

- Suitable for low-level waste which will not reduce in volume or compact over time, contaminated soil or concrete.
- Uses layers of natural materials in combination with synthetic materials.
- May be constructed in several types of soil.
- Similar to the design of a landfill for domestic waste.
- In operation in France, Sweden and the U.S.

In Canada, engineered containment mounds are being used for the disposal of low-level waste (LLW) near Port Hope, Ontario. Engineered containment mounds have also been used for the disposal of LLW in the United States, France and Sweden.

PORT HOPE AREA INITIATIVE

The Port Hope Area Initiative involves the construction of engineered containment mounds at Port Hope and Port Granby. The two facilities will be used to dispose of approximately 1.7 million cubic metres of historic low-level radioactive soil that was contaminated through uranium processing practices in the 1930s. Both facilities are expected to be complete by 2023.

The mounds have been designed to isolate the historic low-level radioactive waste on the top, bottom and sides with multiple layers of natural and specially made materials. Multi-component cover systems will reduce surface water infiltration through the waste, protect the waste from inadvertent intrusion, and limit levels of radiation on the surface of the mound to the same level as natural background radiation.



Visualization of the Engineered Containment Mound at Port Hope

INTERNATIONAL EXAMPLES

In France, an engineered containment mound for LLW disposal was built at Centre de la Manche adjacent to the La Hague plant where used nuclear fuel rods are reprocessed. From 1969, waste containers were stacked on concrete slabs, with higher activity waste placed in concrete bunkers built on those slabs. Spaces between containers are backfilled with sand, gravel or concrete. The repository occupies a site of about 15 hectares and was covered in 1997 with a multi-layer capping system. The top cover layer was planted with grass in order to promote the evaporation of rainwater and to prevent the weathering and erosion of the upper layers of the engineered cover. It has been monitored since its closure.

In Sweden, a mound-type disposal facility is being used for the disposal for short-lived low-level waste at the Oskarshamn Nuclear Power Plant. A concrete pad with drainage channels is installed at the bottom of the disposal mound and waste is stacked on the pad in various containers, ranging from large bags to shipping containers. When a disposal area has been filled, an engineered cover is constructed over the waste pile with absorbent bentonite clay, a plastic liner and a cover of rubble and soil 1 meter thick.

Similar facilities for short-lived waste are in operation in France and Spain.



Engineered containment mound in Sweden

