

Kelly Facts



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Slurry Walls: keep water out & chemical waste in

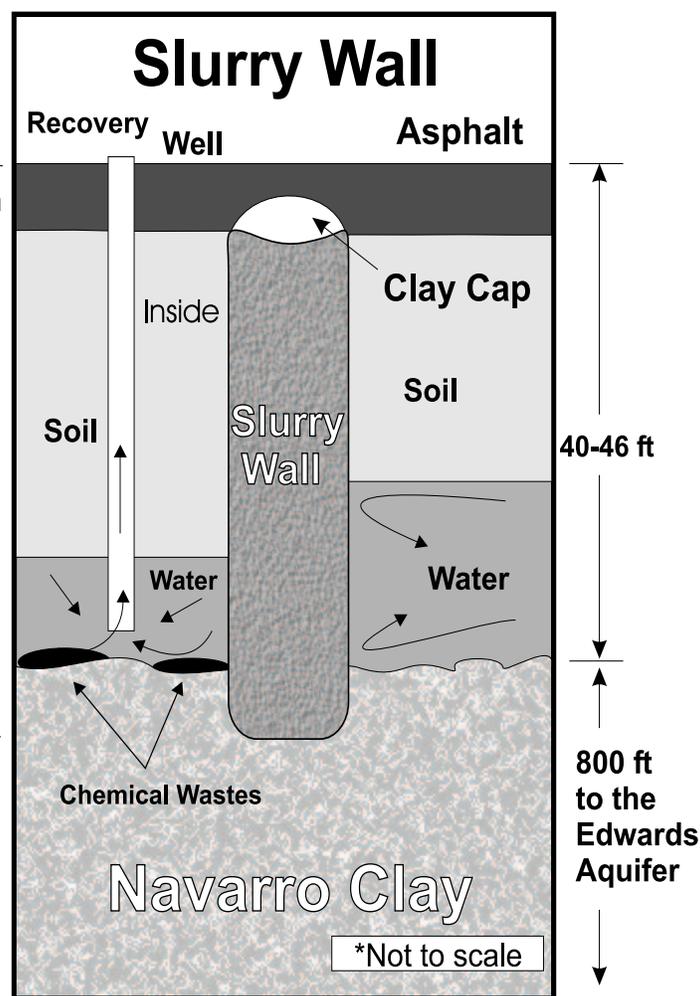
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When chemical wastes soak into the soil some of it is carried away by underground water. It is important to locate, remove or isolate the waste. Keeping the water from spreading the contamination is often the first step. Engineers do this by keeping the water from reaching the wastes through the use of barriers or containment systems. One of the most effective barriers used is the slurry wall.

Slurry walls, a simple technology in use for decades, are particularly effective in keeping chemical wastes in the soil from spreading. The use of this time-tested technology at Kelly AFB will prevent the spread of these chemicals.

Underground slurry walls are barriers that stop contaminated groundwater from passing through by 0.00001% to 0.0001%. (What little water makes it into a contained area is controlled by a well pumping it to a treatment plant.) A slurry wall that surrounds a site works by containing the chemical waste and keeping it from underground water flows. These barriers keep the underground water out and the contaminated water in, stopping the of spread chemical wastes.

Slurry walls work well because of the materials used, where they are used and



how they are built. The key material is bentonite, a natural clay which expands when exposed to water. When mixed with soil and water it hardens and becomes nearly impossible for liquids to pass through. The barriers used at Kelly are at least two feet wide and 40 feet deep.

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Anchoring the wall at least two feet into the natural bottom barrier of Navarro clay creates the bottom seal. (The Navarro clay is the nearly 800 foot protecting barrier for the Edwards Aquifer in the Kelly area.)

Testing

Before construction begins, geologists take soil borings to determine what wastes are there and where the main source is located. Armed with this information the geologist and civil engineers work together to determine the best location and mixture for the slurry wall.

Construction

The first step in building the slurry wall is to dig a trench. Construction is done with a long reach backhoe. Great care is taken to ensure the walls of the trench are straight. A Bentonite and water slurry is then pumped into the trench to keep it from caving in and to prepare the walls for the final bentonite materials.

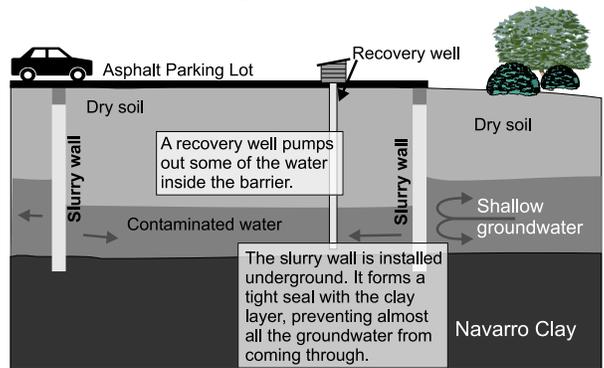
The soils removed in the excavation are graded and mixed with bentonite and water. When fully mixed to the engineering designed proportions the mixture is bulldozed into the trench.

Any removed soils that are not used in the slurry are tested for contaminants and properly disposed. After the slurry hardens it is tested to ensure that it has sealed the area tight.

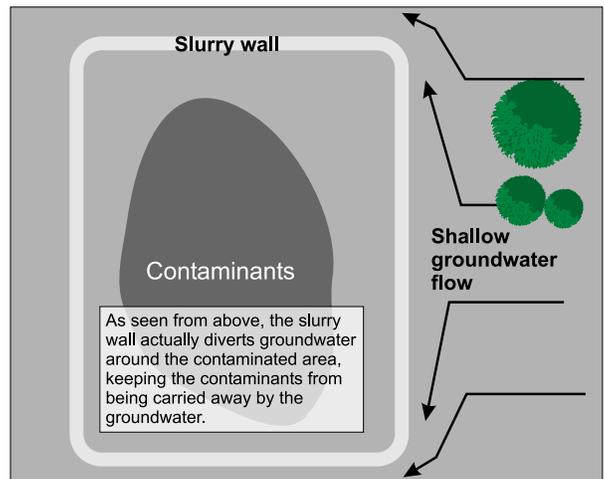
Capping

After testing, the new slurry wall is covered with clay and capped with four inches of asphalt. Capping prevents water entering the contained area from the top. The final step is a recovery well inside the contained area to draw the water away from the walls. This pumping action ensures that

How a slurry wall works



Cutaway side view



Top view

any water inside the slurry walls does not leave. Contaminated water pumped out is properly disposed.

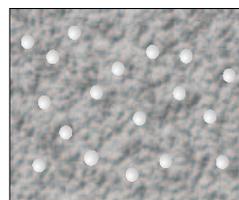
Once the slurry wall is in place a series of monitoring wells are used to ensure the wall is working.

Slurry walls are a proven technology in the tool box of the protectors' of our environment.

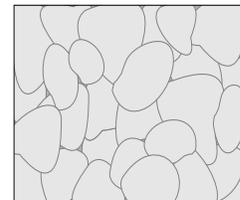
Bentonite, a mineral mined in Wyoming, has unique characteristics that make it ideal for environmental remedies, such as slurry walls and landfill caps.

Bentonite expands in the presence of water, sometimes almost 10 times its original volume. It also becomes very soft, so it can conform to fill tiny spaces in the soil.

Once properly hydrated, bentonite forms a barrier that is nearly impossible for water to penetrate.



When bentonite is dry it looks like small dry chips or pellets. It is usually mixed with water, soil or cement.



Mixed with water, bentonite becomes soft and expands in size, creating a virtually impenetrable barrier.