

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

**NUCLEAR WASTE TECHNICAL REVIEW BOARD
SG&G PANEL MEETING:
SCENARIO A AND ESF DESIGN/CONSTRUCTION**

**SUBJECT: PRELIMINARY STATUS --
IMPLEMENTATION OF THE
PROPOSED PROGRAM APPROACH**

PRESENTER: JEAN L. YOUNKER

**PRESENTER'S TITLE
AND ORGANIZATION: MANAGER
REGULATORY AND TECHNICAL EVALUATION
TRW ENVIRONMENTAL SAFETY SYSTEMS
LAS VEGAS, NEVADA**

**PRESENTER'S
TELEPHONE NUMBER: (702) 794-7650**

**JUNE 13-14, 1994
LAS VEGAS, NEVADA**

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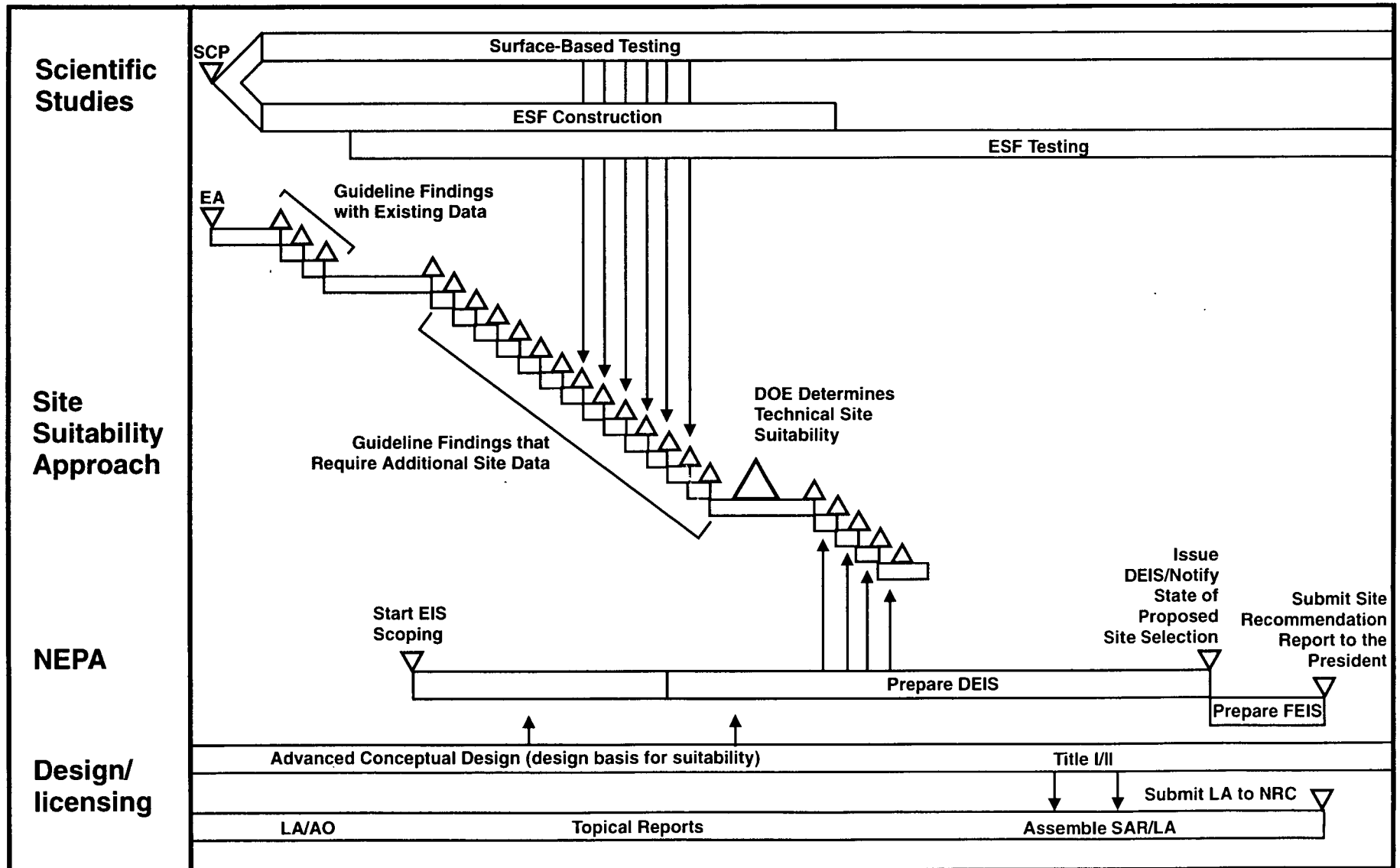
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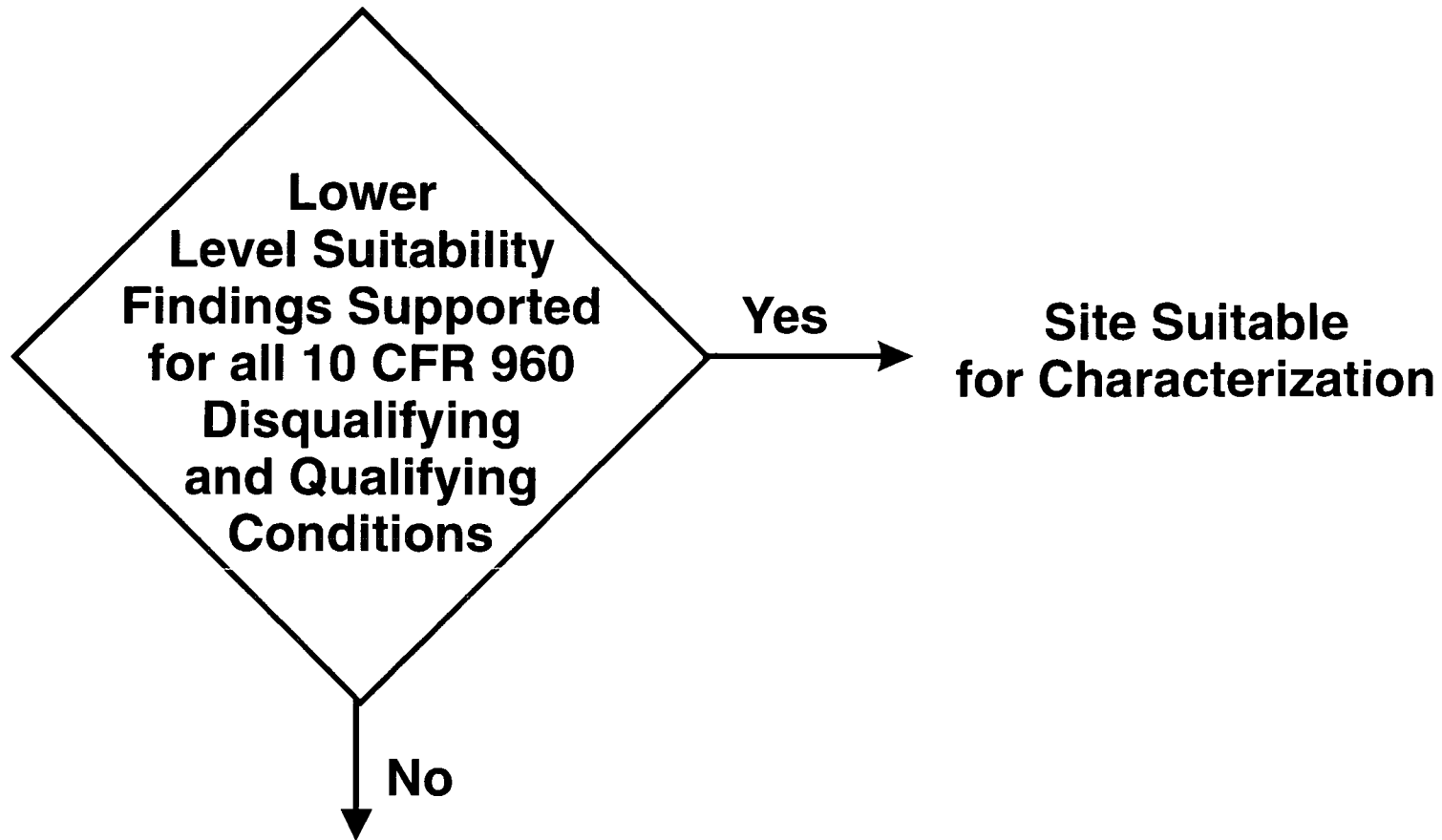
Contents of Briefing

- **Overview**
- **Implementation of Proposed Program Approach**
 - **Test program**
 - **Regulatory**
 - **Performance Assessment**
- **Site Suitability**
- **ACD Plans(discussed tomorrow by D. Stucker)**
- **Title I/II for Waste Package and Repository**
- **100-year Retrievability**

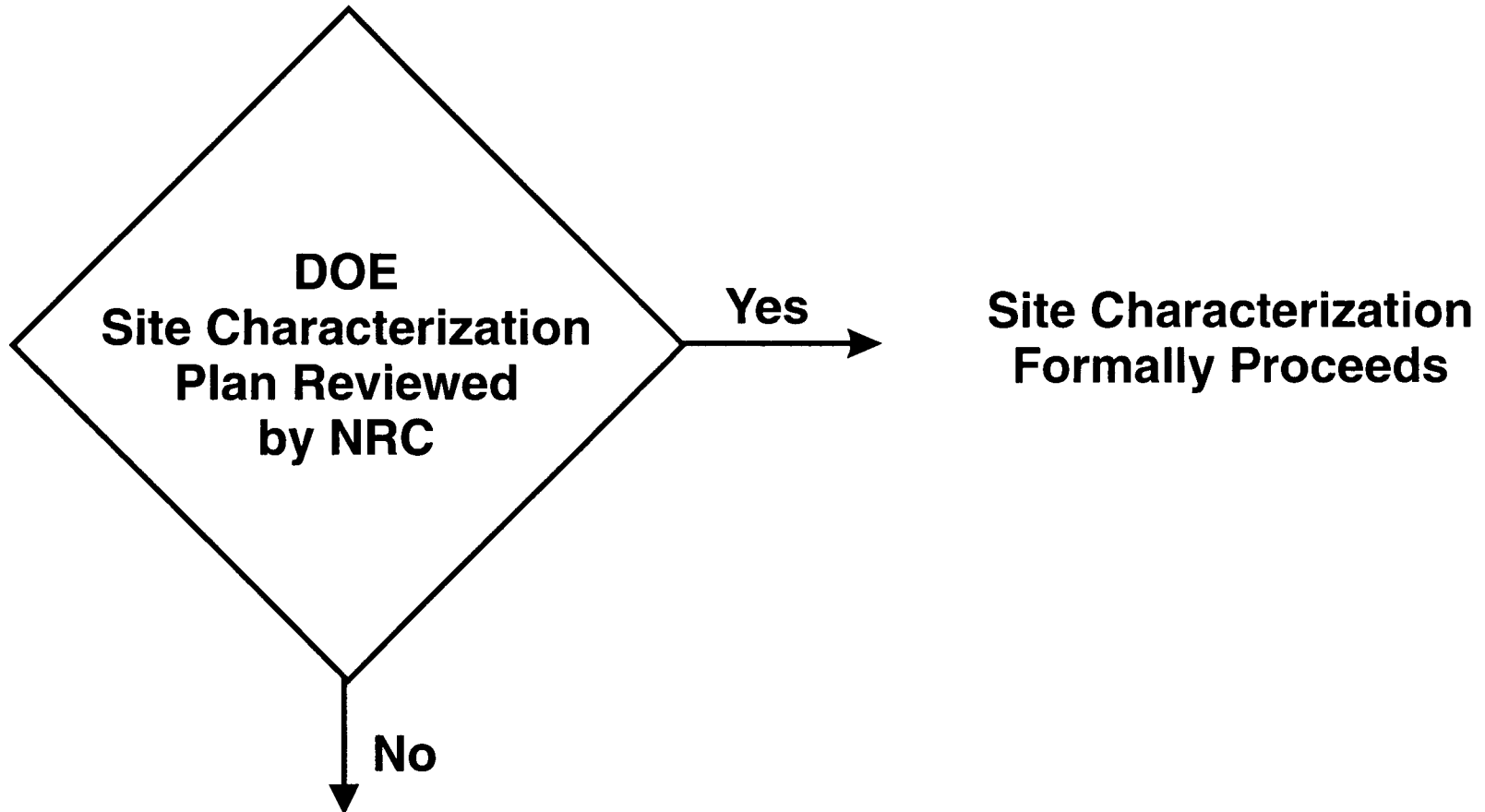
Overview: Step-Wise Suitability Process



1986: Environmental Assessment



1988: Site Characterization Plan



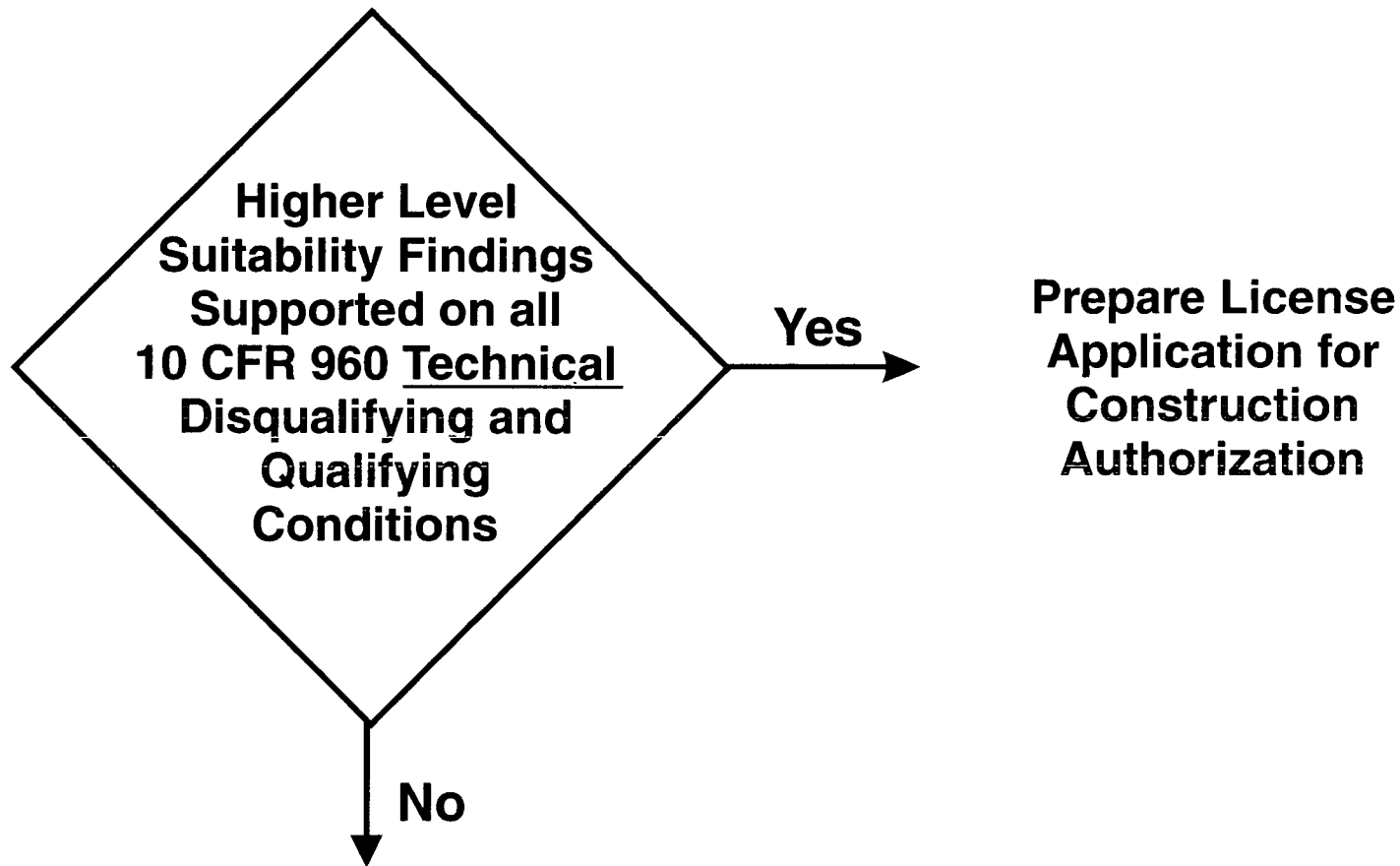
100-Year Retrievability

- **Maintain capability to retrieve for up to 100 years after emplacement**
- **Amendment to close would be filed when performance confirmation results provide adequate basis for this action**

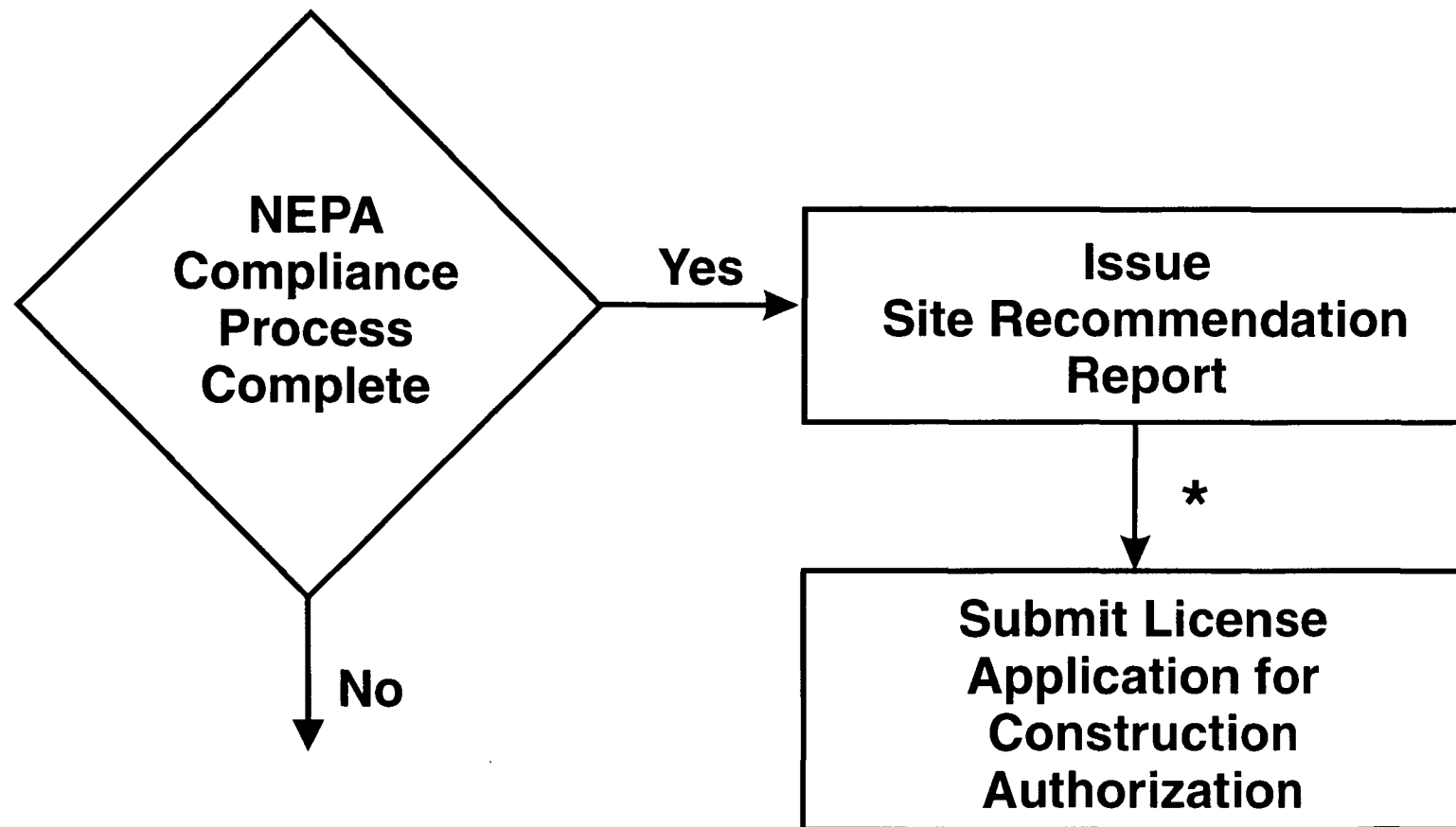
Proposed Design Maturation Process for Retrievability

- **2001: Title I design including waste package handling option, drift re-entry option, and off-normal operation**
- **2004: Final design/Proof of Principle for selected retrievability position; unique equipment prototype built and tested**
- **2008: Operational demonstration using simulated repository condition in already constructed repository if possible**

1998: Technical Site Suitability Determination



2000/2001: Final EIS, Site Recommendation Report, License Application for Construction Authorization



* Assumes Congress issues resolution of repository siting approval per Sec. 115 (a) NWPA



Implementation of PPA: Testing Plans, Regulatory, Performance Assessment

Implementation of PPA: Testing Plans

- **FY 95 and outyear planning based on Proposed Program Approach is underway**
- **ESF construction schedule and ESF test plans are being analyzed and coordinated**
- **Near term surface based studies to support Technical Site Suitability are being identified and schedules reviewed**
- **Laboratory test plans being reprioritized**

Implementation of PPA: Testing Plans

(Continued)

Surface Based Testing

- **Focus on earliest possible acquisition and analyses of key suitability data such as**
 - **nature of steep gradient in water table**
 - **flux at repository level**
 - **age/spatial continuity of perched water zones**
 - **potential role of Ghost Dance Fault as fast flow path**
- **Increase number of drilling crews to 8 by mid-1995**
- **Consolidate testing into fewer deep drillholes**

Implementation of PPA: Testing Plans

(Continued)

Exploratory Studies Facility

- **Four alcoves to be constructed concurrent with TBM operation in North Ramp to obtain data important to suitability**
- **North Ramp extension to allow earliest possible initiation of Topopah Spring heater testing**
- **Two additional alcoves to be constructed concurrent with TBM operation in Main North-South Drift**
- **Obtain access to Ghost Dance Fault at earliest possible time**
- **Contingency plan for Calico Hills excavation**
 - **Select best access option**
 - **Develop design to support possible FY 96 decision to proceed**

Implementation of PPA: Regulatory/ Performance Assessment

- **Performance assessment activities being replanned to support Technical Site Suitability needs and 2001 License Application**
- **Plans for License Application Annotated Outline revisions being rethought in light of PPA impacts on program**
- **Plans for Issue Resolution/Topical Report preparation to be focused on achieving key milestones needed to support PPA strategy for 2001 LA**

PPA Impacts on Evaluation of Site Suitability

Preliminary Site Suitability Decision Schedule

SURFACE PROCESSES

- Erosion; -Surf. Char; -Precl Hydro Report
- Peer Review
- *Draft DOE Reg. Assessment: HLF Evaluation*

PRECLOSURE ROCK CHARACTERISTICS

- Report
- Peer Review
- *Draft DOE Reg. Assessment: HLF Evaluation*

SEISMIC/TECTONIC/VOLCANIC

- Report
- Peer Review
- *Draft DOE Reg. Assessment: HLF Evaluation*
- Postcl Tect DSQ & Precl Tect QC and DSQ*

Draft DOE Reg. Assessment

Reas Avail Tech: HLF Evaluation

GEOCHEM/POSTCLOSURE ROCK CHARACTERISTICS

- Hum Inter; -Postcl Rock Char; -Geochem Report
- Peer Review

GEOHYDROLOGY/TRANSPORT

- Geohydr/Trans; -Climate Reports
- Peer Review
- *DOE Reg Assessment*
- Ground Water Travel Time DSQ: HLF Evaluation*

TOTAL SYSTEM PERFORMANCE ASSESSMENT

- TSPA Peer Review

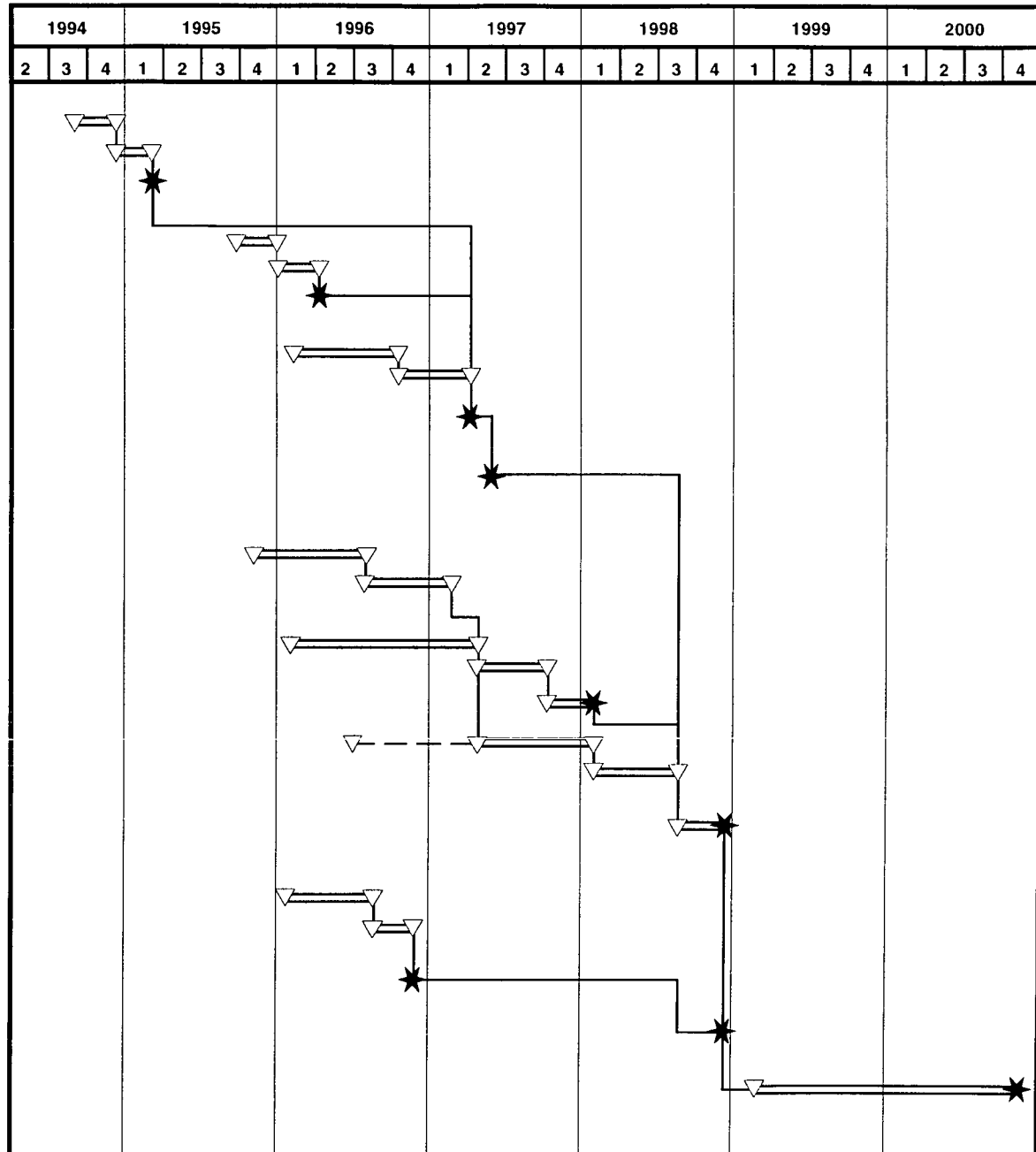
Draft DOE Reg Assmnt: HLF Evaluation on Postcl Syst. & all remaining Pstcl QCs (Geohyd, Geochem, Rock Char, Climate, Tect)

PRECLOSURE RADIOLOGICAL SAFETY

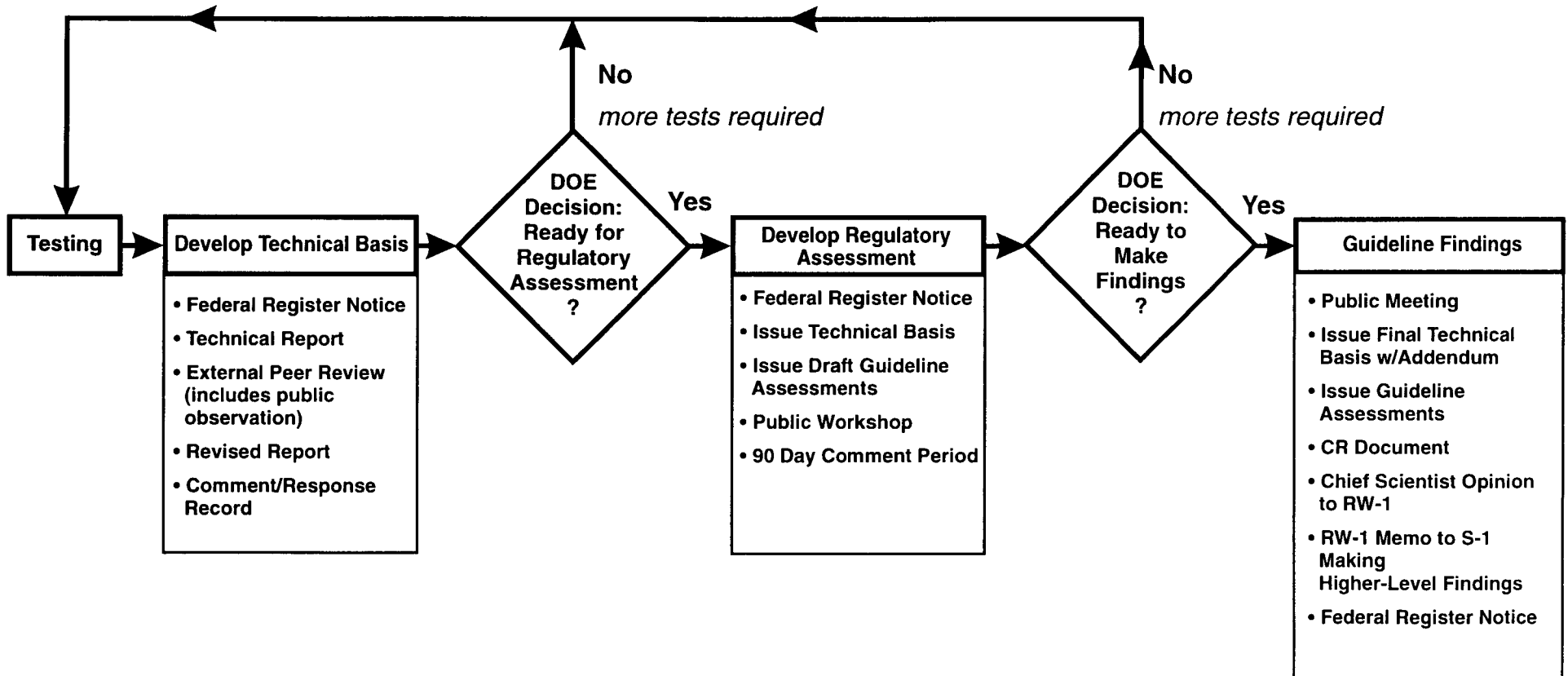
- Site O&C; -Pop Density; -Offset Install; -Meterol
- Peer Review
- *Draft DOE Reg. Assessment Preclos Rad Safety: HLF Evaluation*

TECH. SITE SUITABILITY EVALUATION

PREPARE SITE RECOMMENDATION REPORT & AFFIRM PREVIOUS FINDINGS



Preliminary Higher Level Findings Process



Design Information for Technical Site Suitability Evaluation

- **Repository/Waste Package**
 - **Key inputs to suitability evaluation**
 - **Subsystem release predictions**
 - **Seismic design basis**
 - **Preclosure radiological release predictions**
 - **Host rock lateral extent**
 - **Information on rock quality**

Information Levels Supporting Key Milestones

| | TSS/DEIS - 1998 | LA/CA - 2001 | CA - 2004 | ULA/R&P - 2008 | Perf. Confirm. * |
|--------------------------|-----------------|-------------------|-----------------|-------------------------|------------------|
| REPOSITORY DESIGN | ACD | Title I | Title II | Title III | Title III |
| Backfill/Seals | | Title I | | Demonstrated | Decision |
| Materials Inter'n | Bounded | Bounded | Mat'l's Sel. | | |
| Retrievability | | Title I | Proof of Princ. | Demonstrated | |
| Ar. Pwr. Den. | Bounded | Bounded | | APD Decision | Final APD |
| Emplace. Mode | | Title I | | Decision | |
| Precl. P.A. | Bounded | Sub. Finished | | Final | |
| Lag Storage | ACD | Title I | Title II | Title III | |
| Rail Spur | CD | | Title I/II | Title II/III | |
| WASTE PKG. DESIGN | ACD/Title I | Title II (P'type) | Full Scale | P'type Tested/Title III | Oper'ns Conf. |
| Sub Cmp Con | | Complete | | Updated | |
| Criticality Con. | | Complete | | Updated | |
| Contr. Rel. | Bounded | Conserv. Calcs | | Complete | |
| Materials | Concepts | Determined | | Test Complete | Model Confirmed |
| Waste Form | | Src'e Term Bnd'd | | Final Src'e Term | |
| EBS Thermal | Concepts | Bounded | | | |

* Performance confirmation program is required to start during site characterization and continue until permanent closure (10 CFR 60.140 (b))