WASTE *from page 17G*

treatment facility discharged pollutants into Crooked River.

"Nobody disputed the need to clean up the river," says VanMatre. "The problem was financing a new plant."

The city looked into building a state-of-the-art treatment facility. But the price tag of $25-$30 million was too steep. Finally, Prineville gained EPA approval, along with $10.3 million in grants and financing, to upgrade its older facility.

This appeased regulatory authorities. But it left the city with another problem.

Prineville had to find something to do with as much as 1 million gallons of treated waste water daily because, by agreement, it could only discharge into Crooked River six months of the year, or only during the fall and winter. During the growing season the waste water was to be applied to the land.

Effluent as irrigation—The original plan called for irrigating alfalfa fields with the effluent. But there wasn't enough acreage. Then the mayor and city manager turned the city's attention toward using the effluent to irrigate a new golf course.

Initially, the EPA said "no way" to this suggestion, remembers VanMatre. Regulatory agencies finally acquiesced when enough safeguards had been designed and built into the project.

For example, even though this part of Oregon is high desert and gets only 10 inches of precipitation annually, the ground water is just 5-8 feet below soil surface. To keep effluent from contaminating the ground water, crews, using a laser-guided trencher, installed 22,000 feet of deep drainage tile during the course's construction. It took 1½ weeks. They dug it, laid the pipe and put a sand envelope around the pipe all in the same operation, says VanMatre.

Wayne VanMatre, superintendent of Meadow Lakes Golf Course, Prineville, Ore.

The course must regularly monitor seven wells on site for evidence of nitrates or contamination. So far, no problems, says VanMatre.

Safeguards in place—The city is producing about 650,000 gallons of treated waste water daily. It's pumped from the city treatment plant to a 13-acre storage pond. From there it's piped to the 10 shallow ponds on the golf course. These ponds are lined with high-density plastic. The ponds will hold a total of about 15 million gallons. About 13 million gallons will evaporate during a normal summer.

Then, in the evening, when all golfers are gone, the effluent is used to irrigate the course. The Rainbird Maxi 5 irrigation control system can apply 3,200 gpm, as much as 1.5 million gallons a night.

Since the property on which the course was built was flat, Meadow Lakes fairways had to be sculpted to drain into its 10 plastic-lined ponds.

The greens also drain into the ponds. That allows the Meadow Lakes crew to over water the greens one week a month to flush effluent salts from the Pennlinks turfgrass.

VanMatre says the public course should finished with about 30,000 rounds in its first full season. He's hopeful that it will build to 40,000 rounds per season within five years.

Between 70-80 percent of the play comes from outside of the Prineville area, adds VanMatre. Some comes from Bend, Ore., a nearby community of about 50,000. And some comes from the other side of the mountains, cities like Portland and Seattle.

Whether VanMatre is walking the course or looking down onto it from the adjacent plateau, he says Meadow Lakes is both challenging and beautiful. And, because it's a municipal-type course, it's also affordable.

"We wanted the type of golf course that would draw people here," he says. "We think it turned out pretty nicely."

—Ron Hall

Skogley, with a healthy patch of Velvet bent that thrives in shade or sun.

Velvet bent: the future of temperate greens?

by C. R. Skogley, Ph.D.
University of Rhode Island

■ Velvet bentgrass (*Agrostis canina*, subsp. *canina*) could be the grass of the present and the future for golf greens in temperate regions. Large sums of money are spent annually attempting to find ways to reduce management inputs on golf turf. One obvious—but neglected—method to achieve this goal is to use a grass that has reduced growth requirements.

Velvet bentgrass is such a grass.

Velvet bentgrass was a common component on greens on many older golf courses into the 1960s. In most cases, it arrived as a component of "South German mixed bent," the seed widely used on our earliest courses. "South German" was a naturally-occurring blend of creeping bent (*A. stolonifera* L.), colonial (*A. tenuis* Sibth.) and velvet. For many years, it was the only bentgrass available as seed. Until the advent of 'Seaside' and 'Penncross' varieties in the 1940s and 1950s, greens were established with "South German" seed or were vegetatively established from stolons.

Under the low level of maintenance provided through the first half of this century, velvet bent would generally predominate over creeping bent. With the advent of increased inorganic fertilizer and water use, velvet began to suffer and developed a

continued on page 22G

VELVET *from page 20G*

Overwhelming choice of the pros

■ In 1932, ten professional golfers were invited to putt on greens at the Arlington Turf Gardens in Virginia. The trials included four well-known vegetatively-established creeping bents, colonial bents, South German mixed bents, and one selection of velvet bent.

Each professional was asked to rate the putting qualities of these grasses and to indicate his first, second and third choice. Velvet bentgrass received the first choice vote of all 10 pros for the best putting surface.

Velvet bent's most notable characteristic is its deep dark color, as these test plots illustrate.

poor reputation among superintendents. As velvet bentgrass was weakened by excessive management, *Poa annua* became a prime replacement. As the following generations of superintendents came into the decision-making positions, few were familiar with velvet bentgrass management, and fewer still made the effort to learn.

Agronomists recognize that each species of grass has specific growth requirements for optimum performance. Bentgrasses, in general, perform under lower fertility conditions better than do bluegrasses or ryegrasses. Within a genus such as *Agrostis* (bentgrasses), there is also a range of differences among species. Velvet and colonial will make good growth under lower fertility and drier soil conditions than will the creepers. Colonials will tolerate drier soil conditions than will the velvets, but will not tolerate the close cut required on greens.

Velvet bentgrass may be found in Newfoundland, Quebec, and Michigan in the north and as far south as Delaware, West Virginia and Tennessee. It is well-adapted to shady locations as well as sunny sites. Velvet bent is rather tolerant of infertile soils, but not soils that are poorly drained.

During 1962, a variety of bentgrass called 'Kingstown' was released by researchers at the Rhode Island Station. Like most velvets, it was light green. Since most superintendents in America believe a dark green grass is needed, Kingstown's color was a serious disadvantage. Efforts to enhance color with excessive fertilizer treatments resulted in soft, weakened growth and, eventually, loss of stand density to *Poa annua*.

However, during 1994, seed of a new generation of velvet bentgrass, SR 7200, was released. Its inherent color is significantly darker green. It retains this color even under the low fertility conditions upon which it thrives.

Although the light textured, infertile and acidic soils of New England may favor velvet bentgrass management, the grass has performed well when properly managed in many regions of the U.S. Additional testing will help determine its range.

—The author is retired professor emeritus at U.R.I., Kingston. This article originally appeared in "The Seed Researcher," the newsletter of Seed Research of Oregon. For more information on SR 7200, phone (800) 253-5766.

GRADING THE BENTGRASSES

	Velvet	Colonial	Creepers
Low fertility tolerance	A	A	B
Dry soil tolerance	B	A	C
Close cut tolerance	A	B	B
Shade tolerance	A	B	B