

1 **Supplementary Table 1** – Sample collection information, as well as helium and
2 carbon isotope data. X-values represent air-normalized $^4\text{He}/^{20}\text{Ne}$ values (considering
3 solubility in water for fluid samples²³), which are used to determine air-corrected
4 $^3\text{He}/^4\text{He}$ values (R_C/R_A) of the samples²⁴. $\text{CO}_2/^3\text{He}$ is calculated using raw He-isotope
5 values (R/R_A).

6 **Supplementary Table 2** – Sample location information, cell counts and polycyclic
7 aromatic hydrocarbon (PAH) data.

8 **Supplementary Table 3** – Flux calculations used in the text and to make Figure 4.

9 **Supplementary Table 4** – Water chemistry data, PhreeqC calculations and saturation
10 index (SI) values.

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