



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION



Active and Abandoned Mine Operations

Abandoned Mine Reclamation in Pennsylvania

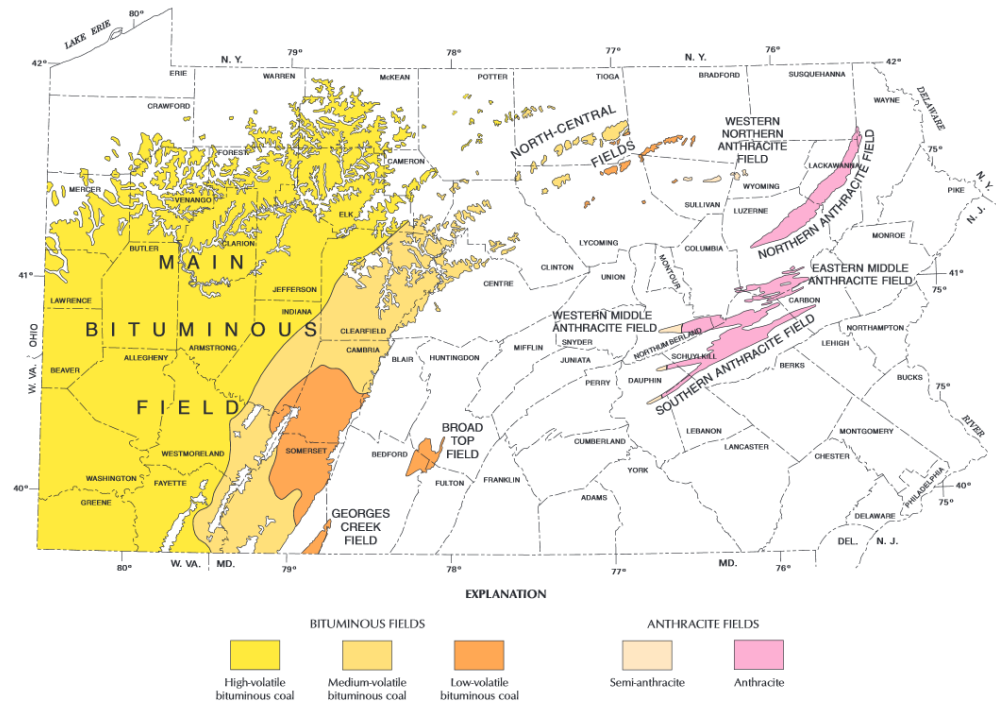
Executive Deputy Secretary John Stefanko
October 2015

Tom Wolf, Governor

John Quigley, Secretary

Coal Distribution in Pennsylvania

- Pennsylvania mines two different types of coal; anthracite in the east and bituminous in the west
- Anthracite is a hard, compact variety of coal that has a high luster
- In 2014, Pennsylvania mined almost 8 billion kilograms of anthracite coal
- Bituminous is a relatively soft coal containing a tarlike substance called bitumen
- In 2014, Pennsylvania mined 53.6 billion kilograms of bituminous coal

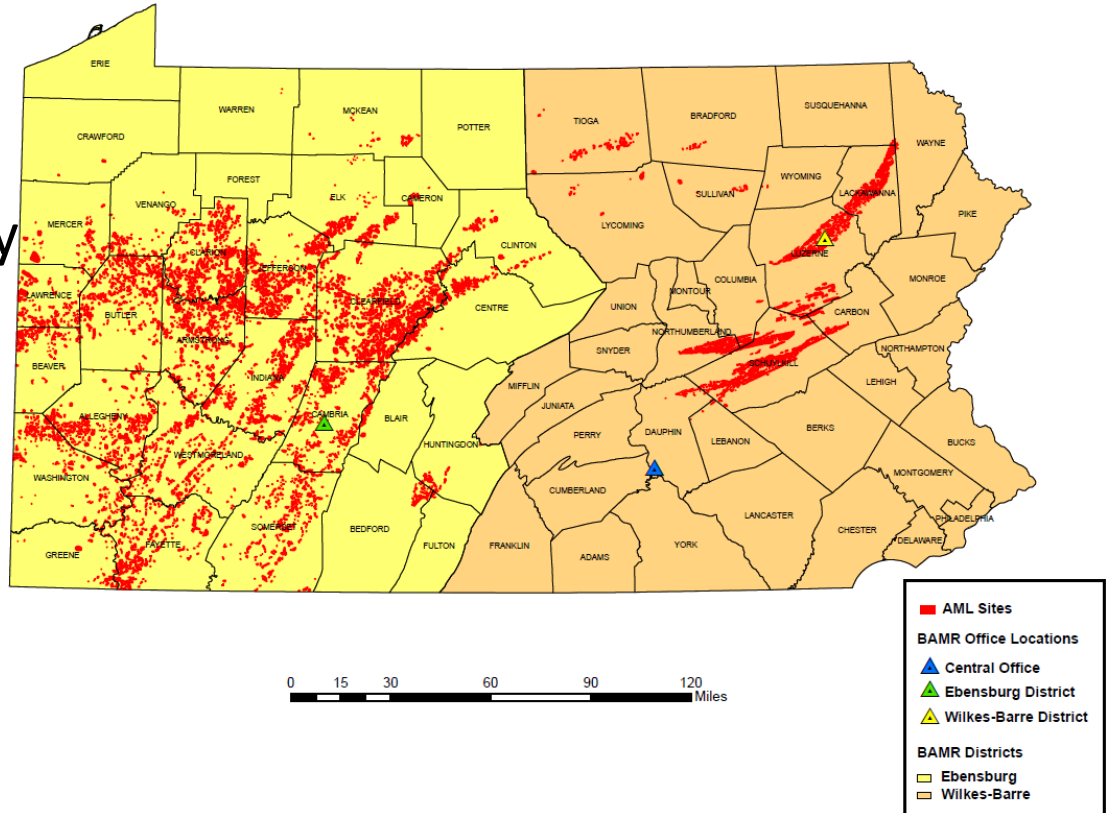


▶ Coal Mining and Environmental Protection

- DEP's mission is to protect Pennsylvania's air, land, and water
- Part of that mission includes efforts to remediate pollution from past (pre-1977) coal mining activities
- In 1977, the U.S. government passed new mining regulations to prevent environmental degradation caused by mining
- At that point, the damage had already been done

Problems Caused by Past Mining

- There are nearly 250,000 acres of land and more than 5,500 stream miles negatively impacted by coal mining in the state
- Some of the problems caused by mining include:
 - Fires
 - Subsidence
 - Highwalls
 - Open shafts and portals
 - Polluted water supplies



Funding and Staffing

- In the U.S., the coal industry is assessed a fee per ton of coal extracted to fund efforts to clean up abandoned coal mine sites
- The proceeds from that fee are distributed to state government agencies, like DEP, to pay for costs associated with remediating abandoned mine sites
- DEP employs about 150 geologists, engineers, biologists, and others to design and execute remediation projects

Reclamation Efforts

- From 2010 to 2014, DEP has completed **951** projects and spent **\$115,164,612** on abandoned mine projects

Year	Projects Completed	USD Spent
2010	124	\$13,405,750
2011	205	\$26,654,252
2012	225	\$15,067,834
2013	177	\$29,031,116
2014	220	\$31,005,660

- Examples
 - Abandoned Mine Lands – Newtown South
 - Mine Subsidence – Houztdale
 - Mine Fire – Simpson
 - Abandoned Mine Drainage – Bennett Branch

Newtown South: History

- This site hadn't been mined for more than 50 years
- The last mining company left behind many hazards
- It was clear that people were accessing the site for recreational use, despite the danger
- This is a rich hunting and fishing area, so the reclamation was poised to make a big impact on local sportsmen

Newtown South: Problems

- 4 hazardous waterbodies
- 3 vertical openings
- 7 strip pits
- 1,200 feet of highwalls



Newtown South: Solutions

- COST: \$680,756
- TIME: 1 year
- Reclaimed 50 acres
- Installed 2 passive treatment systems
- Filled in 7 strip pits and 4 hazardous water bodies
- Planted 1,000's of trees
- Installed wetlands



Houtzdale: History

- This site was last mined by the Berwind White Coal Mining Company in the 1930's
- Since then, the pillars left behind by the coal company have slowly degraded, causing dangerous subsidence to occur beneath people homes, in their yards, and on the public roads
- The mines were anywhere from 20 to 70 feet below the surface; the coal seam itself was only 4 feet thick

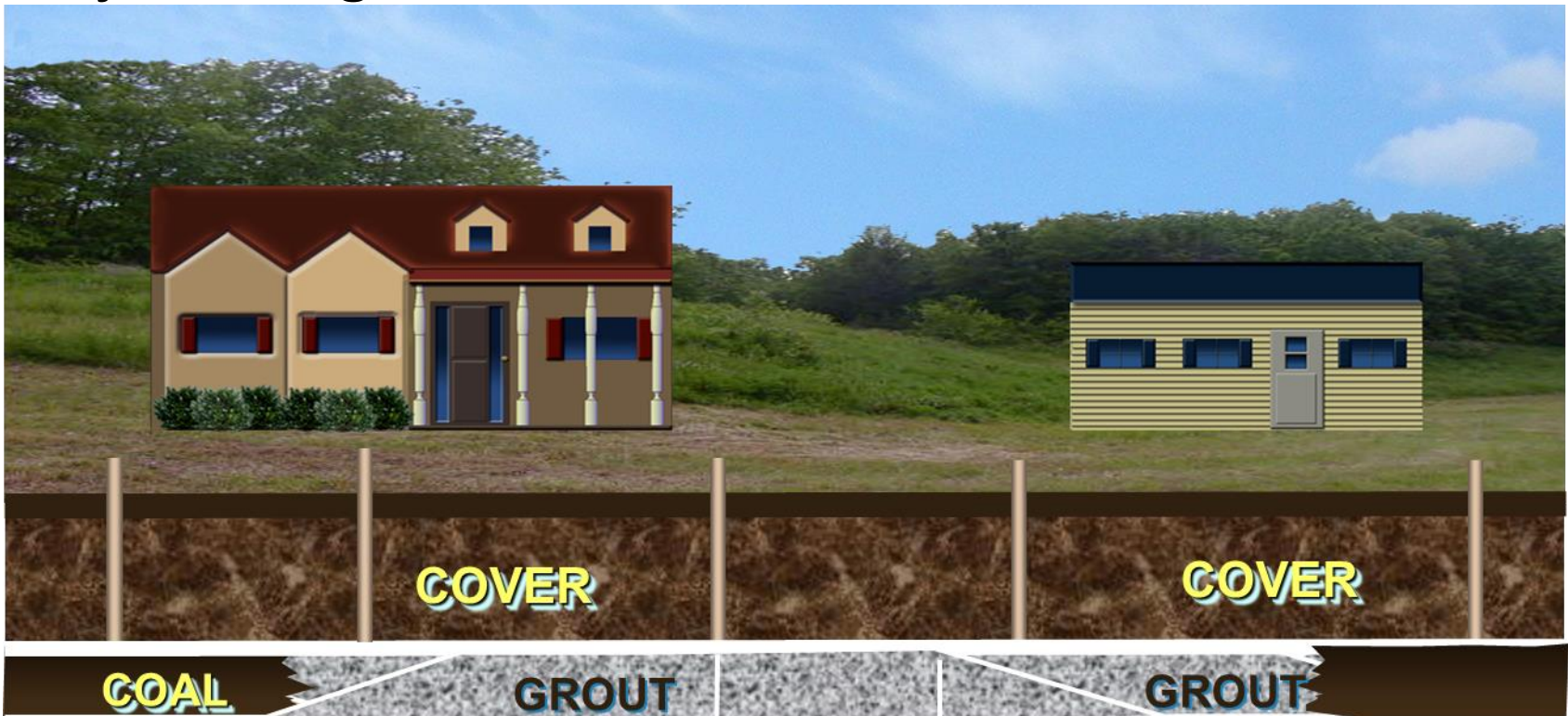
Houtzdale: Problems

- 154 homes were threatened by mine subsidence
- The homes covered an area of 50 acres
- Mine subsidence caused:
 - Cracks in homes and other structures
 - Trenches and sinkholes on yards, sidewalks, and roads



Houtzdale: Solutions

- COST: \$5,614,964
- TIME: 4 years
- Drilled about 722 boreholes
- Injected a grout mixture into the abandoned mine



Simpson: History

- This was a large spoil pile in northeast Pennsylvania
- It was last operated by Northwest Colliery several decades ago
- Despite the safety risks of trespassing on such a site, the pile was frequented by many
- The cause of the fire is not known, although there is some suspicion that it was caused by trespassers
- In general, piles like this are not only at risk for arson, but also spontaneous combustion caused by prolonged exposure to bright rays of sun

Simpson: Problems

- Fire was within a half mile of the nearest home
- Smoke and odors were detected as far as 11 miles away



Simpson: Solutions

- COST: \$2,213,477
- TIME: 4 months
- Dug an isolation trench around the site to prevent spread of the fire
- Established a water supply
- Excavated the site
- Quenched the site
- Re-graded and seeded disturbed area



Bennett Branch

- COST: about \$44,000,000
- TIME: 5 years



Click photo to view video.

Recipe for Success

❖ Embrace Challenge

- There have been many sites with unique complications; be they ownership issues, mineral rights issues, or environmental degradation, among other things
- These challenges can seem insurmountable but they are not
- With a talented staff, ingenuity, and determination, anything is possible
- Many of the aforementioned examples were projects that “couldn’t be done;” that is a conclusion that DEP does not accept, especially when it comes to the health and safety of the public

Recipe for Success

❖ Be Creative

- Creativity has been an integral part of embracing and overcoming challenges
- Many projects have required DEP to develop new treatment technologies, implement new excavation techniques, or engineer custom equipment
- Whatever the challenge may be, meeting it with creativity helps to move the project forward, and can help future projects with similar circumstances

Recipe for Success

❖ Partnership Makes it Possible

- In every project, it's important to consider all the possible stakeholders, whether they're local government, community groups, or industry
- These groups have a vested interest in collective success and engaging them in the process advances the overall goal
- Many of DEP's successful projects would not have been possible had it not been for the support and assistance of others



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Thank you!

Please contact John at jstefanko@pa.gov with any questions.