

safeBERM® Retro-Fit System

Cost Effective and Environmentally Friendly Option for Coal Ash Storage

BENEFICIAL REUSE FRAMEWORK - 5 C's

Commitment to process

Creation of proper, adequate storage

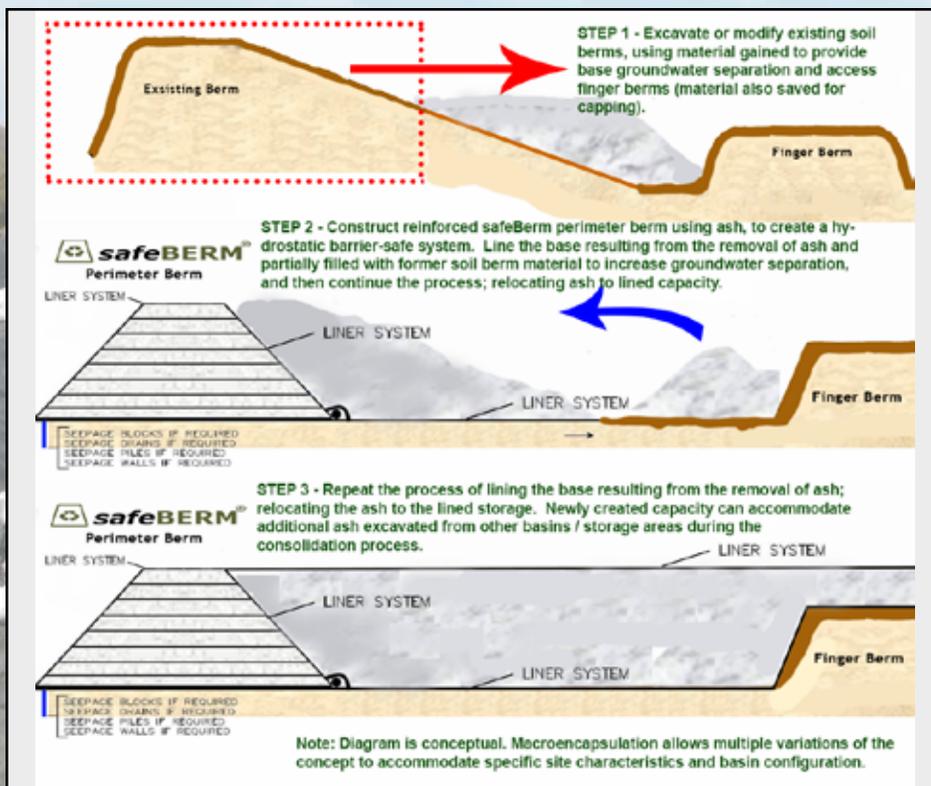
Consolidation into smallest footprint

Compliance with environmental regulations

Clean closure - clean up once!

Utility companies are facing enormous costs to manage coal ash basins. Solutions vary from cap in place to off-site disposal at lined landfills. Using a Beneficial Reuse approach provides a Better, Faster and Cheaper solution to the storage problem that coal ash producers are faced with today.

EnCAP-IT® has developed a method using its safeBERM® technology to beneficially reuse all of the coal ash excavated from old wet basins, including any consolidation excavation into a fully encapsulated storage unit. EnCAP-IT's safeBERM™ Retro-Fit System provides proper management of CCR's in an environmentally safe and sustainable manner that supports responsible reuse of CCR's. In fact, the same CCR's that require proper long-term storage are used to construct the very structure that accomplishes this. It is the ideal compromise between the controversial option of capping in place, and the costly option of removal and offsite disposal.



safeBERM®
Retro-Fit System



Responsible REUSE 

John P. Swenson
john@mseberms.com
(804) 647-0952

ADVANTAGES:

- Beneficially Reuses coal ash to convert wet basin(s) to dry encapsulated storage;
- Ash would be simultaneously utilized for the structural fill berm construction during ash removal and liner installation (saving time and providing a location to directly place the material);
- Meets coal ash management regulations;
- Flexibility of safeBERM® design accommodates site-specific configurations;
- The design of the safeBERM™ can be changed mid-stream in order to accommodate some unknowns; i.e. more coal ash excavation than expected;
- Uses the same long-term proven protections the waste industry has been using for decades;
- Single-handling of CCR reduces time and costs of construction;
- Reduces the costs and need of imported construction materials;
- The dry fill can be configured to better accommodate solar farm installation; the project can be shaped to accommodate this type of land reuse.



EnCAP-IT's safeBERM® Retro-Fit approach is a viable alternative solution where CCR's can be stored safely under half the cost and timeframe as compared to off-site disposal, moving the coal ash storage away from the waterways.

Specifications:

- Macroencapsulated storage unit is fully lined with internal drain systems;
- Reuse of beneficial reuse materials (coal ash) to construct safeBERM®;
- Geomembrane liner above the water table;
- Meets EPA Coal Ash Regulations.

The following is a table representing a conceptual comparison.

OPTION	Amount of Coal Ash (cy)	Dewater Costs**	Excavation Costs	Retro-Fit Project	Transportation & Disposal Costs	Final Land Reuse (Bring site to final conditions)	Total Cost	Environmental Protection Index Min 1 to 10 Max
Cap-In-Place Cheapest option, provides the least amount of environmental protection	3,000,000	N/A - - doesn't meet EnCAP-IT's environmental protection standards					1	
Excavate, safe-BERM® Retro-Fit System Reasonable cost option; provides highest degree of public safety; maximum on-site environmental protection; Ideal Option	3,000,000	managed savings available	\$51.7M	\$40.4M	-	\$4.9M	\$97.0M	10
Excavate, Off-Site Disposal Most expensive option; provides maximum on-site reclamation via removal	3,000,000	N/A	\$70.7M	-	\$213.8M	\$5.3M	\$289.7M	9

* Related to on-site impacts only. ** Working face of dewatering process can be minimized to reduce costs. ^Some information (above) derived from various media outlets