

## Peer Review Plan

Title of Review: Object Modeling System (OMS): Assessment and Future Directions [ ] **Influential Scientific Information**

Agency: USDA, Agricultural Research Service [x] **Highly Influential Scientific Assessment**

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Subject of Review: Current challenges in soil erosion research have created demand for integrated, flexible, and easily parameterized sediment transport models. Most of the existing monolithic erosion models (e.g., WEPP and WEPS) are not modular, thus modifications require considerable time, effort, and expense. In this paper, the viability and challenges of using the Object Modeling System (OMS) for soil erosion model development will be explored. The OMS is a Java-based modeling framework that facilitates simulation model development, evaluation, and deployment. We present application of a fully restructured and modularized core WEPP hillslope erosion component functioning within the OMS as a single compartmentalized erosion module. In addition, we discuss specific features of the OMS related to soil erosion modeling including: 1) how to reduce duplication of effort in wind and water erosion modeling; 2) how to make soil erosion models easier to build, apply, and evaluate, 3) how to facilitate long-term maintainability of soil erosion models; and 4) how to improve the quality of soil erosion model code and ensure credibility of model implementations.

Purpose of Review: We anticipate that the external peer reviewers will possess an in-depth knowledge of research conducted. Reviewers will be expected to focus on areas such as:

1. Evaluate the methodology. Is the approach and process appropriate for the system?
2. Evaluate the quality and completeness of the individual components of the system.
3. Comment on whether/where the documentation is difficult to read or understand.

Type of Review: [ ] Panel Review [x] Individual Reviewers  
[ ] Alternative Process (Briefly Explain):  
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Timing of Review (Est.): Start: 05/2007 End: \_\_\_\_\_ Completed: 12/2007

Number of Reviewers: [x] 3 or fewer [ ] 4 to 10 [ ] More than 10

Primary Disciplines/Types of Expertise Needed for Review: Hydraulic engineer, agricultural engineer, water and wind erosion modeling

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