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## Irrigation With Sewage Effluent

A speech given by James R. Burdett at Midwest Association of Golf Course Superintendents Clinic, November 15, 1972. (Preceded by the film "The Living Filter")

The golf course superintendent's job is growing to be more and more of managing men, money and machines, towards the end of keeping a golf course in high class playing condition than in the days of the groundskeeper. Programs have to be initiated many times by the superintendent, so that he can be setting his own path, rather than following the line of thinking set down by his bosses. He is the co-ordinator of fertilizer, water and mowing, and he has to know what the EPA, OSHA, and the FDA are talking about, and then relate it to his board.

In an editorial in the Bull Sheet, April 1970, I quote, "Fairway watering will be a thing of the past because of a lack of water, green watering might be tolerated however, because it is next to the game." This editorial, by Roger LaRochelle, sent me to searching about and finding in my own thought a solution to the watering. This, I felt, was part of my business career. I then thought of pollution as the dumping into an environment. This was backed up this fall when I backpacked in the Colorado Rockies and was looking at trees that had fallen and were in the process of decaying. From these decaying trees we are growing another forest. This turns into recycling. Similar to that shown in the movie. Congressman Jamie Whitten put it best in his recent Appropriations Committee report, when he said:

"Today, the Congress, the Administrator of the Environmental Protection Agency and others are faced with many of the environmental groups.

"We see many projects opposed by some because it will change the type of fish or type of animal which they wish to catch and kill.

"Because a major is not at our shores, they feel that testing of weapons is unnecessary.

"Because their lights come on every night, they oppose new electric generation facilities. They are trying to stop power generation when our needs are doubling each ten years.

"Because they haven't been hungry, they oppose fertilizers and pesticides which are fundamental to agriculture production.

"Because they have jobs, they are opposed to development of areas of this country not so fortunate.

"Because their homes are not flooded, they are opposed to reservoirs.

"Millions of people have been sold against 'changing the environment' — even though it may be for the good of mankind."

In driving up to the Wisconsin symposium last month, I had Wally Phillips on the radio and one question that came to him from a listener was about where cow chips had been used for fuel (The answer was in areas where fuel was not otherwise available). Our illustrious president, Mr. Paul Voykin, can tell us about the use of cow chips in the Canadian frontier. From a personal viewpoint, Gentlemen, I submit to you that what we are doing is always working on recycling. We will continue to use the excess product of an area in working out our life cycle. In the Christian Science Monitor, September 19th, was an article on waste recycling. Up in Alaska, where the temperatures sometimes drop to 70 degrees below zero, is an experimental project, involving recycling hog "waste into protein rich pellets to be fed back to the hogs. The hogs are housed in a two story structure, with pens on bottom floor and a hothouse on top. Along the side are trenches, through which water is pumped. The hog waste is carried in the trenches to collection areas, then put through a pasteurization process that kills and extracts harmful bacteria and other undesirable elements. Finally, the recycled waste is fed back to the hogs in the form of small pellets containing more than 60 percent protein, vital to animals' growth."

Senator Merdes said the recycled material would amount to about 10 percent of the hogs' diet, with barley grown on the farm supplying the rest.

This process, as was quoted in the article, could eventually lead to hog raising in cities. "Carbon di-

oxide from the hogs would be pumped to the second floor to stimulate the growth of plant life, in turn the oxygen released by the plant life would be pumped back downstairs to further spur development of the animals. The result would be strawberries as big as plums." In this article, I find that man is utilizing and/or changing his environment to eliminate pollution. In the National Geographic, September 1971, the question rises that in taming the Missouri river, what happens to the fish? But the question, to me, meant more. When you change farms into urban areas and increase human population on this previous watershed area, what happens to the waste products of the human population?

Sewage effluent and the use of it is a fairly common concept for the past five to ten years.

Through the use of treatment plants, effluent water is available for reuse much more quickly than common breakdown of sewage. It is estimated that municipal sewage treatment plants throughout the country handle 20 billion gallons of waste water a day. This would make a river 550 feet wide, 20 feet deep, and flowing at the rate of 32 thousand cubic feet per second. Where does it all go? Close to Medinah Country Club, there are sewage treatment lagoons which will settle out the particular matter of treated sewage and then feed the excess water into lakes and streams. This water, when treated, is of a condition that the water into which it flows does not become excessively contaminated, but when the waters of one river are added to another, the persistent compounds are thereby multiplied.

At the Dorado Beach Hotel in Puerto Rico, treated waste water is being used to water the golf course, since fresh water is in very scant supply. The scarceness of fresh water has been precipitated by the "Jet Age" and increasing the demands on the drink-

ing water supply which is what Roger had mentioned in the Bull Sheet editorial back in 1970.

Jim McPhilomy at the Valley Country Club in Denver, was on the Los Alamos Country Club in New Mexico for 5½ years. In a recent letter, he states "Sewage effluent has some definite beneficial advantages. For example, nutritional value, normally high nitrogen supply, recycling of moisture. However, these benefits may be outweighed by the detrimental effects derived from prolonged use of sewage effluent without an abundant supply of natural rainfall or available fresh water for flushing the often toxic elements through the root zone of the turf grass areas."

I have been informed that with the use of certain wetting agents, the flushing of these toxic elements is still critical, but not as critical as without their use. "If during the minimal rainfall periods, we had a minimum of ¼ to ½" of natural rainfall to leach these elements through the root zone, the turf grass responded as if from a daily fertilizer application. I found it better to withhold some moisture during these severe dry periods rather than continue applying the normal amount of sewage effluent for irrigation." Jim goes on to tell me that in Los Alamos, the annual rainfall is seventeen inches. He also says that sewage effluent changes from plant to plant and also within the same plant, in different tests.

(Continued next issue)

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**The Editor Wishes All of You Health, Happiness  
and Good Luck During 1973**