

Dirt dilemma delays digging

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Cleanup work at the Guadalupe oil field has come to a stop for as long as two and a half years while Unocal Corp. and government officials try to find a new way to dispose of huge amounts of contaminated.

Unocal has discovered that its system of bioremediation, in which the contamination is allowed to naturally decompose to safe levels, is not working fast enough to allow the oil-tainted sand to be safely placed back into the ground.

The oil company has a pile of 360,000 cubic yards of contaminated sand – dug up from various locations in the oil field – that was bioremediated but is still too polluted to be used as backfill. The cleanup plan calls for polluted sand to be cleaned and then put back into the ground.

“We have all this contaminated sand and no place to put it,” said Harvey Packard, a senior engineer with the state Regional Water Quality Control Board. “Rather than proceed with any more work, we’ve stopped excavating and will do an analysis of other disposal options.”

The 360,000 cubic yards is only a pilot program to test how well bioremediation works. Unocal is less than halfway done with the first phase of the clean-up of the oil field, which is polluted with a kerosene-like substance called diluent.

Between 8.5 million and 20 million gallons of the substance – used to thin the gooey oil as it was pumped out of the ground – were leaked at the field and settled into the sand in huge underground pools. Unocal officials do not know how much soil is affected overall.

In the bioremediation project, called land farming, the sand is spread out and then sprinkled with water laced with a byproduct of corn processing, called corn-steep liquor. The sand is turned frequently to aerate it, and this causes microorganisms to eat both the corn-steep liquor and the oil pollution.

Unocal’s pilot program showed that the land farming technique can quickly reduce the contamination from 2,000 parts per million to 1,000 parts per million. However, it takes much longer to reach the threshold of 700 parts per million that regulators have set as a goal for the sand to be reused.

In the meantime, all cleanup work is on hold. The only exceptions may be some small-scale interim excavations, Packard said.

A larger problem

Before the stoppage, Unocal had planned on working full time at the oil field through 2003 to excavate 17 pockets of contamination that are close to the ocean or the Santa Maria River.

The oil company has cleaned up six of the 17 sites as well as five sumps, which are small pockets of contamination that were formed when oil-laced drilling muds were dumped next to drilling wells when the field was in operation.

The 17 plumes to be excavated constitute only a tiny fraction of the diluent at the site. Ways must be found to get the bulk of the pollution out of the ground without destroying the oil field's fragile coastal dune ecosystem.

State water officials required Unocal to dig up the 17 sites because they pose the most immediate threat of polluting the ocean. During the winter of 1994, the Santa Maria River abruptly changed course and sliced into a large contamination plume near the beach.

Unocal had to do emergency excavation and walled off the contaminated area to stabilize the site. These highest-risk sites were cleaned up before the excavation was stopped.

"A key point to stress is that we eliminated the threat to the beach," Packard said. "There won't be any more discharges like there were in 1994."

Deciding what to do

Other options, besides bioremediation, for disposal of the polluted sand include hauling it by truck or rail to a disposal site, injecting the sand in a water slurry back into the underground oil formation and washing or burning the sand to remove the pollution.

Unocal likely will be required to submit a new environmental impact report that will look at the ecological consequences of these other disposal methods. A draft of that report should be out within a year.

One environmental impact that will be evaluated is air pollution. Several of the alternative cleanup options, such as hauling by truck and burning, cause significant air pollution.

The county Air Pollution Control District would like to avoid a situation like that in the recently completed Unocal oil cleanup in Avila Beach. More oil was burned digging up and hauling away the pollution than was removed from the ground there, said Karen Brooks, enforcement officer with the air district.

One of the milestones coming up is in October," she said, "when they should have some calculations about air emissions from these other disposal methods."

The analysis also will look at using the partially cleaned sand for backfill in areas that are not ecologically sensitive, said Gonzalo Garcia, Guadalupe cleanup manager for Unocal.

"It doesn't look like we can reuse the material in wetland areas," he said, "but that doesn't mean we can't use [it] in upland areas."

Unocal plans to use the extra time it now has during the excavation stoppage to pursue other aspects of the cleanup project. Workers will finish removing the pipes that carried the diluent throughout the field as well as experiment with ways other than excavation to clean up the field.

One method with which Unocal will experiment calls for steam to be injected into the contamination to scrub it from the sand particles and the water pumped out and treated.

"There is going to be a great deal of work going on," Garcia said. "We will probably be as busy [as] or busier than ever."