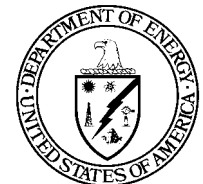


# Overview of Repository Operations

Presented to:  
Nuclear Waste Technical Review Board

Presented by:  
Paul Harrington  
Team Lead, License Application Team  
Yucca Mountain Site Characterization Project Office  
Las Vegas, Nevada



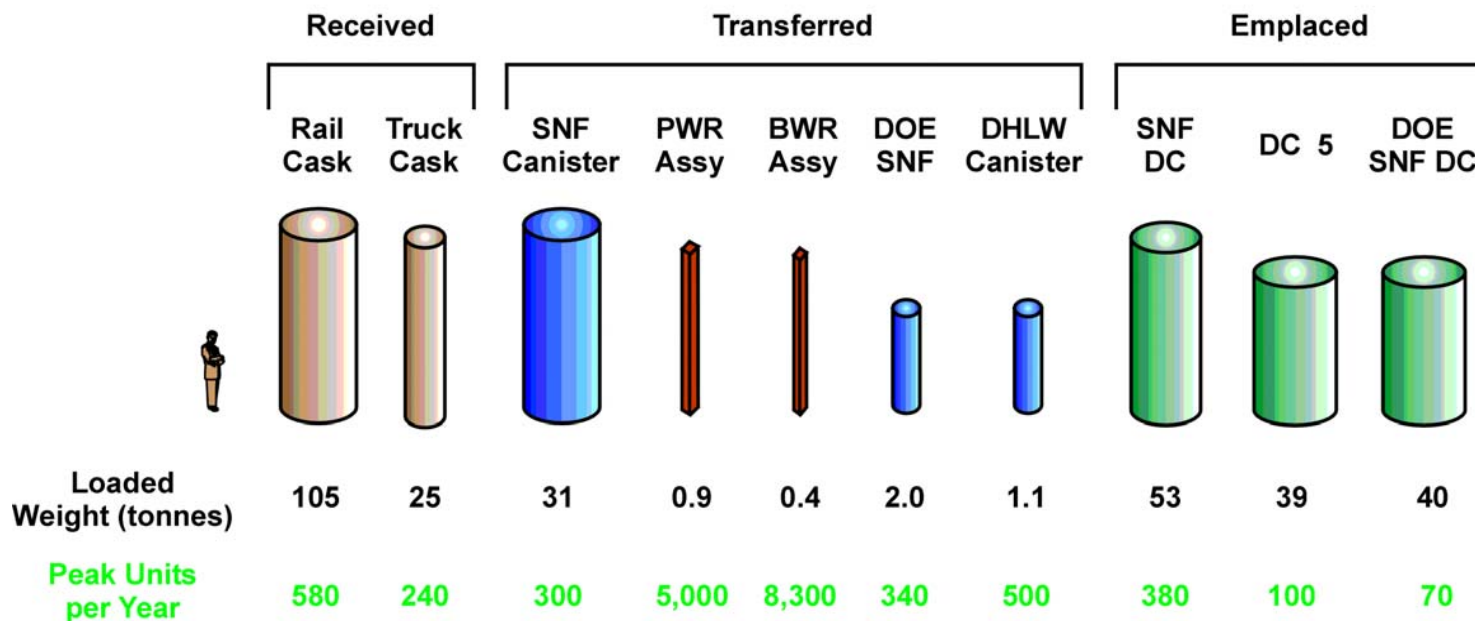
October 22-23, 1997

U.S. Department of Energy  
Office of Civilian Radioactive  
Waste Management

# Presentation Objectives

- **Describe the overall repository site**
- **Identify the surface operations areas**
- **Describe the North Portal site operations and surface facilities**
- **Present the current concept for the Waste Handling Building (WHB)**

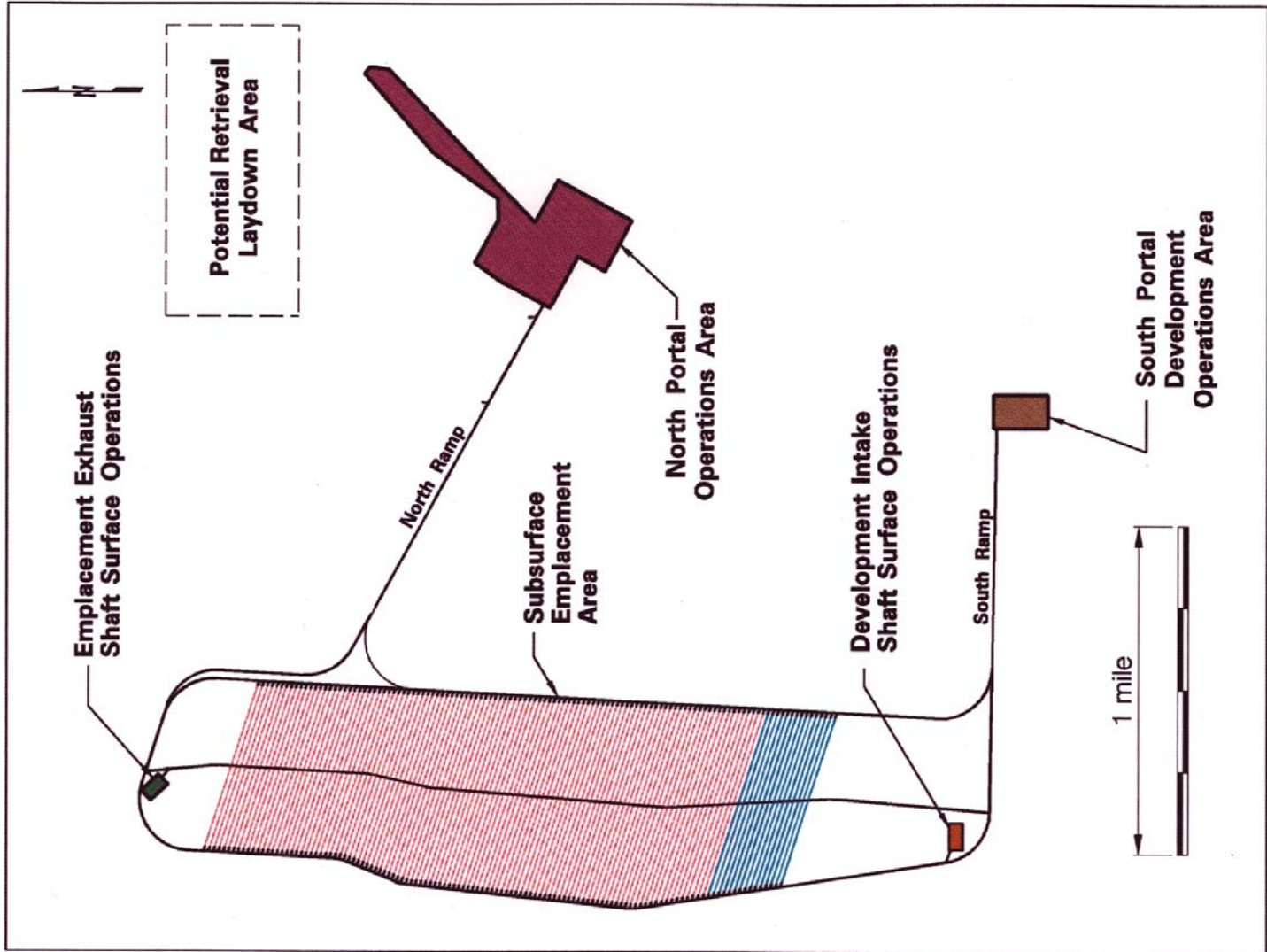
# Representative Waste Form Data



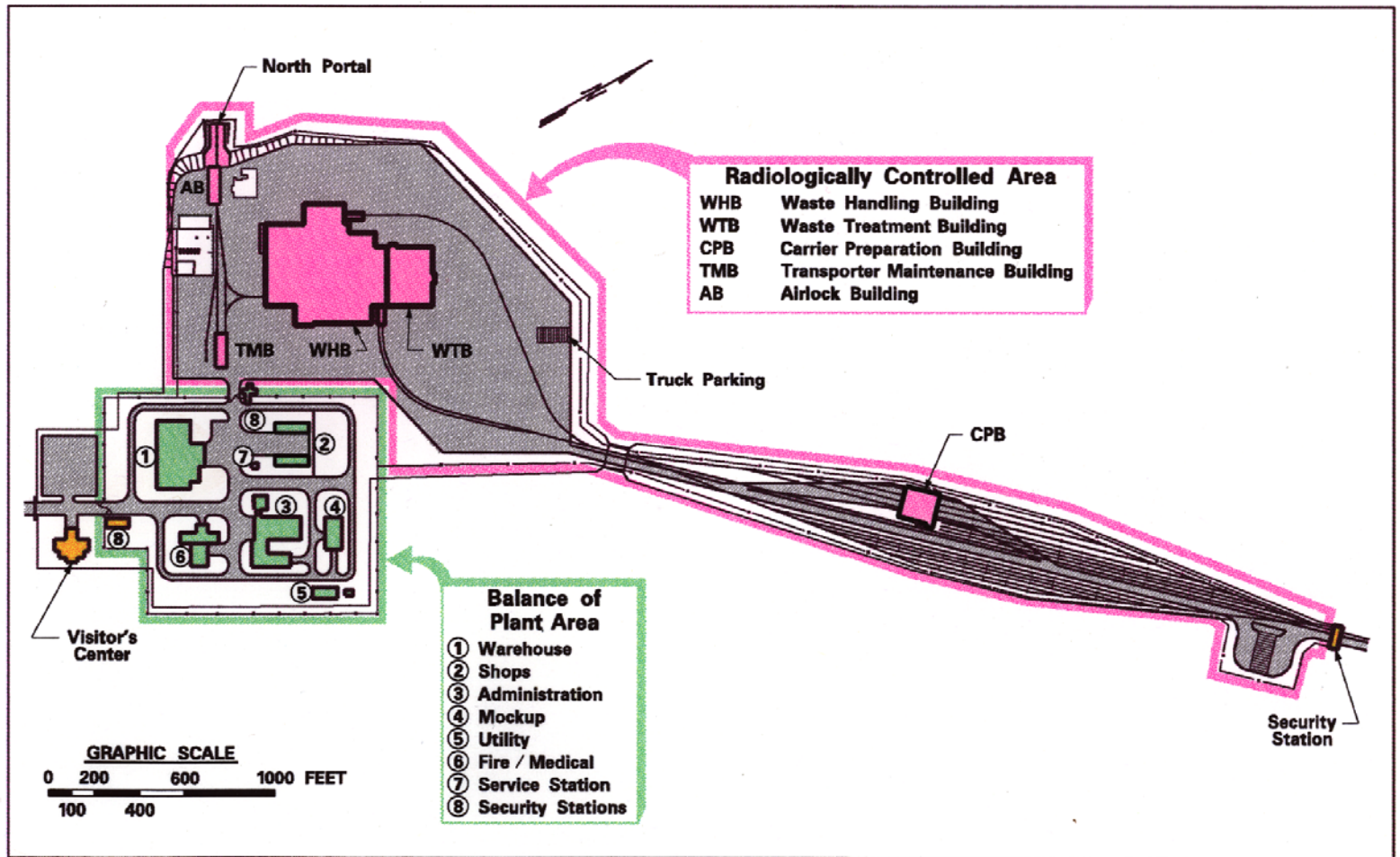
## KEY

BWR	Boiling Water Reactor	DHLW	Defense High-Level Waste
DC	Disposal Container	PWR	Pressurized Water Reactor
DC 5	5 Pack with DOE SNF Center	SNF	Spent Nuclear Fuel

# MGDS Operations Areas

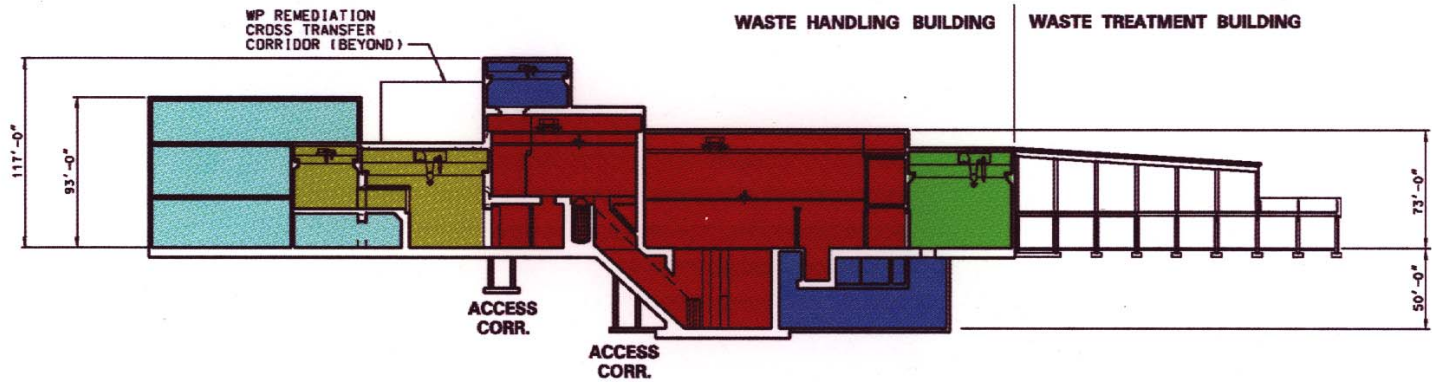


# Repository North Portal Surface Facilities



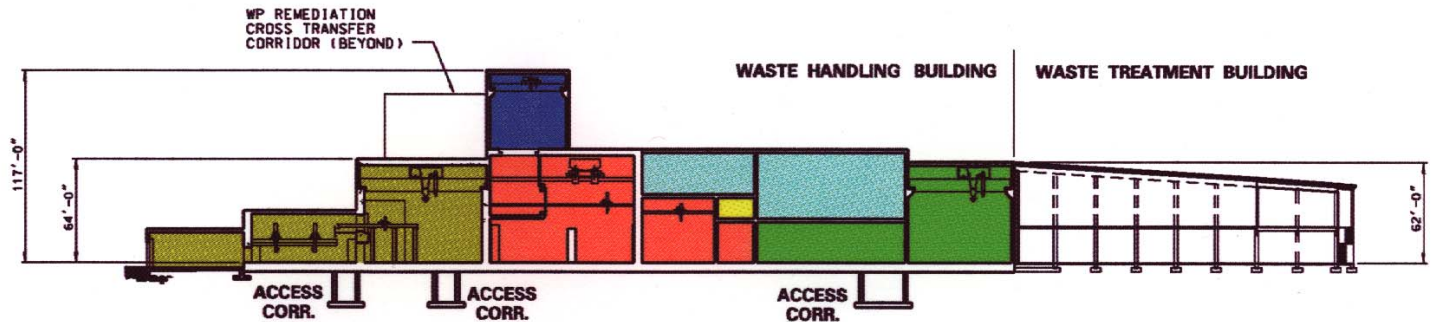


# Waste Handling Building Sections



**Assembly Transfer**

(A)

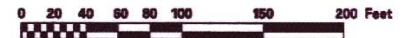


**Canister Transfer**

(B)

- |   |                             |   |                           |
|---|-----------------------------|---|---------------------------|
|  | Carrier/Cask Handling       |  | Waste Package Remediation |
|  | Assembly Transfer           |  | Direct Support            |
|  | Canister Transfer           |  | Mechanical/Electrical     |
|  | Disposal Container Handling |  | Facility Operations       |

## Graphic Scale



# Backup

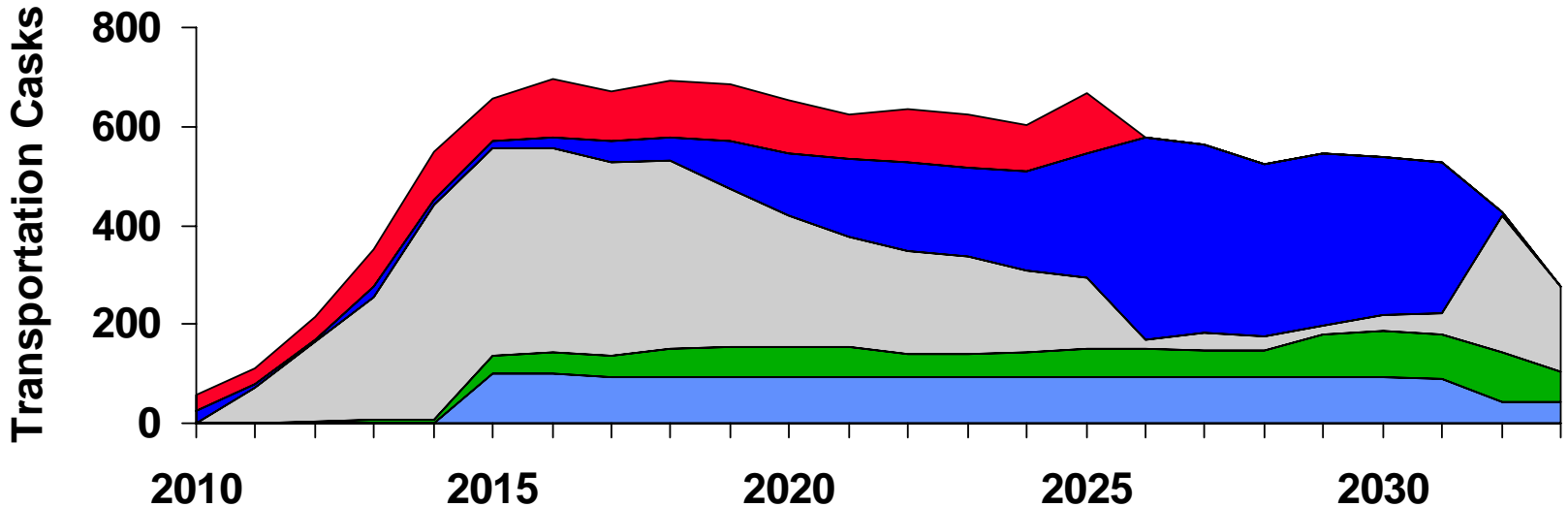


# Key Assumptions and Requirements

- **Peak annual receipt and emplacement rates**
- **Receipt and emplacement configurations (e.g., rail and truck transportation, commercial SNF in DPCs and disposable canisters, HLW and DOE SNF in disposable canisters, vast variety)**
- **Dry loading of disposal containers**
- **No integration with ISF, and no early receipt**
- **No rod consolidation or significant cask maintenance**
- **Off-site disposal of low-level waste**
- **Off-site recycle/disposal of empty DPCs**
- **Seismic load of 0.66g for waste handling building**

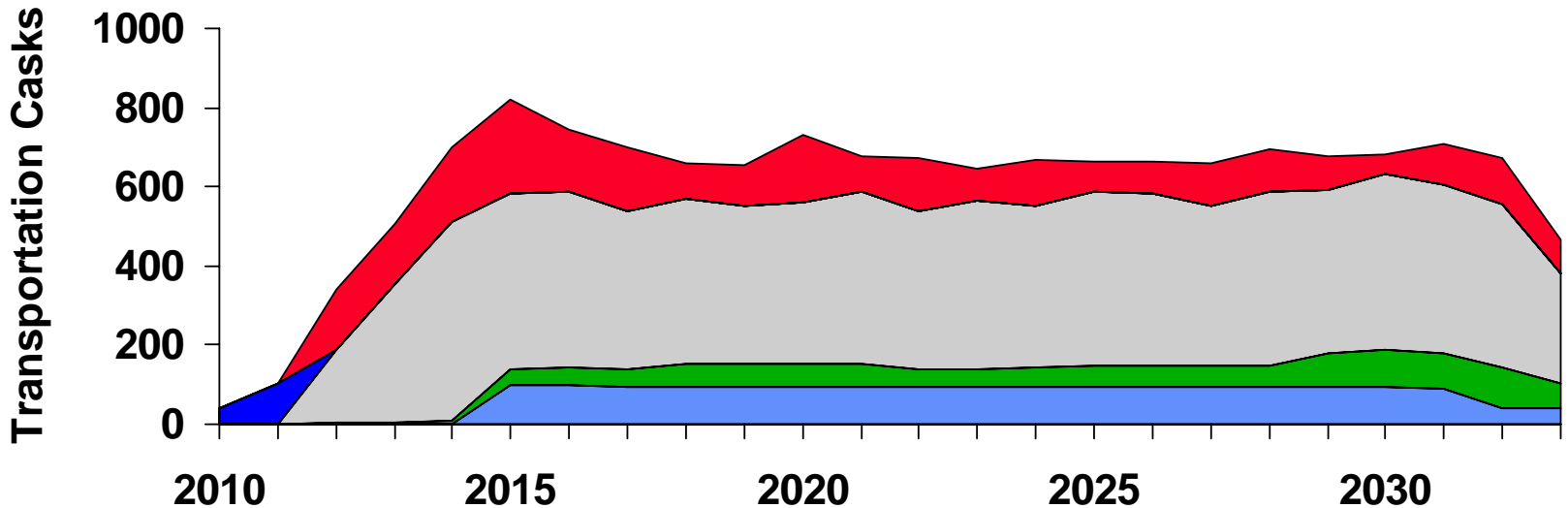
# Cask Arrival Schedule (CDA)

- CSNF as UCF by Truck
- CSNF in DPCs by Rail
- CSNF as UCF by Rail
- DOE SNF in DISPCs by Rail
- HLW in DISPCs by Rail
- HLW - Vitrified High-Level Waste
- CSNF - Commercial Spent Nuclear Fuel
- UCF - Uncanistered Fuel
- DPC - Dual Purpose Canister
- DISPC - Disposable Canister



# Cask Arrival Schedule (No ISF)

- CSNF as UCF by Truck
- CSNF in DPCs by Rail
- CSNF as UCF by Rail
- DOE SNF in DISPCs by Rail
- HLW in DISPCs by Rail
- HLW - Vitrified High-Level Waste
- CSNF - Commercial Spent Nuclear Fuel
- UCF - Uncanistered Fuel
- DPC - Dual Purpose Canister
- DISPC - Disposable Canister



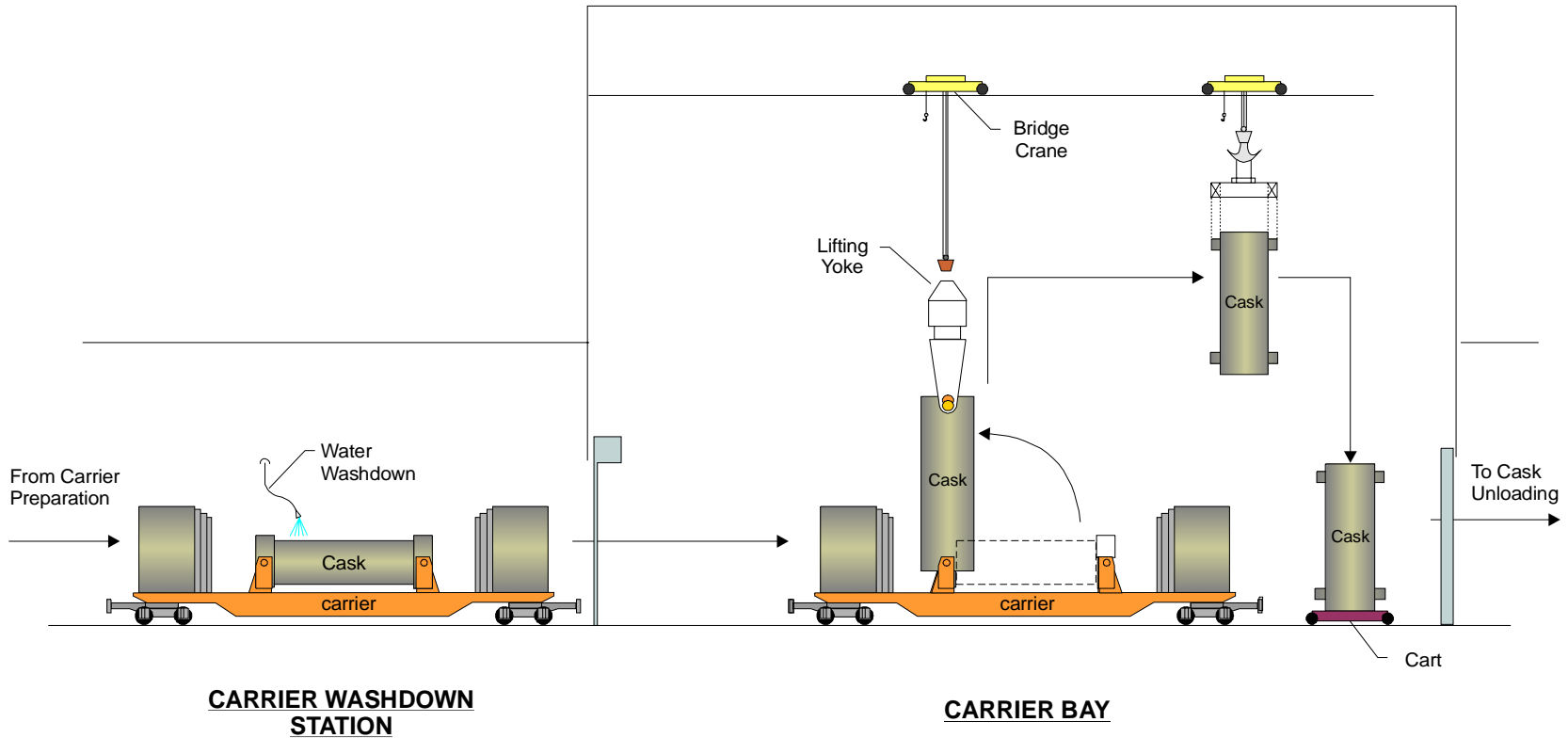
# Lag Storage Objectives

- **Temporarily store: carriers, casks, assemblies, canisters and disposal containers**
- **Provide a buffer between major material handling operations (e.g., off-site transportation, carrier preparation, cask unloading, DC loading and emplacement)**
- **Minimize the impact on adjacent operations from: receipt surges, failures, and resource shortages**
- **Accommodate cooling, blending, and loading of compatible forms (e.g., low  $K_{\text{eff}}$ )**

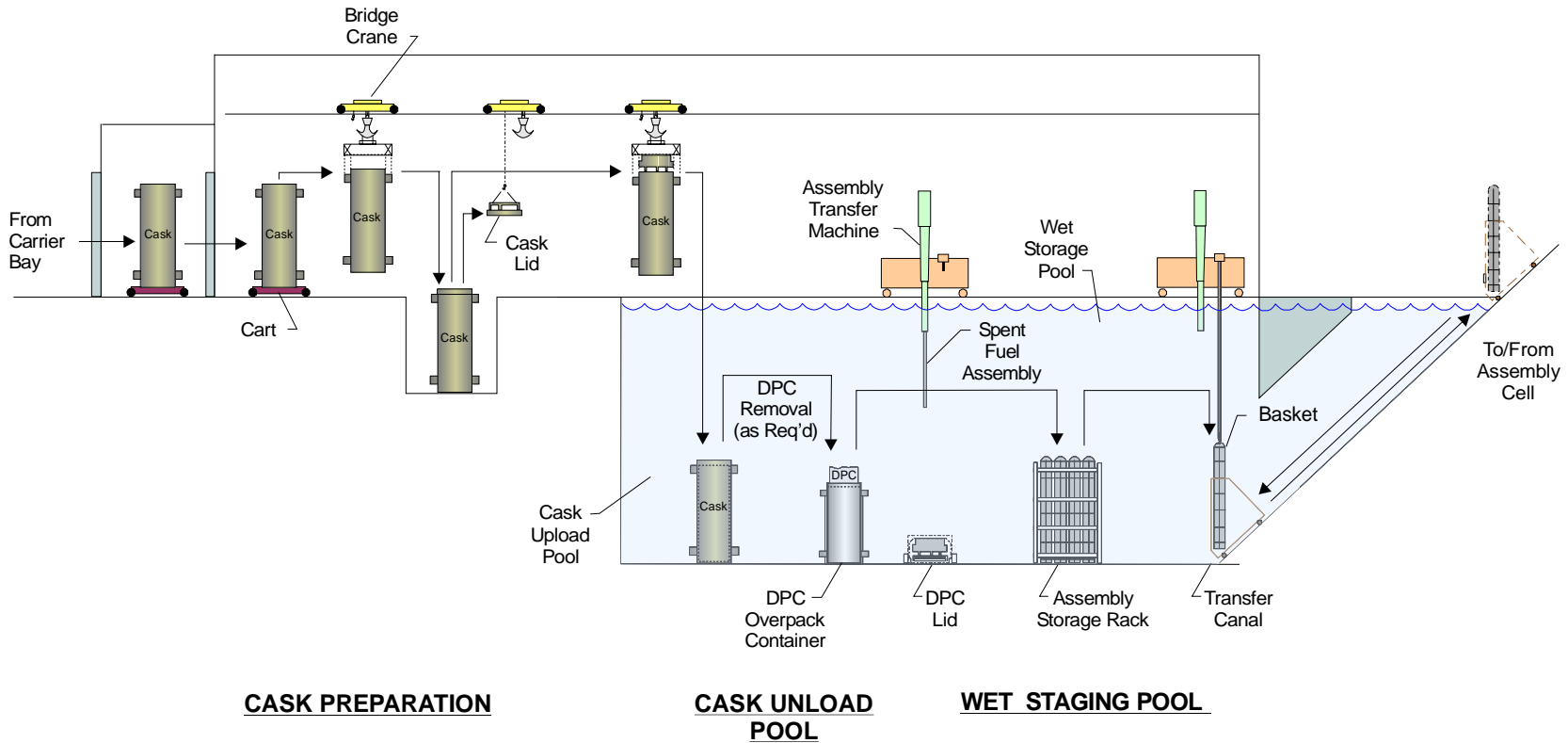
# Lag Storage Capacity in VA Design

<b>Storage Form</b>	<b>Facility/Area</b>	<b>Capacity (items)</b>	<b>Capacity (time)</b>
<b>Cask/Carrier</b>	<b>Rail sidings and truck parking</b>	<b>125 rail cask carriers 35 truck cask carriers</b>	<b>2½ weeks</b>
<b>Spent Fuel Assembly</b>	<b>WHB staging pools</b>	<b>1,584 BWR or 792 PWR assemblies</b>	<b>6 weeks</b>
<b>Disposable Canisters</b>	<b>WHB dry canister staging</b>	<b>40 small HLW or DOE SNF canisters</b>	<b>3 weeks</b>
<b>Disposal Containers</b>	<b>WHB loaded DC staging</b>	<b>20 loaded DCs</b>	<b>2 weeks</b>
<b>Empty Disposal Containers</b>	<b>WHB empty DC preparation</b>	<b>40 empty DCs</b>	<b>4 weeks</b>

# Carrier/Cask Handling System

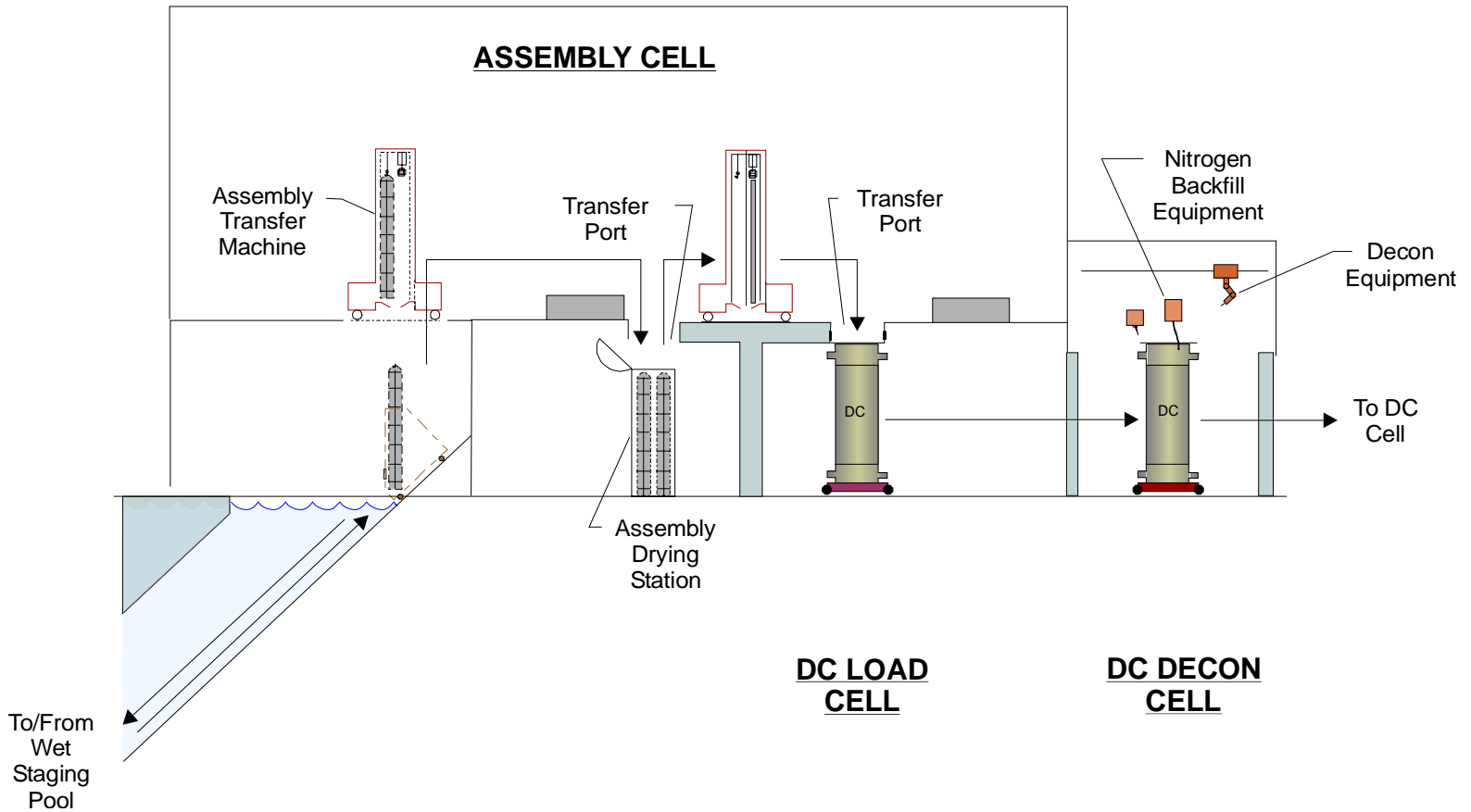


# Assembly Transfer System



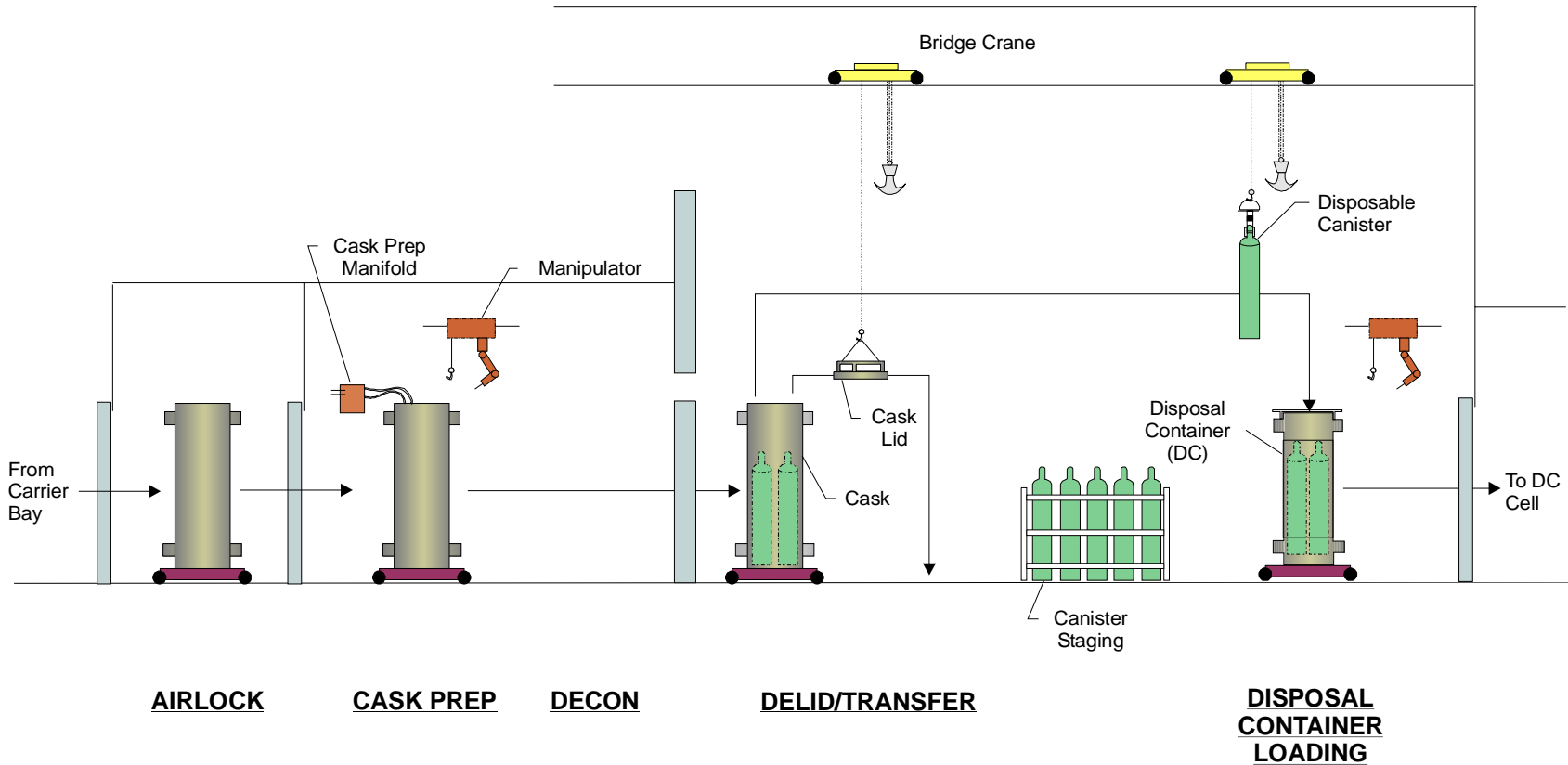
# Assembly Transfer System

(Continued)





# Canister Transfer System



# Disposal Container Handling System

