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Salty methane water may quench timber's thirst

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LINCH -- The green oasis next to the coal-bed methane water reservoir stands out from the sagebrush prairie. Over a rise on the road, in a valley just north of nowhere, the grove attracts hundreds of rabbits with a landscape feature unique in these parts: Trees.

But not a single one of the 2,100 trees covering the three-acre spread in carefully planted rows would be there if it were not irrigated by coal bed methane water, the salty and bedeviling byproduct of drawing natural gas from coal beds.

"What we started was what we consider a pilot project," said Patsy Ballek, an environmental specialist with Windsor Energy Group, an Oklahoma-based company with coal-bed methane operations in the Powder River Basin.

Now the trees -- poplars bred by an Iowa company to soak up large volumes of salty water -- appear to be thriving. Some have grown more than 2 feet since they were planted in late April, giving Ballek and others involved with the project hope that the technique might be used in other parts of the basin to sop up the vast quantities of salty water that accompany coal-bed methane development.

"We were looking to use our water for beneficial use, and one of our consultants came up and said they had been investigating some stuff with trees," Ballek said.

The investigation began when Chris Ewart was a graduate student in Portland, Ore. Now an engineer with CBM Associates in Gillette, Ewart thought trees he had seen planted on top of capped Oregon landfills might be a solution to water management issues in the Powder River Basin.

Ewart found the trees were planted by Ecolotree. Owned by Lou Licht, the North Liberty, Iowa, company uses trees to reduce pollution by minimizing seepage into the water table at 85 sites in 22 states across the country.

The Johnson County project has gone as well as could be expected, Licht said. Only a handful of trees have died, failed to grow or withered when the saline water from the sprinklers landed on their leaves.

"Better than I thought it would be," Licht said last month as he stood under the blazing July sun during a break from an inventory of the trees.

The trees are watered for two to three hours a day by coal-bed methane water that is piped to sprinklers. Cow manure is spread as fertilizer, and a mixture of gypsum and sulfur is used to neutralize the naturally alkaline water. Grass is

grown to choke out weeds, and all the trees are male to keep them from germinating and taking seed outside the irrigated area.

It has created an oasis. Kenneth Anderson, a retired farmer who cares for the trees during the week, said he has seen sage grouse in addition to the rabbits that hop through the field. Antelope and cattle have been attracted to the spruced-up area, but are kept out by a fence.

"It has worked as well as we'd hoped," Ewart said as he bounced along in a pickup truck, traveling along the 22-mile dirt road to the site at Jepson Draw.

"If this area were conducive to growing trees, there'd be trees in all the draws," he said.

Bureau of Land Management officials have toured the site and came away impressed. However, Mike McKinley, a hydrologist with the Buffalo Field Office, said it was not a complete solution because it uses relatively little water.

Licht estimates the site will use up to 1.3 million gallons of water annually. More than 544 million gallons were pumped from the basin's coal seams last year.

Based on previous experience and experiments he's done at his Iowa farm, Licht said the trees can grow 40 feet tall and up to 24 inches in diameter. When harvested, the wood has been used for baseboard siding and paper pulp. But the main task is to sop up water.

"We do not plant trees for landscaping. Every tree we have has a permit attached to it," he said. "I believe these trees multitask. You can do more than just grow wood."

The system is attractive at this point because the trees use more water than irrigated crops, Ballek said. She and Ewart agreed that if the trees prove successful, they eventually could be an option for private landowners. However, hurdles remain before the test site can be declared a success.

The first frost of the fall and last of the spring will be major tests of hardiness for the trees. And although the trees have responded well to the methane water so far, Licht said there is still tweaking to be done.

"We decided on a small project because it would be more like a study," Ballek said. "We want to be environmentally friendly, and we want to use our landowners' property, but we want to do it in the right way."

Ewart is hopeful.

"We're using the water to grow trees in Wyoming. We're finding out if it's good science," he said.

Those at the site agreed: It looks good so far.