

Peer Review Plan

Title of Review: Wind Erosion Prediction System (WEPS) Technical Documentation [] **Influential Scientific Information**

Agency: USDA-Agricultural Research Service [X] **Highly Influential Scientific Assessment**

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Subject of Review:

The Wind Erosion Prediction System (WEPS) is a physically-based, daily time step model. WEPS was developed in response to customer requests to replace the empirical Wind Erosion Equation (WEQ), which was first published in 1967. WEPS addresses many WEQ shortcomings on a national basis by simulating the changes in the surface conditions, and thus susceptibility to wind erosion, due to wind, weather and management practices on a daily basis. Since WEPS uses stochastic weather generators for wind and weather simulation, it can provide not only estimates of long term average annual wind erosion, but also the time periods during the year when that erosion is most likely to occur. WEPS is sensitive to the impact different management practices have on a site's susceptibility to wind erosion, making comparisons of alternative practices easy. Being a process-based model, additional detail is also available. For example, not only is total erosion leaving a simulated field available, but also the amount of soil loss by particle size: a) creep/saltation (larger wind blown soil particles that will end up in road ditches and waterways nearby); b) suspension (smaller particles that can be carried in the wind and causes visibility issues on nearby roads); and c) PM10 (very small dust particles that have health implications and is regulated by EPA).

The science behind WEPS is based on numerous peer-reviewed publications. Many other publications and presentations have specified the sources and implementation of its national databases for wind, weather, soil, management operations, crops, and management practices, as well as the WEPS interface design and layout. In addition, many top level national and regional NRCS soil scientists, agronomists and expert wind erosion practitioners have reviewed and tested the model prior to acceptance and implementation within their agency. The model has now been accepted and deployed within NRCS field offices nationwide this October, 2010.

Purpose of Review:

Even though WEPS science is based upon peer-reviewed research, there has been no single definitive source that pulls together how WEPS has implemented the peer-reviewed science within each of its major sub-components (submodels). A WEPS Technical Document is planned for eventual peer-review and submission as a USDA Handbook. This process is scheduled to take more than a year to complete as the individual chapters are completed and reviewed prior to submission as a handbook.

In addition, the feedback from NRCS during their testing and evaluation, has acted like a continual peer-review of the model in the past. Now, after delivery to their field offices, additional issues will invariably arise that need resolution. This additional WEPS customer peer review process is expected to continue indefinitely.

Type of Review: [] Panel Review [X] Individual Reviewers

[X] Alternative Process (Briefly Explain):

Responding promptly to NRCS issues discovered during the first year of their initial implementation phase acts as a continuing customer peer-review process by their agency.

Timing of Review (Est.): Start: Oct. 2010 End: Sep. 2012 Completed: _____

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

Primary Disciplines/Types of Expertise Needed for Review: Modelers, agronomists, soil scientists and agricultural engineers for the reviewing WEPS submodel chapters for USDA Handbook.
NRCS field office, state and national level agronomists for WEPS usage issues.

Reviewers selected by: Agency Designated Outside Organization
Organization's Name: _____

Opportunities for Public Comment? Yes No

If yes, briefly state how and when these opportunities will be provided:

How: _____
When: _____

Peer Reviewers Provided with Public Comments? Yes No

Public Nominations Requested for Review Panel? Yes No

Other: _____

