

FIRST AID: *For a Faulty Water Supply*



Laying plastic sheets. Partial covering with soil in foreground.

by **ELMER J. MICHAEL** and **JAMES DEBOTTIS***

In 1937 the Country Club of Rochester, Rochester, N. Y., installed an irrigation system using water from the municipal mains. As the suburbs expanded the supply became less dependable, and water rationing during dry years became a serious problem.

Several studies were made over the years for securing water from other sources. Several wells were drilled, but little water was found.

In 1957 it was decided that we should try to secure water from a creek about 400 feet from our property. However, the owner of the land where the creek was located refused to let us construct a pump house or lay pipe line through his property, but agreed to let us draw from the creek if we could figure out how.

Running across our property and the property adjoining the creek was a drainage ditch.

We were allowed to lay a suction line through this ditch. Since our land was only 11 feet above the water level in the creek, this was possible.

Now we had a way to get water, but we were only allowed to draw 200 gallons-per-minute from the creek, far short of our 550 gallons-per-minute requirement. Therefore, our next problem was storing water. This was solved by constructing a pond with a half-acre surface and an average depth of three feet. This gave us a capacity of approximately 500,000 gallons. The pond also added to the strategy of the course; it now serves as a water hazard for holes No. 11 and 14.

With the pond being constantly supplied by a 200-gallon-per-minute pump at 20 psi through a six-inch suction line 400 feet long, we were able to operate our irrigation system

with a 550 gpm pump at 125 psi for nine hours, a complete cycle, and only lower the pond level about one foot.

The first year after construction our change from city water to creek water effected a saving of about \$1,600.00, since the normal cost of water had been around \$2,400.00 and the power to draw creek water cost only \$800.00.

Just when we were congratulating ourselves on being able to do an efficient job of watering, the pond began to leak. The leaks became worse as time passed.

In our first attempt at sealing the pond, we drained it, searched out the holes, and filled them with cement. Two years later we were again drawing water from the municipal supply to keep our pond full, and the cost of irrigation rose.

In our next attempt we packed the pond bottom with Bentonite clay, but this too, was unsuccessful. In 1965 we decided to try a plastic liner on half the pond.

We drained the pond again and let the soil dry. When the soil was dry enough to work, we used a small bulldozer to remove the top six inches, and piled it on the half of the pond not to be lined. The area was harrowed and raked several times, and all stones and other objects which might puncture the plastic were removed. We then rolled the soil to break-up the large clods, graded the pond slopes to a maximum of 35 degrees so that the soil placed over the plastic would not slide down, and we were ready for the plastic sheets.

The polyethylene sheets used were six mils thick and measured 40 x 100 feet. It was

necessary to cover the sheets with soil as quickly as possible to avoid displacement by wind. Two layers of sheets were put down, and they were laid like shingles on a roof. We felt that the two thicknesses would be less likely to puncture, and that this type of overlapping would keep us from having to cement the sheets together.

To cover the sheets of plastic with soil we used a tractor with a front-end loader to dump the soil, and four men to smooth it out in a six-inch depth so that the tractor could ride on top of soil previously placed. We covered the plastic with roadways at first to hold it down and then filled in between.

We held down the excess sheeting around the pond edge by digging a trench along the high water mark about one foot deep, placing the trimmed plastic in the ditch, and covering it. The entire area was then more carefully graded and the pond was filled with water.

For equipment, we used a bulldozer, tractor with front-end loader, dump truck to haul away debris, a York rake, and a heavy roller. The weather was ideal, and it took four to six men about five days to do the job.

Sealing half the pond reduced the water loss to a point where we felt justified in completing the job. Therefore, in 1966 we sealed the other half in the same manner.

Since then we have had no trouble maintaining the water supply.

* Elmer Michael, now retired, received the Green Section Award in 1967, and James DeBottis is superintendent of the Country Club of Rochester, Rochester, N. Y.

COMING EVENTS

PENNSYLVANIA STATE UNIVERSITY TURFGRASS CONFERENCE

February 10-13, 1969,
University Park, Pennsylvania
Chairman — Dr. Joseph M. Duich

CORNELL UNIVERSITY TURFGRASS CONFERENCE

February 24-27, 1969, Cornell University,
Ithaca, New York
Chairman — Dr. John Cornman

RUTGERS UNIVERSITY TURFGRASS CONFERENCE

February 19-21, 1969, Holiday Inn, Route 1
New Brunswick, New Jersey
Chairman — Dr. Ralph E. Engel

UNIVERSITY OF MASSACHUSETTS TURFGRASS CONFERENCE

March 5-7, 1969, University of Massachusetts,
Amherst, Massachusetts
Chairman — Dr. Joseph Troll