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Asplundh has scheduled regular production on the Forestry or General Service bodies, both complete on GMC chassis. These 45' lifts with a capacity of 350 pounds in all positions are fully insulated and have high pressure hydraulic systems to the baskets. Ready for fast delivery.

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This is the Chipper that has been helping to cut down on Air Pollution for the past twenty-five years.

For More Details Circle (119) on Reply Card

When the Chinch Bugs Struck,

# THEY CALLED A 'COPTER

Guy Tedesco, left, greens superintendent at the Country Club of New Seabury, Mashpee, Mass., found helicopter application of insecticide was quick, efficient, and economical in preventing chinch bugs from destroying two golf courses at the club. He is discussing the problem with Al Barufaldi, center, Bay Colony Helicopter, Plymouth, Mass., which provided the craft, and Richard Canning of Chemapco, Inc., the application division of R. F. Morse & Son, Inc., West Wareham, Mass., distributors of the insecticide.



When pros go to seed, they turn to **Chanderlin...**

### **Certified Penngift Crownvetch Seed 99/75**

*(Meets highway specifications)*

**\$2.95** per pound—**\$295.00** per 100 pounds

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Sod quality bluegrass, Fescue and Merion Blue for certified sod production. Certified Pennstar and 0217 Fylking Kentucky Bluegrass, Certified Kingstown Velvet Bent, Certified Manhattan Perennial Ryegrass, Exeter Colonial Bentgrass, Highlight Chewings Fescue and other grasses and special mixtures for institutions, golf courses, contractors and landscapers mixed to your specifications.

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**W**HEN GUY TEDESCO, greens superintendent at The Country Club of New Seabury, Mashpee, Mass., on Cape Cod, diagnosed an infestation of chinch bugs, he knew he had a tough problem. The insects, about one-fifth of an inch long, black, with white patches on their wings, are well known for their ability to literally suck the life out of lawns by feeding on the juice of stems of grass.

Tedesco determined that chinch bugs had invaded both courses of the club—known as “The Pebble Beach of the East” because of its location on the southern shore of Cape Cod overlooking Nantucket Sound. Its Blue Championship course is 7,175 yards, par 72, and there is a less demanding, but sporty, Green Oak—Pine course.

Since the season was just beginning, Tedesco had to act fast. But how do you control the insects promptly, efficiently and economically over a wide-ranging 90 acres of golf courses involving greens, trees, fairways, and roughs?

Tedesco knew that Aspon 6 E® is specially formulated to kill chinch bugs but that still didn't solve his application problem. He talked it



# The Budget Cutter

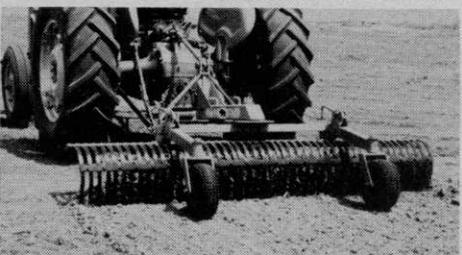


## SATURN VI

When economy really counts, count on saving when you buy and continued savings as long as you operate the SATURN VI. Servis' new 72-inch rotary mower is designed especially for low-cost, light-duty general mowing, but built with heavy 10-gauge steel for long life and low maintenance.

Available in lift-type or pull-type with torque limiter and replaceable skid shoes standard on both models. Tail wheel is standard on the lift-type. Pull-type features an automatic leveling device, to maintain a uniform cut, and reversible wheels for either center or trailing position.

Optional equipment available includes dual shredding blades, front and rear chain guards, drive-shaft safety shield, and dishpan-type blade carrier. For wheel-type tractors with drawbar ratings of 30-50 hp. See your nearest authorized Servis dealer for the best in economy mowing — the SATURN VI.



The Servis Landscaping rake is available in two models. The Little Rhino Model features right and left offset. The Lone Star Model is recommended for operations where offset features are not required.

over with Chemapco, Inc., the application division of R. F. Morse & Son, Inc., West Wareham, Mass., who came up with an answer: apply Aspon by helicopter.

The insecticide was sprayed over the entire 90 acres in a dilute mixture of 15 gallons per acre. Total application time was two hours.

After the application, the irrigation system of each course was programmed to wet down all treated areas to help drive the insecticide in the crowns of the turf. Tedesco got welcome help the next day when a series of showers soaked the roughs and other areas not covered by the irrigation system.

After a few days, a close inspection showed the chinch bugs invasion had been effectively checked.

Guy Tedesco was so pleased with the results that he recommended the aerial application program to other courses in the area. Soon after, Chemapco took to the air to spray Aspon on 50 acres at the Oyster Harbors Golf Club in Osterville, Mass. Results were equally good.

Because of the success of its helicopter application program, Chemapco plans to offer it as a special chinch bug control service in 1971.



**SERVIS EQUIPMENT COMPANY**  
Post Office Box 1590 Dallas, Texas 75221



What Plants Are Best

# TO HEAL WOUNDS OF STRIP-MINING



By RALPH BRANSON  
Syndicated World Trade Press  
Boise, Idaho

**D**ONALD A. SCHULTZ, Supervisor of the Caribou National Forest, in southeastern Idaho, reports that the USDA project of growing trees, shrubs and grasses on phosphate cleared land has met with some success despite the short time the project has been under way.

Objectives are to protect the quality of the water coming out of the water sheds, to provide stabilization of soil on surface mined areas, to return the mined areas to production and make them aesthetically acceptable.

Phosphate companies supporting the project financially are: The Mon-

santo Company, J. R. Simplot Company, El Paso Products Service Company, and FMC Corporation.

The complete report was released in March. A limited supply of copies are available by writing Caribou National Forest, P.O. Box 4189, Pocatello, Idaho 83201.

Accumulated data indicate which species of trees, shrubs and grasses are the best adapted to the revegetation of surface mined areas in southeastern Idaho and which treatments are the most beneficial and feasible. Information resulting from this study should prove to be of incalculable value to anyone who may be confronted with the problem of revegetating land that has been stripped of its top soil, or anyone who may be interested in stabilizing the soil on steep slopes.



## The Project in Capsule

Here is a brief resume of the five-year study. A total of 716 plots for plantings have been established on three mine sites and 11,213 trees and shrubs have been planted. Plantings consist of: 1—tree and shrub, seedlings and cuttings plantings, 40 species; 2—grass, seed plantings, 12 species; 3—forb, seed plantings, 6 species; and 4—tree and shrub, seed plantings, 17 species.

Various treatments tried and evaluated were: 1—Hydroseeding: a mixture of water, seed, fertilizer and other ingredients, formed into a slurry, spread under pressure; 2—Fertilizer: N20-P10-K10 was applied by hand broadcasting at the rate of 200 lbs. per acre; 3—Mulch: straw was spread on the surface after seeding to provide stabilization and protection; 4—Water was supplied



Long before environmental issues reach a boiling point, industries involved in surface mining of phosphate deposits recognized the problems of scalping a mountain and leaving it to bleed. Four companies helped begin a study five years ago on revegetating surface-mined areas in Caribou National Forest. They worked with the U.S. Forest Service. The typical surface mine, far left, was contour-graded, soil was worked, fertilized, seeded and planted. George Atwood, left, of Monsanto Company, and Ken Dittmer of Caribou National Forest, are examining plantings. At upper center is a locust tree, lower center is crownvetch, and at right is a mixture of grasses and forbs, including alfalfa, wheat, rye, clover and fescue.

the criteria—survival, growth and vigor, 10 of the best adapted trees and shrubs are: Russian Olive, cottonwood, dark locust, American elm, cotoneaster, box elder, pea shrub, honey locust, choke cherry and blackberry. Based on germination, density and vigor, the best adapted grasses were: Intermediate wheat, smooth brome, hard fescue, pubescent wheat, and crested wheat grass. Of the six forbs tried, the three that showed the best growth performance were Ranger alfalfa, yellow clover and crownvetch.

As for trees and shrub plantings by seed, the results were unsatisfactory. Very poor germination was experienced with the 17 species tried, indicating this method is not practical. In general, it was found that trees and shrubs do better on the flat gentle slopes. This observation was made on all mine sites.

Of course, there were some exceptions, but for the most part, grasses did better on the slopes. The chances for seed cover and germination were better on the slopes, because the material on the slopes was looser than it was on the flatter areas. Broadcast grass seeding by hand was the most effective method tried, while hydroseeding and broadcast seeding by helicopter were the most unproductive methods employed.

Scarification was beneficial in compacted areas for germination and growth. Compaction of material on flat areas, posed the most difficult revegetation problems. Often rainfall is heavy during stripping operations; this together with the movement of heavy equipment over finer material, while dumping waste, caused extreme compaction. In fact, some of these flat areas were so compacted that water would not penetrate or infiltrate more than  $\frac{1}{2}$ " to  $\frac{1}{4}$ " below the surface. When some standing pools were ex-

at each initial planting of trees and shrubs; and 5—Canadian and Charlottetown barley was planted to provide a temporary nurse-crop for protection and stabilization.

The seedbed was prepared by dragging the plot by tractor to create ripples and, then the area was raked to provide seed cover.

Broadcast seeding by helicopter also was tried. Unfortunately, due to personnel changes and prior job commitments, many of the plantings did not receive all of the treatments. This was particularly true of mulching, watering, raking and fertilizing.

#### **Vegetation Most Successful**

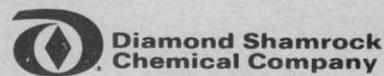
At the present time, findings indicate the greatest success has been with trees and shrubs grown from seedlings and cuttings. Based on



A dose of Dacamine® Turf herbicide is just the tonic for clearing out broad-leaf weeds. It knocks dandelion, knotweed and most other broadleaf weeds out of your turf landscape. And Dacamine stays put—won't vaporize and cause damage to susceptible plants nearby.

Dacamine Turf herbicide combines the power of an ester with the non-volatility of an amine. It slowly penetrates weeds down to their roots for more complete control. Always read the label before spraying.

Ask your dealer about Dacamine Turf or, write Agricultural Chemicals Division, Diamond Shamrock Chemical Company, 300 Union Commerce Building, Cleveland, Ohio 44115.





Dittmer has learned that deciduous plants outperform coniferous species.

germination and plant growth. Porous soil, on the other hand, has very little water-holding capacity and provides a poor seedbed. A mixture of both fine and coarse materials provides optimum water penetration and holding capacity and allows root development on established plants.

As for the application of 20-10-10 fertilizer at the rate of 200 lbs. per acre, it was beneficial to the growth of trees, shrubs and grasses, but was not necessarily essential to plant establishment. During the first growing season, the fertilized trees were much greener and more vigorous than unfertilized. Once grasses had been established, success depended on development of density and vigor and here is where fertilizer was of assistance.

One of the most important factors affecting revegetation is stability of the material on slopes. The lack of stability on steep slopes may make revegetation impossible, or at least extremely difficult. It is advised that where ever possible, slope angles should be constructed on a minimum of  $2\frac{1}{2}$  to 1, or 40%. Slopes constructed  $1\frac{1}{2}$  to 1, as a rule, do not provide needed slope stability.

Stabilization cannot be accomplished by planting alone. Rill and gully development, as well as mass movement of waste material may prevent satisfactory revegetation. Excessive run-off and soil movements begin to take place immediately after waste material, from the stripping operation, is laid down. In many cases, plants are not able to establish themselves, because of the movement of this material. Other plants are swept away or are buried, when sides are eroded away. Even after grasses have been established and natural reseeding begins, much of the seed produced is washed off these steep slopes. If the slope is constructed to insure stability, then plant establishment is likely to be achieved.

Contour trenching in intervals of 25' and 50' has been partly successful in stabilizing  $1\frac{1}{2}$  to 1 slopes. However, contour intervals of 75' or 100' have proved unsatisfactory due to excessive run-off down steep long slopes.

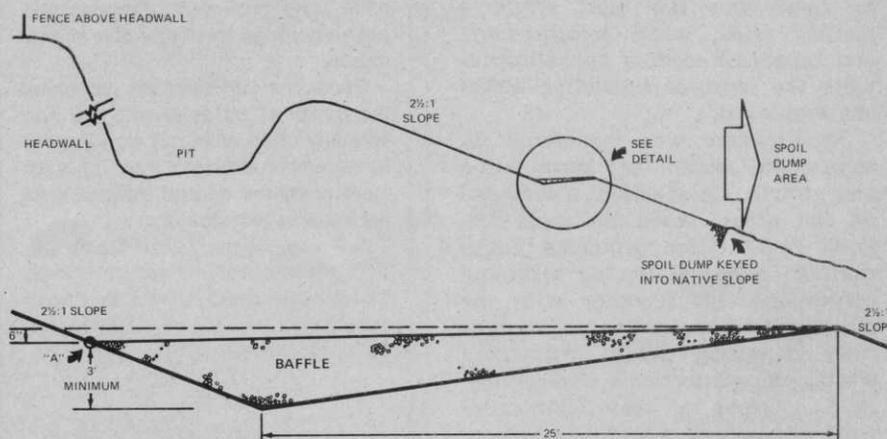
One disadvantage of contour trenches is that they tend to fill up with fine material washed down from the slopes, adding to the mass weight of the material and causing sluffing. Contour trenching should be regarded as a measure to reduce outside damages in the event the slope angle cannot be flattened.

amined, it was found the soil 4" below the surface was dry. This condition prevents the plants from developing healthy roots. The scarification method that got the best results was the one where top material was ripped by tractor to a depth of at least 10".

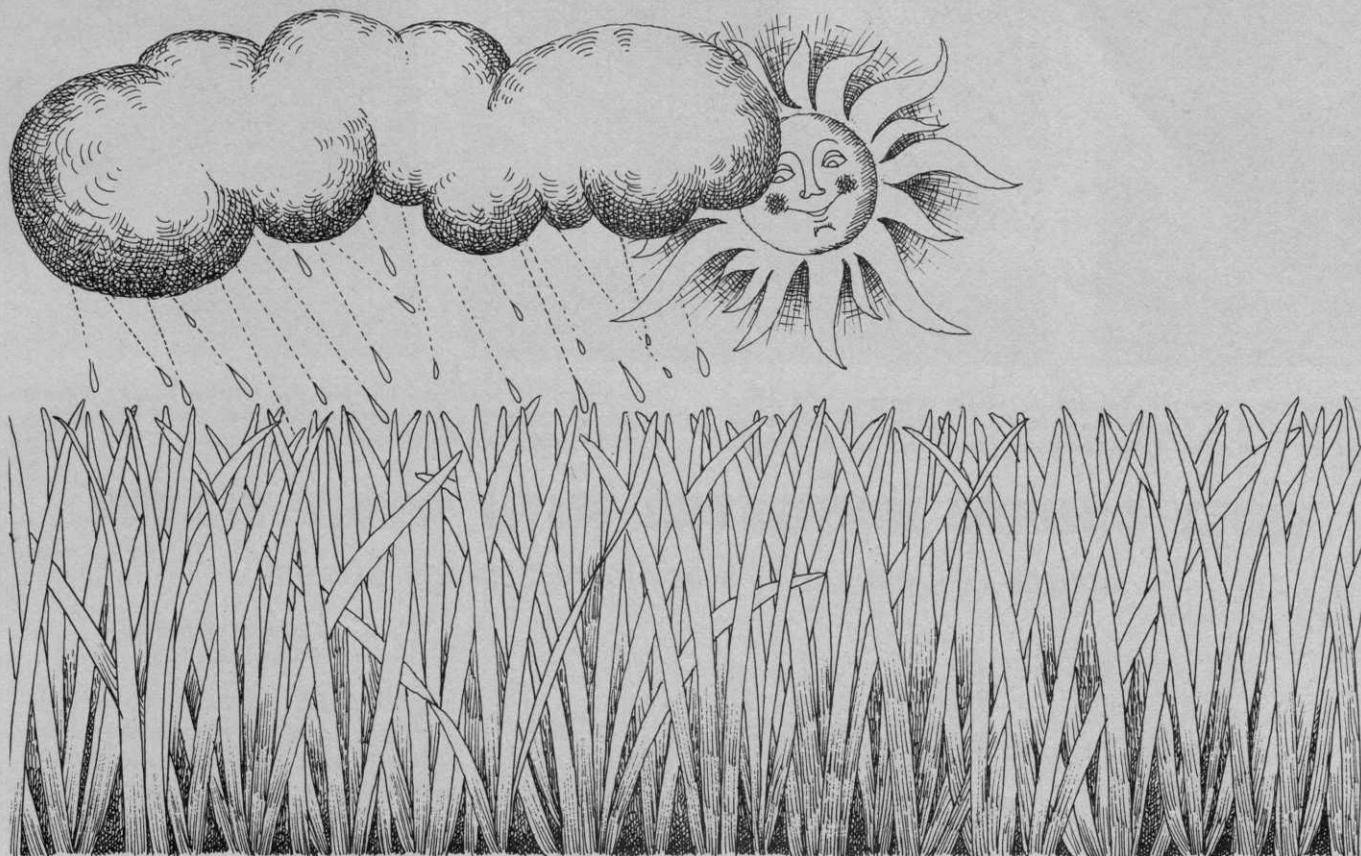
Another factor which affects revegetation is color of the soil. It was discovered that black soil in-

hibited plant growth, while other colors appeared to have no significant effect. Darker soil absorbs heat readily, drying the surface material to a depth of a few inches within a few days after receiving moisture.

Texture of the soil—too fine or too coarse—is also an important consideration in revegetation. Fine material becomes compacted and cuts off water percolation. This inhibits



This is a typical mine profile. A bench, 25 ft. wide, is constructed at contour intervals of 25 or 50 ft. The bench is tipped so the inside edge is three feet below the outside edge. Check dams are placed at 50 to 100 ft. intervals.



## Shell's Akton<sup>®</sup> Insecticide controls chinch bugs in turf for up to 8 full weeks. Rain or shine.

At 1¼ lbs. per acre, Akton<sup>®</sup> keeps turf green for up to 10 full weeks. That can mean a full 2 months between applications.

Akton kills both resistant and non-resistant chinch bugs and it also kills sod webworms. Rain won't hinder its performance. And it has no known phytotoxicity among ornamentals or other plants.

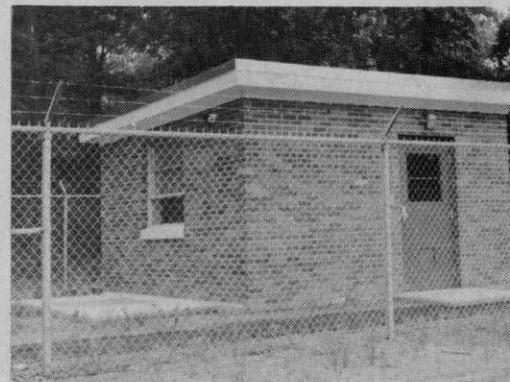
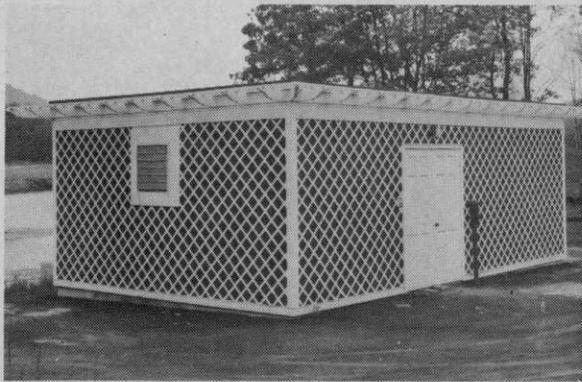
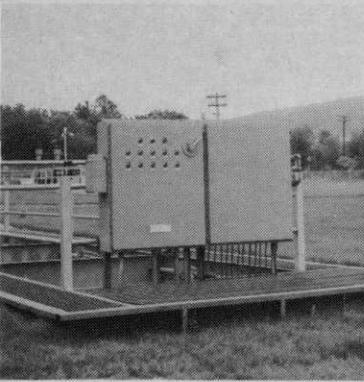
Akton is competitively priced with other currently used insecticides. And, because it kills chinch bugs for up to 8 weeks, you can save by scheduling your maintenance on an every-other-month basis.

For up to eight weeks of effective chinch bug control, Shell's Akton does the job. Rain or shine.

For information, write: Shell Chemical Company,  
Peachtree Center Station, P. O. Box 56144, Atlanta,  
Georgia 30343.

**Shell does a better job.**





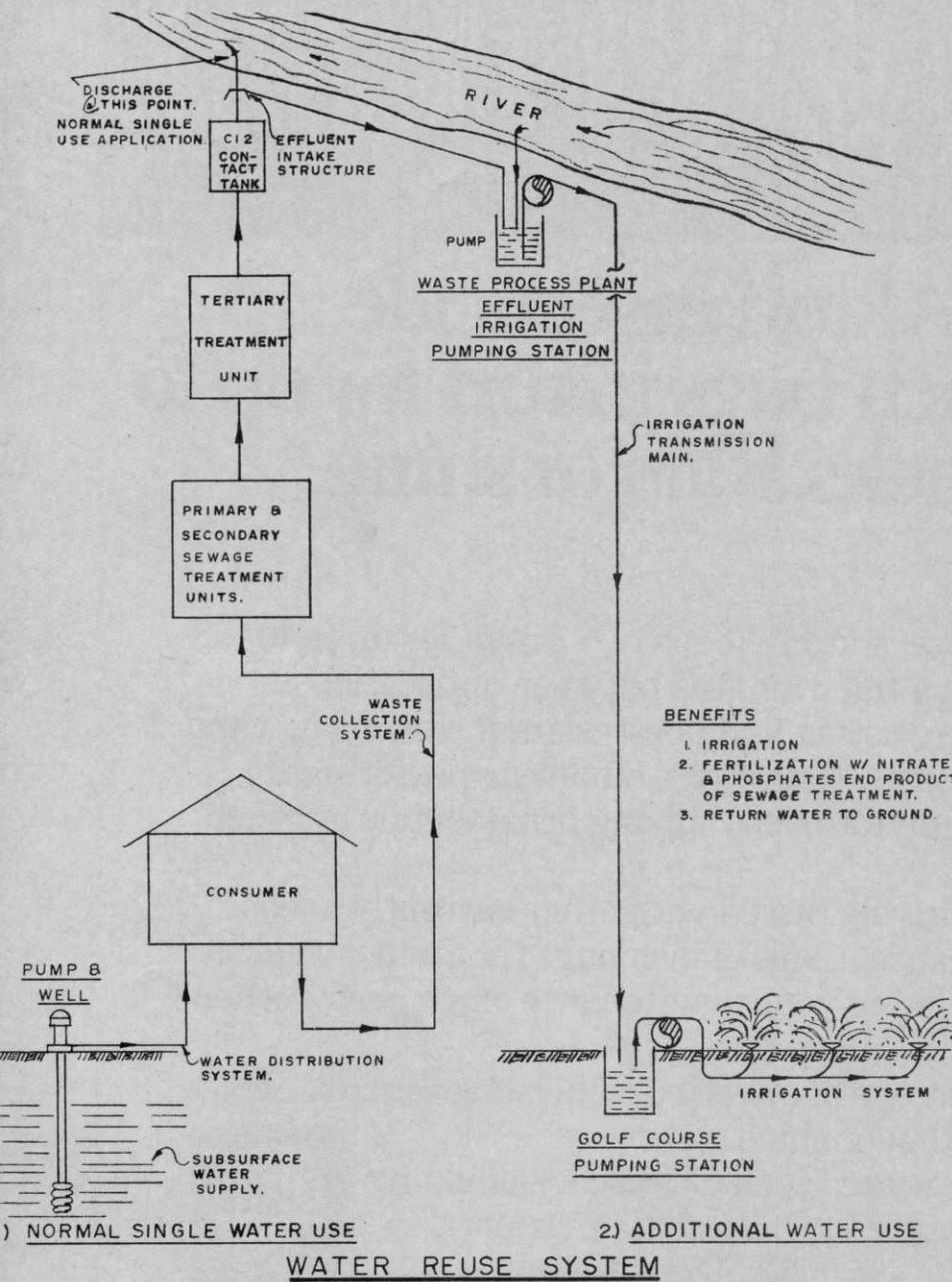
Consulting engineer Richard J. Jeske prepared the schematic below to explain how Panther Valley CC's water reuse system works. Pictures above show what the key facilities

look like. From the left are the "Hydro Clear" tertiary treatment unit, the golf course irrigation pumping station, and the processed waste pumping station.

## GOLF COURSE IRRIGATES WITH 'USED' WATER

### Source Is Community's Sanitary Sewage System

By ALBERT S. KESHEN  
Plainfield, N.J.



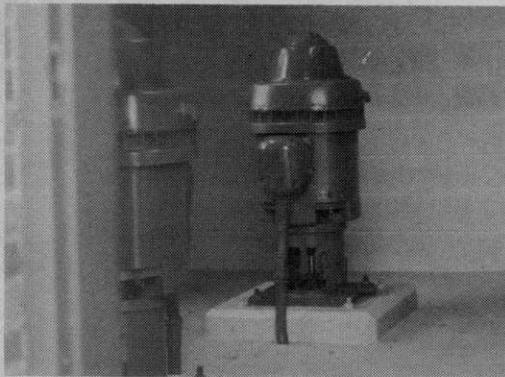
**S**ANITARY SEWAGE disposal design to tertiary stage with treated effluent circulation for irrigation of the swanky golf course of the Panther Valley Country Club, Allamuch, N. J., has resulted in these benefits:

1. Built-in liquid fertilization from the natural water supply source.
2. Assurance of ample water at all times without worry over any possible drought or municipal bans.
3. Conservation of the water supply through recirculation of the water in this reuse system.

Panther Valley is an expansive residential community developed in a mountain setting in an isolated area in the northwest section of the state about 60 miles from New York City. A former 2,000-acre country estate has been converted to a \$65 million new community of townhouses, apartments and luxurious homes that will eventually provide country living for 2,000 families.

The 18-hole, well-trapped golf course, was designed by Robert Trent Jones, internationally-famous course architect. Early in the planning stage it was realized that the 60-acre course, measuring 6,850 yards from the back tees, required 250,000 gallons of water a day for irrigation. A normal well system would only yield 100,000 gallons of water daily, which means a deficiency of 150,000 gallons.

Water supply comes from the Pequest River and a lake on the course which is fed by springs and runoffs in the area. The lake requires constant replenishment. Fur-



This is the interior of the waste pumping station.

thermore, the normal primary and secondary treatment of water for purification would not be sufficient since a state fish conservation and hatchery is close by and the authorities warned that standard waste treatment might endanger the ponds.

Faced with this problem, Panther Valley's consulting engineer, Richard J. Jeske, Springfield, N. J., developed his concept of the tertiary treatment through an aerated sand filter. The water is purified through primary and secondary sewage treatment units, then piped to a tertiary unit for final purification. Instead of being discharged into the river, the water is piped over and over again into the main irrigation pump in the center of the course with eight sprinklers distributed to assure adequate irrigation. There are 8,000 feet of pipe from the irrigation pumping station at the sewage plant on the premises where the effluent is treated to the irrigation pumping station at the golf course.

When the community is fully occupied this system will handle 800,000 gallons of water daily, of which only 250,000 will be required to irrigate the golf course.

"Our objective of cleanliness has been achieved through this means," said Chris J. Cerullo, manager of the Pequest Water and Sewer Companies which operates the sewage treatment plant with capacity to serve future construction outside Panther Valley. "As a test we filled a six-foot tank with this treated sewage and were able to see clear through to the bottom."

Under this recirculation system, the water goes back into the sub-surface strata and can be used over and over again for well water and irrigation purposes.

Another big advantage of this sewage treatment is the retention of the fertilizing elements in the water, thus cutting down on main-

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This is the TL10ETMG, headliner of the new Myers TurfLine Sprayers. It's designed specifically for eliminating weeds, fungus and insects. It also reduces labor, saves time and lets you get on with other work. If turf, shrubs and trees are your responsibility, it'll pay you to look at this one. It includes features like these:

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- Has convenient hose connections for high pressure spray gun work.

Thoroughly field proven, this unit has already shown people in all parts of the country how to handle their grounds maintenance jobs efficiently and economically. Shouldn't you look into this one now? See your Myers TurfLine Dealer or write today for our new catalog.

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tenance costs, since less commercial fertilizer is required. Although all used water to be discharged into rivers must meet the standards set by the Federal Water Pollution Control Act of 1965, there is a provision that this used water still can contain nutrients in the form of nitrates and phosphates that are the main cause of algae in rivers, streams and lakes. But, with the reclaimed water at Panther Valley being used for the irrigation of the golf course and some of the balance being made available to black dirt farms nearby, the natural water reservoirs near Panther Valley will remain unpolluted, especially during the summer months.

Since the used water contains nitrates and phosphates that have a nutrient value at a pH close to seven, the golf course is being irrigated with a form of built-in liquid fertilization. This factor, according to Leonard Schilling, grounds superintendent, will prevent disease such as dollar spot and brown patch, as well as reducing the expense of purchasing additional fertilizer and labor costs in applying it.

"Turf has been mainly seeded by our own staff," said Richard Hughes,

golf pro. "We've used Merion blue grass with reseeded of Astoria, Seaside, and Penncross bentgrass on the fairways, tees and greens; then cut low to eliminate bluegrass to make it all uniform. Kentucky bluegrass is for the rough. We water in 10- to 12-hour cycles. With the improved irrigation system, we're always assured of a course that's green and lush, even the rough."

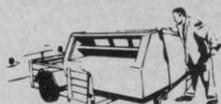
The reused water that is not applied to the golf course and the nearby dirt farms is being used to create ponds and lakes. "These artificial reservoirs are half used water and half fresh water," said Philip Barske, Panther Valley's conservationist. "The water purification system can also be used to irrigate the millions of dollars worth of lawns, trees and shrubbery within our 2,000-acre complex during the dry periods."

Engineer Jeske, although satisfied with the results attained, does not claim that he has worked out a panacea for all irrigation problems. He points out: "It has worked out well for our particular set-up and could be applied to other fairway-living complexes, or even golf courses near a municipal sewage

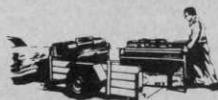
treatment plant, provided a tertiary treatment unit has been installed. It costs \$60,000 and those miles of piping and booster pumps might not be required on other projects to get the water to the main pumping station. In certain areas where water is scarce and costly, the system could conceivably be ideal because the piping and pumping costs would be less than for the price of water itself."

Taking the long-range view, however, Philip J. Bowers, II, president of Panther Valley's development company, appeared well satisfied with the investment outlay of his water sewage system. "We won't have to be concerned if there's a drought or worry if the municipal council passes an ordinance cutting back on our use of water," he said. "The reused water is free, which is quite a savings since it costs almost \$21,000 yearly to irrigate a course in northern New Jersey whereas our only cost is pumping and that only runs \$3,500 a year. Moreover, the long-range view, which we are striving for has prevailed. It's all in accordance with our philosophy that 'only excellence will survive'."

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