

A photograph of a forest path with tall trees and a person in the distance. The path is paved and leads into a dense forest of tall, thin trees. The lighting is soft, suggesting a shaded forest environment. The text is overlaid on the right side of the image.

**America's  
Nuclear Future**  
The BRC and the cost of  
nuclear waste disposal

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**Waste Management Phoenix**  
**February 2012**

A photograph of a paved path winding through a dense forest of tall, thin trees. The path leads towards a person standing in the distance. The text is overlaid on this image.

## **The President's Blue Ribbon Commission on America's Nuclear Future**

**Can not pick HLW site but can pick a strategy**

**Re-iterated that deep geologic disposal is best for nuclear waste disposal**

**Recommends interim storage for spent nuclear fuel**

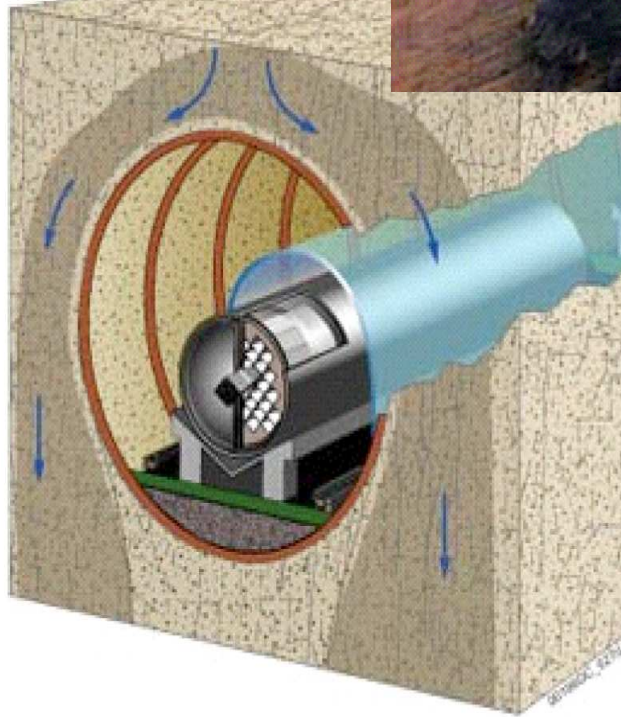
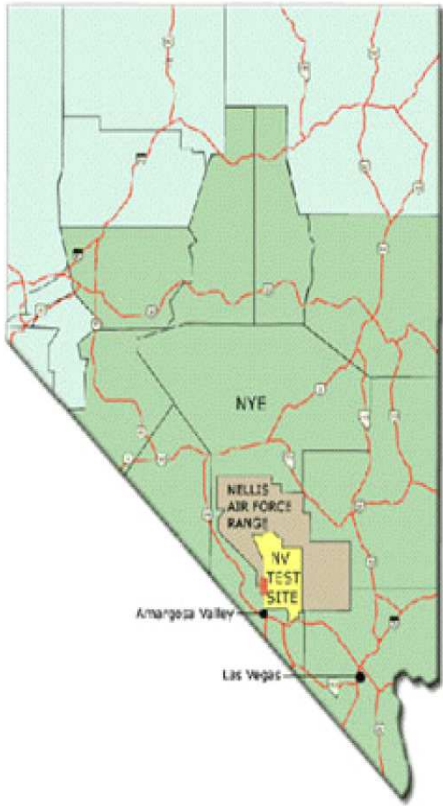
**Recommends a quasi-government entity to execute disposal and storage program**

**Recommends resumption of the site selection process for one or more repositories, i.e., a second repository**

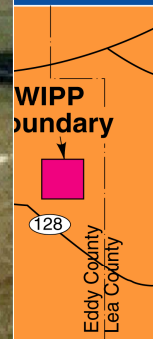
# Our understanding of nuclear waste disposal comes primarily from the Yucca Mountain Project and the Waste Isolation Pilot Plant.



Click for Larger Image

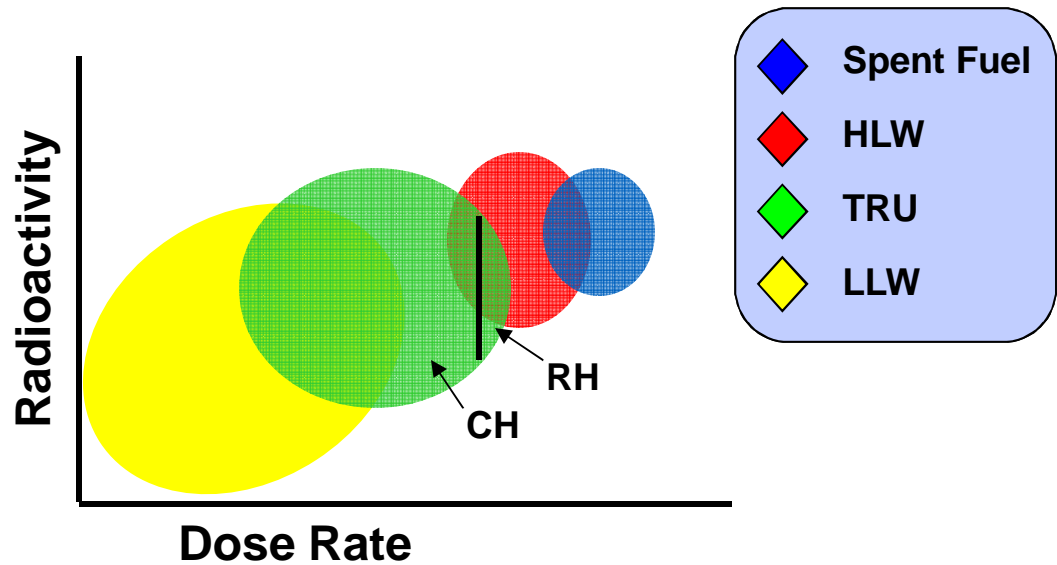
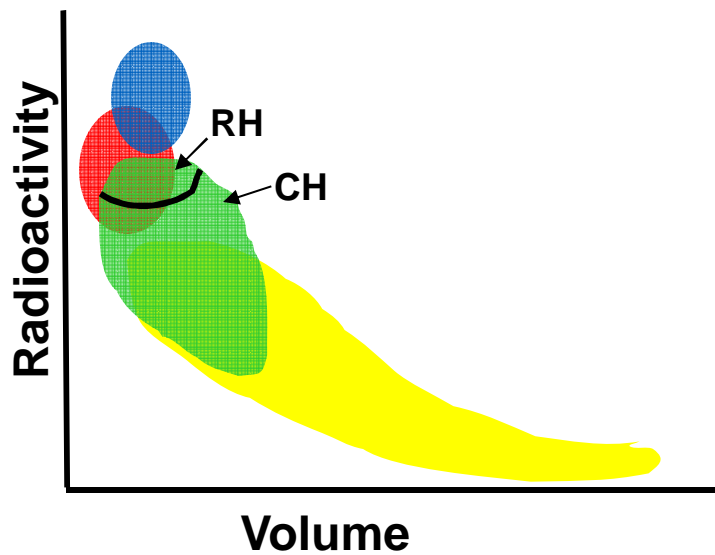


New Mexico



only 1  
have been used


**1970 - AEC establishes new category for transuranic waste, distinct from high- and low-level radioactive waste, but overlapping both.**



TRU - Contact Handled (CH) < 200 mrem/hr < Remote Handled  
all >100 nCi/g RH, up to 23 Ci/L

## Second Repository Schedule and Assumptions

**Assumptions - 83,000 metric tons of heavy metal, high heat-generating, vitrified, non-retrievable high level waste. Using information from Yucca Mt operations and license application from 1990 to 2008, WIPP operations between 1999 and 2008, DOE GNEP studies, various TSLCC estimates and commercial industrial mining practices:**

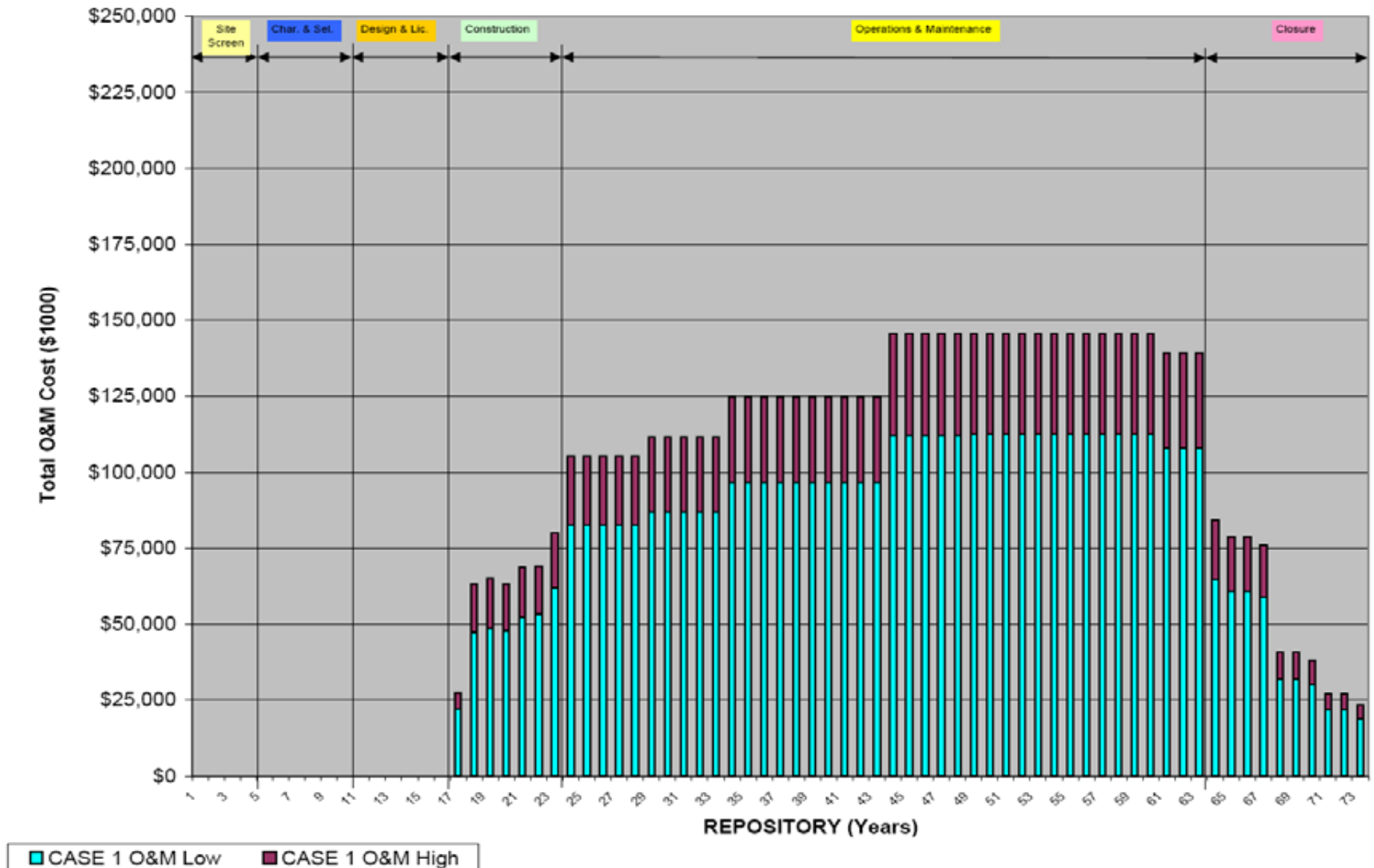
<b>Phase</b>	<b>Duration Range (years)</b>	
<b>Site Screening</b>	<b>3 – 4</b>	 <p><b>A fair amount is done for YMP. A great deal more is done for salt within the LWA</b></p>
<b>Site Characterization</b>	<b>3 – 9</b>	
<b>Design and Licensing</b>	<b>5 – 7</b>	
<b>Construction</b>	<b>6 – 8</b>	
<b>Total Licensing and Construction</b>	<b>18 – 29</b>	
<b>Operations</b>	<b>35 – 40</b>	
<b>Closure</b>	<b>9 – 12</b>	
<b>Total Life Cycle</b>	<b>62 – 81</b>	

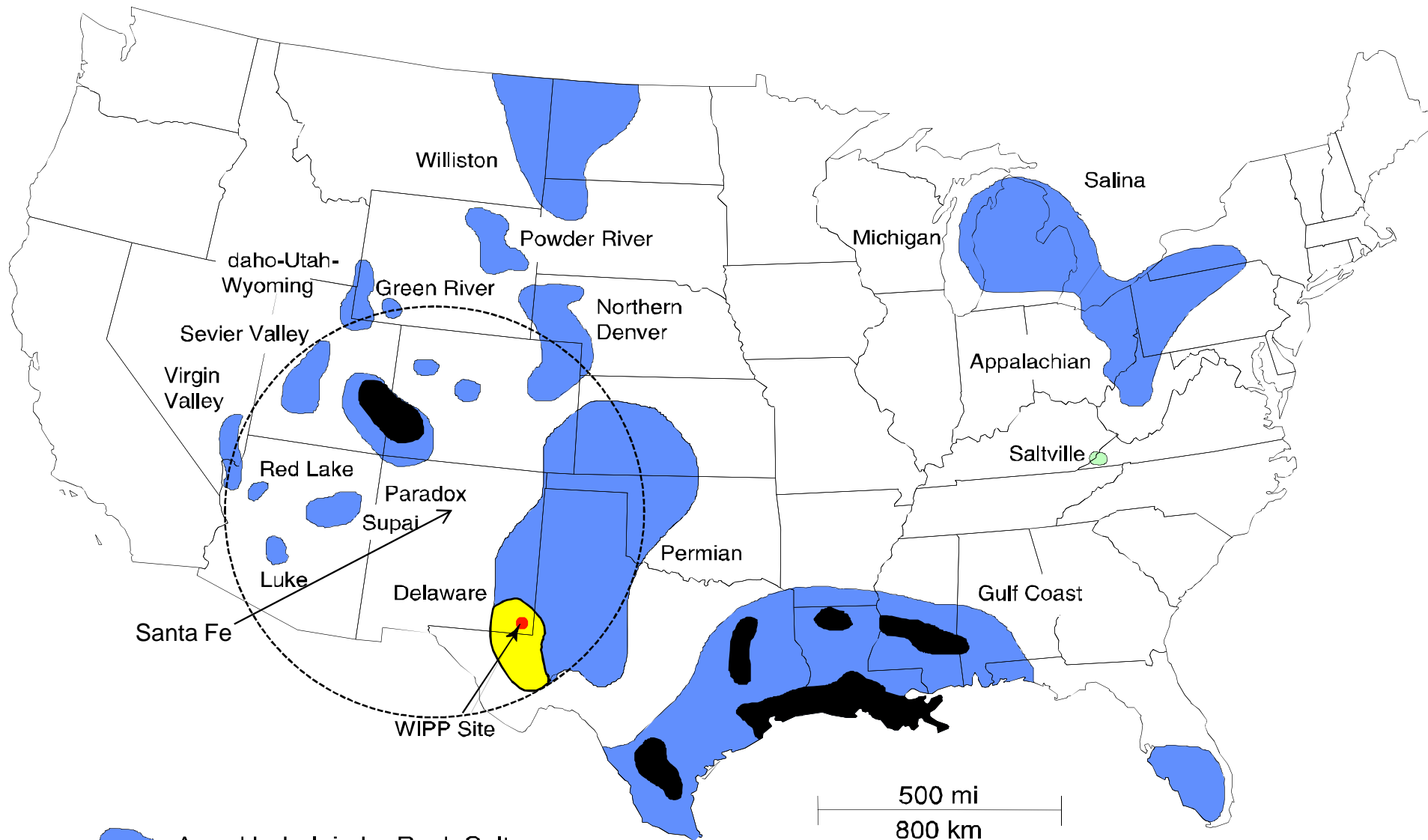
Repository Costs (in millions 2008\$) for 83,000 MTHM of HLW

<b>Component</b>	<b>volcanic tuff</b>	<b>massive salt</b>	<b>granite/basalt</b>
<b>Development and Characterization</b>	<b>9,488</b>	<b>800</b>	<b>11,006</b>
<b>Surface and Subsurface facilities</b>	<b>24,053</b>	<b>7,187</b>	<b>27,901</b>
<b>Waste Package and Barriers/Shields</b>	<b>19,164</b>	<b>1,250</b>	<b>8,700</b>
<b>Performance Confirmation</b>	<b>3,273</b>	<b>926</b>	<b>3,797</b>
<b>Regulatory, Infrastructure And Mgmt. Support</b>	<b>4,687</b>	<b>2,030</b>	<b>5,436</b>
<b>Program Integration QA/QC, NRC, other</b>	<b>6,821</b>	<b>3,708</b>	<b>7,912</b>
<b>Transportation</b>	<b>9,434</b>	<b>7,000</b>	<b>6,500</b>
<b>Institutional costs Financial assistance</b>	<b>6,604</b>	<b>6,604</b>	<b>6,604</b>
<b>TOTAL</b>	<b>\$83,524 (YM ~ \$71,000)</b>	<b>\$29,505 (LWA ~ \$17,000)</b>	<b>\$77,856</b>

# The Majority of Costs are for Operations and will Inflate over Time

- assume a low 2% rate with a Gaussian centered on operations





- Area Underlain by Rock Salt
- Area of Salt Domes or Salt Anticlines
- Delaware – Basin  
- least tectonically deformed, thickest, most optimal depths



A photograph of a forest path with tall, thin trees and dappled sunlight filtering through the canopy. The path is paved and leads into the distance. The text is overlaid on this image in a bright yellow font.

**Some specific policy actions needed:**

**Support the formation of a quasi-government entity to execute disposal and storage program as recommended**

- **give it full control of the Nuclear Waste Fund (>2013)**

**Support interim storage for spent nuclear fuel**

**Support resumption of the site selection process for a second repository**

**WA, NM, SC, ID, TN, NY should form a multi-state compact to begin this consensus process**

**Support the completion of the Yucca Mt. license review**

- **failure to do so undermines NRC's credibility**

**Make the minor changes necessary to the NWPA of 1982 and the LWAct of 1992 that will make all of this happen**



**If the BRCs recommendations are followed, then there is a clear path towards solving the nuclear waste problems in this country:**

- **spent nuclear fuel is stored in a safe, simple surface facility(s) until needed**
- **high-level waste is permanently disposed in a deep geologic repository**
- **both facilities and their operations are funded completely by the existing balance, and future revenues of, the Nuclear Waste Fund plus committed DOE funding - no new taxes needed**
- **eventually everything will be disposed of in the one deep geologic repository**

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*Carbon Footprints*