

Used Fuel Disposition Campaign

Remaining Process Model Gaps for GDSA

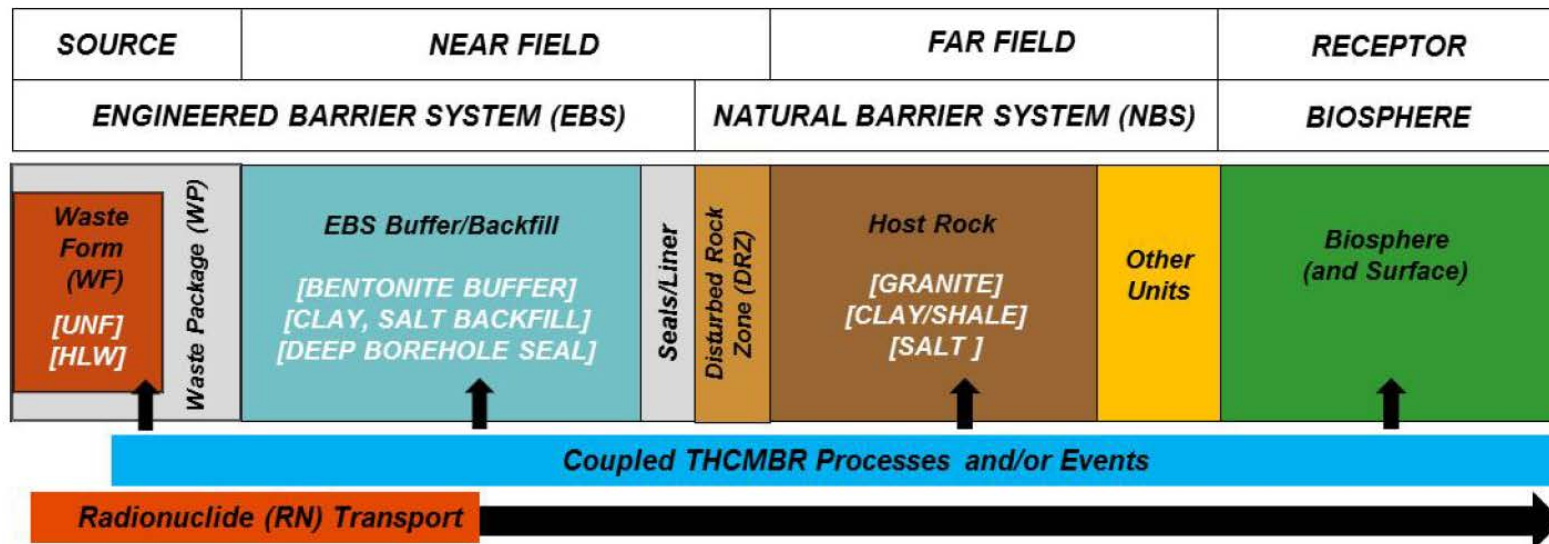
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Purpose of Talk

■ Purpose

- Share the list of process models we have identified as missing or in need of improvement (e.g., additional functionality, supporting data, improved computational efficiency, etc.)
- Seek additional input on this list
- Seek developers/partners to fill identified gaps



■ Informal gap analysis

- GDSA work
- GDSA integration table
- PA analyses from the literature
- FEPs list
- Internal discussions
- Interactions (UFD campaign, conferences, etc.)

■ Identify and categorize process models

- Process model gaps (missing)
- Improvements needed (or alternative process model(s) needed)

Process Model Gaps

■ Process model gaps

- Alteration* of seals, liners, EBS materials
- **Canister degradation (mechanistic)**
 - General corrosion, internal corrosion
 - Localized corrosion (pitting, MIC, etc.)
 - Stress corrosion cracking
- Disruptive events*, climate*, glaciation*
- Early WP failure
- Gas generation*
- Microbial activity*
- Neutron activation*
- Non-Darcy flow*
- Pitzer equations*
- Reference biospheres
 - Surface topography, hydrology, infiltration, and pumping for generic media models
- Solid solution model*
- THM* for salt, clay, DRZ, buffer
- WP performance after breach*
 - WP internals, in-package chemistry, cladding, flow

■ Improvements needed

- **Colloid stability and transport**
- Comprehensive decay and ingrowth
- **Discrete fracture network enhancements**
- Dual or multi-continuum
- HLW glass dissolution (mechanistic)
- **Mesh refinement tools**
- PA tools/methods
- Representation of geosphere
 - Heterogeneities
- **Sorption and solubility data and dependence**
- **UNF dissolution (FMDM) enhancements**

Others??

** Potentially excluded from primary PA simulations*