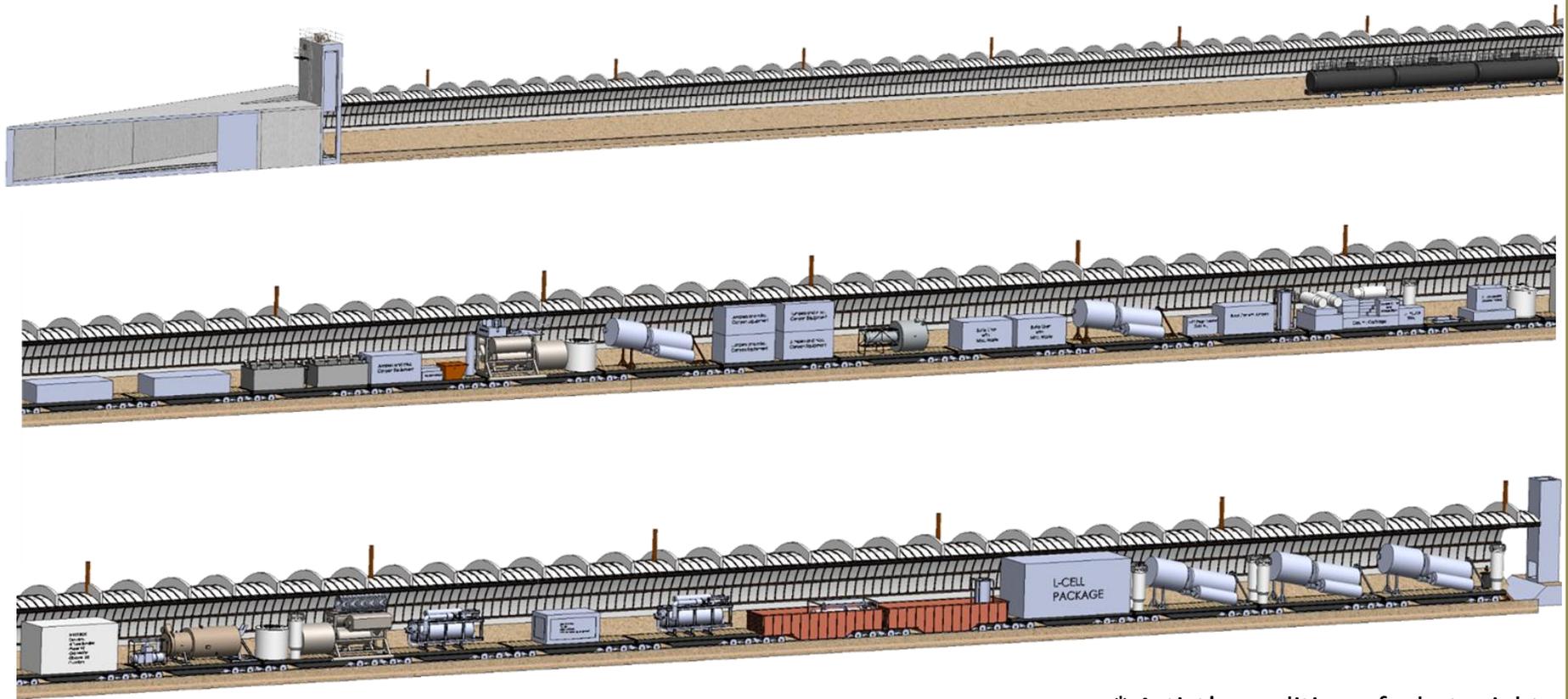


PUREX Tunnel #2 Options Considered

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PUREX Tunnel #2



* Artist's rendition of what might be in the PUREX Tunnel #2

PUREX Tunnel #2 Options Considered

Install a high density polyethylene cover (HDPE)



Criteria						Comments
Protection of Human Health and Environment	Allows Future Remedial Action	Ease of Implementation	Ease of Upkeep	Speed of Implementation	Cost	
●	●	●	●	●	●	HDPE cover already in place on Tunnel 1. In the event of further collapse, cover will inhibit the spread of contamination to some degree, but does not provide containment. Lack of durability limits its effectiveness for long-term use.

PUREX Tunnel #2 Options Considered

Install a soft-surface tent cover



Criteria						Comments
Protection of Human Health and Environment	Allows Future Remedial Action	Ease of Implementation	Ease of Upkeep	Speed of Implementation	Cost	
●	●	●	●	●	●	In the event of further collapse, tent will provide somewhat better contamination control than HDPE cover, but does not provide containment. Susceptible to weather damage that would require periodic repair or placement.

PUREX Tunnel #2 Options Considered

Install a hard-surface tent cover



Criteria						Comments
Protection of Human Health and Environment	Allows Future Remedial Action	Ease of Implementation	Ease of Upkeep	Speed of Implementation	Cost	
●	●	●	●	●	●	More effective contamination control than HDPE or soft tent, but still does not provide containment in the event of further collapse.

PUREX Tunnel #2 Options Considered

Construct a building over the tunnel



Criteria						Comments
Protection of Human Health and Environment	Allows Future Remedial Action	Ease of Implementation	Ease of Upkeep	Speed of Implementation	Cost	
●	●	●	●	●	●	Could be designed with ventilation to provide effective contamination control, but would be time-consuming and more expensive than other options involving exterior covers. Has the potential to trigger collapse during construction.

PUREX Tunnel #2 Options Considered

Fill the tunnel with expanding foam



Criteria						Comments
Protection of Human Health and Environment	Allows Future Remedial Action	Ease of Implementation	Ease of Upkeep	Speed of Implementation	Cost	
						<p>Will provide additional stability and contamination control to tunnel interior. Key concerns are heat and off-gas generation during filling, potential fire hazards and unknown performance in high radiation areas over the long-term. Use at the Hanford Site has been previously rejected based on fire protection requirements.</p>

PUREX Tunnel #2 Options Considered

Cause a controlled collapse of the tunnel



Criteria						Comments
Protection of Human Health and Environment	Allows Future Remedial Action	Ease of Implementation	Ease of Upkeep	Speed of Implementation	Cost	
●	●	●	●	●	●	Would prevent future unintended collapse. Key concern is the difficulty of controlling the collapse to ensure contamination control and protection of workers.

PUREX Tunnel #2 Options Considered

Retrieve the waste from the tunnel



Criteria						Comments
Protection of Human Health and Environment	Allows Future Remedial Action	Ease of Implementation	Ease of Upkeep	Speed of Implementation	Cost	
●	●	●	●	●	●	Provides a permanent solution to the tunnels, but would involve an extended and technically challenging effort for facility and equipment design, construction and implementation. Very lengthy and expensive effort in comparison to other options.

PUREX Tunnel #2 Options Considered

Fill PUREX Tunnel 2 with engineered grout



Criteria						Comments
Protection of Human Health and Environment	Allows Future Remedial Action	Ease of Implementation	Ease of Upkeep	Speed of Implementation	Cost	
●	●	●	●	●	●	<p>This option has been selected by DOE/CHPRC for Tunnel 1 and is supported by Ecology. Considerable experience at the Hanford Site implementing large grouting operations. Characterization of stored wastes to support treatment and disposition can be accomplished using process knowledge and observational approach during future closure and remediation. Complicates ability to segregate wastes requiring different disposition paths.</p>

PUREX Tunnel #2 Options Considered

Enhance surveillance and monitoring of the tunnel



Criteria

Criteria						Comments
Protection of Human Health and Environment	Allows Future Remedial Action	Ease of Implementation	Ease of Upkeep	Speed of Implementation	Cost	
●	●	●	●	●	●	Some aspects have already been implemented on Tunnel 1 and 2. Remote imaging, sensing and entry tools can be investigated and implemented where feasible.

Analysis of Options

Option	Criteria						Comments
	Protection of Human Health and Environment	Allows Future Remedial Action	Ease of Implementation	Ease of Upkeep	Speed of Implementation	Cost	
1 - No further action	●	●	●	●	●	●	Would not protect against collapse in Tunnel 2.
2 - HDPE Cover	●	●	●	●	●	●	HDPE cover already in place on Tunnel 1. In the event of further collapse, cover will inhibit the spread of contamination to some degree, but does not provide containment. Lack of durability limits its effectiveness for long-term use.
3 - Soft-Surface Tent	●	●	●	●	●	●	In the event of further collapse, tent will provide somewhat better contamination control than HDPE cover, but does not provide containment. Susceptible to weather damage that would require periodic repair or replacement.
4 - Hard-Surface Tent	●	●	●	●	●	●	More effective contamination control than HDPE or soft tent, but still does not provide containment in the event of further collapse.
5 - Pre-Engineered Building	●	●	●	●	●	●	Could be designed with ventilation to provide effective contamination control, but would be time-consuming and more expensive than other options involving exterior covers. Has the potential to trigger collapse during construction.
6 - Poly Foam Injection	●	●	●	●	●	●	Will provide additional stability and contamination control to tunnel interior. Key concerns are heat and off-gas generation during filling, potential fire hazards, and unknown performance in high radiation areas over the long-term. Use at the Hanford Site has been previously rejected based on fire protection requirements
7 - Collapse in Place	●	●	●	●	●	●	Would prevent future unintended collapse. Key concern is the difficulty of controlling the collapse to ensure contamination control and protection of workers.
8 - Waste Retrieval	●	●	●	●	●	●	Provides a permanent solution to the tunnels, but would involve an extended and technically challenging effort for facility and equipment design, construction, and implementation. Very lengthy and expensive effort in comparison to other options.
9 - Grout Void Fill	●	●	●	●	●	●	This option has been selected by DOE/CHPRC for Tunnel 1 and is supported by Ecology. Considerable experience at the Hanford Site implementing large grouting operations. Characterization of stored wastes to support treatment and disposition can be accomplished using process knowledge and observational approach during future closure and remediation. Complicates ability to segregate wastes requiring different disposition paths.
10 - Surveillance & Monitoring Enhancements	●	●	●	●	●	●	Some aspects have already been implemented on Tunnel 1 and 2. Remote imaging, sensing, and entry tools can be investigated and implemented where feasible.

● Option performs well with the criterion compared to other options and generally has no significant drawbacks related to performance.

● Option performs acceptably with the criterion compared to other options, but may have areas of concern.

● Option performs poorly with the criterion compared to other options or has major drawbacks or concerns.

