

(STP-00-050, June 2000, Other, Hydrogeologic Conceptual Model)

June 21, 2000

ALL AGREEMENT STATES
MINNESOTA, OKLAHOMA, PENNSYLVANIA, WISCONSIN

**OTHER INFORMATION: TECHNICAL BRIEFING ON RESEARCH RE: HYDROGEOLOGIC
CONCEPTUAL MODEL AND PARAMETER UNCERTAINTY (STP-00-050)**

The Nuclear Regulatory Commission (NRC) has scheduled a "**Research Symposium: Hydrogeologic Conceptual Model and Parameter Uncertainty**" to be held July 25-26, 2000 at NRC Headquarters, Rockville, Maryland. The research briefing and discussions will cover methodologies being developed and tested to evaluate hydrogeologic conceptual model and parameter uncertainties. Enclosed is a tentative agenda which identifies the NRC research contractors and their projects, preliminary presentation titles, topics to be addressed and the NRC contact. Although there is no registration fee, advance notice of attendance is requested.

Please note that the methodologies being discussed focus on a wide variety of applications to waste disposal facilities and decommissioning site reviews. Therefore, the methods, field data and experimental testing results should be valuable to all Agreement States involved in reviewing both partially- and fully-saturated hydrogeologic systems. Information on the parameter uncertainty assessment methodology has been recently documented in NUREG/CR-6656, "Information on Hydrologic Conceptual Models, Parameters, Uncertainty Analysis, and Data Sources for Dose Assessments at Decommissioning Sites" (single copies are available upon request).

Although the enclosed tentative agenda for the research symposium lists NRC research contractors (i.e., University of Arizona, Pacific Northwest National Laboratory, and USDA/Agricultural Research Service), other NRC contractors and Federal agencies have been notified of the symposium and may also be making presentations. Other Federal employees, Agreement State regulators and their contractors are welcome to attend. Each Agreement State will be responsible for travel and per diem expenses for their respective attendees. Those interested in attending should contact the NRC point of contact to register in advance. There is no tuition cost for this briefing. Advance registration is requested by June 30, 2000.

If you have any questions regarding this correspondence, please contact me or the individual named below.

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Frederick C. Combs, Deputy Director
Office of State and Tribal Programs

Enclosure:
As stated

Tentative Agenda
RESEARCH SYMPOSIUM:
Hydrogeologic Conceptual Model and Parameter Uncertainty

Location: **NRC Headquarters**
11545 Rockville Pike, Rockville, MD

Dates: **July 25, 2000 in the NRC Headquarters Auditorium**
July 26, 2000 in the ASLBP Hearing Room, T-3B45

Presentations will be from the following Hydrology Research Projects:

Testing and Evaluating Conceptual Ground-Water Flow and Transport Models
Shlomo P. Neuman and Peter J. Wierenga, University of Arizona (UAZ), Principal Investigators

Variability and Uncertainty in Transient Flux and Transport Estimates in Support of Decommissioning Reviews
Philip Meyer and Glendon Gee, Pacific Northwest National Laboratory (PNNL), Principal Investigators

Joint Field Study for Testing and Evaluating Field Instrumentation and Infiltration Estimates
James Starr and Dennis Timlin, Agricultural Research Service (ARS)/USDA, Principal Investigators

Tuesday, July 25, 2000

1:15 p.m. Welcome Thomas King, Director, NRC/RES/DRAA

1:20 Meeting Format William Ott, NRC, Facilitator

HYDROLOGY RESEARCH PROGRAM

1:35 Nature of Uncertainty in Hydrology, Regulatory Significance, and Technical Issues Being Addressed in
NRC Research Program in Hydrology Tom Nicholson, NRC

CONCEPTUAL MODEL UNCERTAINTY

2:00 Overview of UAZ Methodology for Estimating Uncertainties in Conceptual Ground-Water Flow and
Transport Models Shlomo Neuman & Peter Wierenga, UAZ

! UAZ Methodology and Field Experimental Plans for Testing

! Preliminary Test Results and Technical Issues to be Resolved for Quantifying Uncertainties
Discussion William Ott, NRC, Facilitator

3:15 BREAK

PARAMETER UNCERTAINTY

3:30 Overview of PNNL Methodology for Estimating Uncertainties in Parameters
..... Philip Meyer and Glendon Gee, PNNL

- ! Testing of PNNL Methodology Using Hypothetical Test Cases
 - ! Approaches for Conducting Sensitivity and Uncertainty Assessments
 - ! Methods to Evaluate Value in Updating Database with Site-Specific Information
- Discussion* William Ott, Facilitator

4:45 *Review Day's Discussions and Formulate Research Questions* William Ott, Facilitator

5:00 p.m. ADJOURN

Wednesday, July 26, 2000

8:30 a.m.. *Review Meeting Agenda and Research Questions* William Ott, Facilitator

CONCEPTUAL MODEL UNCERTAINTY

8:40 UAZ Research Activities and Findings on Developing a Methodology for Reviewing Conceptual Ground-Water Flow and Transport Models Shlomo Neuman & Peter Wierenga, UAZ

- ! Tools and Criteria Identified in the UAZ Methodology for Evaluating Conceptual Models and their Inherent Uncertainties
- ! Field Infiltration Experiments at the Apache Leap Site - Experimental Results

10:15 - 10:30 BREAK

- ! Testing of the Methodology for Decommissioning Sites using the Maricopa Database
 - ! Approaches to Rank and Quantify Uncertainties
- Discussion* William Ott, Facilitator

12:00 - 1:00 p.m. LUNCH

PARAMETER UNCERTAINTY

1:00 PNNL Research Activities and Findings on Parameter Variability and Uncertainty
..... Philip Meyer and Glendon Gee, PNNL

- ! Approaches to Estimating Infiltration and Transport Parameter Distributions and Uncertainty
 - ! Testing of the PNNL Methodology Using DandD, RESRAD and MEPAS Codes on Hypothetical Tests Cases Related to Decommissioning Reviews
 - ! Discussion of Tools and Databases for Estimating Uncertainties
 - ! PNNL Water Budget Model Using Mathcad 8
- Discussion* William Ott, Facilitator

3:00 - 3:15 p.m. BREAK

UNCERTAINTIES IN INFILTRATION ESTIMATES

3:15 ARS-NRC Joint Study to Assess Field Methods and Data for Estimating Infiltration and Ground-Water Recharge and Their Inherent Uncertainties Jim Starr and Dennis Timlin, ARS

- ! Approaches to Estimate Infiltration and Ground-Water Recharge Using “Real-Time” Datasets from Multi-Sensor Capacitance Probes
- ! Use of MCP Datasets in PNNL Water Budget Model
- ! Recommendations for Future Field Studies to Confirm MCP Network Approach
Discussion William Ott, NRC, Facilitator

INFILTRATION PARAMETER UNCERTAINTY

4:00 **Round Table Discussion of Parameter Uncertainty Related to Conceptual Models**
..... Symposium Speakers and Attendees lead by William Ott, Facilitator

4:45 Closing Remarks Cheryl Trottier, Chief, NRC/RES/RPER&WMB

5:00 p.m. ADJOURN