Mine Reclamation Advisory Board
July 2019

Acid Mine Drainage Treatment at BET Associates, IV to Comply with TMDLs
Mining Permit

- Currently BET Associates IV, LLC
- 7,596 acre Mining permit, includes a coal breaker, anthracite surface mining, refuse reprocessing, and coal ash disposal
- Underground mining began in 1793, surface mines since the early 1900’s.
Water History

• Abandoned underground mines form minepools that are interconnected.
• As mines in the valley closed in the 1950’s, the state installed pumps to lower the minepool to keep the remaining mines working.
• 1980 Consent Decree with EPA required Bethlehem Mines to maintain pumps and treat water.
• Pumped discharge to Panther Creek until 2001 when pumps were permanently shut off.
Water History

- Gravity discharge from an abandoned muleway along SR309 since 2001 with flows up to 20,000 gpm discharging to the Little Schuylkill River
- Panther Creek and Little Schuylkill River TMDL data collection began in 2002. Historic Data was not used when pumped to Panther Ck.
- Impairments included iron, aluminum, and manganese.
- All NPDES points on Panther Ck. were dropped in 2005
Permit Revision

• Added 5 NPDES points on Panther Creek
  3 Potential pumped mine drainage
  2 Stormwater

• Stringent water quality limits are necessary to comply with TMDLs on Little Schuylkill River and Panther Creek.

• Compliance with the TMDL based on Cumulative Load of all mine drainage discharges.
Mine Pool Drainage in the Panther Valley
Schuylkill and Carbon Counties

Legend
- Monitoring Point
- Lansford Minepool
- Greenwood Minepool
- Tamaqua/Rahn Minepool
- Little Italy
- Springdale
- Buck Mt. Vein
- Lausanne Tunnel
- Barrier Pillar

Map scale:
0 5,000 10,000 Feet
0 1 2 Miles
BET Associates IV, LLC (Lehigh Coal & Navigation Operation)
Rt. 309 Treatment
Pebble lime and settling
Approx 4.0 acres

Panther Creek
Little Schuylkill River
Treated Discharge
Rt. 309 Discharge
## NPDES Limits

<table>
<thead>
<tr>
<th></th>
<th>Monthly Average</th>
<th>Daily Max.</th>
<th>Instantaneous Max.</th>
<th>Monthly Average Mass Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Fe</strong></td>
<td>1.5 mg/l</td>
<td>3.0 mg/l</td>
<td>4.5 mg/l</td>
<td>180.10 lbs/day</td>
</tr>
<tr>
<td><strong>Total Mn</strong></td>
<td>1.0 mg/l</td>
<td>2.0 mg/l</td>
<td>2.5 mg/l</td>
<td>168.00 lbs/day</td>
</tr>
<tr>
<td><strong>Total Al</strong></td>
<td>0.75 mg/l</td>
<td>0.75 mg/l</td>
<td>0.75 mg/l</td>
<td>90.10 lbs/day</td>
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<tr>
<td><strong>TSS</strong></td>
<td>35.0 mg/l</td>
<td>70.0 mg/l</td>
<td>90.0 mg/l</td>
<td>4,203.4 lbs/day</td>
</tr>
</tbody>
</table>

### Additional Requirements

- **pH** – Within the range of 6.0 to 10.0 at all times.
- **TDS (mg/L)** – Monitor and Report
- **Flow (GPM)** – Measured Daily

Alkalinity must exceed acidity at all time.
Abandoned mines contribute to the minepool
Note: Underground mine prop pockets on the bottomrock

Previous surface mine and reclamation above the exposed coal
RATES

Museum: $3.00
Museum and Mine Tour:
    Adult: $10.00
    Child 5-10 yrs.: $7.00
    Child Under 4 yrs.: Free
Group Rates: (20 or more)
    Adult: $7.50
    Student: $6.50

Tours are every hour from 11 AM - 3 PM.
*For groups of 20 or more please call to make a reservation.*

Appropriate Attire Required

Light jacket or sweater, the mine is 50 degrees year round.

Be sure to visit our unique gift shop which features beautifully hand sculpted coal souvenirs, t-shirts, hats, a variety of books, and more!
Field example of the minepool