

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

**PRESENTATION TO
THE NUCLEAR WASTE TECHNICAL REVIEW BOARD**

**SUBJECT: POSSIBLE METHODS TO
ASSESS SITE SUITABILITY**

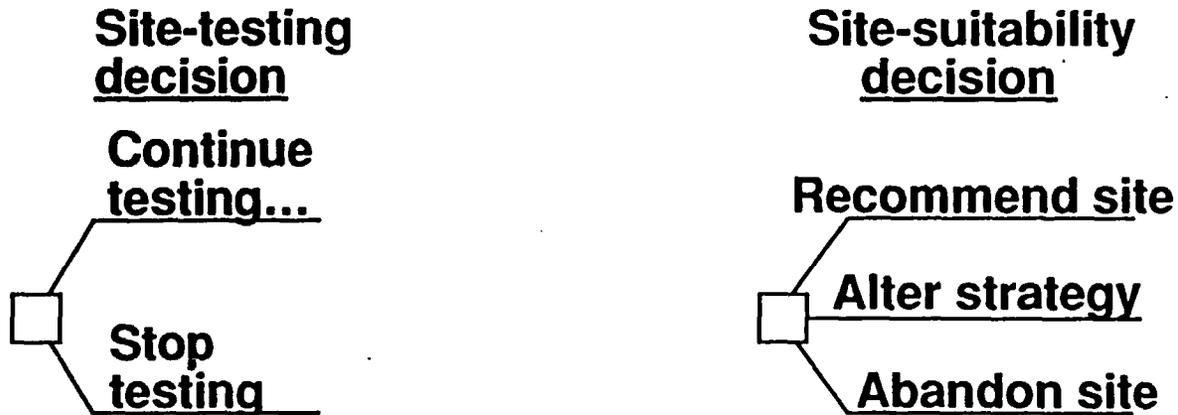
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A site-suitability assessment helps DOE make decisions about the site



Site-testing options

- Continue testing
 - As planned
 - Revised plan
 - Altered strategy
- Stop testing

Site-suitability options

- Recommend the site
- Alter strategy
 - Licensing
 - Design
 - Other
- Abandon the site

These decisions are similar to those analyzed for SBT prioritization, but...

- ***There are more alternatives—e.g., “alter strategy”***
- ***Their analysis may be based on more comprehensive criteria***

Our evaluation of possible site-suitability methods comprises three primary tasks

Project Tasks

- 1) Identify possible suitability-assessment methods to be evaluated**
 - **Suitability criteria (requires management input)**
 - **Timing options**
 - **Analysis techniques**

- 2) Evaluate the feasibility and defensibility of the methods**

- 3) Recommend promising methods to DOE management**

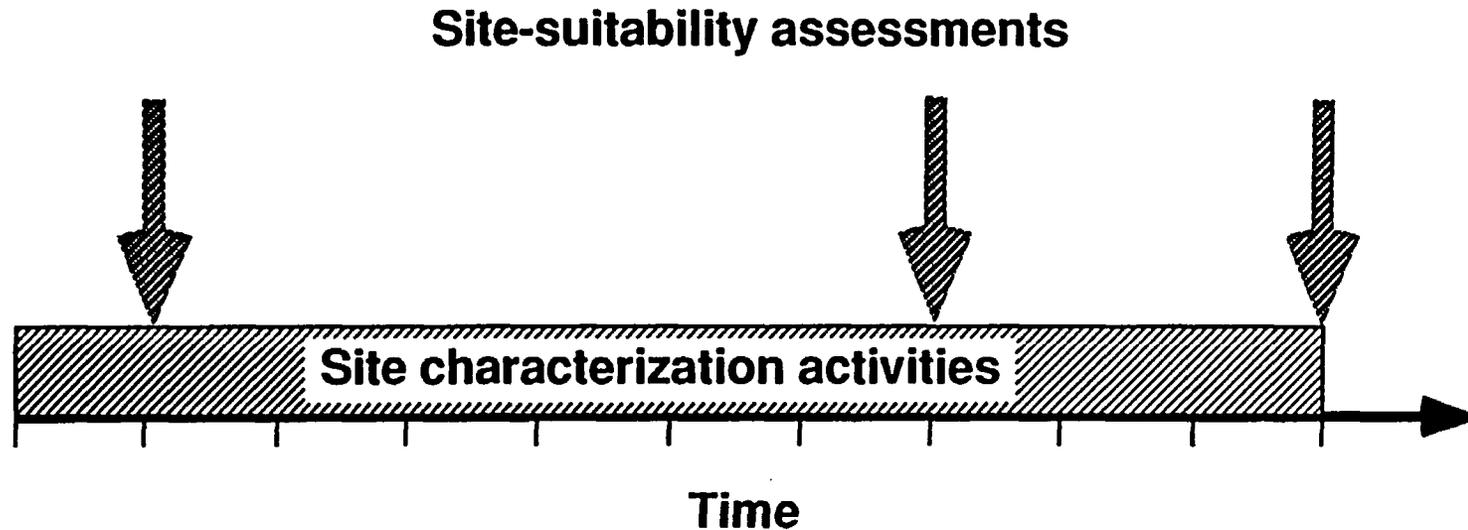
We have begun Task 1 of this effort

Various performance measures and related suitability criteria could be considered

- **Postclosure performance**
 - Total system releases
 - EBS release rate
 - Waste package containment
 - Ground-water travel time
- **Preclosure radiological safety**
 - Public exposure
 - Off-site releases
 - Worker exposures
- **Feasibility**
 - Siting and construction
 - Operation and closure
 - Retrievability
- **Other preclosure impacts**
 - Environment
Protection
Mitigation
 - Socioeconomic
Mitigation
Compensation
 - Transportation
Public risks
Feasible routes
- **Cost**
- **Other**

***Selection of the measures and criteria depends on
DOE management's definition of site suitability***

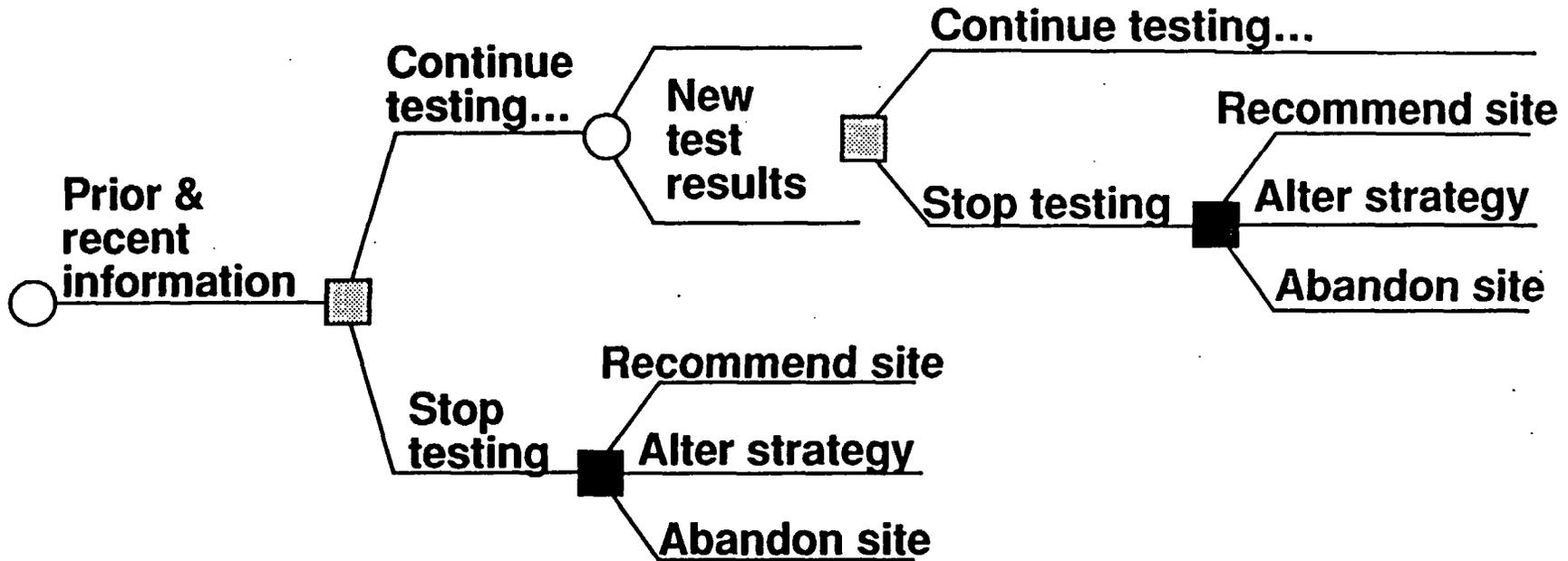
The timing of suitability assessments may vary with the type and status of characterization activities



Timing options include

- At regular intervals
- Associated with testing or program milestones
- “Continuously,” as test results are obtained

Each suitability assessment can involve two types of decisions

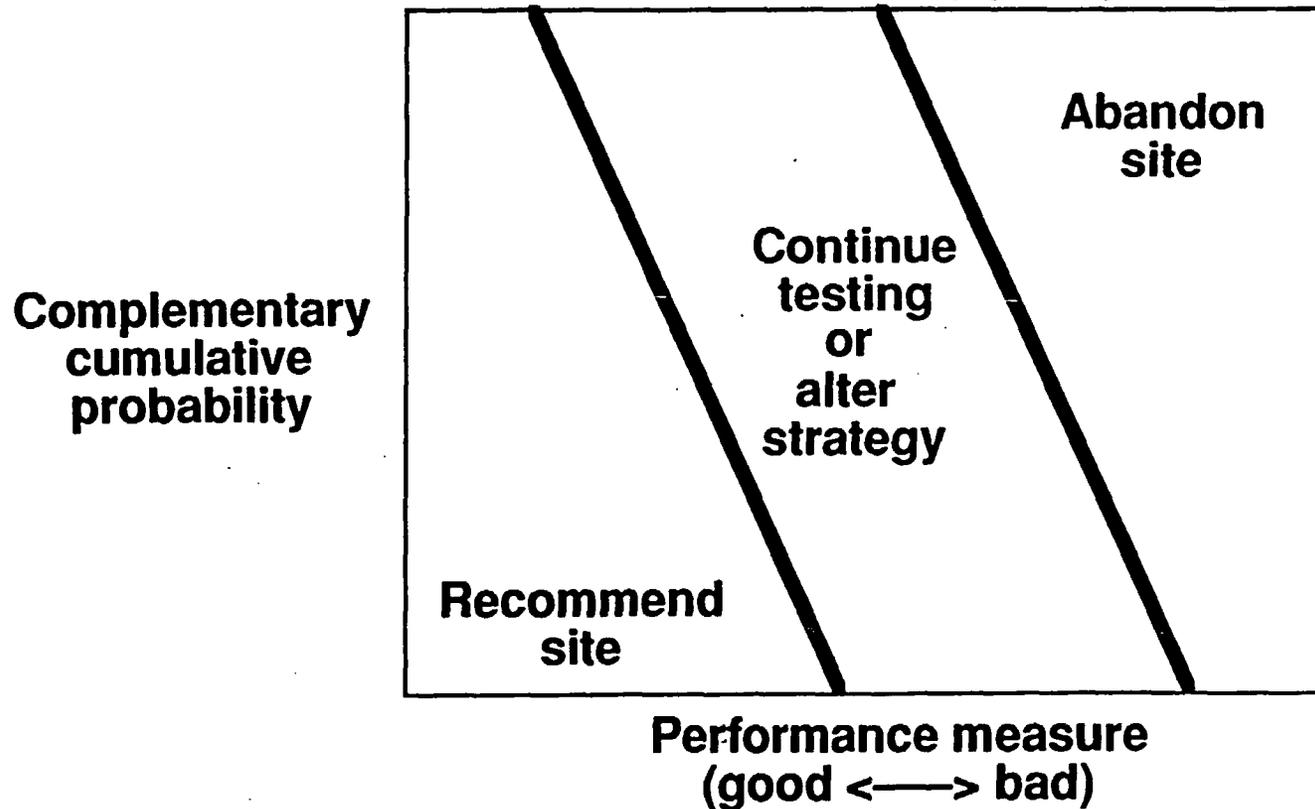


- Decision
- Uncertainty

▣	<i>"Continue / stop testing" decision</i>
■	<i>"Recommend / alter / abandon" decision</i>

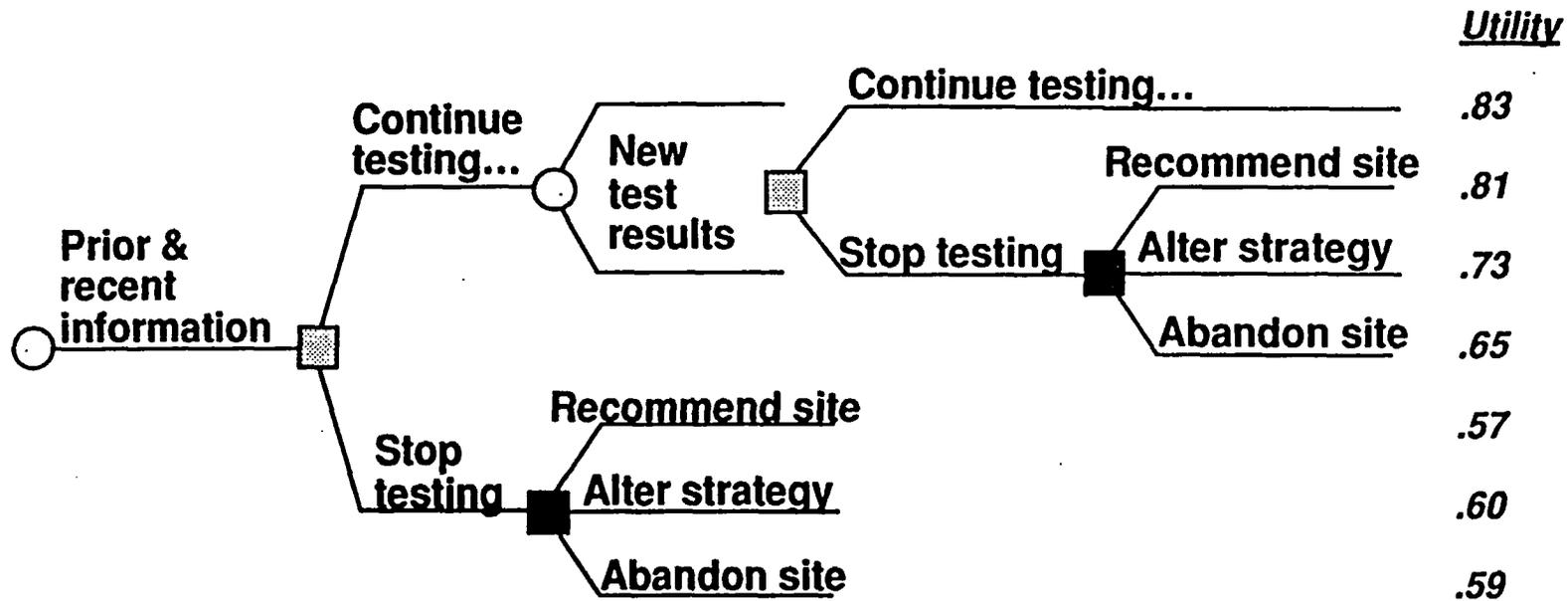
One analytic approach is to expand the test-prioritization method to address broader alternatives and criteria

Illustrative site-suitability policy diagram



This is useful when testing activities affect probabilistic suitability criteria such as postclosure system performance

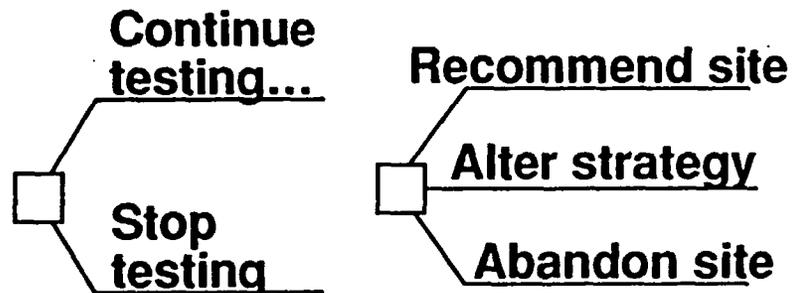
A closely related approach is to analyze decisions using multiattribute utility analysis



- *Possible outcomes of decisions are quantified using the selected performance measures*
- *Decisions are evaluated using a utility function that incorporates management judgments of relative importance of the measures*

We will evaluate suitability assessment methods and recommend those that are practical and defensible

- **The methods will assist DOE decisions about the site**



- **They will be consistent the approach taken for SBT prioritization**
- **They will build upon existing models and information**