

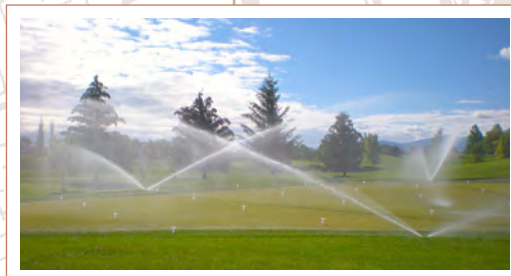
IRRIGATION DESIGN

BILL ROBERTS GOLF COURSE IRRIGATION AUDIT

Billings, Montana

The City of Helena retained Steiner Thuesen PLLC to provide inspection and auditing services for the irrigation system at Bill Roberts Golf Course. The irrigation system has reached the end of its useful life and is in desperate need of replacement. The golf course is irrigated with an antiquated 34-year-old system and another out dated 20-year-old system. The course employs two pump stations, three different types of controllers, four different sprinkler head series types and an age span between the two systems of 16 years. The age difference itself causes considerable challenges.

The current irrigation system presents a number of problems inherent to old systems. These include a lack of dependability, unavailable parts due to the age of the equipment, and severe inefficiencies in terms of application of water, energy use, and labor management. Prior to the audit, the Owner performed a system evaluation and tune-up making any necessary adjustments so that the irrigation system in the areas being evaluated was operating at near peak performance as possible.



Using the information obtained from the audit, a base irrigation schedule was developed using a five-step process that considers the following: 1) Plant water requirements; 2) Sprinkler performance; 3) Soil reservoir; 4) Scheduling run-times, and; 5) Scheduling- programming.

Several recommendations came out of the audit process. The key recommendations included replacement of the irrigation system with newer equipment capable of providing Distribution of Uniformity in the 0.70 – 0.80 range and a new irrigation control system with a weather station allowing for ET-based irrigation and fine tuning of the system over the entire course. Additional heads at the greens were also recommended as well as automation of the well pumps that fill the irrigation reservoirs.