

## SAINT VINCENT COLLEGE ACTIVATED IRON SOLIDS/SBR DEMONSTRATION PROJECT

**Project Location:** Saxman Run Deep Mine Discharge, Latrobe, Westmoreland County Pennsylvania

**Project Duration:** October 2003-June 2005

**Client:** Dr. Daryle Fish  
Saint Vincent College  
300 Fraser Purchase Road  
Latrobe, PA 15650  
(724) 537-9761  
dfish@stvincent.edu

Deep coal mines in the Latrobe area are discharging substantial quantities of AMD into the Loyalhanna Creek severely degrading surface water quality. Two of the discharges located in Saxman Run discharges are in the top twenty discharges in Western PA and have combined flows ranging from 2000-5000 gal/min. Water quality of the discharges are pH = 5.5, Iron = 30-60 mg/L, and net acidity = 50-70 mg/L. The land required to treat the discharges with passive wetland treatment systems exceeds 50 acres and would also require installation of a 5 to 10 acre ALD. The efficiency of such a large wetland/passive system is also uncertain.



A demonstration of a new technology was undertaken by St. Vincent College using funds obtained through a "Growing Greener" grant. The technology demonstrated was the innovative activated iron solids/sequencing batch reactor (AIS/SBR) treatment process (patent pending) developed by Jon Dietz, Ph.D.. AIS/SBR treatment involves the use of AIS to catalyze the iron oxidation & removal process (100-fold faster than passive treatment) in a sequential batch reactor (SBR); a self-contained treatment system that provides aeration, oxidation, precipitation and settling. The demonstration involved installation and monitoring of a pilot-scale (40 gpm) AIS/SBR Treatment system to determine design criteria for full-scale implementation at the Latrobe WWTP. The demonstration also examined alkalinity generation from: 1) a conventional Anoxic Limestone Drain; and 2) pulverized limestone added directly to the AIS/SBR Treatment system.

Dietz *et al* Consulting assisted St. Vincent College in preparing the "Growing Greener" application and helped garner local and state support for the project. Dietz *et al* Consulting also provided the package AIS/SBR treatment unit, site designs for installation of the AIS/SBR unit and support facilities, input into the design of the ALD, monitoring and operation of the AIS/SBR unit during the demonstration, analysis of the results from the demonstration, summary reports of the study, evaluation of the feasibility for converting the existing WWTP, and various public involvement and educational activities (e.g., seminars, conferences and site tours).