Regulating Active Coal Mines

SMCRA balances the need to protect the environment from the adverse effects of surface coal mining operations with the Nation's need for coal as an essential energy source. It ensures that coal mining operations are conducted in an environmentally responsible manner and that the land is adequately reclaimed during and following the mining process.

The oversight function that OSM performs consists of a few basic components. These include establishing and aiding in promoting the primacy of state and tribal oversight agencies, oversight of the resulting state or tribal regulatory agencies, on-site inspections of coal mining operations (both independent of state or tribal authorities and in cooperation with those authorities), and finally, if necessary, holding the regulatory authorities and the coal operators accountable if they fall short of the established program requirements during and after mining.

OSM also partners with states and Indian tribes to regulate mining on Federal lands and to support states' regulatory programs with grants and technical assistance.

The examples that follow represent some of OSM's accomplishments in Fiscal Year 2009 in the regulatory arena.

2009 Active Mine Reclamation Award Winners

Each year since 1986, OSM has recognized the efforts of coal mine operators to reclaim their active mine sites to uses to benefit the environment and the public. OSM recognized eight coal mining companies in 2009 for their excellence in active mine reclamation work.

National Award

National Awards are presented to coal mining companies that achieve the most exemplary mining and reclamation in the country. A coal mining operation may be nominated for achievement in a specific aspect of reclamation, or for overall performance in meeting goals of the Surface Mining Law.

Peabody Energy, Black Beauty Coal Company, Viking Mine, Daviess County, Indiana

Viking Mine's Corning Pit offered a reforested area designed to create wildlife habitat, sequester carbon, promote biodiversity and provide for a future timber supply.

Spring Creek Coal, LLC, Spring Creek Mine, Decker, Montana

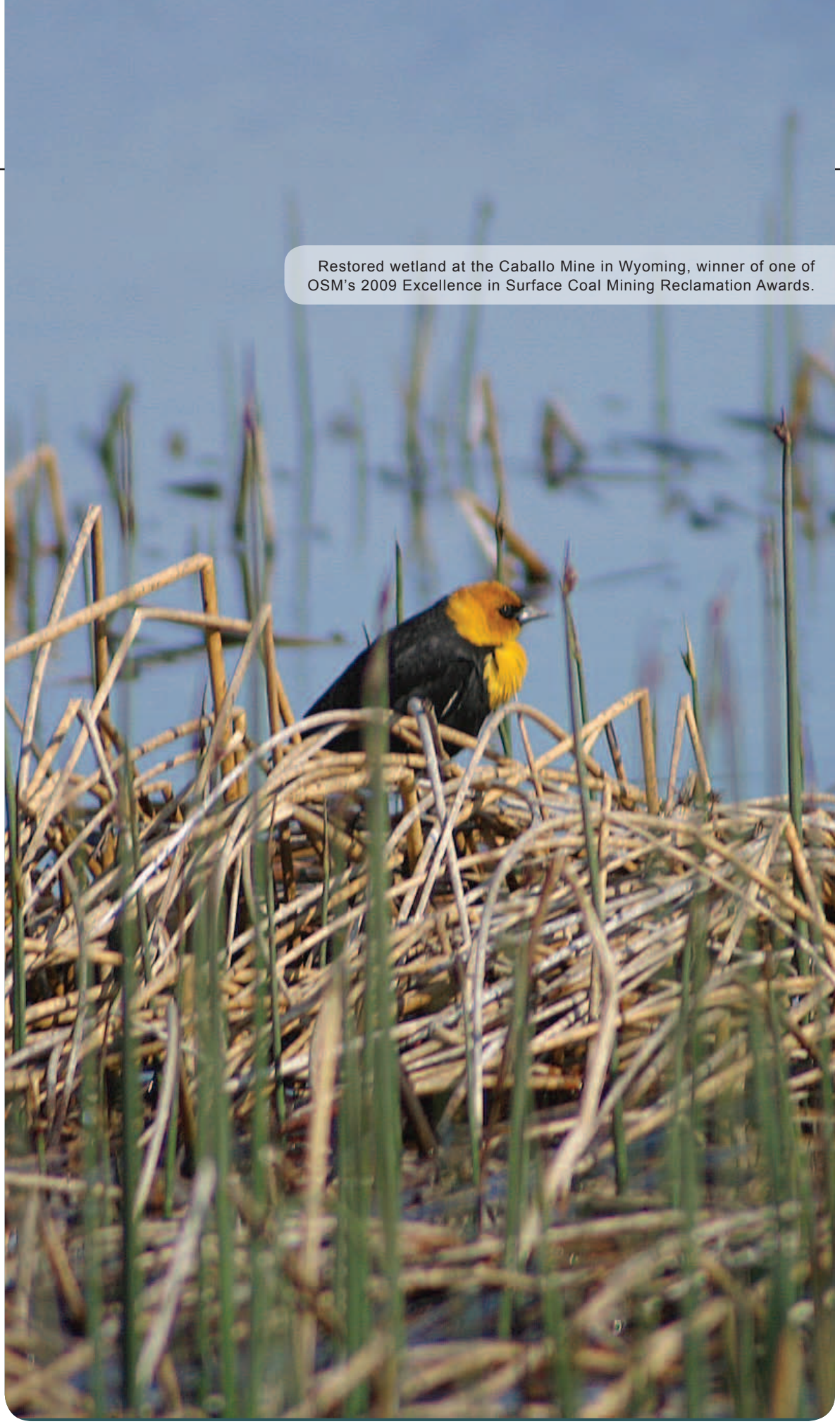
Spring Creek Mine identified a wide diversity of vegetation types in the pre-mine vegetation and soil surveys, then successfully incorporated the same type of diversity into the post-mining landscape.

San Juan Coal Company, La Plata Mine, La Plata, New Mexico

San Juan Coal Company's reclamation efforts used the highest technology regrading method available to control erosion and sedimentation, and to achieve enhancement of wildlife habitat and related environmental resources.

Peabody Energy, Caballo Mine, Campbell County, Wyoming

Caballo Mine's stream channel reclamation and construction of associated pools



Restored wetland at the Caballo Mine in Wyoming, winner of one of OSM's 2009 Excellence in Surface Coal Mining Reclamation Awards.

of the North Tisdale Creek Wetlands Reservoir has effectively re-established riparian vegetation and wetland conditions.

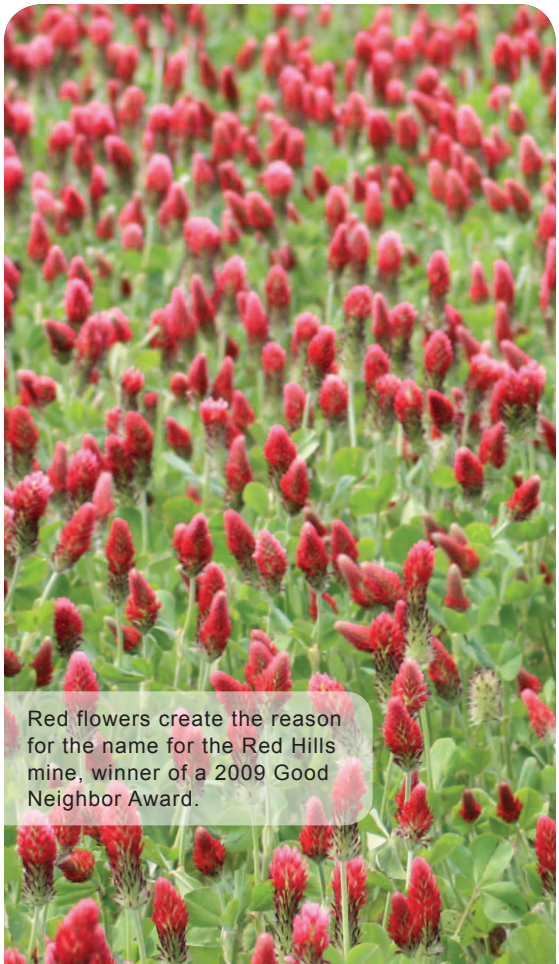
Good Neighbor Award

Good Neighbor Awards are presented to companies for successfully working with surrounding landowners and communities while completing mining and reclamation.

Bronze Award

Coulterville Coal Company, LLC, Gateway Mine, Randolph County, Illinois

Gateway Mine recruited employees from surrounding southern Illinois communities to participate in technical training and education programs for local students, provide mine tours and open houses for the local community and its schools, participated in Arbor Day projects, and donated steel to build a local high school.



Red flowers create the reason for the name for the Red Hills mine, winner of a 2009 Good Neighbor Award.

Silver Award

Patriot Coal Company, LP, Patriot Surface Mine, Henderson County, Kentucky

Patriot Coal assumed the reclamation liability on a permit in western Kentucky left behind by the mine's former owners and reclaimed a 32-acre final pit impoundment, achieved hay productivity, and proposed merging a portion of the area into a local county park system.

Gold Award

North American Coal Corporation, Red Hills Mine, Choctaw County, Mississippi

Red Hills Mine presented hands-on technology training to rural teachers, built a public overlook, gave tours, and provided presentations to help address negative stereotypes associated with surface mining. The mine also employed exemplary reforestation techniques to provide property owners with new stands of loblolly pine trees.

Director's Award

Each year, one coal mining operation in the country is selected to receive the Director's Award for outstanding achievement in a specific area of reclamation. In 2009, the Director's Award recognized the project that advanced the science of reclamation.

Luminant Mining Company was cited for its continuous funding of academic studies of the company's environmental footprint.

Luminant Mining Company, LLC, Fairfield, Texas

The Luminant Mining Company's Environmental Research Program received the Director's Award for its funding of graduate studies of the company's environmental footprint. University graduate students are offered the use of research facilities and living quarters near one of Luminant's power plant and mine facilities. By the end of 2008, Luminant had provided more than $4.6 million in funding, and the program has produced more than 120 completed independent student theses and dissertations. Specific, on-the-ground results include increasing prime farmland soils at Luminant's Big Brown facility from about 5 percent to more than 58 percent.

Topical Studies

In addition to conducting inspections, OSM carries out other oversight responsibilities. One example is the series of scientific studies the bureau carries out to increase both its ability to regulate the industry and enhance environmental protection. These are called topical studies, and they often lead to on-the-ground procedural changes.

Typically, the reviews are conducted by multiple experts, with the cooperation or participation of the State so that any recommendations or improvements are well understood and can be implemented in a reasonable time frame. In addition, the oversight reports do not limit findings to compliance with the program or regulations, but often include suggested discretionary actions that will improve the program. The efforts sometime span multiple years involving not only the identification of a problem but also the offer of technical assistance to the State regulatory authority if the state asks for OSM's help and advice to improve the regulatory program.

Some recent examples of oversight topical studies include:

West Virginia Storm Water Run Off Analysis (SWROA)

A SWROA is a specific analysis that the state of West Virginia added to its program in Fiscal Year 2009 to address concerns about potential excessive water runoff from mining operations during large storms. Under the protocol, a coal mine operator must submit a detailed analysis using hydrologic and hydraulic modeling to predict surface water runoff peak flows from the permitted area before mining, during mining and after reclamation is complete. The mining and reclamation must be planned in such a way that the worst-case peak flow during and after mining does not exceed peak flow for the pre-mining operation.

When OSM conducted its topical study on the proposal, a team of OSM engineers reviewed five permits for both field conditions and the models used to predict the discharges. The team found the SWROA concept and emphasis on storm water management resulted in improved surface mine drainage designs and more timely construction. The SWROA focused on more creative and safer water detention and better valley fill and construction practices. However, the report also noted that the current methods do not guarantee evaluation of the worst-case scenario, and other problems with the modeling were noted. The engineers also suggested the State consider changing its rules to require that the models used in predictions be verified in the field.

The West Virginia Department of Environmental Protection (WVDEP) agreed to work with OSM to provide additional training on modeling parameters for its staff and host a workshop for West Virginia operators. WVDEP and OSM also agreed to monitor violation history on a yearly basis to determine if there are offsite impacts related to excessive peak discharges, which would merit further changes to the SWROA process.

OSM completed several other topical studies in Fiscal Year 2009. They include:

- Flyrock (West Virginia)
- Blackwater Discharges (West Virginia)
- Permitting techniques to prevent post mining discharges (Pennsylvania)
- Fill and pond certification procedures (Virginia)
- Review of durable rock fills (Virginia)
- Offsite impacts related to maintenance of sediment control structures/ditches (Virginia)

Geomorphic Reclamation

A new look is emerging on lands that at one time were coal mines. The change in the landscape is new and different because it appears very similar to the surrounding hills and valleys (photo right).

Before mining began, lands in the Navajo Nation in the Four Corners region were primarily used by wildlife and by livestock such as sheep, goats, cattle, and horses. The people used traditional Navajo herding practices.

By law, coal operators are required to restore their mines to their approximate original contour so that local people can use

the lands after mining and reclamation is completed in a manner similar to that used before mining occurred.

The language used in SMCRA more specifically mandates that an operator restore a mined area to the point where it closely resembles the land before mining. OSM's Approximate Original Contour regulations state that reclamation must create a gently rolling contour with no highwalls remaining. However, while most of the engineering approaches that mining companies have historically employed achieved stable landscapes, many of those projects tend to have an artificial, flat appearance.

The traditional engineered design approach usually creates large areas that look similar to the landscape in a farm field, or a city park, or a construction fill site, often exhibiting long straight lines, and flat, uniformly sized and spaced structures on the landscape.

In the past few years, OSM's Western Region has encouraged mining companies on Indian lands to begin developing and implementing reclamation plans that result in a more natural appearance using a technique called geomorphic design.

Geomorphic design focuses on rebuilding the land in such a way that it more closely resembles the undisturbed landscape before mining. The technique divides the reclaimed landscape into several smaller drainages and sub-watersheds, instead of limiting the reclaimed drains to a few large centralized rock-armored structures common to previous reclamation work.

Incorporating that primary change in drainage design as well as related considerations such as grade and watershed size, allows the creation of a reclaimed setting that significantly enhances long-term landscape stability. The geomorphic model is also relatively maintenance free for the land users, benefits native plant diversity and wildlife species, and is more aesthetically pleasing to the eye because the finished product more readily blends in with the surrounding landscape.

Creating a naturally functioning reclaimed landscape that blends readily with the

adjacent undisturbed area is meaningful to the Navajo people living nearby, and the effort of returning the land to a more natural appearance increases the acceptance of mining projects within the reservation boundaries.

The McKinley North Mine operated by Chevron Mining Inc. is an example of one of the more recent geomorphic reclamation projects OSM has helped develop.

Chevron submitted plans to geomorphically reclaim four mine areas and OSM approved two sites. OSM engineers and hydrologists held several regular meetings to discuss how to go about incorporating geomorphic reclamation into the company's postmining plan while also making sure the company continued to observe and obey the applicable regulatory requirements.

The company then began working in the field to implement the plan.

As a result of the successful creation and construction of the geomorphic design elements, OSM has begun working with BHP Navajo Coal Company at its Navajo Mine on a 42-acre site that also embraces the new approach. The company has already completed final reclamation on one site while continuing work on others, all incorporating the geomorphic reclamation techniques.

It appears the momentum is growing toward such reclamation plans. Late in Fiscal Year 2009, OSM engineers and hydrologists met with Peabody Western Coal Company to discuss using the geomorphic model in reclaiming at the company's Kayenta mine complex in northeastern Arizona. The company indicated it was interested in possibly moving away from the previous reclamation approach.

Irrigation lines in an area being reclaimed using geomorphic reclamation. Water is supplied to native plant species to ensure their survival in the region's semi-arid climate.

In an effort to continue the shift toward geomorphic reclamation, OSM's Western Region has developed draft guidelines to provide mining companies broad direction on the concept, and continues to encourage those companies to adopt the idea as much as possible.

The First Five Years of the Appalachian Regional Reforestation Initiative

Clutching a 10-pound, spear-like, tree planting bar, 19-year-old Berea College student Abigale Embry raised her arms over her head and suddenly thrust the metal tip of the heavy tool into the compacted mine soil at the Dollar Branch abandoned mine site in Harlan County, Kentucky.

"We're planting trees to restore the forest on this mine site and to provide food and habitat for a diverse range of wildlife," said Embry.

Throughout the spring of 2009, hundreds of college students from as far away as Vermont, Kansas, and Florida, came to the old mine site deep in the mountains of Eastern Kentucky to volunteer to plant hardwood tree seedlings under an innovative mined land reforestation initiative called the Appalachian Regional Reforestation Initiative, or ARRI.

"These young people are doing excellent work. It's worth every penny of what we're putting into it," Kentucky Department for Natural Resources Commissioner and ARRI partner Carl Campbell said, as he packed hardwood tree seedlings into tree-planting bags for students from Berea College, Eastern Kentucky University, and the University of the Cumberlands.

The tree-planting effort at the Harlan County abandoned surface mine is just one of dozens of projects conducted by ARRI, which is a cooperative effort among the states within OSM's Appalachian Region and the Office of Surface Mining to encourage restoration of high-quality forests on reclaimed coal mines in the eastern United States.

ARRI's goals are to communicate and encourage mine reforestation practices that: (1) plant more high-value hardwood trees on reclaimed coal mined lands in Appalachia; (2) increase the survival rates and growth rates of planted trees; and, (3) expedite the establishment of forest habitat through natural succession.

Prior to ARRI's creation, most mine sites did not use reforestation techniques to help stabilize the mine soils, clean the air and water, and provide for wood resources, wildlife habitat and jobs. A major focus of ARRI is to address the significant forest fragmentation in Appalachia created over the past 30 years. During the past two spring tree-planting seasons, over 2,500 ARRI volunteers worked to plant 177,500 trees on 22 different former mining sites in six Appalachian states. The volunteers represented a wide spectrum of diverse interests and included representatives from government, industry, conservation, environmental, and faith-based groups, as well as grade school, high school, and college students.

One of ARRI's most active partners is the Appalachian Coal Country Watershed Team (ACCWT), which hosts volunteer tree-planting events on mined land throughout the region. This joint effort strives to improve watersheds through the reforestation of former mine sites previously reclaimed without benefit of using the Forestry Reclamation Approach (FRA). The partnership successfully enhanced

College student at ARRI Arbor Day Tree Planting Event in Kentucky.

reclaimed mine sites through the supplemental planting of native hardwood species to promote healthy forest habitats, an effort that is helping to influence the way reclamation progresses on active mines in the future.

Using the FRA, ARRI's other main focus is to advocate the establishment of healthy productive forests on active or current mining sites.

As of 2009, ARRI had signed agreements with more than 200 diverse groups and nearly 1,000 individuals to help support the mission of reforestation in Appalachia. In just five years since ARRI's start in 2004, the partnerships have planted more than 60 million, high-value hardwood trees on 87,000 acres of newly reclaimed mined land in the Appalachian region.

Another active ARRI partner is The American Chestnut Foundation (TACF).

TACF's main objective is to reestablish the chestnut tree, valued for its wood and as a food source, within its original range in the Appalachian Mountains. The TACF/ARRI partnership allows TACF to use ARRI's reclamation sites for establishing experimental plots, demonstration sites, and as "springboards" for the majestic tree to be established back into the forests of its native range. (For more information on TACF, see entry on page 8).

Eastern Kentucky University professor Tammy Horn is another ARRI advocate.

Horn's vision involves planting nectar-producing trees using the FRA to establish "bee yards," and to capture the honey flows. She sees unreclaimed mine sites as a golden opportunity not only to bring trees and bees to Appalachian mine sites, but jobs as well.

"What we're trying to do is set up long-term economic development," said Horn.

Horn is working in cooperation with the International Coal Group (ICG), a West Virginia mining company, to create a series of bee yards on old mine sites reclaimed with the FRA, and she has placed more than 50 hives on reclaimed Kentucky sites.

The coal company has embraced the idea.

"Actually, it turned out that it was pretty simple for us to make the sites FRA compliant and bee yard ready," said Don Gibson, International Coal's director of Permitting and Regulatory Affairs.

Over time, Horn believes, with the right mix of plant life, even more mountains can provide products and income for her project called the "Coal Country Beeworks." The Beeworks is a collaborative effort among Tennessee beekeepers Elaine and Edwin Holcombe, Kentucky beekeeper Allen Meyers, Horn, and Eastern Kentucky University. It represents a chance for local people to develop marketing skills and incomes from selling products like honey and beeswax.

"We were already planting a variety of grasses and tree species, and ICG is a participant in the Appalachian Regional Reforestation Initiative, so we were already putting a lot of native hardwood species out on the ground," said ICG's Gibson.

The sites cost the company very little, just the price of maintaining the roads to the areas and constructing fences to protect the pollen-carriers.

If the project goes beyond Kentucky, Horn believes it could turn into a major economic driver.

Information on the Coal Country Beeworks is used with permission from West Virginia Public Broadcasting