

CIVIL ENGINEERING NEWS

WASTEWATER

Los Angeles Considers Injecting Biosolids beneath Harbor

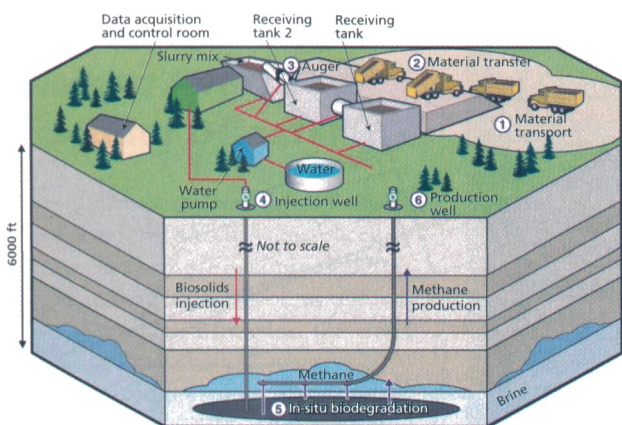
Officials in Los Angeles have big plans for the city's burgeoning flow of biosolid waste: they want to inject it underground. The proposal, which first must qualify for an experimental U.S. Environmental Protection Agency permit, calls for a closely monitored, three-year test during which treated sewage sludge will be pumped into a depleted oil and gas reservoir about 5,000 ft (1,524 m) beneath Los Angeles Harbor.

If the project is approved, the city could start pumping waste into a briny, porous sandstone formation deep below dozens of layers of clay and shale within a year. The idea comes at a time when opposition is mounting to the city's current method of disposing of biosolids—spreading it on agricultural crops not intended for human consumption. "Putting something five thousand feet below the groundwater is better than putting it ten feet above," says Michael Bruno, the president of Terralog Technologies, of Arcadia, California, which has patented the untested injection technology.

Terralog, a seven-year-old research and engineering firm that specializes in injecting waste from oil fields underground, proposed using the same disposal technique on municipal biosolids when the Los Angeles Bureau of Sanitation sent out a request for proposals two years ago looking for disposal alternatives. If the current proposal moves forward, the biosolids will be mixed with water to form a slurry, then pumped underground through a 3.5 in. (90 mm) tube that will fit inside a 7 in. (175 mm) diameter steel casing surrounded by concrete. Hundreds of 0.5 in. (13 mm) holes in the final 50 ft (15 m) of the line will allow the slurry to enter the underground chamber.

The proposed test site, located at Terminal Island, just outside of Long Beach, was chosen because it is on the property of a current waste treatment facility. Of greater importance, it is also on the flank of an oil and gas reservoir that has been in operation for more than 50 years. The extensive geophysical data that exist on the area are critical for such an

Biosolids Processing Summary



Early tests conducted by researchers at the University of California at Los Angeles indicate that the ground temperature at 5,000 ft (1,524 m)—about 140°F (60°C)—will sterilize the biosolids after 24 hours and should cause them to biodegrade within three months, producing substantial quantities of methane and carbon dioxide. Bruno says the gases could be tapped at a later date and that the proposed facility will inject waste at a rate of up to 400 tons/d (363 Mg/d).

In the past, Los Angeles has hauled much of its biosolid waste to two neighboring counties, where it is scattered on such crops as cotton. But with county restrictions and bans on this method looming, sanitation officials in Los Angeles are optimistic about the injection proposal. "Depending on the level of success of the project," says Omar Moghaddam, the manager of applied research and engineering at the Los Angeles Bureau of Sanitation, "I'm not saying the opportunities are unlimited, but they are vast."

—Greg Brouwer

experimental project. Tiny seismic monitors will collect sonic signals from grade slippages and fractures and create a three-dimensional map of the area, and any deformation in the vault's beachlike sand as it fills with biosolids will be measured with a down-hole tilt meter from a nearby well.