



Even the best of irrigation designs will prove useless if adequate pressure is not maintained by the pumping station.

Planning for Irrigation Improvements

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AT ONE TIME or another, club managers or management committees will be required to allocate major funds to modify, upgrade, or replace an existing irrigation system. Most will wish that more information was available to evaluate the necessity or desirability of making such an investment for the club. Management involves recognizing alternatives and making informed choices to provide direction toward future expectations. When alternative choices are not apparent, management is

undermined. Management often realizes that something needs to be done . . . "But what?" "Why now?" "Is that the only way?" "Isn't there something less expensive?" "What are the alternatives?" "Can we implement this in phases?" Complete answers don't seem to be available.

Years may go by. Each year the answers are not any better. The irrigation needs obviously are becoming more urgent. There is a need to confirm the necessity and appropriateness of such a project. More

than a roomful of board members and club managers have thought, "Surely there should be more information available."

One reason for the feeling of lack of control is the fact that so little information is documented. How does management know it will not perpetuate existing problems? No one has defined what the real problems are and how or if they will be corrected after the major expenditure. How long will it be before another modification is required? Many who have been given

the responsibility to make or recommend a major irrigation purchase have been given few options or cost-control features to consider.

Major modifications may be in order. The prospect of renovation or replacement of an old irrigation system is common. Irrigation systems do wear out. Increased turf expectations often require more advanced irrigation control. If major improvements are in order, and it's your turn in the saddle, it is only prudent of you to investigate all available options.

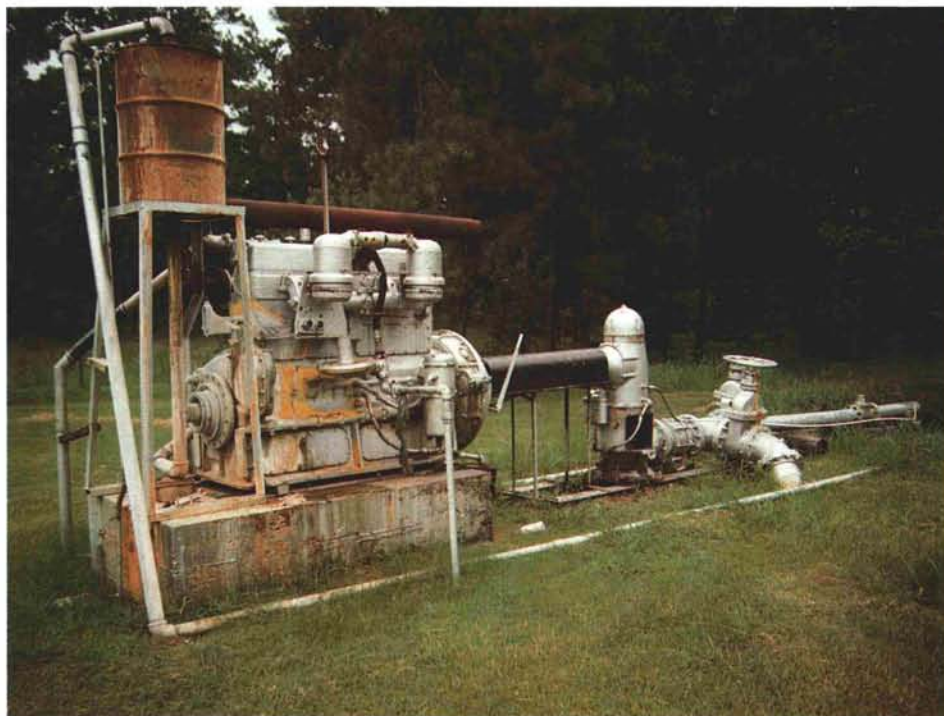
Planning Allows Participation

Planning is the process that puts the control back into management's hands. Planning is the process that provides fundamental assurance that all existing shortcomings and all alternatives are identified and evaluated. Your specific situation is investigated by an expert. A complete written evaluation with recommendations is documented, including a list of sequential steps to follow. Furthermore, planning establishes design standards that will assure that the irrigation system modification or replacement will have the most probability of meeting the club's expectations.

Some clubs skip the planning process and then struggle with picking among "free" layouts provided by those selling the products. Many committees struggle with the selection process. Two or more layouts are submitted; all have different advantages and operating features. Each has desirable features, but none are complete designs that assure any more success than in the past. How do you choose? Often the choice is based on relatively unimportant considerations, and the committee settles for whatever has been presented to them. When planning is skipped, real choices are few and far between.

Planning obviously comes before designing, so it should be obvious that any irrigation layout provided for consideration without any evidence of planning hasn't had any. Buyers beware. Planning provides a framework of system performance and limitations required if the design is to be customized to the club's specific desires. Most management decisions occur during the planning process. Planning decisions are incorporated in the system design. Skip the planning and you skip your opportunity to participate.

One thing I want to state clearly is that planning and designing are two separate events. Long-range planning includes an evaluation of the current impact of the existing system and its components on reliability and horticultural success. It involves a time for the club to evaluate the cost of



Antique pump stations can no longer meet the needs of today's irrigation systems and golf courses.

performance items desired, such as additional coverage. All of this is before the design is initiated. The evaluation, objectives, and decisions of the club are guideposts for the designer.

With the help of the consultant, management has an opportunity to participate directly in the decisions regarding cost/performance trade-offs. It is management's responsibility to balance the outcome to a satisfactory solution when faced with opposing weighted judgments concerning: 1) the quality of the golf course, 2) the expectations of club members, and 3) the members' willingness to pay.

If you realize a purchasing mistake regarding a single piece of equipment, its short lifetime or relatively small cost may permit early replacement without a detrimental impact on the quality of turf or the financial stability of the golf course. Mistakes in planning, designing, or installing a major irrigation system, though, are not easily corrected or replaced. Expenses that could have been avoided may continue for years.

An example of the wagon before the horse is the replacement of a pumping station when irrigation improvements are anticipated, yet undefined. Pumping equipment should be specified to satisfy the requirements of the irrigation system. Matching the pumping station to the new or modified irrigation system may lead to a reduction in pumping capacity because of the advanced irrigation

controller's ability to develop more efficient and consistent water demands during the irrigation cycle. The best opportunity to realize improved pumping efficiency is to delay the pump station purchase until after the design consultant has evaluated long-range requirements.

Obtain a Written Plan for Long-Range Improvements

Planning can be provided in the form of a long-range improvement plan. Planning for irrigation improvements not only will assure success, but is also necessary to gain the support of management and members. The absence of a detailed written improvement plan is the primary reason for lack of cohesive support. A written long-range improvement plan prepared by an independent consultant, with no ties to manufacturers or distributors, offers an objective expert opinion that club management and members are able to support.

Economical . . . How Can You Afford Not To?

Obtaining an irrigation improvement plan for your golf course is simple and inexpensive. It is an economical first step to system modification or replacement. You may know that you want more reliability, more

watering flexibility, and/or improved performance, but an efficient and practical approach to get there may not be so clear. The long-range improvement plan is a road map with budget and directions of how to proceed from your current system to a new or improved system.

The potential savings associated with developing a long-range improvement plan are great. Savings are readily available and result from reductions in installation cost, avoiding ineffective purchases, phasing in the most helpful improvements first, and in reductions in day-to-day operating expenses.

If efficiency and water management capabilities are not addressed in the planning of system improvements or replacement, there is little hope that they will exist in the completed project. In the early planning stages, it is helpful to review all potential or economic options that may be available. It is likely there are options to consider which you may not be aware of. Such questions as, "Is it possible to incorporate part of the existing piping into the new system?" can be effectively addressed. The expert's task is to help identify the most effective way to improve the irrigation system.

Common Irrigation Conditions Leading to Dissatisfaction

With the guidance of a long-range improvement plan, the professional consultant

can improve or eliminate existing conditions that contribute to poor performance. As an example, assume some areas of low pressure exist which contribute to poor coverage. A well-designed control system should be able to make two improvements. First, new controls may decrease the maximum flow required of the pumping station and allow the discharge pressure of the station to be increased. Secondly, new controls should improve the balance of water flow throughout the piping system, thereby reducing the pressure losses in the system.

Note the adjacent list of common irrigation faults. All of these shortcomings can be avoided. Planning the contents and standards of your system before having someone design the system will maximize your probability of obtaining the most value from your investment.

A Better Job

A qualified planning consultant will allow you to do a better job. The advantages and benefits of a well-planned irrigation system are obvious. An independent consultant is working for you to assist and make known viable alternatives. The independence of the consultant is a valuable contributor to an objective report. No one wants to make an informed decision more than the one faced with the responsibility.

A consultant helps define the cost/benefit situation. Without planning, there is no

assurance that your emphasis will be incorporated. If performance is not planned into the design, don't assume it will be in the installed system.

Performance includes:

- Area of coverage
- Pumping limitations
- Water resource restrictions
- Cost of installation
- Longevity
- Horticultural control
- Allowable watering time periods
- Water management
- Operating control flexibility
- Efficient use of pumping energy

Over the last few years, new irrigation products have become available that allow substantial improvements in turf care. New control systems are available for effective horticultural control and water management. The rising expectations of club members require increased irrigation control and effectiveness. The rising public awareness demanding responsible use of water will demand responsible water management practices. The rising cost of electricity encourages efficient watering schedules. The rising cost or decreasing availability of water often justifies the investment in modern control equipment to gain the ability to manage water consumption and application on a daily basis. New control systems can



Water quality must also be closely evaluated. The sediment in this water could ruin even the best green in a few short seasons.



Irrigation design must consider architecture as well as turf species. Very specialized designs are necessary for difficult-to-irrigate areas.

actually improve the watering of the course and use less water doing it. Due to lack of effective control, overwatering is often inherent in older control systems. For a number of reasons, substantial system changes may be in your future. Planning is a step toward responsible resource management.

Planning Makes a Difference

Operational costs are influenced significantly by the design. Defining and establishing design standards through irrigation planning may reduce the operating cost of the irrigation system by tens of thousands of dollars each year.

In one case, the club was presented with this scenario. They could spend \$40,000 more in water management control features and reduce their water purchase by an estimated \$10,000 to \$15,000 each year over the life of the system. Without adequate planning and informed choices, this club would have, by default, opted for the system with the smallest installation cost.

The consultant can assist in the evaluation of trade-offs between irrigation performance and available budget constraints. Value en-

gineering allows you to get the most from your investment in irrigation. The qualified consultant can define the short- and long-term impact of performance trade-offs. Most important, the independent consultant provides expert advice and confidential assistance.

Steps for Success

Don't overlook adequate planning. Look for objective advice. Obtain a long-range improvement plan as soon as practical when major work is anticipated within 12 to 24 months. Insist on a complete design with planned performance.

Where to Begin

Begin by looking for a qualified independent consultant. Ask your USGA Green Section representative for suggestions. The value of a professionally prepared long-range improvement plan cannot be overstated. Begin by knowing you have choices to make that will have a significant impact on the cost and performance of the irrigation system.

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Common Irrigation Conditions

- Poor irrigation coverage
- Low system reliability
- Premature equipment failure
- Insufficient watering control
- Excessive operating cost
- Inadequate pipe sizing
- Little, if any planning
- Lack of surge pressure control
- Excessive water velocities
- Incomplete designs