------------------|--|----------|---------------------|--------------------|--------------------|--------|---------|----------|----------------|---------|------|
| | | | | | | | | 1.2 m | 2.4 m | 0-1.2 m | 1.2-2.4m | 0-1.2 | 1.2-2.4 | |
| RC3 | 2011/3/28 | No flow | <0.25 | | 3 | 8.55 | 175.93 | 175.79 | 175.92 | -0.14 | 0.13 | -0.12 | 0.11 | |
| | 2011/4/18 | Recharge | 1.4 | | 3 | 10.23 | 175.97 | 175.95 | 175.93 | -0.02 | -0.02 | -0.02 | -0.02 | |
| | 2011/5/6 | Recharge | 1.9 | No value | 2 | 10.95 | 175.94 | 175.91 | 175.88 | -0.03 | -0.03 | -0.03 | -0.03 | |
| | 2012/3/1 | Recharge | <0.25 | | 4 | 7.01 | 176.07 | 175.98 | 175.96 | -0.09 | -0.02 | -0.08 | -0.02 | |
| | 2012/5/11 | Discharge | 1.38 | 7.99E-05 | 7 | 13.52 | 175.66 | 175.9 | 175.97 | 0.24 | 0.07 | 0.20 | 0.06 | |
| RC5 | 2011/4/1 | No flow | | | 3 | 7.76 | 175.89 | 175.95 | 175.99 | 0.06 | 0.04 | 0.05 | 0.03 | |
| | 2011/4/21 | No flow | <0.25 | No value | 3 | 9.24 | 175.94 | 175.98 | 175.97 | 0.04 | -0.01 | 0.03 | -0.01 | |
| | 2011/4/21 | Recharge | 2.5 | -6.94E-04 | 1 | 9.25 | 176.02 | 175.97 | 175.96 | -0.05 | -0.01 | -0.04 | -0.01 | |
| | 2011/5/18 | Discharge | 1.6 | | 2 | 11.08 | 176.01 | 176.06 | 176.08 | 0.05 | 0.02 | 0.04 | 0.02 | |
| | 2011/5/18 | No flow | | | 4 | 11.14 | 176.02 | 176 | 176.04 | -0.02 | 0.04 | -0.02 | 0.03 | |
| RC6 | 2011/12/19 | Discharge | <0.25 | No value | 5 | 8.36 | 175.82 | 175.84 | 175.95 | 0.02 | 0.11 | 0.02 | 0.09 | |
| | 2011/3/30 | Discharge | <0.25 | | 2 | 8.88 | 175.94 | 176 | 176.03 | 0.06 | 0.03 | 0.05 | 0.03 | |
| | 2011/4/20 | Discharge | <0.25 | | 4 | 11.29 | 176.08 | 176.14 | 176.19 | 0.06 | 0.05 | 0.05 | 0.04 | |
| | 2011/5/11 | Discharge | 1.8 | 3.57E-04 | 4 | 11.41 | 175.92 | 175.99 | 176.24 | 0.07 | 0.25 | 0.06 | 0.21 | |
| | 2012/4/5 | Recharge | <0.25 | No value | 6 | 10.54 | 176.04 | 176.01 | 175.96 | -0.03 | -0.05 | -0.03 | -0.04 | |
| RC7 | 2011/4/5 | No flow | <0.25 | | 4 | 7.24 | 175.84 | 176.02 | 176.14 | 0.18 | 0.12 | 0.15 | 0.10 | |
| | 2011/4/11 | Discharge | 1.2 | 7.94E-05 | 3 | 8.06 | 175.81 | 176.02 | 176.14 | 0.21 | 0.12 | 0.18 | 0.10 | |
| | 2011/5/20 | No flow | | | 4 | 11.42 | 175.89 | 176.14 | 176.25 | 0.25 | 0.11 | 0.21 | 0.09 | |
| | 2011/12/28 | No flow | <0.25 | No value | 6 | 6.53 | 175.78 | 175.98 | 176.22 | 0.2 | 0.24 | 0.17 | 0.20 | |
| | 2012/3/8 | Discharge | 0.55 | 5.46E-05 | 5 | 7.02 | 176.02 | 176.16 | 176.35 | 0.14 | 0.19 | 0.12 | 0.16 | |
| RC8 | 2012/4/12 | Discharge | <0.25 | | 6 | 10.71 | 175.99 | 176.21 | 176.36 | 0.22 | 0.15 | 0.18 | 0.13 | |
| | 2012/5/15 | No flow | <0.25 | No value | 6 | 12.71 | 175.96 | 176.24 | 176.38 | 0.28 | 0.14 | 0.23 | 0.12 | |
| | 2011/4/6 | Discharge | 1.3 | 9.03E-04 | 2 | 7.8 | 175.92 | 175.94 | 176.02 | 0.02 | 0.08 | 0.02 | 0.07 | |
| | 2011/4/6 | Discharge | 1.1 | 7.64E-04 | 2 | 7.82 | 175.9 | 175.92 | 176 | 0.02 | 0.08 | 0.02 | 0.07 | |
| | 2011/4/29 | Discharge | 0.95 | 8.80E-05 | 6 | 9.19 | 175.92 | 176.07 | 176.26 | 0.15 | 0.19 | 0.13 | 0.16 | |
| RC11 | 2011/5/23 | No flow | <0.25 | | 4 | 11.7 | 175.85 | 176.01 | 176.22 | 0.16 | 0.21 | 0.13 | 0.18 | |
| | 2012/1/7 | No flow | <0.25 | No value | 4 | 6.99 | 175.76 | 175.83 | 176.09 | 0.07 | 0.26 | 0.06 | 0.22 | |
| | 2012/3/15 | Recharge | <0.25 | | 6 | 7.82 | 175.95 | 176.02 | 176.16 | 0.07 | 0.14 | 0.06 | 0.12 | |
| | 2012/5/8 | Discharge | 2.31 | 1.60E-03 | 6 | 12.59 | 176.05 | 176.07 | 176.27 | 0.02 | 0.2 | 0.02 | 0.17 | |
| | 2012/5/18 | No flow | <0.25 | No value | 5 | 13.34 | 175.94 | 176.09 | 176.29 | 0.15 | 0.2 | 0.13 | 0.17 | |
| RC12 | 2011/4/8 | Discharge | 0.75 | 4.96E-05 | 6 | 8.13 | 175.91 | 176.12 | 176.23 | 0.21 | 0.11 | 0.18 | 0.09 | |
| | 2011/5/4 | Discharge | 2.1 | 2.92E-03 | 6 | 10.53 | 175.91 | 175.92 | 176.18 | 0.01 | 0.26 | 0.01 | 0.22 | |
| | 2011/6/1 | No flow | | No value | 6 | 13.26 | 176 | 176.28 | 176.33 | 0.28 | 0.05 | 0.23 | 0.04 | |
| | 2012/2/9 | No flow | <0.25 | No value | 4 | 4.2 | 176.17 | 176.07 | 176.24 | -0.1 | 0.17 | -0.08 | 0.14 | |
| | 2012/3/27 | Recharge | <0.25 | No value | 5 | 11.64 | 176.03 | 176.02 | 176.13 | -0.01 | 0.11 | -0.01 | 0.09 | |
| RC12 | 2012/4/26 | Recharge | 0.29 | 1.26E-05 | 6 | 11.67 | 176.06 | 176.38 | 176.17 | 0.32 | -0.21 | 0.27 | -0.18 | |
| | 2012/5/22 | No flow | <0.25 | No value | 5 | 14.6 | 175.99 | 176.03 | 176.16 | 0.04 | 0.13 | 0.03 | 0.11 | |
| | 2011/4/13 | Discharge | 0.77 | 1.53E-04 | 4 | 9.83 | 175.79 | 175.86 | 175.98 | 0.07 | 0.12 | 0.06 | 0.10 | |
| | 2011/5/9 | Recharge | 1.7 | -2.36E-03 | 6 | 11.72 | 176.04 | 176.03 | 176.02 | -0.01 | -0.01 | -0.01 | -0.01 | |
| | 2011/6/8 | No flow | <0.25 | No value | 5 | 15.89 | 176.06 | 176.14 | 176.11 | 0.08 | -0.03 | 0.07 | -0.02 | |
| | 2012/1/16 | Discharge | 0.29 | 9.59E-06 | 4 | 5.08 | 175.79 | 176.21 | 176.23 | 0.42 | 0.02 | 0.35 | 0.02 | |
| | RC12 | 13:58-14:28 discharge | | 2.13 | 1.85E-04 | 1 | 4.92 | 175.82 | 175.98 | 176.14 | 0.16 | 0.16 | 0.13 | 0.13 |
| | | 14:30-15:00 discharge | | 1.5 | 1.23E-04 | 1 | 4.91 | 175.83 | 176 | 176.14 | 0.17 | 0.14 | 0.14 | 0.12 |
| | | 15:19-15:49 discharge | | 0.73 | 6.34E-05 | 1 | 4.9 | 175.84 | 176 | 176.14 | 0.16 | 0.14 | 0.13 | 0.12 |
| | | 15:51-16:21 discharge | | 0.48 | 4.44E-05 | 1 | 4.93 | 175.85 | 176 | 176.13 | 0.15 | 0.13 | 0.13 | 0.11 |
| RC12 | 16:22-16:52 discharge | | 0.23 | 2.46E-05 | 1 | 4.92 | 175.87 | 176 | 176.13 | 0.13 | 0.13 | 0.11 | 0.11 | |
| | 2012/3/29 | Recharge | <0.25 | No value | 6 | 11.51 | 176.06 | 176.03 | 176.01 | -0.03 | -0.02 | -0.03 | -0.02 | |
| | 2012/4/30 | Discharge | 1.48 | 1.47E-04 | 6 | 12.03 | 175.98 | 176.12 | 176.4 | 0.14 | 0.28 | 0.12 | 0.23 | |
| | 2012/5/25 | Recharge | 0.4 | -1.85E-04 | 6 | 15.26 | 176.01 | 175.98 | 175.65 | -0.03 | -0.33 | -0.03 | -0.27 | |

n = Number of measurements