

U.S. DEPARTMENT OF ENERGY  
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

**NUCLEAR WASTE TECHNICAL REVIEW BOARD**

**SUBJECT: OCRM PROGRAM APPROACH**

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# Introductory Remarks

- **Thermal management is a critical element of program to develop a repository and begin disposal in a timely and cost-effective manner**
- **Although principal focus is on MGDS issues, thermal management is a system problem; you will hear from many different areas that bear on this problem**
- **What you will hear is work in progress -- we are in the early stages of our thermal management planning**

# Program Approach

- **We have previously described to you our restructured program approach that focuses on**
  - **Site and design activities to support technical site suitability evaluation in 1998 and initial license application in 2001**
  - **Repository design permitting retrieval for up to 100 years after start of waste emplacement**
  - **MPC concept (canisters designed to transport and store waste as well as serve as part of waste package)**
- **Thermal management affects all of these areas**



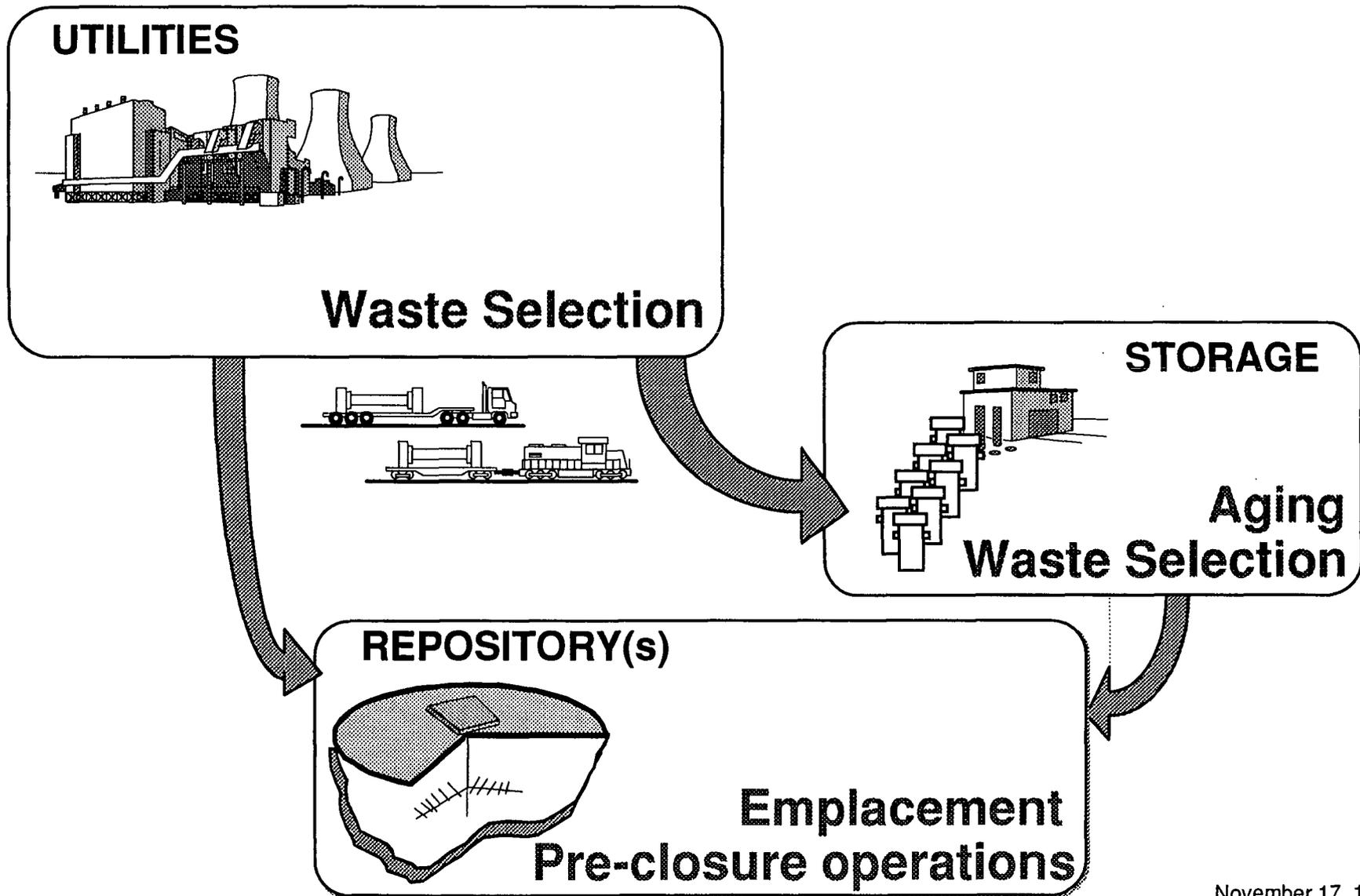
# **Approach to System Thermal Management**

- **We emphasize prudent development, consistent with the development of information about the site**
- **We recognize the possibility of changes that could have cost and schedule impacts; consequently a key objective of our approach is to maintain flexibility**

# **Thermal Management Has System-Wide Implications**

- **Thermal management must consider all elements of the waste management system**
- **MGDS thermal design must consider potential impacts on MPC design and interim storage requirements**
- **On the other hand, waste acceptance and storage may be able to help in MGDS thermal management and could help to provide additional design flexibility**

# Potential Thermal Management Options



# **CRWMS Thermal Management Objectives For MGDS Thermal Design**

- **Develop cost-effective thermal design compatible with waste isolation and containment.**
- **Design waste packages compatible with the MPC concept that provide containment while near-field temperatures are high and uncertainties are large.**
- **Design the underground facility to achieve thermal conditions compatible with preclosure operations and monitoring.**

# **CRWMS Thermal Management Objectives For WAST Thermal Design**

- **Develop cost-effective casks and MPCs that comply with regulatory thermal requirements**
- **Provide MPC designs consistent with available MGDS thermal testing and design information**
- **Determine possible benefits of waste acceptance and storage strategies for MGDS thermal design and to avoid de-rating of MPCs**
- **Implement desirable changes within institutional framework under which we must operate**

# **Key Program Milestones That Must Be Supported By Thermal Management**

- **Begin deployment of MPCs in 1998**
- **Determine technical suitability of site for a repository with information available by 1998**
- **Develop initial license application (to apply for construction authorization) with information available by 2001**
- **Select design and update license application (to receive and possess waste) using information available by about 2008**

# **System-Wide Strategy to Implement Thermal Management Objectives**

- **Develop a flexible thermal design for the elements of the system**
- **Conduct system evaluations for technical site suitability in terms of low MGDS areal thermal loading**
- **Then, conduct system evaluations of higher areal thermal loadings to improve cost and performance**
- **Confirm performance of the thermal design**

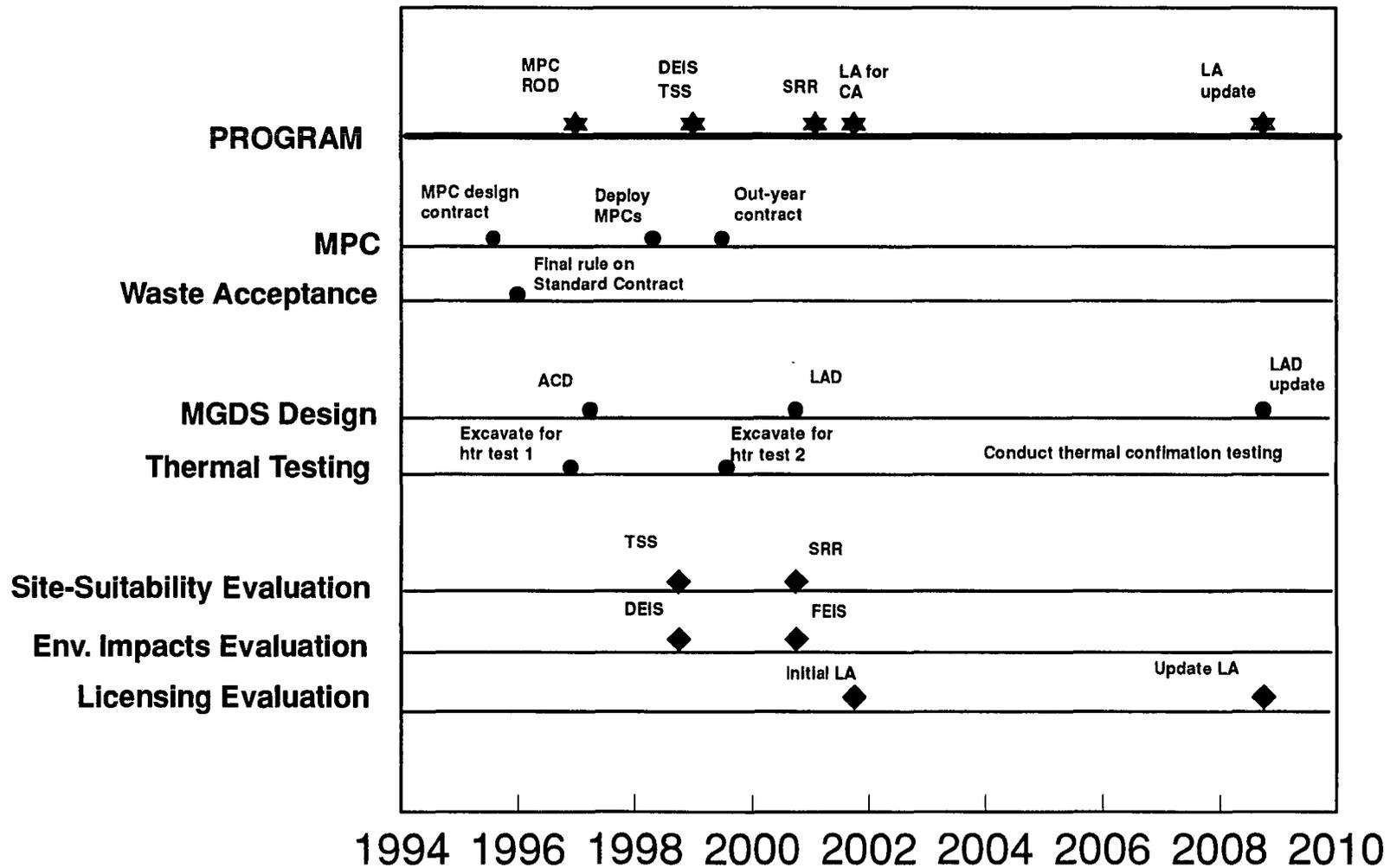
# Why This Strategy?

- **Recognizes that system must deal with cold waste as well as hot waste and information is needed regarding low areal thermal loading**
- **MGDS operability more problematic for higher areal loadings: prudent to proceed from low areal loadings to determine feasibility limits**
- **Approach maintains flexibility: easier to go from cold repository to hot than from hot repository to cold**
- **Consistent with new program approach; near-field info for low areal loading available first; far-field info for higher areal loading available later**

# DOE Plans For Thermal Management

- **Plans for thermal management embedded in the five-year plans**
- **These plans define**
  - **Integration of MGDS and WAST elements**
  - **Program-wide linking of thermal information, requirements, and schedules**
  - **Plans for MGDS thermal tests and analyses and development of MGDS thermal design**
  - **Development of MPC compatible with MGDS design**
- **Some of the details of these plans are discussed in these presentations**

# General Schedule For System Thermal Management



# Concluding Remarks

- **Thermal management a cross-cutting issue in the program**
- **We have a plan to arrive at a thermal design that is consistent with the new program approach and that maintains flexibility in the options**
- **We are early in the process, but we believe we are making progress toward an eventual thermal loading decision**