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# ***CHARACTERIZATION, MONITORING, AND MODELING***

## ***A SCIENCE AND TECHNOLOGY DEVELOPMENT ROAD MAP FOR THE DEPARTMENT OF ENERGY OFFICE OF ENVIRONMENTAL MANAGEMENT***

Prepared by the  
DEPARTMENT OF ENERGY  
OFFICE OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF SCIENCE AND TECHNOLOGY  
CHARACTERIZATION, MONITORING, AND  
SENSOR TECHNOLOGY  
CROSSCUTTING PROGRAM

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## FOREWORD

***Characterization, Monitoring, and Modeling: A Science and Technology Development Road Map for the Department of Energy Office of Environmental Management*** was prepared at the request of senior management of the Department of Energy Office of Environmental Management (DOE-EM) Office of Science and Technology (OST). The purpose of this ***CMM ROAD MAP for DOE-EM*** is to assemble information on technology development, needs, and gaps within DOE-EM and use this information to indicate directions in which further development is warranted.

This ***ROAD MAP*** was prepared by the DOE-EM OST Characterization, Monitoring, and Sensor Technology Crosscutting Program (CMST-CP). The initial source for identifying technology needs and gaps was the formal Site Needs identification process carried out by the OST Site Technology Coordinating Groups (STCGs). In recent years the primary role of CMST-CP has been to support the OST Focus Areas (FAs). In implementing this role CMST-CP personnel have assisted the FAs in compiling these STCG-expressed Needs, forming Technical Responses to those Needs, and performing technology gap analyses. These gap analyses, provided by the CMST-CP liaisons to the five FAs, are the foundation of this document. Additional sources of information include strategic needs assessments and other documents compiled by FAs, Sites, and other OST programs. Focus Areas and other OST programs have been invited to provide review comments; comments received have been incorporated into the document.

At the present time DOE-EM is reorganizing its Office of Science and Technology to provide better and more direct support to closure sites (Thrust 1) and to develop alternatives for high-cost, high-risk baselines (Thrust 2). Advances in Characterization, Monitoring, and Modeling remain critical for success in both of these thrust areas. In particular, many current environmental monitoring practices designed for active regulated facilities will be both prohibitively expensive and inadequately informative to provide scientifically defensible and regulatorily acceptable post-closure monitoring appropriate for DOE-EM sites. Consequently, the relevance of this ***CMM ROAD MAP for DOE-EM*** and the continuing research and development it describes remain as great as originally envisioned.

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