

## **LAUREL VALLEY GOLF CLUB LIGONIER, PENNSYLVANIA**

The WHM Group (WHM) completed a natural channel design project on a stream running through the Laurel Valley Golf Course, saving the owners some money in the process.



One condition of the design was that the stream banks had to remain grass. This presented a challenge because grass has shallow roots and is not effective in preventing erosion. Another condition was that the channel had to complement the aesthetic of the course, which was designed by Arnold Palmer. This condition limited the approaches that could be used.

Eroding stream banks are a common problem on golf courses. Not only are they are unattractive, but they can cause ponds to fill with sediment, resulting in costly dredging. Traditionally, golf courses have stabilized streams with retaining walls or wire baskets filled with rock, both of which are unsightly, expensive and prone to failure. Natural channel design is a method of restoring or creating a stable stream channel by using a natural system as a model. WHM has designed successful stream restoration projects in Pennsylvania, New York, Maryland, North Carolina and West Virginia. We offer full-service solutions that include background data collection, design, permitting and construction.

WHM's techniques transform an unappealing stream into a beautiful golf-course asset that requires little maintenance and is environmentally friendly. This is accomplished by reshaping the eroding channel into a more natural condition. We use our knowledge of natural channels to offer a cost-effective alternative to eroding waterways.

The stabilization technique we chose for the Laurel Valley project incorporated methods used in natural channel design. This approach employs stable natural channels as a model for developing channel pattern, profile and hydraulic dimensions. Another key component of this technique uses in-stream structures to protect sections of the stream that are vulnerable to erosion.

The final project consisted of grading a new channel pattern and dimensions to decrease the channel slope and bank height. This decreased the power of the stream and the potential for erosion. In addition, j-hook log vanes were installed to protect the stream's banks.

We obtained permit approvals in a timely manner, so construction began on schedule. Through our relationships with regulators, we know how to prepare permit applications that the agencies will consider complete in the first submission.

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