



# United States Department of the Interior

U. S. GEOLOGICAL SURVEY  
OFFICE OF SCIENCE QUALITY AND INTEGRITY

## Memorandum

DATE: September 4, 2012

TO: Charles A. Peters, Director, Wisconsin Water Science Center, Middleton, Wisc.

FROM:

SUBJECT: PUBLICATIONS—"Approaches in Highly Parameterized Inversion--bgaPEST, a Bayesian Geostatistical Approach Implementation With PEST—Documentation and Instructions" by Michael N. Fienen<sup>1</sup>, Marco D'Oria<sup>2</sup>, John E. Doherty<sup>3</sup>, and Randall J. Hunt<sup>1</sup> (IP-040384)

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<sup>2</sup>University of Parma, Italy

<sup>3</sup>Watermark Numerical Computing and Australian National Centre for Groundwater Research and Training

The subject manuscript is hereby approved as a chapter in Book 7, Section C of the Techniques and Methods Series. The chapter number will be assigned by Elizabeth Ciganovich of the USGS scientific publications group.

The manuscript describes version 1.0 of computer code. For the approval review, I examined the colleague reviews by Michael Cardiff and Steve Westenbroek together with the author responses. The reconciliation of technical comments and changes to the manuscript meet the requirements of USGS Fundamental Science Practices. The revised manuscript is in good shape editorially thanks to revisions made using the guidance from Mike Eberle.

I found minor policy issues that should be cleaned up before publication. This numbered list summarizes the policy comments needing attention:

1. Cooperator?—in contrast to the other manuscripts in the 'highly parameterized inversion' series, there was no cooperator listed on the cover or mentioned in the manuscript. This is not a problem. If a cooperator is added, please let me know if there are policy-related questions or concerns.
2. Trademark designations—on page 11, we need to recognize the trademark status of names used in a manner similar to that done in the PESTCommander manuscript.
3. Promising a future deliverable—on page 15, we need to be sure there is no appearance of promising a future product or deliverable when discussing the parallelization of the Jacobian calculations.
4. Timing of releasing and citing the TSPROC report—the Westenbroek and others report on TSPROC needs to be released in order to cite the report. Hopefully the timing of the TSPROC report release will be well in advance of the release of the subject manuscript.

A synopsis of other comments needing attention:

5. Clarification of “overfit” as a ‘problem’ in the abstract. “Overfitting” is mentioned in the abstract with no context. I ask whether readers will understand the issue and if additional clarification is needed.
6. Acknowledgments—has the question about placement (Eberle) been resolved?
7. Appendixes—please ensure Mike Eberle’s edits are applied; notes on this are focused in the appendixes.
8. Appendixes 4, 5, and 6—start off with figures or tables before the text. Please move some text ahead of the supporting figures or tables in the final layout.

Please have Mike contact me at 717-730-6970 or [kjbreen@usgs.gov](mailto:kjbreen@usgs.gov) if he has questions about my comments.

Files posted to the IPDS document vault:  
PDF document of manuscript with comments;  
PDF file copy of this approval memo.