

# Honoring the 40th Anniversary of SMCRA

## The Office of Surface Mining Reclamation and Enforcement

The Office of Surface Mining Reclamation and Enforcement (OSMRE) is one of nine bureaus within the United States Department of the Interior. OSMRE is responsible for establishing a nationwide program to protect society and the environment from the adverse effects of surface coal mining operations, under which OSMRE is charged with balancing protection of the environment and agricultural productivity and the Nation's need for coal as an essential source of energy.

Media: Photo of active mining

## Creating Coal: Heat, Pressure, and Time

Before there was an OSMRE or a United States, there was coal. Over the course of its geologic history, many parts of the Nation were covered by inland seas and large lakes.

Coastal swamps and plains, much like today's Florida Everglades occupied the shores of these water bodies. Swamp ecosystems produced copious amounts of vegetation which decayed and accumulated forming a substance called peat.

When peat is buried under layers of sediment, it undergoes a process called "coalification". Increased heat and pressure squeeze out water and induce chemical alterations. The resulting material becomes coal, with varying levels of carbon content.

Media: Cascade of the coalification process

- Throughout much of geologic time, a large portion of the US landscape was covered in tropical swamps rich with abundant vegetation.
- Large peat forming swamps existed in the Pennsylvanian, Cretaceous, and Tertiary periods.
- Overtime, this vegetation was buried underneath overlying layers of sediment and debris. After periods of increased deposition, the organic matter was altered into various grades of coal.
- Heat, pressure, and time all play a role in converting organic material into the combustible rock known as coal.
- As a result of this process, coal deposits can be found in a variety of locations all across the United States

## Coal Deposits in the U.S.

There are four major types of coal in the US. Each type of coal is categorized by their carbon content, with anthracite coal having the highest percentage of carbon and lignite coal having the lowest percentage of carbon. The carbon content of coal correlates to how much energy the coal will produce. Therefore, the higher the percentage of carbon, the more energy released when it is burned.

Media: Interactive map of U.S. coal deposits.

- Types of coal are Anthracite (86-97% carbon); Bituminous (45-86% carbon); Subbituminous (35-45% carbon); Lignite (25-35% carbon)

## Historic Coal Mining in the U.S.

Coal has a long history in the United States, dating back to the Hopi Indians in the 14th century who used coal for cooking, heating, and baking pottery. While coal was mined and used on a small scale during the early years of colonization, it wasn't until the Industrial Revolution that coal emerged as a national commodity.

In late 19th century, coal played a vital role in the growth of the Nation's steel industry, and in the years to follow its use would change to fit the needs of a growing American public. With higher resource demand, mining rates and methods of extraction increased across the nation. However, regulation of coal mining was controlled entirely by the states, and often could not keep up with the expanding mining industry.

By the middle of the 20th century, awareness of the environmental and health impacts of coal mining were become more prevalent in communities surrounding mines.

Media: Video of historic coal mining photos

- While people mined coal in the United States for hundreds of years, the coal mining revolution truly began in the late 19th century.
- Early coal miners worked long days in underground mines with limited technology.
- Using dynamite, coal would be blasted from seams and loaded by hand into carts to be transported out of the mine.
- Mules were often used to pull carts in these underground mines.
- Loaded carts would be hauled up to the surface on long tracks.
- Once on the surface, coal would then be moved to processing areas.
- At processing centers, the coal would be sorted to remove unwanted rocks and impurities.
- Finally, coal would be shipped via barge and rail to power America's burgeoning industrial economy.

## Mapping the History of U.S. Coal Mining

More than two centuries of U.S. coal mining has resulted in millions of Americans living less than a mile from an abandoned coal mine. Many communities are built on top of old mines that they may not have known existed. The National Mine Map Repository (NMMR), established by the Federal Coal Mine Health and Safety Act of 1969, was created to maintain an archive of all closed and abandoned mine maps from throughout the U.S. The NMMR became a part of OSMRE in 1982.

Mine maps are a valuable resource for identifying mineral and energy reserves, addressing mining related environmental issues, and in informing citizens of mine locations in the case mine subsidence insurance is necessary. This information is made available in digital format to Federal and state geological surveys, state mining bureaus, industry, researchers, and the public and large.

With over 180,000 digitized maps of closed and abandoned mines dating back to 1792, the NMMR is not only a geographical, but historical, exploration of American mining.

Historic mine maps (by year)

Media: Images of mine maps

- Hancock Mine (1861) – Michigan
- Peavine Copper Mines (1867) – Nevada
- Anthracite Coal Region (1872) – Pennsylvania
- Coal mine (1942) – West Virginia

## Buffalo Creek Disaster

On February 26, 1972, a dam built and operated by Pittston Coal Company in Logan County, WV burst, resulting in a flood that unleashed over 100 million gallons of coal waste water. In 15 minutes, over 125 people living in the valley were killed, 1,100 were injured, and another 4,000 were left homeless.

While numerous efforts had been made to regulate coal mining in the U.S. prior to the Buffalo Creek Disaster, no Federal law was passed until 1977.

Media: Image of Buffalo Creek Disaster

## The Surface Mining Control and Reclamation Act

On August 3, 1977 the Surface Mining Control and Reclamation Act (SMCRA) was signed into law to serve two basic purposes:

- First, to ensure that the Nation's coal mines operate in a manner that protects citizens and the environment during mining operations and to restore the land to beneficial use following mining.
- Second, to implement an Abandoned Mine Land (AML) program to address the hazards and environmental degradation resulting from two centuries of coal mining activities that occurred before the law was passed in 1977.

The law also created OSMRE as part of the Department of the Interior. The law provided OSMRE with the legislative authority to administer and uphold the programs outlined by SMCRA.

Media: Image of President Carter signing the Surface Mining Control and Reclamation Act

- “And it’s with a great deal of pleasure that I, as President of our beautiful country, sign into law the strip mining act, House Resolution 2, which will provide for protection of our country in the future.” – President Carter, August 3, 1977

## Reclaiming Abandoned Mine Lands

Title IV of SMCRA created the Abandoned Mine Reclamation Fund to address the hazards and environmental degradation posed by mining practices before 1977. The Abandoned Mine Land (AML) Reclamation Program tracks and distributes the appropriations of the fund.

Since the passage SMCRA, the AML program has collected over \$10 billion through a reclamation fee assessed on each ton of coal currently produced. Using these funds OSMRE is able to distribute billions in AML grants to states and tribes to cover the cost of reclamation projects.

## Media: Title IV Reclamation

- Examples of how OSMRE and its partners have cleaned up coal mining destruction
- *Teach Watershed Cooperative Agreement Project*
  - *Mid-Centiment Region: Wapello County, Iowa*
  - *The Teach project reclaimed 28 acres of dangerous highwalls, hazardous water bodies, and acidic sediment-clogged stream lands that were created by the unregulated surface coal mining of the 1950's.*
  - *During Fiscal Year 2016, the Pathfinders Resource Conservation and Development organization completed the Teach Watershed Restoration Project in partnership with other organizations. Cooperative assistance for the project was provided from the following; 1) Iowa Division of Soil Conservation and Water Quality, 2) Wapello Soil and Water Conservation District, 3) US Department of Agriculture – Natural Resources Conservation Service and, 4) in-kind Landowner support.*
  - *The final construction contract completed the reclamation for \$402,812.50. For every \$1 that OSMRE contributed through the WCA, the partners put in \$3.*
  - *Priority 1, 2, and 3 water quality concerns such as high sediment loads from uncontrolled runoff and acid mine drainage were damaging the ecosystems of the South Avery Creek, a tributary to the Des Moines River.*
  - *Geomorphic Natural Stream Designs were used in the reclamation of the Teach project. Waterways and creeks were designed and constructed into the reclaimed landscapes that incorporate micro watersheds and natural stream meanders. These features encourage stability and mimic local stream velocities and slopes. The result of these reclamation endeavors was a more natural landscape that blends into the surrounding agricultural pastureland.*
  - *The Teach site was once detrimental to the local environment with its toxic AMD and now, through innovative engineering, hard work, and support by multiple organizations, these hazards have been eliminated. Today the reclaimed site blends in so well with the surrounding landscape, that it is incredibly difficult to tell that an abandoned surface mine ever existed there.*
- Edna Refuse Pile
  - Appalachian Region: Pennsylvania
  - The Edna refuse pile reclamation project took three years to complete and eliminated environmental and safety hazards to the community.
  - Refuse piles can result in sedimentation spilling into nearby waterways, groundwater, and underground mine workings via portals.
  - The run-off often produces acid mine drainage due to the high metal content. Refuse piles are also a fire hazard. They can erode and create steep slopes, which are not safe for recreational use.
  - The Pennsylvania Department of Environmental Protection (PA DEP) regraded 179,000 cubic yards of refuse by covering the main area with soil, capping and seeding it to introduce an area-wide vegetative cover of over 50 acres.
  - After construction was complete, the Edna Refuse Pile was transformed into a gentle sloping area with controlled drainage. Nearby waterways are no longer threatened nor are they producing acid-mine drainage. Trees and vegetation are growing and the public is enjoying the area's natural beauty again.
- Coyote Canyon Coal Fire Mitigation Project
  - Western Region: Coyote Canyon, NM

- The Navajo AML program worked diligently to extinguish a mine fire that had been burning since the 1930s after it discovered the fire was starting to cause subsidence and affecting nearby families, livestock and wildlife.
- A follow up survey was conducted a year after project completion and methane tests confirmed that the fire had not reignited. Safety hazards posed by the fire have been eliminated, and approximately five acres of land have been improved for recreation and as open range.

## Protecting the Environment

OSMRE is the primary regulator of surface coal mining under SMCRA until a State or Indian Tribe demonstrates that it has developed a regulatory program that meets all of the requirements in the law and implementing regulations issued by OSMRE (30 CFR Chapter VII). Most coal-mining States have the primary responsibility to regulate surface coal mining on lands within their jurisdiction, with OSMRE performing an oversight role. When a State or Indian Tribe becomes the primary regulator it assumes responsibility over permitting, inspection, and enforcement activities. OSMRE then provides oversight of the State's or Tribe's implementation of the regulatory program.

Media: Video of satellite video of mining over time

- OSMRE and States work to ensure mines are properly following regulatory standards.
- Here you can see the annual progress of mining and reclamation at one of Wyoming's biggest mines.

## OSMRE in Action: Applying Science and Technology

Developing and transferring knowledge and technology is an integral part of OSMRE's mission. OSMRE is dedicated to providing the most up-to-date tools to Federal and State staff to efficiently and effectively oversee current coal mining practices, and reclamation of abandoned mine lands. OSMRE hosts trainings, workshops, and forums, for key stakeholders across the country to share the newest technological and scientific advances.

### Applied Science

The objective of the OSMRE Applied Science Program is to develop and demonstrate improved technologies to address environmental issues related to the mining of coal and reclamation of the land after mining. Such efforts are needed to better protect identified endangered species, improve reforestation and revegetation, protect prime farmland, improve technologies to mitigate acid mine drainage, improve methods for locating underground mines, and many other issues related to protecting the public and environment associated with surface coal mining.

Use the map on the right to view information about funded and completed applied science projects. Select a point for individual project information. Looking for details on specific projects funded by the Applied Science Program? Check out the OSMRE Applied Science Projects listing to obtain final reports, fact sheets, and additional documentation from the completed projects.

Media: Interactive map of completed applied science project locations

## OSMRE in Action: National Training Programs

OSMRE established the National Technical Training Program (NTTP) in 1985, recognizing the need for an ongoing educational program to increase the technical competence and professionalism of Federal, State, and Tribal personnel that uphold surface mining and reclamation laws.

The Technical Innovation and Professional Services (TIPS) Training Program is a collaborative effort between OSMRE, the States, and Tribes. Every year the TIPS Training Program educates hundreds of students in the use of state-of-the-art scientific and engineering tools. TIPS provides specialized training for off-the shelf applications tailored to mining and reclamation.

Media: Image of students in a classroom

## OSMRE in Action: Serving Communities

OSMRE aims to provide outstanding management of the natural and cultural resources entrusted to us in a manner that is sustainable, equitable, accessible, and inclusive of all populations. OSMRE works closely with communities in coal-impacted areas to address their concerns and needs. OSMRE also provides key resources to citizens who want to learn more about coal mining in their state, engage in the rulemaking process, or work with the bureau on a range of topics.

From volunteer tree planting events to youth engagement programs, OSMRE works in and with communities on a wide range of issues.

Media: Cascade of Youth Events

- The Office of Surface Mining Reclamation and Enforcement (OSMRE) offers various service and learning opportunities for students, recent graduates, and the public at large to get involved and make a difference.
- OSMRE's National Youth Initiatives
  - OSMRE offers various service and learning opportunities for students, recent graduates, and the public at large to get involved and make a difference. Nationally, OSMRE oversees three programs:
    - The Semester Internship Program provides a career exploration opportunity for undergraduate and graduate students and recent graduates. Interns work in OSMRE Headquarters, regional, and field offices and gain professional experience with a Federal regulatory agency.
    - The OSMRE Volunteers in Service to America (VISTA) program places college-educated individuals in a host community for a one year term. The program assists local organizations dedicated to addressing environmental and economic impacts in communities affected by pre-regulatory coal and hardrock mining.
    - The OSMRE/AmeriCorps program, aimed at recent college graduates, has connected participants to direct-service projects in support of OSMRE's mission since 2012. OSMRE/AmeriCorps Members work directly with OSMRE staff and gain professional experience in a Federal agency.
- Appalachian Region Events
  - National Engineer's Week at Carnegie Science Center
    - Every year, OSMRE staff from the Greentree Office participate in National Engineers Week at the Carnegie Science Center in Pittsburgh, PA.

- OSMRE's booth includes discussions, demonstrations, and hands-on experiments. The program encourages young people to consider chemistry, engineering, and science education in their future career planning.
      - This event promotes and highlights Pittsburgh's scientific and engineering community and provides information on careers in the STEM field (Science, Technology, Engineering, and Math).
    - Western PA School for the Deaf - April 2016
      - OSMRE staff from the Green Tree office staff spoke to students at the Western PA School for the Deaf. Students were provided information on SMCRA, coal and careers in STEM.
  - Mid-Continent Region Events
    - Girls in the Middle
      - Each year, OSMRE staff travels west to present at the annual Girls in the Middle event. This event is a hands-on conference for girls in the middle grades (6, 7, and 8) and serves to encourage them to learn more about careers in the science, technology, engine
    - GIS Day 2016
      - Two members of the MCR OSMRE staff participated in the GIS Day 2016 Event at Lindenwood University, in Saint Charles, MO. This event was a celebration of geographic information systems (GIS) technology and unites the geospatial community in both the academic and professional setting in a global movement of collaboration, sharing and education. It brings together GIS users from companies, private industries, universities, government agencies, schools, and non-profits to build a stronger understanding about the world we live in, through the demonstration of real-world applications. ering, and math fields.
  - Western Region Events
    - UpLift Colorado Field Day
      - On April 1, 2015 OSMRE staff helped facilitate a youth outreach activity that involved 25 youth from the Metro Denver area. The activity involved the UpLift program and Synergy program. UpLift is administered within Denver Public Schools while Synergy is run by the University of Colorado School of Medicine. Both programs target youth from disadvantaged backgrounds.
      - The youth spent the day mountain biking through open space and engaging with OSMRE staff about working for the Federal Government and what kinds of opportunities there are for younger generations in government at all levels.
    - Denver Public Schools Career Fair
      - The Denver Public School Career Fair is an opportunity for OSMRE staff to educate students about the bureau mission and STEM career opportunities.
  - We thank our dedicated staff and partners for their involvement at these special events.
  - To find out more about getting involved with OSMRE, visit our website.

## Turning 40

August 3, 2017 marks the 40th Anniversary of the signing of the Surface Mining Control and Reclamation Act.

For 40 years OSMRE staff has worked tirelessly to balance the health and safety of the American people with the production of US energy and protection of the Nation's environment from the adverse effects of surface coal mining.

OSMRE staff will continue to work tirelessly to balance the health and safety of the American people with the production of US energy and protection of the Nation's environment from the adverse effects of surface coal mining.

Media: Infographic of the bill to law

- January 4, 1977: Bill Introduced
  - Representative Morris K Udall (AZ) introduces H.R. 2, the Surface Mining Control and Reclamation Act
- April 29, 1977: The House Votes
  - The Surface Mining Control and Reclamation Act is passed/agreed to by the U.S. House of Representatives
- May 5, 1977: To Committee
  - The Committee on Energy and Natural Resources discharges the bill to the U.S. Senate
- May 20, 1977: The Senate Votes
  - The Surface Mining Control and Reclamation Act is passed/agreed to by the U.S. Senate
- August 3, 1977: Bill to Law
  - President Carter signs the Surface Mining Control and Reclamation Act into law

## Connect with OSMRE

Stay connected with news, events, and activities by visiting the OSMRE website, <https://www.osmre.gov>.

OSMRE on Social Media: YouTube; Twitter <https://twitter.com/OSMRE>; Facebook <https://www.facebook.com/osmre>

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