

## **Responses to Reviewer:**

[Authors' response] We would like to sincerely thank the reviewer for his/her supporting and for taking the time to review our manuscript. Your good suggestions have increased our papers quality. thank you very much!

### **To Reviewer 4:**

#### **General comments**

Good modelling research in the field of subsurface hydrology. Please, see my comments to fix the existing minor issues.

#### Specific comments:

1. Line 64. "Hydrogeological conditions". Insert recent papers on high-resolution datasets for determination of hydrogeological conditions at contaminated sites.

- Maliva, R. G., Herrmann, R., Coulibaly, K., & Guo, W. (2015). Advanced aquifer characterization for optimization of managed aquifer recharge. *Environmental Earth Sciences*, 73, 7759-7767.

- Medici, G., Munn, J. D., & Parker, B. L. (2024). Delineating aquitard characteristics within a Silurian dolostone aquifer using high-density hydraulic head and fracture datasets. *Hydrogeology Journal*, 32, 1663-1691.

[Authors' response] Thank you for your suggestions. We will supplement the revised manuscript with relevant research literature you provided on the application of high-resolution data in identifying hydrogeological conditions at contaminated sites to

strengthen the background explanation of the relevant content. Thank you again for your careful guidance and valuable suggestions!

2. Line 151. MODFLOW, which version?

[Authors' response] Thank you for your valuable feedback. The version of MODFLOW used in this study is MODFLOW-2005. We will add this information to the relevant sections of the article to ensure that the description is clearer and more precise.

3. Line 282. Specify the type of aquifer in terms of lithology.

[Authors' response] Thank you for the comment. In the revised manuscript, we will specify the aquifer type in terms of lithology to provide clearer geological context.

4. Line 302. Same here, specify the type of aquifer in terms of lithology.

[Authors' response] Thank you for the comment. In the revised manuscript, we will specify the aquifer type in terms of lithology to provide clearer geological context.

5. Lines 340-341. "Mean relative error". I suggest Mean Absolute Relative Error because there is the modulus.

[Authors' response] Thank you for the suggestion. We agree with the reviewer that "Mean Absolute Relative Error" is the more accurate term, given the use of absolute values in the calculation. We will revise the terminology accordingly in the revised manuscript.

6. Line 521. Add a “take home message” for the researchers working in the field.

[Authors’ response] Thank you for the helpful suggestion. In the revised manuscript, we will add a concise “take-home message” at the end of the Conclusion section to clearly summarize the key contributions and practical relevance of our study for researchers working on groundwater contamination source identification. Thank you again for your patient guidance and suggestions!

### **Figures and tables**

1. Figure 5. Add the general flow direction with an arrow. Figure 5. Alternatively, divide the figures in two parts (A and B) adding the piezometric surfaces.

[Authors’ response] Thank you for the suggestion. We will add an arrow indicating the general groundwater flow direction in Figure 5 to improve the clarity of the spatial context.

2. Figure 6. I would add a spatial scale using a bar.

[Authors’ response] Thank you for the suggestion. We will add a spatial scale bar to Figure 6 in the revised manuscript to improve the interpretability of the spatial layout.

3. 9 tables are too many. Some of them can go in the Supplementary Material?

[Authors’ response] Thank you for the comment. We will review all tables and relocate the less critical or supporting ones to the Supplementary Material in order to improve the conciseness and readability of the main text.