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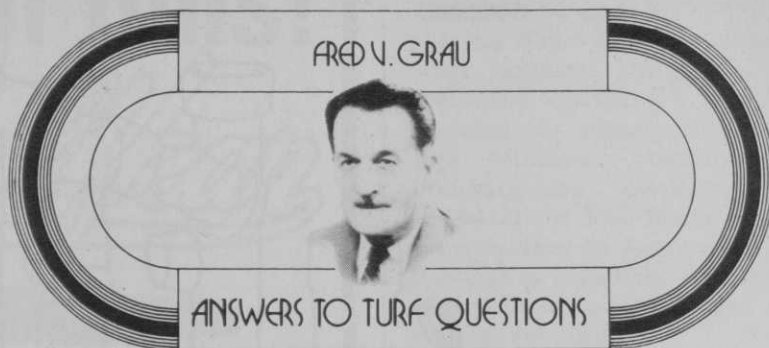
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RECLAIMED WATER FOR TURF

My editorial in the September, 1972, issue of *GOLFDOM* elicited this response from Dr. Maurice L. Parrish, doctor of dental surgery, Silver City, N.M.

"Enjoyed your comments on the use of reclaimed water from the sewer . . . We have been using reclaimed water to irrigate our golf course since 1961. Santa Fe has been using reclaimed water for several years longer.

"The sewer water from the town of Silver City is run through treatment plants and then flowed by gravity to two ponds on the golf course. From there a million gallons are pumped on the course each 24 hours. Our fairways are covered with Kentucky bluegrass and California bent on the greens. How else could a community have a golf course that receives an average of 16 inches of moisture a year?"

"The New Mexico Department of Public Health tests our water periodically and as yet we have had no disease attributed to the golf course."

Thank you for your letter Dr. Parrish. We would like to hear from others on this timely and important subject.

A letter from Dr. Louis T. Kardos, environmental scientist, Pennsylvania State University, says this, among other things:

"I haven't had any direct experience with irrigating golf courses with sewage effluent, but there are many places where this has been done. The nearest one I know of is the country club in Dover, Del. Another installation, which was looking into the possibility, was Rossmoor Leisure World in Cranbury, N.J. They have been putting their effluent into a pond on the

course and then recharging it into the groundwater by applying it to land adjacent to the pond. The Penn State maintenance and grounds department has been using the effluent during dry spells to irrigate a sod production area, the intramural playfields and the sod parking areas surrounding Beaver Stadium.

"In a survey made in 1968, it was found that California, Maryland, Oregon, New Mexico and Nevada permitted golf courses or landscapes to be irrigated with chlorinated effluent from a secondary treatment plant or oxidation pond. In Florida and New Mexico, the use was restricted to periods such that there was no human contact during the irrigation and that the turf would dry before use.

"W.H. Parness in *American City*, Vol. 83:90-92 (1968) describes the use of sewage effluent for irrigating a golf course and grassed area adjacent to airport runways in Livermore, Calif.

"An article in *Grounds Maintenance*, Vol. 3(7): 23-26 (1968) describes the system being used by the Desert Inn Hotel and CC in Las Vegas. The paper, "Sewage Waste Water for Irrigation of Turf," which I gave at the 1969 American Society of Agronomy meetings has never been prepared for publication. A copy of the abstract is enclosed."

Here follows the abstract of Dr. Kardos' paper:

"Sewage waste water has great potential as a water resource for irrigation of turf areas if given adequate and proper treatment. It is capable of providing a firm supply even in the driest years and lends itself to a system in which it may serve as a primary or sole supply or as an auxiliary or emergency

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supply. In addition to providing water it can also provide, with each acre-inch applied, two to four pounds of N, one to two pounds of P, and three to four pounds of K. Use of sewage waste water for irrigation also serves as an anti-pollution measure for our streams and lakes, particularly with respect to the eutrophication hazard. The principal obstacles to its more extensive use are the sanitary or health aspects and the resistance of the public from a psychological or

aesthetic standpoint. Departments of health of some states permit use of chlorinated, pond polished or secondary treated effluent for areas subject to human traffic. Other states do not permit such use or have no stated policy, but consider each request on its own merits. With proper chlorination of a secondary effluent, it should not be difficult to reduce maximum total coliform numbers below 5,000 per 100 ml. and maximum fecal coli below 1,000 per 100 ml., two indices which have been recom-

mended for water used primarily for irrigation. Examination of chlorinated secondary effluent applied to plots at Penn State indicated a monthly average over a six month period of 680 coliforms per ml."

The article in Grounds Maintenance, cited previously, is particularly intriguing. The Desert Inn started the system in 1952. The water costs \$.05 for 1,000 gallons compared to \$.06 to \$.09 for pumped water and \$.16 for purchased water. Other courses using reclaimed water include Paradise Valley CC and Winterwood CC, both in the Las Vegas Valley. There is much more.

Anyone who contemplates using effluent water for turf would do well to obtain a copy of the article, "Sewage Effluent, A Coming Answer to Irrigation Problems?" from Grounds Maintenance, 1014 Wyandotte St., Kansas City, Mo. 64105, attention: Joe Clough.

As long as there are people, there will be sewage and water to carry it away. Golf courses generally are near residential areas, so that in the future, there need not be a real shortage of available irrigation water.

Q—The lakes and water storage areas on our golf course has become impure with algae. We have fish in the ponds and they do not seem to be thriving. We don't want to use chemicals if there is another way. Have you any other suggestions or alternatives? (Ohio)

A—I have been reading about the system of releasing tiny bubbles from aeration lines laid in the bottom of the lake. Bill Lyons at Canal Fulton, Ohio, has used the system effectively. Valved aeration lines release the bubbles, which, in rising, circulate the water and equalize temperature differentials between top and bottom layers. By introducing oxygen, the productivity of the water for fish is greatly increased. Aerobic conditions help to break down impurities and conditions are improved for snails, worms, crayfish and mayfly nymphs. The only system that has come to my attention, thus far, is that developed by the Hinde Engineering Company, Highland Park, Ill. □

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