

treated water then outlets into Sewickley Creek. The system has decreased iron concentrations from 75 mg/L to less than 2 mg/L since it was constructed. Sewickley Creek is no longer polluted by iron from the underground Marchand Mine.



## Recovering a Marketable Resource

Eventually the ponds fill up with iron sludge which, if not managed, will result in the system functioning less effectively. The iron solids formed in the system are very pure and have value as earth tone pigment. Every 5-7 years the ponds will be cleaned out and the iron sludge will be captured, processed and sold. The sludge recovery area is near the first pond. The first three ponds were cleaned out in 2012 and the iron sludge was captured in large geotubes. You can see remnants of these iron recovery activities.

The Marchand passive treatment system is the first mine water treatment system designed for iron oxide production and recovery. The combination of passive design and iron oxide recovery makes this the lowest cost mine water treatment system in the world.

## Walk the Trail and See for Yourself

Aside from an informational kiosk, the site includes a walking trail with strategically posted interpretive trail signs. Here you can see the aeration troughs at work and the progression of the mine water through the treatment system until it is discharged as clean water into the Sewickley Creek.

## Learn About the History of the Marchand Deep Coal Mine

An interpretive sign on site explains the importance of coal to Western Pennsylvania during the nineteenth and twentieth centuries. This mine began production in the 1870s and closed in 1938. At one point this mine produced 508,000 tons of coal in one year and employed about 350 people.

## Ample parking is available for cars and buses

The Lowber Mine site is located about 1/2 hour southwest of Greensburg between Herminie and Sutersville.

## For more information contact:

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**Yesterday** - a coal mine  
**Today** - converting abandoned mine drainage into clean water and a marketable product

Visit

# The Passive Wetland Treatment System at Lowber



Learn about the lowest cost mine water treatment system in the world



## The Problem

The once productive Marchand Coal Mine deep beneath this site was closed and abandoned in 1938. A few years later, water contaminated with metal pollutants began discharging from the old mine entry into Sewickley Creek eventually reaching the Youghiogheny River.

## A Natural Solution

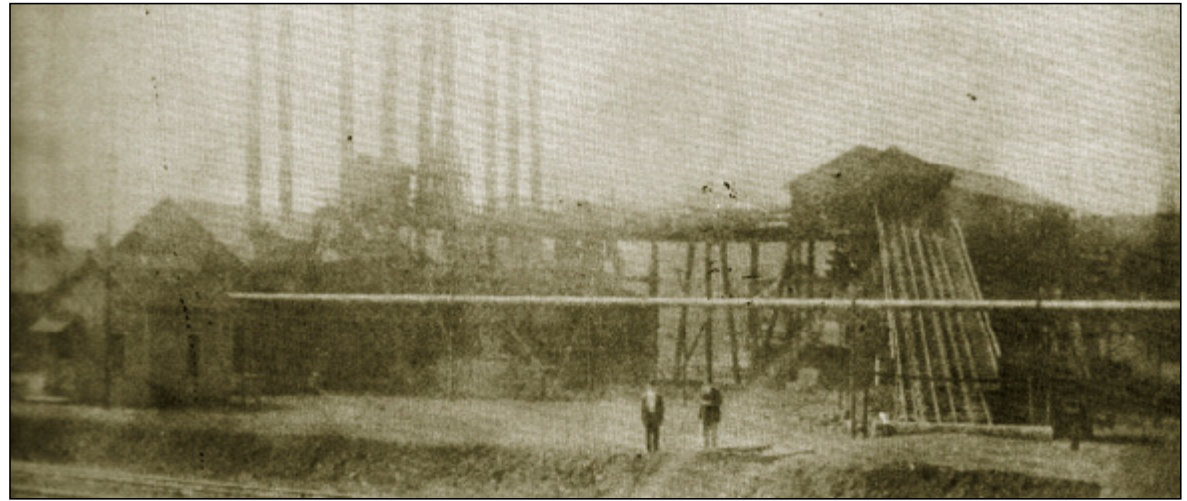
The iron-polluted mine water coming from the underground Marchand Mine discharges at an average rate of 1,800 gallons per minute. For over 50 years this pollution left deposits of iron sludge on the bottom of Sewickley Creek turning it bright orange and degrading aquatic life.

Spearheaded by the Sewickley Creek Watershed Association and Hedin Environmental, this unique, passive treatment system was constructed here in 2006 to capture the iron contamination before it entered Sewickley Creek. A “passive” treatment system operates using gravity and natural processes without the need for chemicals or energy demanding mechanical processes.

The system consists of a series of ponds followed by a constructed wetland. As the water flows through the system the iron is naturally oxidized to orange iron oxide which settles in the ponds and wetland. The series of ponds shown in the diagram captures the mine water from the discharge and allows the iron particles to oxidize (rust), settle and accumulate in the bottoms of the ponds.

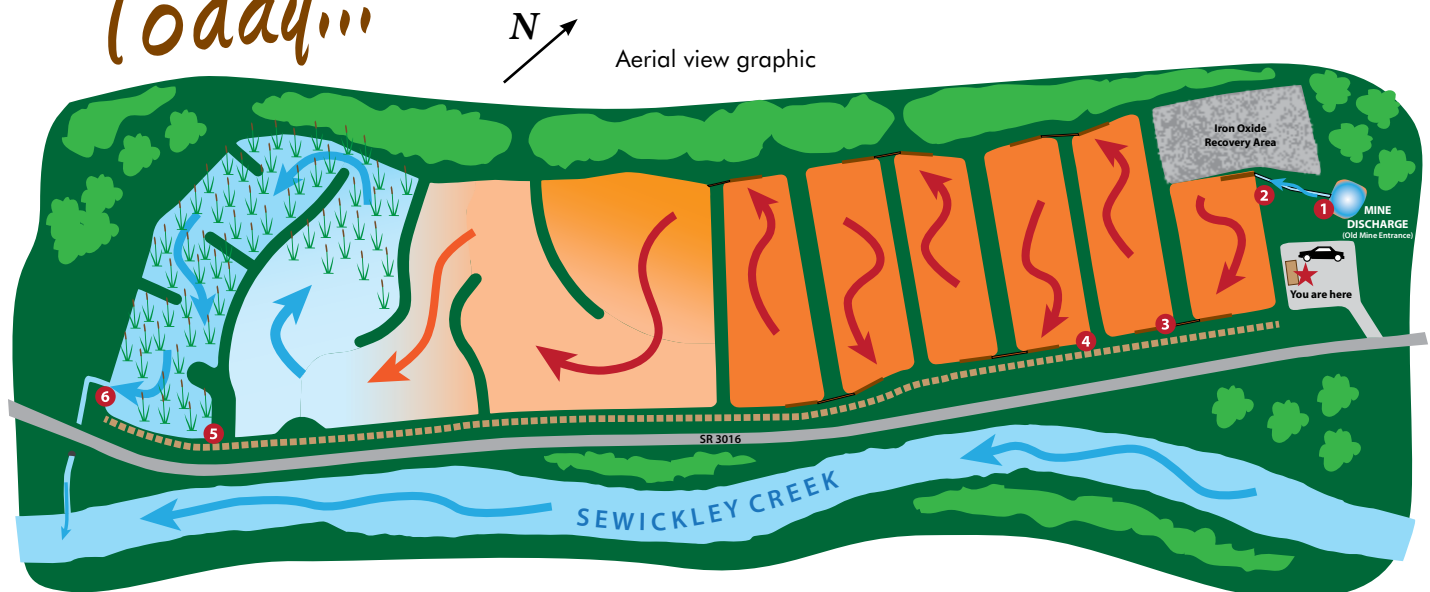
The water is transferred between the ponds in troughs that aerate and distribute the flow across each pond and lessen short circuiting. Most (85%) of the iron is removed in the first six ponds, while the plants in the wetland filter out the rest of the iron particles. The

Yesterday...



During the early twentieth century the Marchand deep mine at Lowber was one of the most productive coal mines in Westmoreland County

Today...



On the same site where the Marchand Mine operated the Lowerber Passive Wetland Treatment System is converting abandoned mine drainage into clean water and a marketable product.