

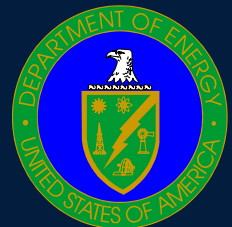


Repository Safety Strategy: Managing and Establishing Priorities

**Presented to:
Nuclear Waste Technical Review Board**

**Presented by:
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Project Manager
Yucca Mountain Site Characterization Project
Las Vegas, Nevada**

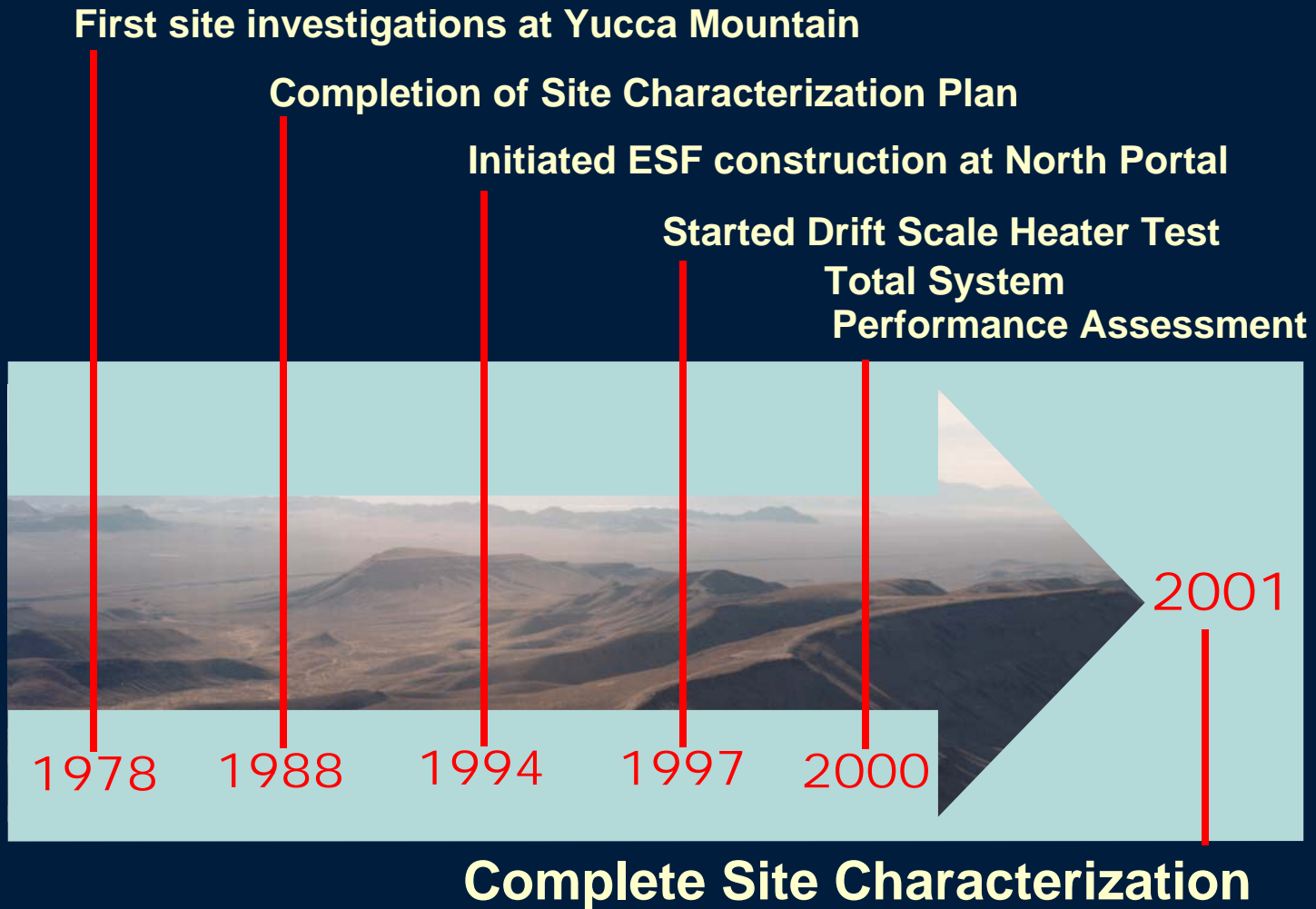
June 24, 1998



Strategy For Demonstrating Repository Safety

- Management of program priorities continues to be based on strategy to protect public health and safety**
- Provides framework for the integration of site information, repository design, and assessment of postclosure performance**

Yucca Mountain Site Characterization Pathway to Geologic Disposal

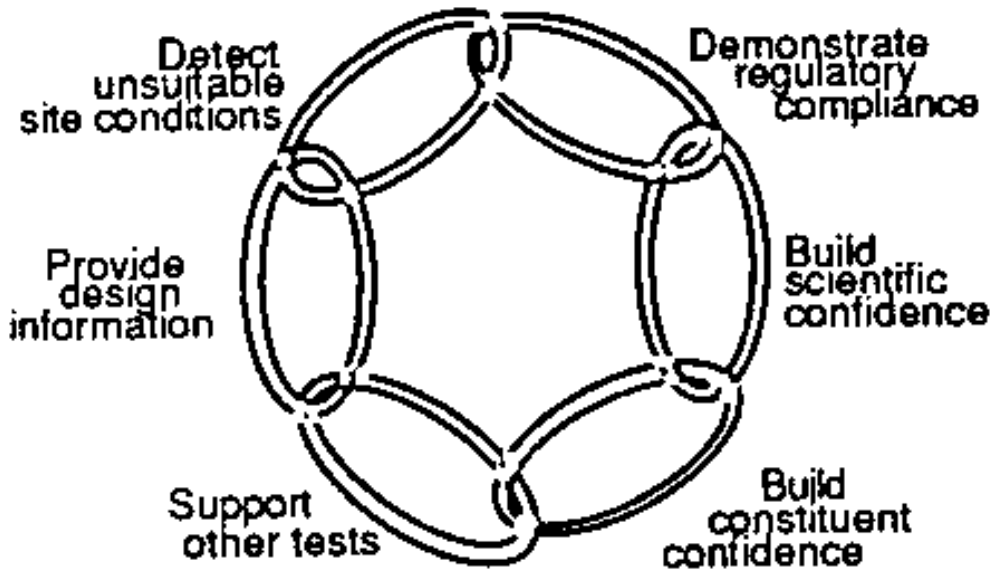


SCP Approach for Managing the Site Characterization Program

Performance Allocation Strategy

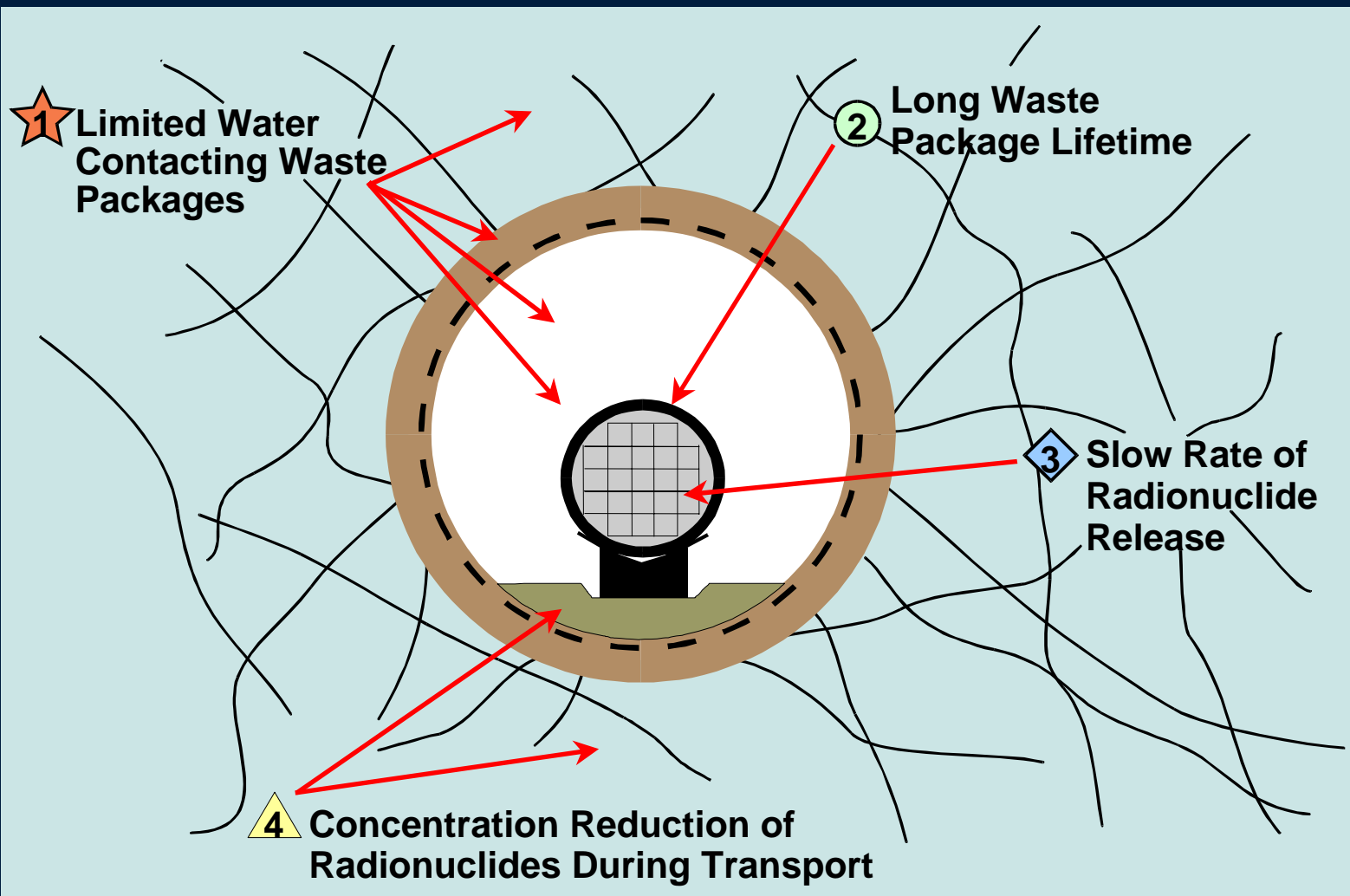
- **Concentrating on the characteristics of only a few features could reduce the cost of the site characterization program**
- **Prudent to consider initially the characteristics of all potentially important features**
- **Choosing all of these features was a way of dealing with the uncertainties in each of them**

On-going Process To Prioritize Work



- Tests with results that could have significant affects on system performance
- As key data became available
- As performance assessment models mature

Attributes of the Postclosure Repository Safety Strategy



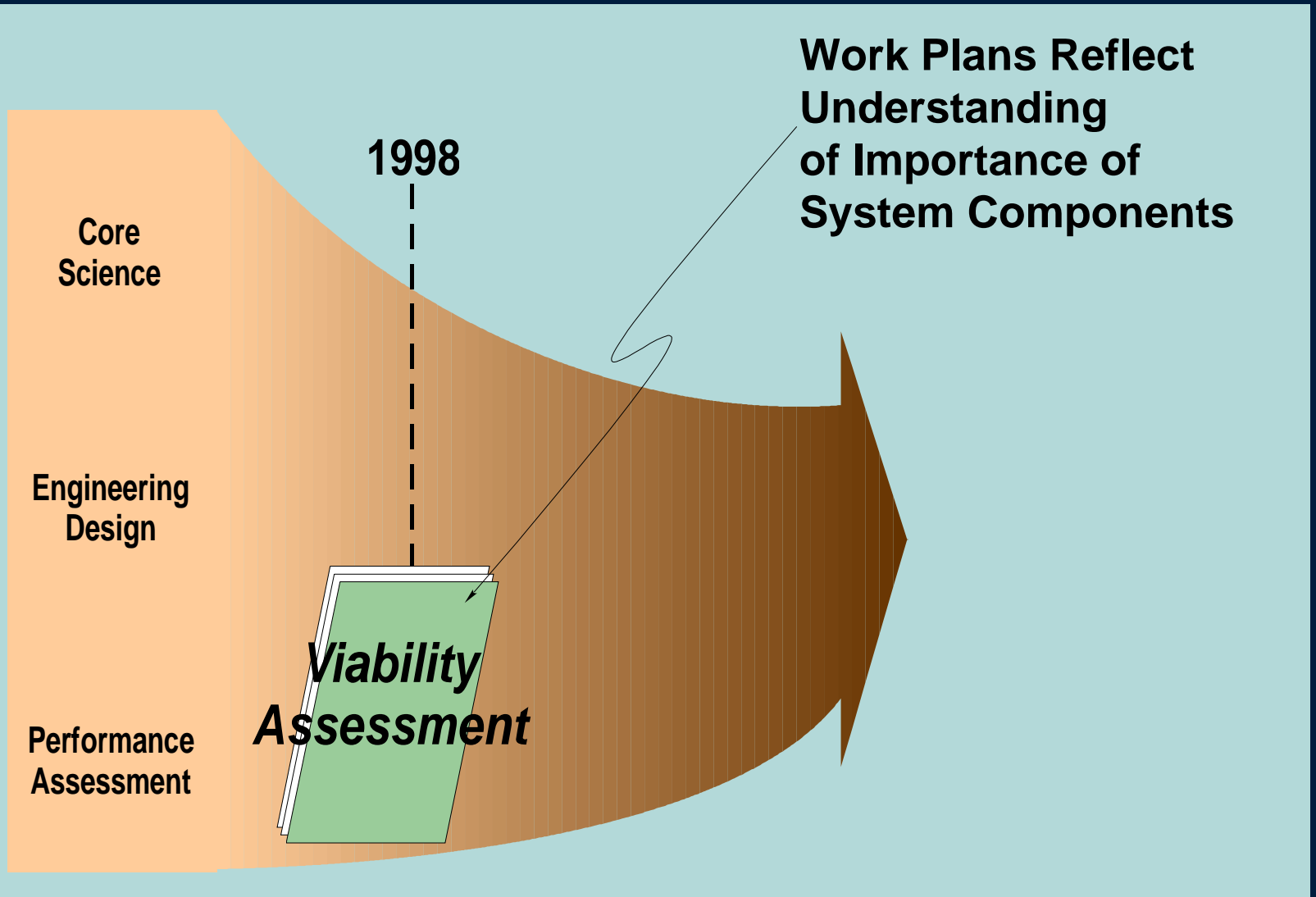
Preclosure Repository Safety Approach

- **Systematic identification of Design Basis Event**

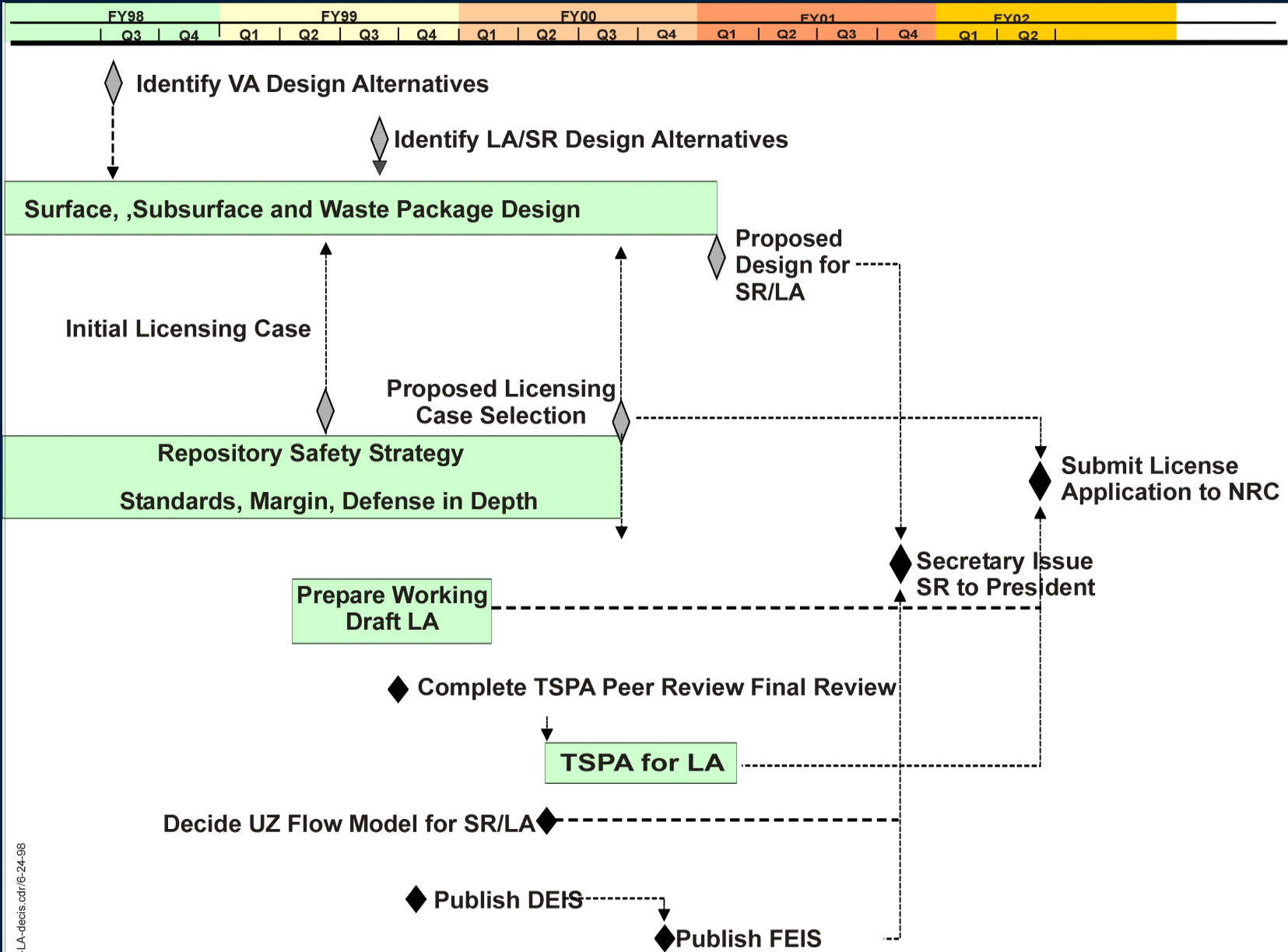
- **Classification of Importance**



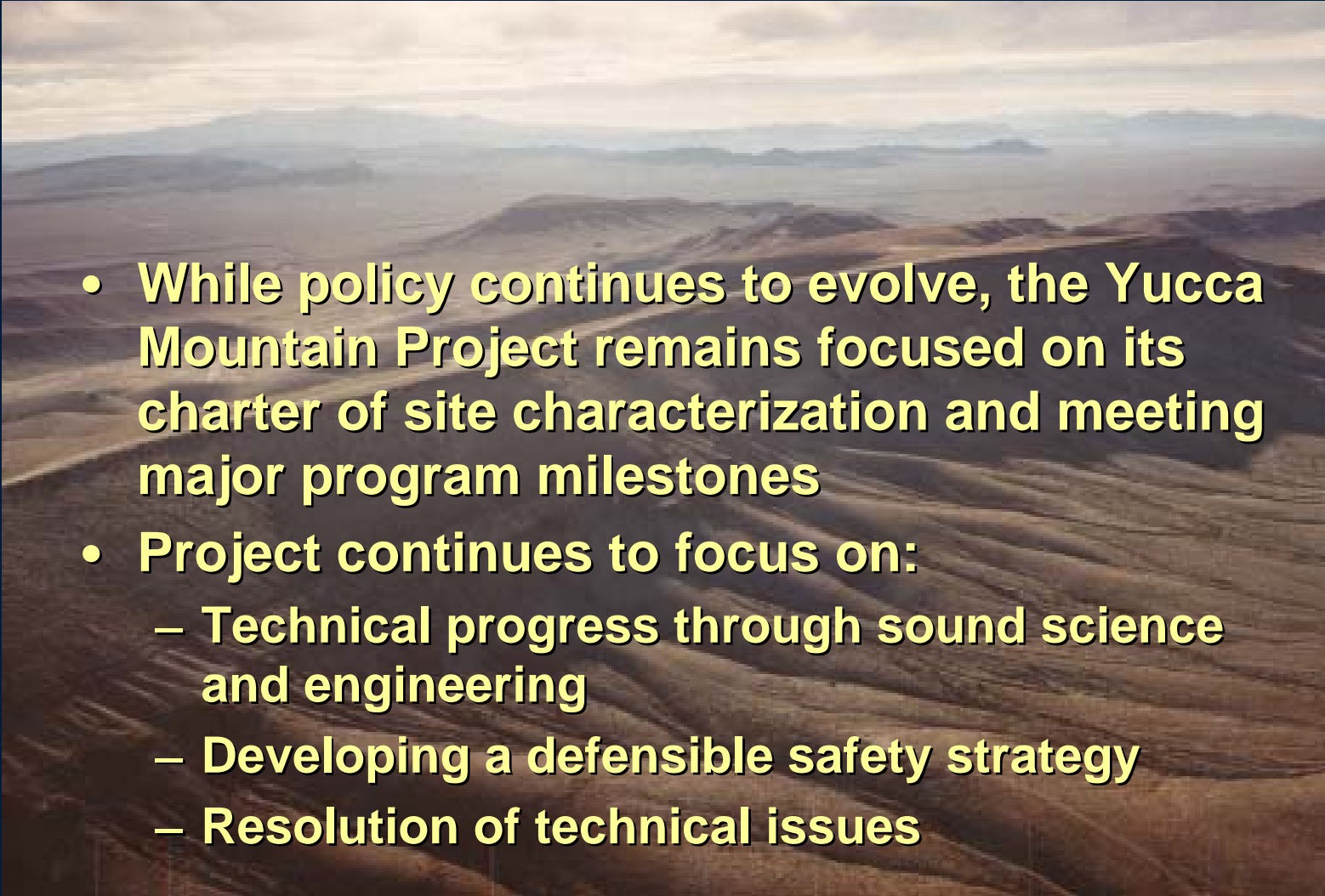
Pathway to Geologic Disposal



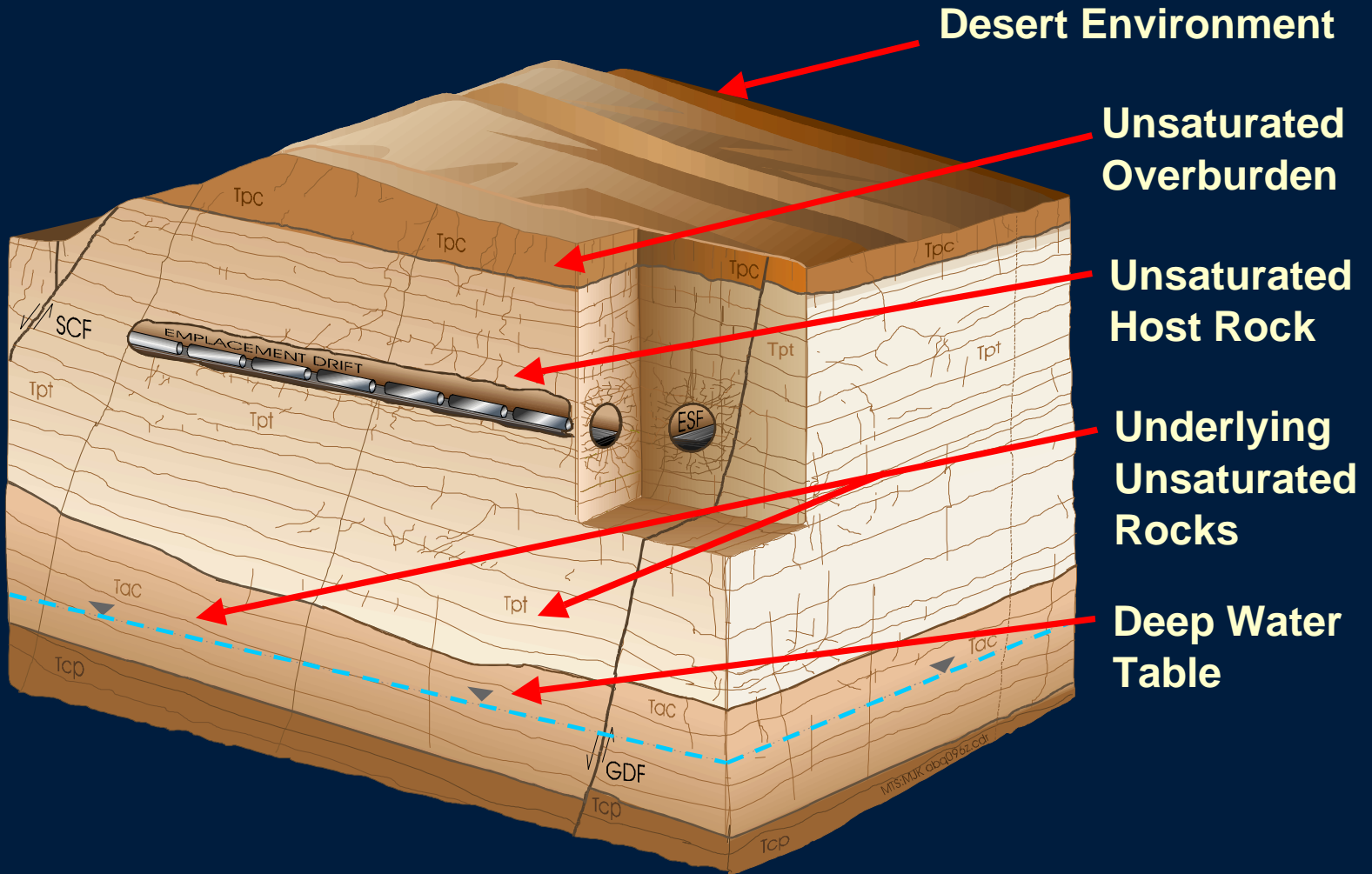
Schedule



Summary

- 
- **While policy continues to evolve, the Yucca Mountain Project remains focused on its charter of site characterization and meeting major program milestones**
 - **Project continues to focus on:**
 - **Technical progress through sound science and engineering**
 - **Developing a defensible safety strategy**
 - **Resolution of technical issues**

Natural System of Yucca Mountain



Desert Environment

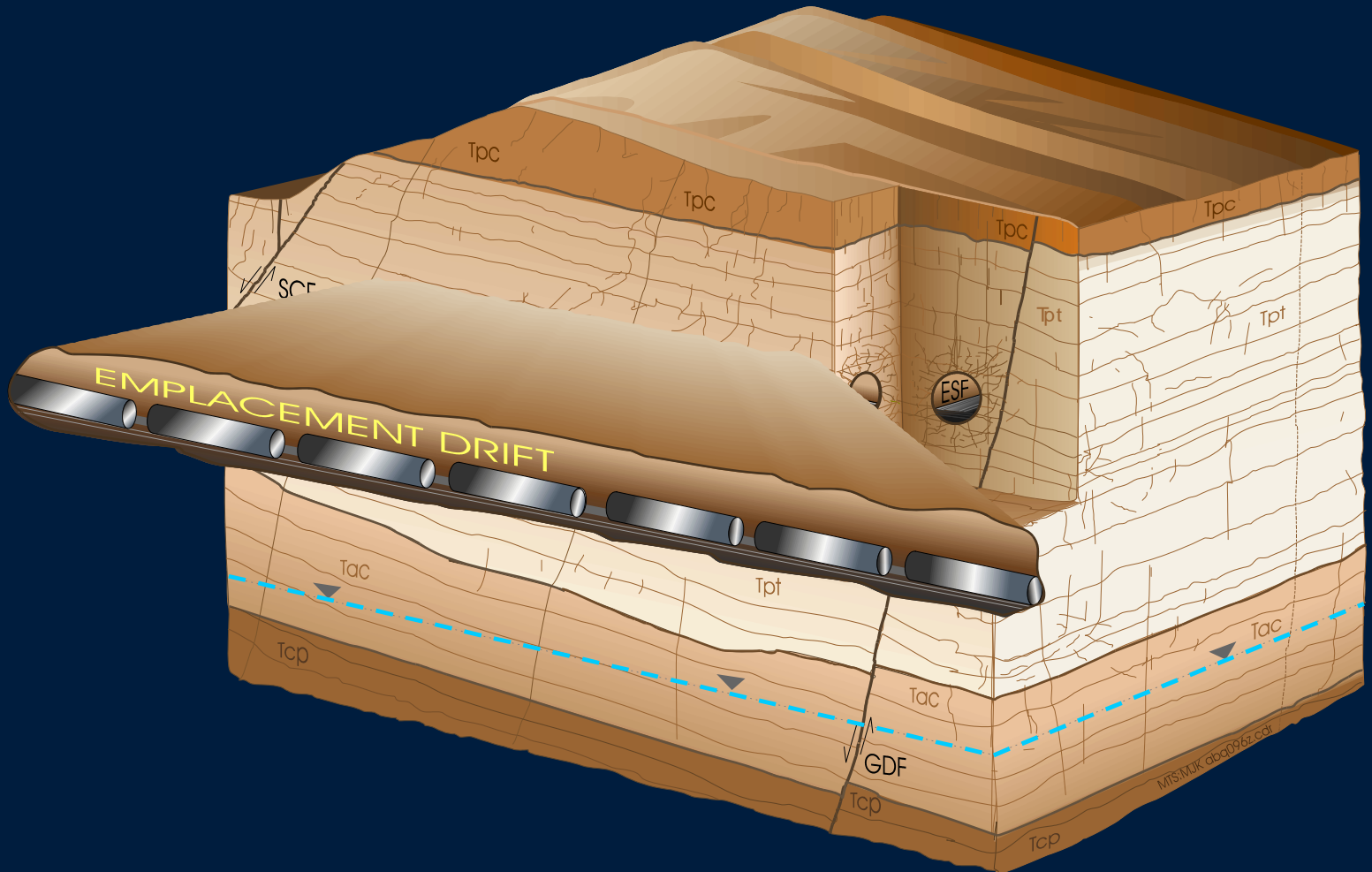
Unsaturated Overburden

Unsaturated Host Rock

Underlying Unsaturated Rocks

Deep Water Table

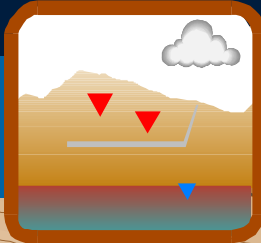
Engineered System Complements Natural System



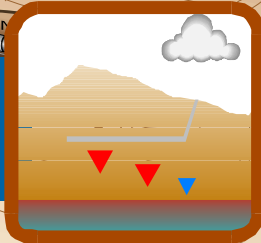
1

Limited Water Contacting the Waste Packages

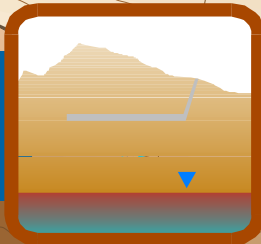
Precipitation (climate) and infiltration



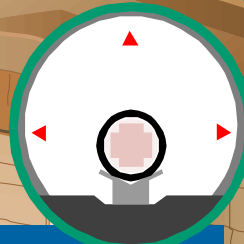
Percolation (unsaturated zone flow)



Redistribution of moisture by heat



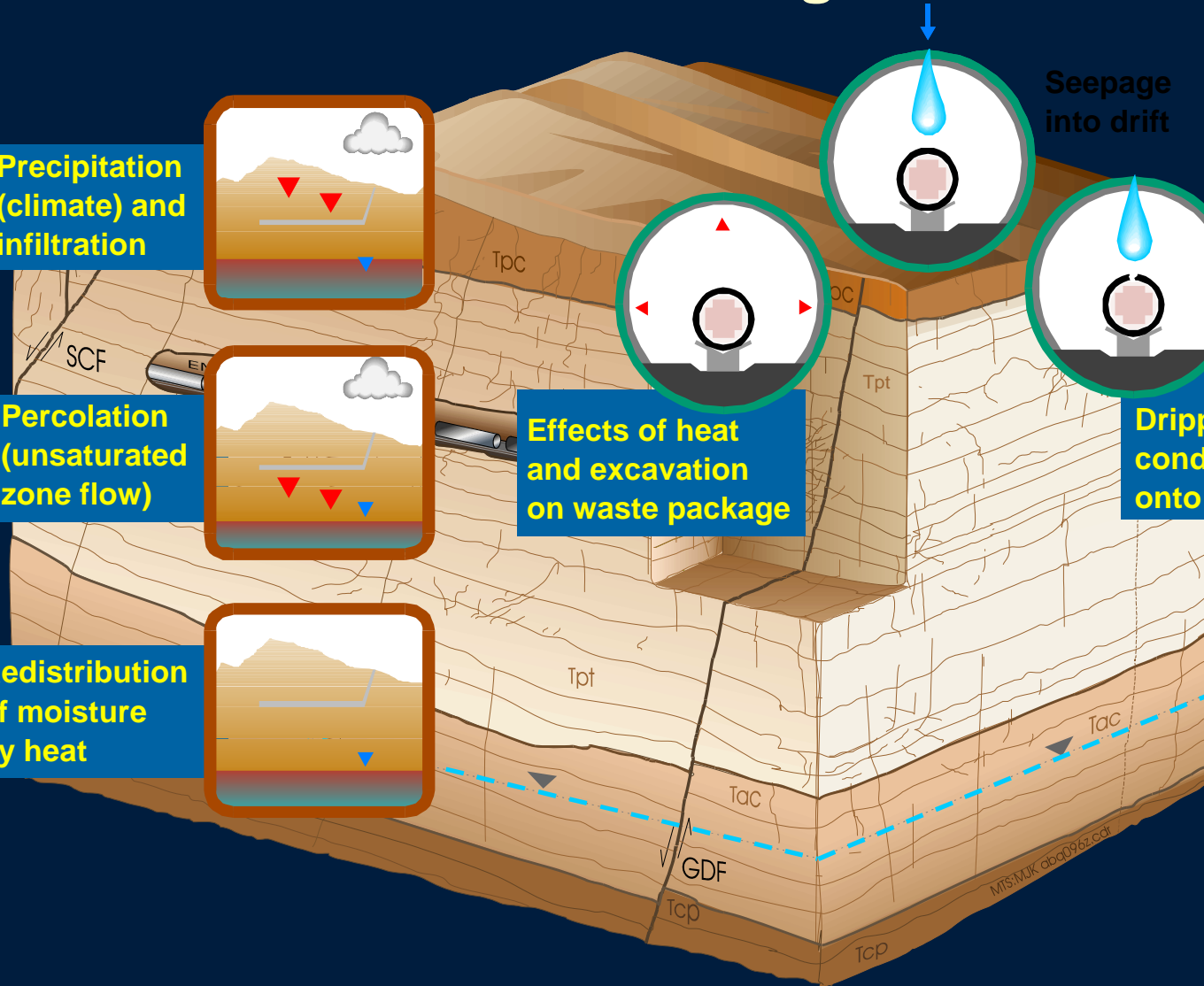
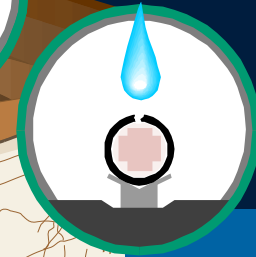
Effects of heat and excavation on waste package



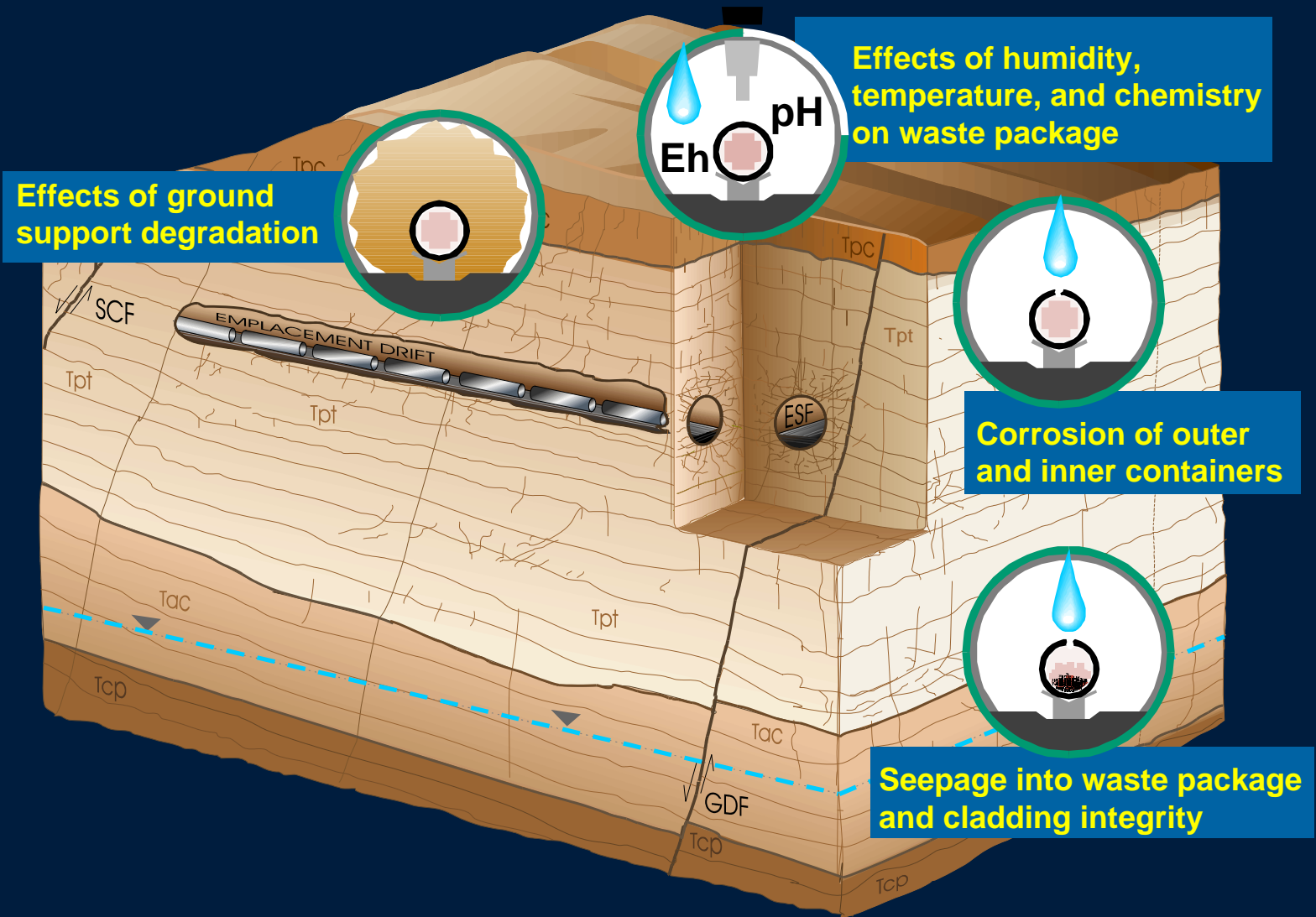
Seepage into drift



Dripping and condensation onto waste

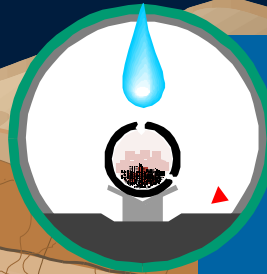


2 Long Waste Package Lifetime



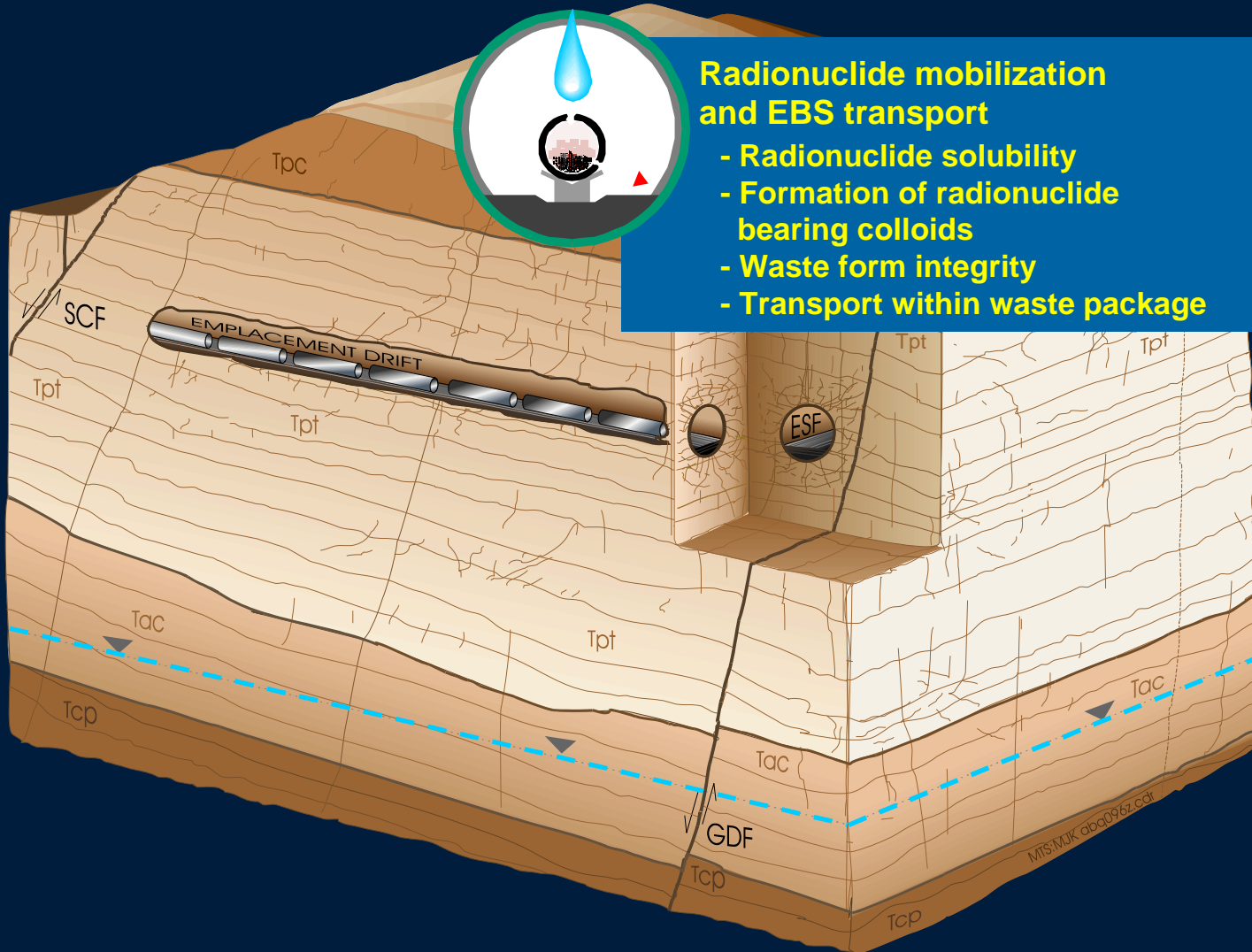
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Slow Rate of Radionuclide Release from the Waste Form



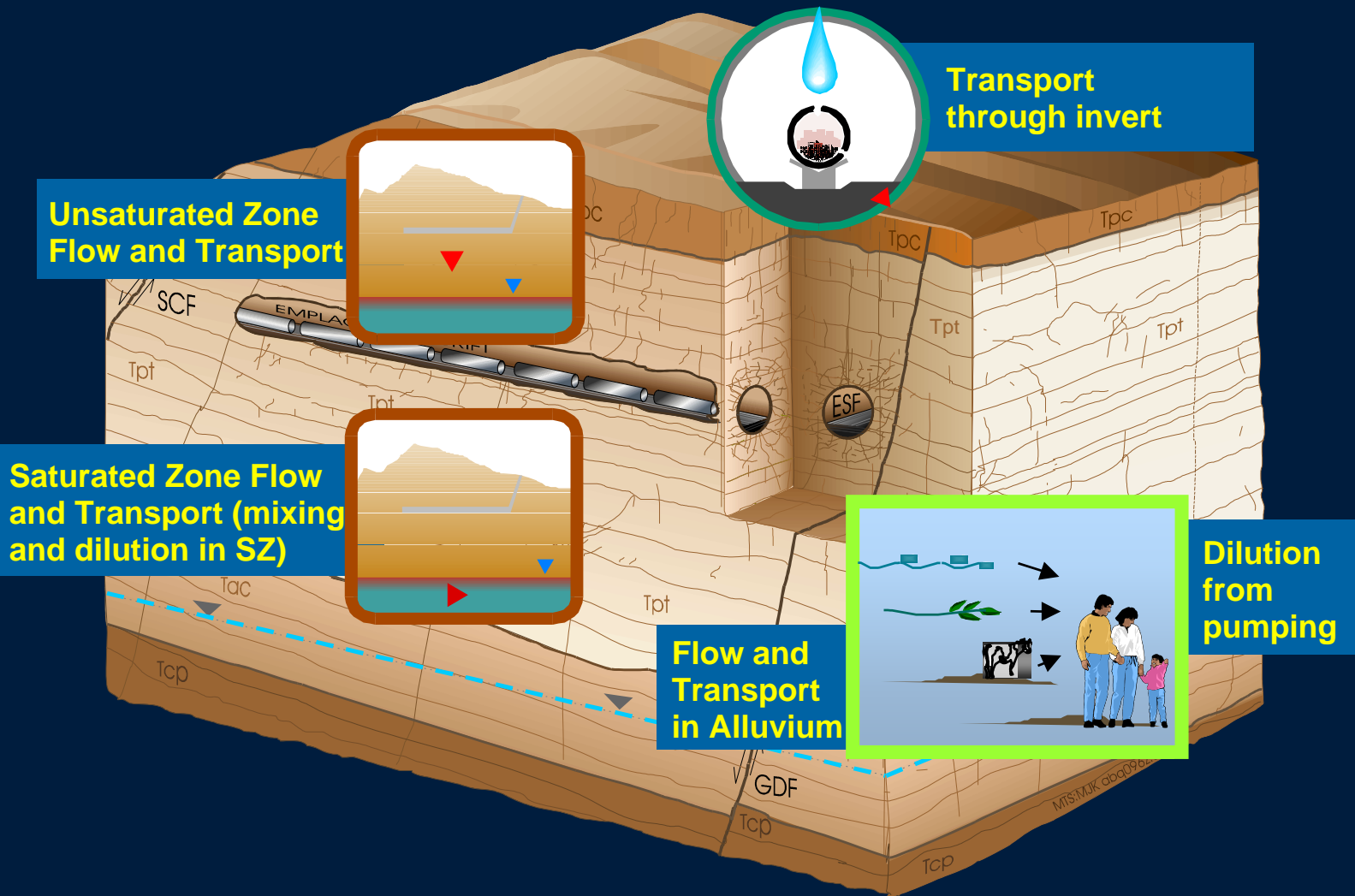
Radionuclide mobilization and EBS transport

- Radionuclide solubility
- Formation of radionuclide bearing colloids
- Waste form integrity
- Transport within waste package

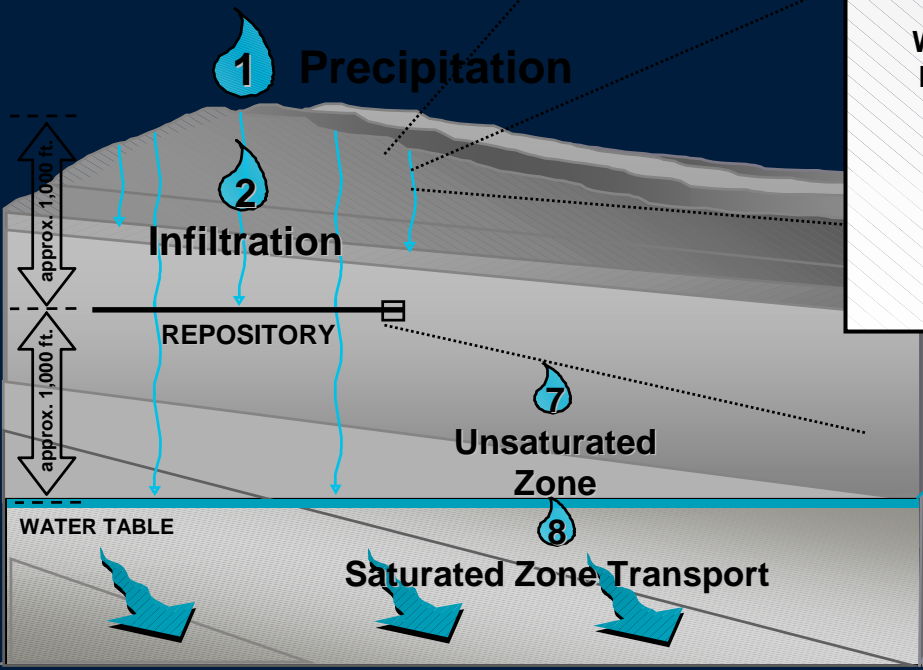


4

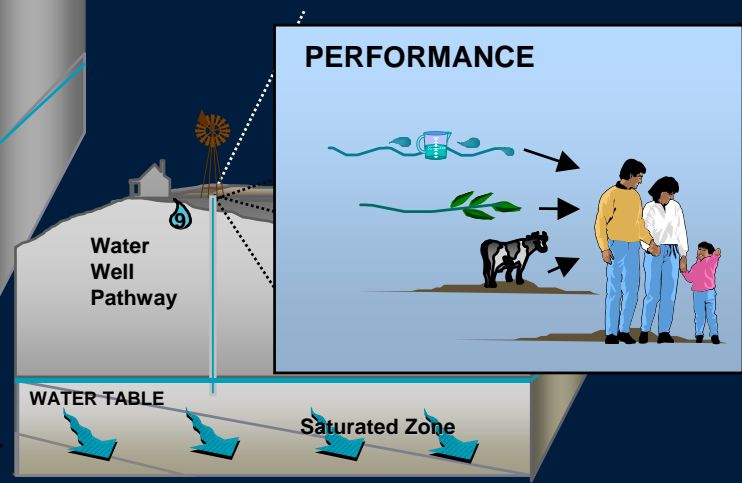
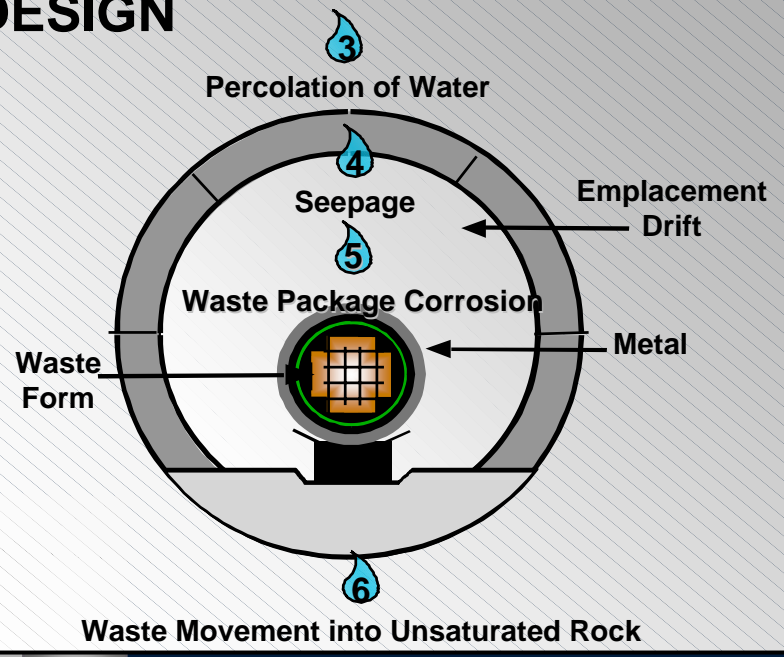
Concentration Reduction of Radionuclides During Transport Through Engineered and Natural Barriers



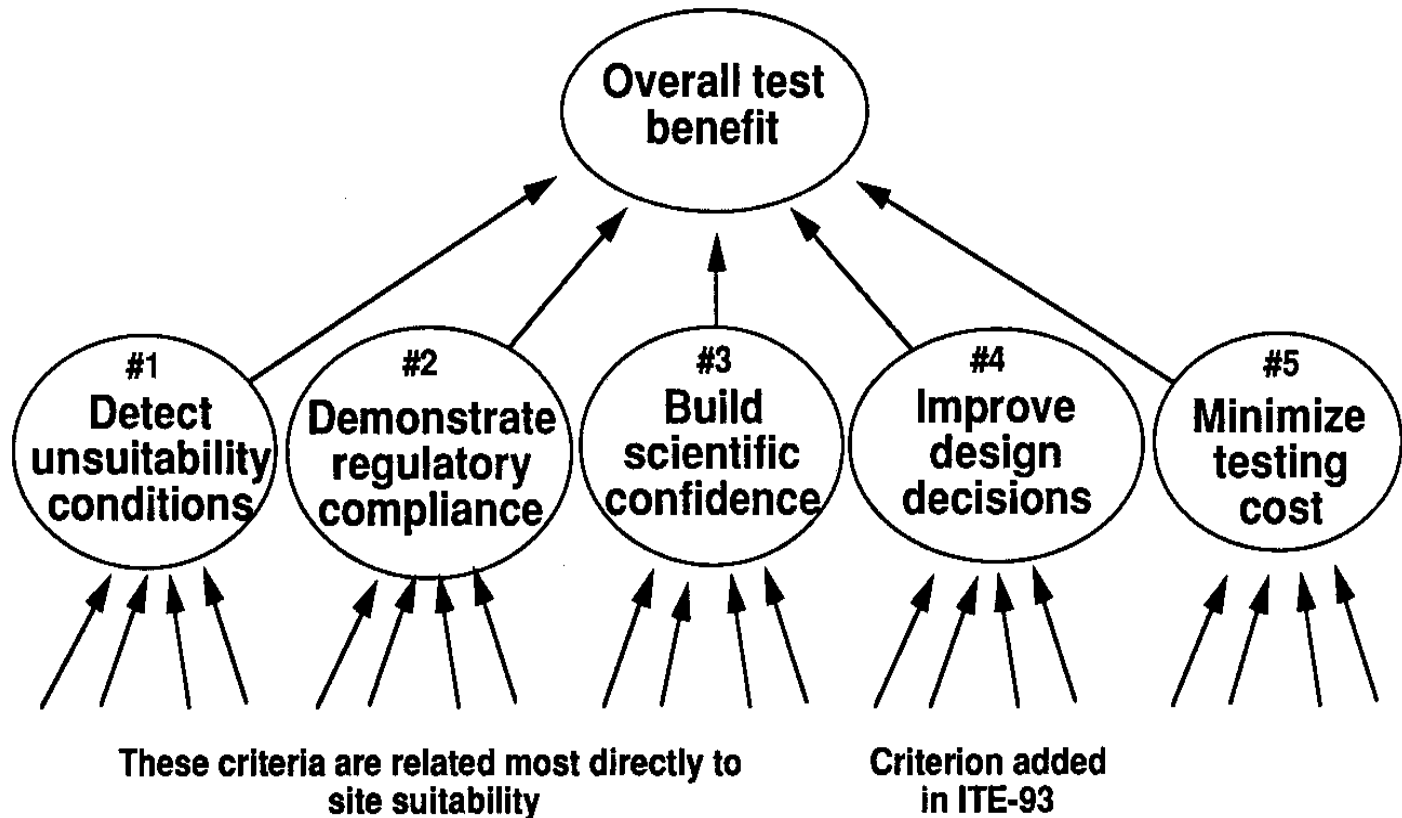
Better Understanding of Site Properties Allows Allocation to Smaller Set of Features



DESIGN



ITE Evaluated Tests Based on Five Criteria



Each criterion is further broken down into other factors used to rank studies