

20
new watershed
cooperative
agreements.

22
watershed
interns.

Partnerships



An oak seedling appears to be thriving on reclaimed mine land. The Appalachian Regional Reforestation Initiative is a partnership between OSM, states, mining operators and conservation groups to promote planting of trees on mined lands using techniques shown to encourage tree growth.

Partnerships in Action

Working Together to Get a Big Job Done

It was inevitable that the Office of Surface Mining would be an agency firmly rooted in and dependant on the concept of *partnership* to accomplish its assignments.

In drafting the Surface Mining Act, Congress set a mammoth task —repairing the 300-year legacy of destructive mining practices and preventing future damage — then clearly expressed the preference that the job be done not by a large Federal agency but by the States and Tribes with Federal help.

This arrangement requires the Federal Government to rely on the States and Tribes for the on-the-ground effort. The States look to the Federal Government for resources they can't provide themselves, including funding, training and technology transfer.

After a rocky start, that forced interdependency shaped a highly cost-effective program that has steadily increased protection for people and the environment from mining impacts for almost three decades.

Today, through innovative programs that have grown out of experience, the partnership approach has expanded to include industry, local government, communities, citizen's groups, schools and regional and national conservation organizations. Each has

something to contribute and something to learn.

OSM works to be an enabling agent, finding opportunities to bring partners together to solve problems and providing the support and tools they need to get a very big job done.



Students measure tree growth on reclaimed mine land.

Watershed Cooperative Agreements Mobilize Communities

In 1999, the Office of Surface Mining began the Watershed Cooperative Agreement Program (WCAP), part of the Clean Streams Program.

The purpose of the WCAP was to assist local not-for-profit organizations, especially small watershed groups, through cooperative agreements as the funding mechanism for Acid Mine Drainage remediation.

One of the criteria to qualify as a recipient for funding was for the watershed organizations to have other partners contributing either funding or in-kind services.

Since implementation of the WCAP, OSM has awarded 161 cooperative agreements and amendments to existing cooperative agreements totaling \$14,068,665 with 92 projects having been completed. During

FY 2006 20 new watershed cooperative agreements were awarded totaling \$1,556,475 and one amendment to an existing project for \$43,525.

Agreements are normally limited to a maximum of \$100,000 and are used primarily for the construction phase of the projects; however, administrative costs associated with the completion of a project are also allowable.



Volunteers help stock Quemahoning Creek at left. At right a fisherman shows off the result. (Photos courtesy of Len Lickvan)

Life Returns to Damaged Quemahoning Creek

Acid Mine Drainage discharge from coal mining operations conducted between 1909 and 1946 polluted Pennsylvania's Quemahoning Creek and wiped out its aquatic habitat. Due to the disastrous effects of the discharge, a segment of the Creek had not been fished for over a 100 years.

Funds to initiate the Boswell Remediation Project on the Quemahoning Creek were generated through a collaborative effort between OSM, the Pennsylvania Department of Environmental Protection, the Southern Allegheny Conservancy, Somerset County Conservation District, local sportsmen's club, and Reliant Energy. The project involves the treatment of the

discharge to Quemahoning Creek, relocation of threatened plant species, and water quality improvements in the watershed.

The project results are one of the most definitive measures of success for a mine drainage treatment system in the area. Approximately 3,000 trout were successfully stocked in a four mile section of the Quemahoning Creek that is located downstream of the Boswell project site.

In addition to the revitalization of habitat, water quality indicators have improved dramatically to enhance recreational use and to provide a resource for public water supply.



Acting OSM Director Brent Wahluquist checks the growth of newly-planted hard wood seedlings at a West Virginia mine site.



American Chestnut Leaves, Burr and Nut
Drawing by Susan B. Riley
Courtesy of The American Chestnut Foundation

OSM is working in partnership with the American Chestnut Foundation (ACF) and the Appalachian Regional Reforestation Initiative to combine reclamation of mine sites with restoration of the American Chestnut — the tree that was once “king of the eastern forests.”

The agency has also provided a grant to Ohio University to evaluate the most suitable soil preparation methods for reclaimed mine land for planting blight-resistant American chestnut seedlings.

The American Chestnut at one time dominated eastern forests, representing a quarter of the trees from Maine to Florida and west of the Ohio Valley. The nuts were shipped by the boxcar load to large cities where they were famously “roasted on an open fire” by street vendors.

The tree was an economic powerhouse for other reasons. A hardwood, the lumber was a favorite because of its natural resistance to decay and insects. Its beauty and strength made it a favorite for construction and furniture making. Wildlife, including, turkeys, deer and birds feasted on the plentiful nuts.

Despite all its strengths, the American chestnut was no match for a fungus from Asia. From an estimated population of 4 billion in the early 1900s, by the 1950s all that remained were a handful of trees, many deformed to scrub-like appearance. Now, the American Chestnut is just few trees shy of being extinct.

The American Chestnut Foundation has been working for more than 25 years to develop a blight resistant American Chestnut it hopes will restore the tree to its place as monarch of the eastern woodlands.

To accomplish this, the ACF started by crossbreeding American chestnuts to chestnuts from Asia, where the blight originated and where trees have developed a resistance. These hybrids were then bred back to American trees again and again to achieve a 15/16 American Chestnut retaining only the blight resistance of its Asian ancestors. It takes nearly 20 years of continuous crossbreeding just to get a resistant American Chestnut that qualifies to be a “parent.”

Reclaiming the Future

*OSM is Helping the
American Chestnut
Regain its Forest Throne*

“This partnership reflects our belief that reclamation should be more than damage-control. It should aim to improve the environment.”

--Secretary of the Interior Dirk Kempthorne

“Properly reclaimed using sound science, mined land can produce healthy trees with much higher growth rates than un-mined land. Reforestation not only sequesters carbon, promotes biodiversity and restores the economic value of forests, but it also increases water filtration and reduces runoff and flooding.”

Brent Wahlquist
Acting Director, OSM

Once they have parent trees, ACF’s next goal will be to collect thousands of seeds for use in the reforestation effort. But thousands of seeds and seedlings are of little use if the hundreds of acres needed to support them aren’t available.

OSM oversees the reclamation of surface coal mines, many located throughout the American Chestnut’s former kingdom. Coal mines reclaimed under the oversight of OSM and its State partners offer several advantages for large scale chestnut repopulation according to Patrick Angel, an OSM forester.

“These sites are perfectly placed to facilitate a widespread reintroduction of the American Chestnut to this area of the country,” said Angel. “Because the sites are surrounded by millions of acres of forest, the wildlife will spread the American chestnut seeds from these reclamation areas to neighboring forests,” he said.

To boost the tree’s comeback chances, OSM is turning to another of its partners, the Appalachian Regional Reforestation Initiative (ARRI). ARRI brings together academics, foresters, concerned citizens, government agencies and coal industry officials to develop the most successful practices for reforesting reclaimed mines.



“Tree Cookies” tell the story

These cross sections were taken from trees of the same age. The section at lower right shows tree growth under normal soil conditions. At lower left is what happens when soil is packed tight on a reclaimed mine site, inhibiting tree growth. In back is an example of what can happen when soil is loosely compacted according to guideline of the Appalachian Regional Forest Initiative.



“From Little Acorns...”

Students get ready to plant seedlings on mined land at an ARRI Arbor Day event in Kentucky

ARRI merges the findings of leading scientists with the real-world experience of practicing foresters, land owners and coal operators to ensure that the best practices are used in reforesting former surface coal mines.

“Our experiments show that the American Chestnut grows very fast on mine spoil when prepared properly – which might not be the preparation used in the past,” Angel said.

As an example, traditional mine reforestation called for the soil to be heavily compacted and then a heavy bed of grasses to be put down on the site. This was done to prevent water runoff. However, ARRI’s research has found that trees struggle to send down their roots in the overly-hardened ground. While its roots are struggling to grow, the tree is overwhelmed by the thick grasses that are competitors for nutrients.



Instead, ARRI research has found that restricting both the compaction and the grass seeds ultimately ensures that the American chestnut – and many other tree species – are not overwhelmed by competition for resources.

Not pretty

The rough look of loosely packed soil on a reclaimed mine site looks unfinished and undesirable to some, but trees love it.

“Using this approach, trees not only grow faster than using traditional reclamation techniques, but they grow faster than is seen in the natural reforestation process,” said Angel.

“The number of blight-resistant American Chestnut seedlings is extremely limited,” Angel explained. “That makes every seedling critical. We have to give every plant the best possible shot of thriving.”

“This is exciting,” said Angel. “We’ll see the American Chestnut in our forests in our lifetime.”



Tichnell treatment process - Steel slag leach beds are used to increase alkalinity as water passes.

West Virginia

Partnership Aims to Remove Stream from Impaired List

The Tichnell project is an abandoned coal mine that contains toxic spoils and Acid Mine Drainage seeps. The property is located in the Sovem Run watershed of Big Sandy Creek. In an effort to control and reduce pollution entering Sovem Run from this site, a partnership was established between Friends of the Cheat (a local watershed group), OSM, the National Mine Land Reclamation Center and the West Virginia Department of Environmental Protection. The purpose of the Partnership is to acquire funds for the design, construction and implementation of a passive treatment system and to perform project oversight.

It is estimated that the treatment system will reduce acid load by approximately 96%. The system's discharge will be used to neutralize acidity downstream. In addition, the treatment system will reduce metal concentrations drastically.

The ultimate goal of this project will be to get Sovem Run removed from EPA's list of impaired streams.

Ohio

Fish Return to Little Raccoon Creek

Little Raccoon Creek in Ohio is a water body severely impacted by Acid Mine Drainage. The creek is a 36.5 mile long tributary to Raccoon Creek.

Partnership efforts between the State of Ohio, EPA and OSM generated 4.7 million dollars in funding for seven restoration projects. The restoration work consists of combinations of passive treatment systems and land reclamation. Biological sampling performed prior to the initiation of the restorative efforts

indicated little to no biological activity near the mouth of Little Raccoon Creek.

Recent sampling in the same location indicated a substantial increase in biological activity. Sampling results show 123 fish of 16 species. Included in this group are spotted bass, a desirable sport fish.

The combined projects have allowed this once lifeless stream to meet EPA's warm water habitat standards.

Pennsylvania

Cessna Run Project Dedicated

On August 22, 2006, partners and friends gathered to dedicate the Cessna Run AMD treatment project in Pennsylvania.

Cessna Run is a tributary of Little Mahoning Creek heavily impacted by high concentrations of dissolved aluminum from mine drainage. OSM partnerships helped establish a passive treatment system that processes an average of 176 gpm and provides an effluent discharge free of dissolved aluminum. The system has also improved indicators of water quality downstream, where 114 fish including native and stocked *Brook Trout* and *Mottled Sculpin* have been identified.

The Cessna Run Partnering coalition includes: Indiana County Conservation District, Little Mahoning Creek Watershed Association, Ken Sink Chapter of Trout Unlimited, Western Pennsylvania Coalition for Abandoned Mine Reclamation, Pennsylvania Senior Environmental Corp, Penns Corner Conservancy, TJS Mining Company, Pennsylvania Game Commission, Pennsylvania's Growing Greener Program and OSM. This project reflects the positive impacts Partnership outreach programs are having throughout the area.



Dick Pardee, President of the Little Mahoning Creek Watershed Association, releases Eastern Brook Trout into Cessna Run located downstream from the Cessna Run project site.

Partnership begins its first project

Montour Run Watershed dedicated its first AMD passive treatment project in Allegheny County, Pennsylvania. The discharge from the project spoils area is net alkaline, allowing a relatively simple treatment process using wetlands and ponds.

A cooperative partnership was established between the Pennsylvania Department of Environmental Protection, Imperial Land Corporation, Stream Restoration Inc. and local property owners.

Water sampling results indicate approximately 98% reduction in total iron concentration. The project is an essential element for aquatic habitat restoration and water quality improvement. There are other AMD treatment projects underway to help re-establish the Montour Run area of Allegheny County.

Audenreid Treatment Project Can Handle Pennsylvania's Largest Mine Water Load



Audenreid treatment process includes limestone treatment tanks and settling ponds.

partnership was established between EPA, OSM and Pennsylvania DEP to build a passive treatment system to convert this contaminated rural mountain setting into a potential recreational resource.

The treatment system handles the largest load of mine water in the State of Pennsylvania. It consists of three limestone-filled holding tanks and two settling ponds. The dissolved aluminum precipitates in the settling

On June 17, 2006, a treatment project was dedicated at the Audenreid mine drainage tunnel in Pennsylvania.

The Audenreid Mine Drainage Tunnel discharges up to 14,000 gpm to the Catawissa Creek. The discharge accounts for 84% of the total acidity loading in the creek. In addition, a portion of the aquatic habitat was killed by the elevated levels of dissolved aluminum in the water. In order to address this problem, a

ponds. Monitoring points located downstream show improved water quality with reduced levels of dissolved aluminum. Further downstream, monitoring indicates the water has completely assimilated the dissolved aluminum. The treatment method's success can be seen by the increasing population of native Brook Trout in the Catawissa Creek.

Maryland Cleanup Site Doubles as Environmental Education Center

Maryland receives annual funding from the Appalachian Clean Streams Program (ACSP) to use for partnering activities with private and public entities.

The funds generated must be used only for AMD remediation activities. Funding allows for undertakings like the Crellin School AMD project to be completed.



Project site shows school, amphitheater, two AMD treatment ponds, and Snowy Creek. Photo courtesy of MD Bureau of Mines.

Drainage from this site was degrading the water quality in Snowy Creek, Garrett County, Maryland. The partnership, which included students from Crellin Elementary, allowed for the construction of three treatment cells, and the removal and re-grading

activities of abandoned coal refuse. The site is currently used as an environmental education center for 85 students.



OSM/VISTA Danielle Adams teaches community members about Acid Mine Drainage as part of her work with the Friends of the Cheat River.

OSM/VISTA Volunteers Extend the Reach Of Watershed Groups

The Friends of Cheat Watershed Association is a model watershed authority throughout West Virginia and neighboring States. This watershed "think tank" provides educational and work opportunities in the mining industry.

The Office of Surface Mining and AmeriCorps sponsor the OSM/VISTA program, which enables groups like the Friends of Cheat to expand their mission of educational and outreach programs, grant writing, partnerships, and volunteer recruitments.

The program matches OSM/VISTA volunteers with watershed groups. Each participant will work, gain valuable experience and receive a modest living stipend. OSM/VISTA volunteers have contributed to the Friends of Cheat's success by grant writing, project oversight, conducting water quality analysis, software training, creating GIS maps for remediation projects and organizing outreach activities in local areas.

For more information about OSM/VISTA program, please visit www.accwt.org.

Two-stage System Yields Results in West Virginia

The Blaser Refuse and Portals project is located near Tunnelton, Preston County, WV. The project site includes collapsed mine portals, coal refuse, tipples, mine buildings, impounded water, and multiple Acid Mine Drainage (AMD) discharge points. AMD discharge degraded the water quality of the receiving stream, Pringle Run, as well as the Cheat River, located further downstream.

The Abandoned Mine Lands Office constructed a two-stage passive treatment system using *Successive Alkalinity Producing Technology*. The two stage system has successfully provided an effective effluent polishing process that treats the discharge.



Completed Pine Glen East project

Pine Glen East Treatment Shows Results in Just One Season

The Pine Glen East project was constructed to address AMD issues in the Boake Run Watershed in Centre County, PA. Funding of \$819,767 from the Appalachian Clean Streams Program was used to restore water quality and aquatic life to lower portions of Sterling Run and expand habitat for the existing native Brook Trout populations.

Boake Run Watershed was contaminated by high concentrations of metals entering through seeps originating from reclaimed surface mines. The treatment strategy consisted of diverting streamflow through limestone beds and a series of ponds. The technique raised pH and precipitated the metals. The treated waters then re-enter Boake Run with a reduction in both acid load and contaminant concentration. In addition to the improved water quality efforts, 13 acres of disturbed area were planted to benefit wildlife.

After only one summer of operation, the Pennsylvania Fish Commission concluded that native Brook Trout were moving into sections of Sterling Run that had been previously uninhabited due to the pollution.

Iowa

Lake Red Rock Visitors Benefit from Mine Acid Cleanup, Erosion Control

Iowa has initiated partnerships with private and government entities to assist in obtaining funds for clean up of acid mine drainage under the Watershed Cooperative Agreement Program. The State has assisted the Red Rock Environmental Education Fund Resource Conservation and Development in acquiring an OSM Watershed Cooperative Agreement grant in the amount of \$75,000.

The grant money was used to address issues with AMD in the Red Rock Project site. The site consists of 8-acres of eroded acidic spoil material. Reclamation work has eliminated erosion of acidic material. Terraces were established to redirect surface runoff to wetlands. The reclamation project also includes application of a vegetative cover and erosion control. These efforts will continue to provide a more appealing place for visitors of the Lake Red Rock Recreation Area.

Single Source Coal Reporting Selected Finalist for Intergovernmental Awards

The Single Source Coal Reporting project was selected as a finalist for one of the 2006 Intergovernmental Solutions Awards presented by the American Council for Technology at its annual Management of Change Conference.

The system allows the coal mining industry to submit production and safety data requirements on a secure web-based system. The one-time data capture allows both Federal and State Agencies to consolidate multiple agency reporting requirements by sharing information. This system provides increased efficiency in customer service by eliminating redundant transmission and review of data.

OSM partnered with the Mine Safety and Health Administration, Internal Revenue Service and Pennsylvania and Virginia State governments in March 2006 to implement the Single Source Coal Reporting system.

Looking for Innovators

Partnering With Minority Schools

The demand for a skilled mining, environmental, engineering and scientific workforce is growing. With 50% of OSM's workforce eligible for retirement in the next five years, OSM will be competing with other public and private sector employers to recruit and retain the best and brightest of our nation's college graduates in these career fields.

In an effort to develop a supply of qualified individuals for the future, OSM is undertaking an initiative that focuses on activities with minority higher education institutions (MHEIs); specifically, Historically Black Colleges and Universities, Hispanic Serving Institutions and Tribal Colleges and University.

As its core purpose, OSM's Minority Higher Education Initiative will provide a mechanism for minority higher education institutions to participate and benefit from programs related to surface mining and reclamation activities by: providing project funding; providing technical expertise to assist in instruction, research, and project activities; expose students to surface mining and related issues; create mentoring and career opportunities; provide an avenue for OSM to more effectively deliver technical assistance to customers and partners; and develop a more knowledgeable and diverse cadre of potential OSM professionals.

To promote and support minority institutions participation in career fields in the mineral and energy resource industries, minority institutions were encouraged to participate in OSM's 2006 Applied Science Program. To encourage and solicit involvement, OSM staff visited several minority institutions to provide information on the Agency's mission, programs and partnership goals. Some of the schools visited by OSM were: University of New Mexico, Haskell Indian Nations University, Florida A&M, Prairie View A&M, Florida International, Spellman, Morehouse, Clark Atlanta, Central State, Alabama A&M, Tuskegee, Jackson State, Texas A&M Kingsville, Langston and New Mexico Highlands.

As a result of OSM's efforts, Prairie View A&M was awarded project funding to conduct a scientific study entitled "Improved Static Test Prediction of Acid Generation Potential: A surface Analysis Approach." Another solicitation effort will be conducted in 2007. With the new solicitation, OSM will once again encourage participation of minority institutions in the 2007 Applied Science Program.



In January, 2006, OSM volunteers were recognized for their work in relief efforts to help victims of hurricanes that slashed the Gulf Coast in 2005. Shown accepting awards on behalf of OSM volunteers are (from left) Allen S. Kraps, Carol Houston and Sheila Hartless of OSM's Pittsburgh Office, former Secretary of the Interior Gale Norton, Darlene Carter, OSM's Emergency Management Coordinator, Lynn Scarlett, Deputy Secretary of the Interior and Brent Wahlquist, Acting Director of OSM.

OSM Volunteers Aid Hurricane Victims

More than two dozen OSM volunteers worked for at least 30 days in Southeastern Texas as part of the Department of the Interior's response to Hurricanes Katrina and Rita.

OSM's first team of volunteers arrived the Beaumont, TX, area in mid-October of 2005 and began work immediately, ultimately spreading out over 11 Texas counties, working at 13 separate debris-disposal sites and accounting for more than 1 million cubic yards of debris handled by contractors.

The OSM team further enhanced DOI's contribution to the cleanup effort by quickly developing and implementing systems for conducting safety training and handling equipment inventory, purchasing and other administrative functions.

OSM Members of DOI Group 09

Group Leader: Allen S. Kraps, Appalachian Region, Pittsburgh
Deputy: Audrey Parker, Appalachian Region, Pittsburgh
Exec Admin: Paulette Wilson, Headquarters, Washington, DC

Debris Mission Quality Assurance Team members

Carol Houston, Appalachian Region, Pittsburgh *
Sheila Hartless, Appalachian Region,

Pittsburgh *
Rene Sanchez, Denver Finance Center *
Fred Fox, Headquarters, Washington, DC *
Gary Hall, London, KY *
Lafayette Vance, Appalachian Region, Pittsburgh *
Wendi Stephens, Lexington KY
Ned Hagen Bush, Pikeville KY
Victor (Brent) Virts, Big Stone Gap VA
Kale Horton, Mid-Continent Region, Alton IL
Mike Benevides, Western Region, Denver
Mychal Yellowman, Western Region, Denver
Frank Hooper, Appalachian Region, Pittsburgh
Samuel Pugh, Beckley WV
LaChelle Harris, Tulsa OK

OSM Members of DOI Groups 10 and 19

Ian Dye, Big Stone Gap VA
Bennett Stein, Appalachian Region, Pittsburgh
Jeffrey Zingo, Tulsa, OK
Debra Zirkle, Big Stone Gap, VA
Ike Isaacson, Johnstown, PA
Russell Porter, Albuquerque, NM
Dan Trout, Tulsa, OK

Assigned to FEMA in Baton Rouge

Alan Boehms, OSM, Casper, WY

* These volunteers from Group 10 extended their deployment to become members of Group 19/20.