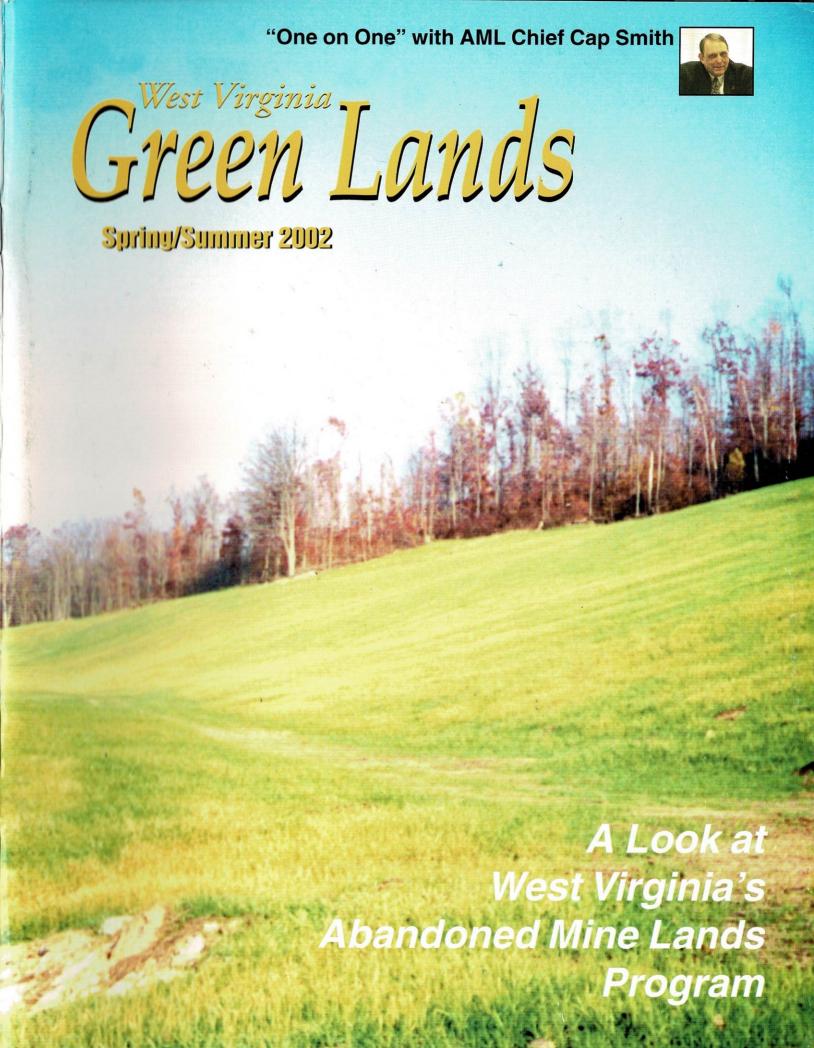
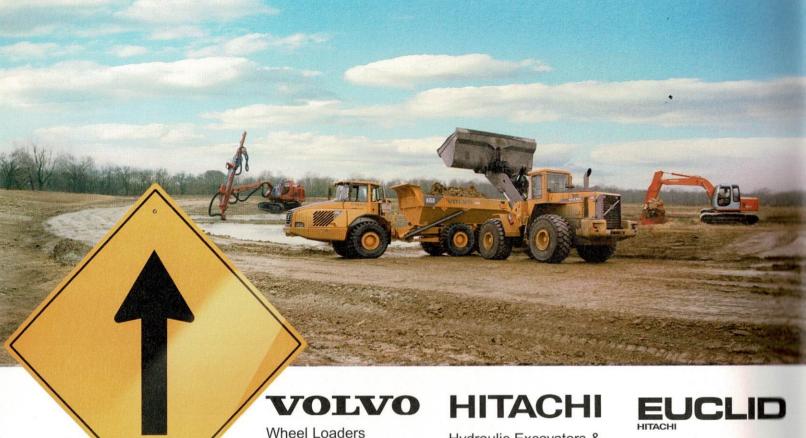
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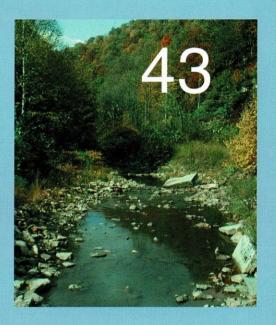
Green Lands is published quarterly by West Virginia Coal Association with offices at NorthGate Business Park, P.O. Box 3923, Charleston, WV 25339 (304) 346-5318, or (304) 342-4153, FAX 346-5310 E-Mail: wvcoal@wvcoal.com, website: www.wvcoal.com

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**Bull Run #35, located in Preston** County, was reclaimed under the Abandoned Mine Lands program, which is funded by the coal industry. Construction was completed during the spring of 2001. See more sites beginning on page 26

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### chairman's comments

Comments by Ken Woodring

### As West Virginia's Coal Industry Faces Significant Challenges, There is Still Reason for Optimism

Coal is a crucial compo-

nent in America's energy

equation, and that can-

not and will not change

over night.

The coal industry has never been a stranger to challenges, and today's business climate is no exception. At present, the nation's economy is struggling to regain its footing, mild winter weather has left utility stockpiles higher than normal, and coal prices along with demand have weakened substantially. Perhaps most daunting of

all, the regulatory climate in which we operate has grown ever more complex and difficult.

Truck safety, bonding capacity and rising insurance rates have jockeyed for our time and attention in recent months. Most recently, Judge Charles Haden issued a ruling that – if allowed to stand – is

likely to have serious long-term repercussions for our industry. In that decision, Judge Haden contradicted the consent decree that he approved in February 2000 by ruling that valley fills constructed during the mining process are illegal in most instances. In keeping with that decision, it appears that he enjoined the U.S. Army Corps of Engineers from issuing new permits for valley fills that do not seek an AOC variance and do not proscribe an equal or better use for the permitted site. The federal government and the Kentucky Coal Association, both of which are parties in the case, have filed motions for a stay of the decision as well as motions requesting clarification from the court as to the scope of the court's order.

The ruling places a new cloud of uncertainty

over West Virginia's coal mining industry and, consequently, over the reliability and security of America's future energy supplies. After all, coal is the fuel source for more than half the nation's electricity, and the very foundation of our nation's electric generating infrastructure. It goes without saying that a disruption in U.S. coal supplies will

have serious adverse consequences for the U.S. economy and our modern way of life. Furthermore, the opponents of coal mining have succeeded in attracting

nents of coal mining have succeeded in attracting national attention to their cause. They are wellfunded and well-organized, and they have used the media and other public

forums skillfully. Now more than ever, it is imperative that we make our voices heard. We must let people know that their portrayal of the coal industry in West Virginia is inaccurate. That contrary to what they might have heard, mountaintop mining is:

**Limited in scope.** Less than 1% of the area of West Virginia has been surface mined or is under permit to be mined in the future, according to the West Virginia DEP.

**Beneficial.** Mountaintop mining creates new opportunities for economic development that would be impossible otherwise. The Mingo County master plan and the projects under way

(See Chairman on page 8)



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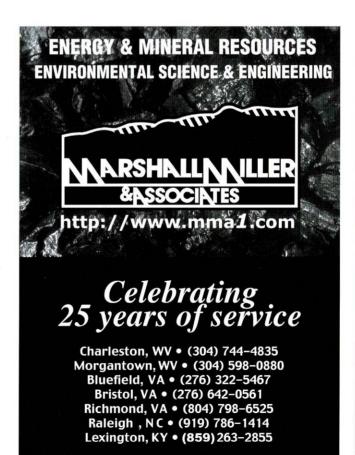
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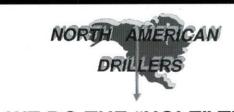
# Chairman from page 5

there provide a powerful model for economic growth and diversity elsewhere in the coalfields.

**Responsible.** Enormous care is taken by the industry to restore the land to a natural and productive state once mining is complete. Evidence substantiates that any environmental harms to the land and water are minimal and short in duration.

The challenges we face are significant – and the stakes are high. However, I do believe there is reason for optimism. Coal is a crucial component in America's energy equation, and that cannot and will not change over night. Acknowledging that fact, the Bush Administration has proposed a national energy strategy that promotes clean coal technologies and new investment in our electric generating infrastructure. Since then, the House and Senate have each passed bills containing procoal provisions. If enacted, such legislation should position West Virginia to be a leading provider of energy to the rest of the nation for decades to

Furthermore, our largest customers – the nation's electric utilities and power producers – have taken the first steps toward developing a new generation of coal-fired power plants. During the past year, utilities have announced plans for more than 60,000 megawatts of new coal-fired



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capacity in 32 states. While the current economic weakness has slowed progress on this front, the prospects for many of these plants look bright.

But there is much work to do, and we must have a sense of urgency about the task at hand. We must become stronger and more vocal advocates for the future of coal mining in West Virginia. We must convince the people of the region and the country as a whole that what we do is important in supporting and maintaining their quality of life, and that it is consistent with high environmental standards. I am confident that if we perform our jobs safely, take steps that safeguard the environment for future generations, and continue to fight the good fight for the future of West Virginia coal, we will be rewarded in the long run.



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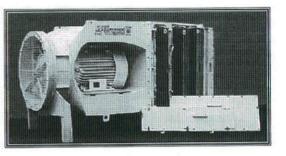
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Three Inducted into the West Virginia Coal Hall of Fame for 2002 Three leaders who helped shape the West Virginia's coal industry were inducted into the West Virginia Coal Hall of Fame

on Friday, May 3rd at the Marriott in Charleston.

Those inducted into the 5th Class of the West Virginia Coal Hall of Fame were James W. "Bill" Anderson, President (retired) Anderson & Anderson Contractors, Inc., Princeton; C. Wes McDonald, Executive Vice President - Operations (retired) CONSOL, Inc., Pittsburgh; and Garold R. Spindler (deceased 1903-1961) Dean, School of Mines, West Virginia University, Morgantown.

"Any person that meets the criteria of making significant contributions to the growth and development in the state's coal industry for at least five years is eligible," said Royce Watts, secretary/treasurer of the West Virginia Coal Mining Institute.

mining operation was done for Crosier Coal and Coke in Elkhorn, W.Va. with his brother, Jack. Later the business expanded to four operations located mainly in McDowell, Wyoming and Raleigh counties.

Anderson was one of the founding members of the West Virginia Mining and Reclamation Association in 1966. He was chairman of the association in 1987-88.



Three leaders who helped shape West Virginia's coal industry were inducted into the Coal Hall of Fame in early May in Charleston. Pictured are (I-r): C. Wes McDonald, James W. "Bill" Anderson, and Joseph W. Leonard III, retired professor of the University of Kentucky representing inductee Garold R. Spindler who is deceased.

Some of Anderson's community achievements include the construction and donation of a baseball field to Concord Bill Anderson's first surface College and six little league fields near Gardner, W.Va. Anderson was also inducted into Princeton High School's "Sports Hall of Fame" in 1999.

> Wes McDonald began his career with CONSOL in December 1965 as a section foreman at the Turkey Gap Mine in the company's Pocahontas Fuels Division. In 1975 he was elected Vice President of the Beckley Operations. He was appointed Senior Vice President

 Engineer Exploration and Environmental Affairs in 1981 and elected executive Vice President – Operations 1985 where he retired in 1999.

During his career, McDonald was actively involved with the mining engineering programs at both the University of Alabama and West Virginia University.

Garold Spindler performed valuable research in the coal industry including methane drainage in the Pittsburgh Coal Seam, which is still used today. His roles as teacher and administrator are the ways he is most

remembered. His unselfish dedication to the success and well-being of each individual student is the hallmark of his career. Several previous Coal Hall of Fame inductees were students under Spindler.

Spindler received a degree in mining engineering in 1933. He worked as a director of the West Virginia School of Mines Extension and the West Virginia Department of Mines becoming director in 1940.

Although Spindler left

WVU in 1946, he later returned and was named Dean in 1951. He was awarded an Honorary Doctorate Degree in 1958.

Some of the criteria for coal leaders to be inducted into the Hall of Fame include:

- Significant contribution to the development and growth of the coal industry in West Virginia as evidenced by documented accomplishments, etc.
- Devotion of a minimum of five years of his/her mining career directly related to the West Virginia

coal industry and major contribution to the growth and development of the West Virginia coal industry.

 Living and deceased persons are eligible for selection.

The West Virginia Coal Mining Institute and the West Virginia Coal Association are sponsors of the event.

The home of the West Virginia Coal Hall of Fame is in the Mineral Resources Building at West Virginia University, Morgantown.

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After spending many years in engineering and management with both the private and public sectors, Cap Smith, chief of Abandoned Mine Lands and Reclamation with the West Virginia Division of Environmental Protection, has taken on the challenge of cleaning up scars of yesteryear.

In April, Green Lands learned about the AML program from Cap . . . .

.... One on One

#### GL: As Chief of AML&R, what do you bring to the office from your background?

SMITH: I have spent many years in the private sector in senior engineering management and almost ten years in public sector senior management. These experiences have instilled the need for professionalism and devotion to duty. I plan to use my considerable experience in helping to move AML forward.

#### GL: What is the mission of the Office of Abandoned Mine Lands and Reclamation?

**SMITH:** Our mission is "to protect public health, safety and property from past coal mining and enhance the environment through reclamation and restoration of land and water resources."

First and foremost we want to protect lives and property from problems caused by past coal mining. We want to prevent kids from entering abandoned open entries and getting lost in extensive abandoned mines. We want to protect homes and property from uncontrolled mine drainage. We want to prevent hunters from falling into abandoned vertical shafts. We want to reclaim refuse piles so that they don't slide into streams and block them. We want to clean up acid mine drainage. This is done by eliminating problems, sealing portals, stabilizing refuse piles, and redirecting drainage.

An amendment to SMCRA allows us to enhance water supplies to communities whose drinking water has been affected by past mining.

The coal industry money through the AML program has provided over 9,000 water hook-ups to families and businesses whose previous water supply has been degraded due to past mining practices. To date, this program has helped about 24,000 West Virginians.

#### GL: How and why did the abandoned mine lands program originate?

**SMITH:** Congress, in reviewing surface mining legislation in the mid – 1970's, found that over 1.5 million acres of land had been directly disturbed by coal mining and over 11,500 miles of streams polluted by sedimentation or acidity from surface or underground mines. In response to

> the problem associated with inadequate reclamation practices. Congress enacted the Surface Mining Control and Reclamation Act of 1977 (SMCRA). A main purpose of SMCRA was to promote the reclamation of mined areas left without adequate reclamation prior to August 3, 1977 and which continue, in their unreclaimed condition, to substantially degrade

the quality of the environment, prevent or damage the beneficial use of land or water resources, or endanger the health or safety of the public. Title IV of SMCRA established the AML Fund to be used for the reclamation and restoration of areas affected by past mining. The Fund is derived from a reclamation fee of 35 cents per ton of clean coal produced by surface coal mining, 15 cents per ton of clean coal produced by underground mining, and 10 cents per ton for lignite coal. The AML Fund is supplied with money from active operators mining coal today.

**GL:** You mentioned that the purpose of the program is elimination of mined areas endangering health or safety of the public. Is there an established priority in the expenditure of the funds received from the AML Reclamation Fee?

**SMITH:** Section 403 of SMCRA states that expenditure of moneys from the fund on lands and water eligible shall reflect the following

priorities:

- 1. the protection of public health, safety, general welfare, and property from extreme danger of adverse effects of coal mining practices;
- 2. the protection of public health, safety, and general welfare from adverse effects of coal mining practices; and
- 3. the restoration of land and water resources and the environment previously degraded by adverse effects of coal mining practices.

#### GL: Does that mean that the AML&R will be more involved in the acid mine drainage problems in the state?

**SMITH:** Yes, it means that the office will protect public health and safety and property from adverse effects of coal mining practices on eligible lands through the reclamation and restoration of land and water resources through cooperation

Not to sound self-serving, but there is much work left to be done to protect the people of West Virginia from the effects of past coal mining. We have accomplished a lot and I am proud of these accomplishments. This is coal industry money spent on coal problems that could, if not reclaimed, cause injury or death or is degrading improved property. We have documented at least 741.3 million dollars of priority one and two sites — health and safety problems that are left to be reclaimed in West Virginia alone. For example, we have sealed 2,211 open entries and we know of 1.787 left to be sealed. We have reclaimed 835 acres and are aware of 340 acres of dangerous slides that still need to be reclaimed. Each year, problems that have existed since before 1977 are found due to complaints from the public.

On January 30th, 2001, U. S. Representative Nick J. Rahall introduced legislation, (H.R. 297)

West Virginia received a Total Grant Award of \$25 million for Fiscal Year 2002. As of September 30th, 2001, the balance in the AML Trust Fund was \$1.49 billion. And, of that amount, West Virginia is eligible to receive just over \$108 million in State Share Funding and \$40 million in Federal Share Funding for a total of \$148 million.

with other public, private, local, state, and federal agencies.

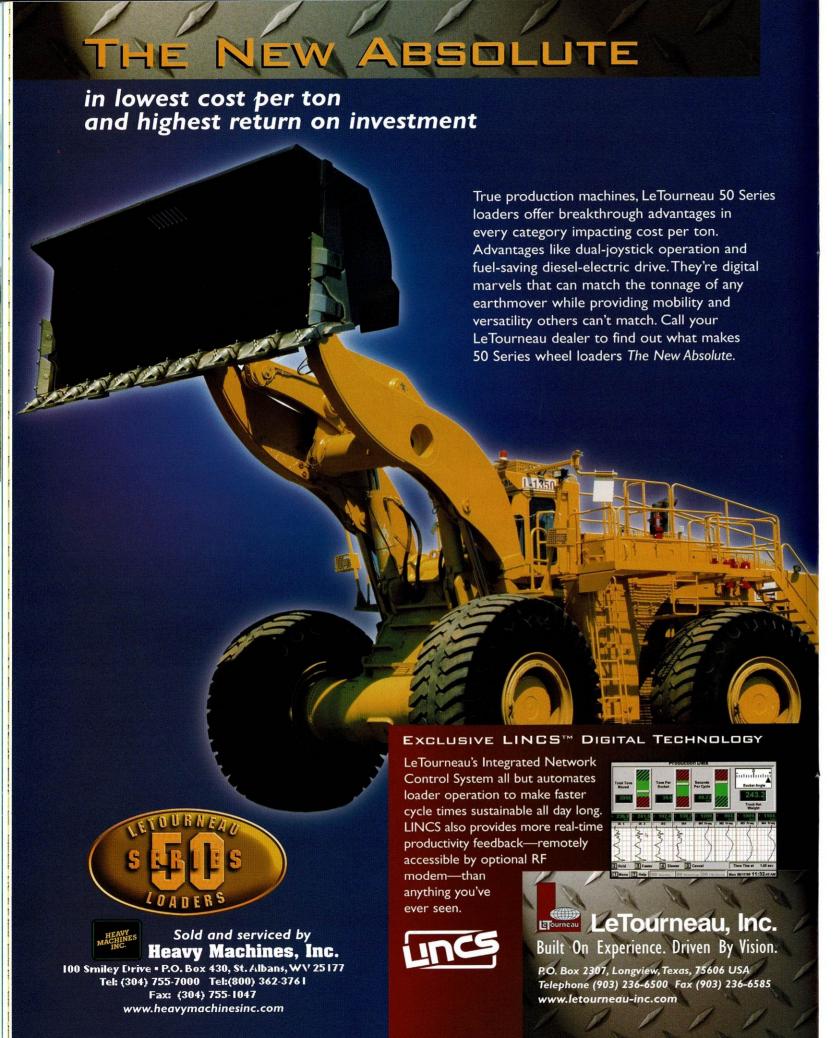
#### **GL:** The AML program was enacted 25 years ago. Will this continue or is there an end to the program?

**SMITH:** Originally, the fee collection was authorized for 15 years after the date of enactment of SMCRA, to August 3, 1992. Subsequent amendments to SMCRA extended the fee until September 30, 2004. In summary, this may be the end of the AML Program.

known as "Abandoned Mine Lands Reclamation Reform Act of 2001" that will extend the authority to collect reclamation fees an additional seven years, from 2004 to 2011.

The major points of that legislation are:

- Increase the historic coal production supplemental grant pool of funds from 40% to 60% of the Secretary's share of the AML Fund.
- Reallocating reclamation fee amounts that have accrued for the Rural Abandoned Mine Program, but have not been appropriated, to the historic coal production supplemental grant



program for states/tribes with priority sites.

- Limiting eligible lands and waters to coal priority 1 and 2 sites prior to certification with exception that allows priority 3 sites to be addresses in conjunction with a priority 1 or 2 project.
- Authorizing the transfer of all accrued interest from the AML Trust Fund to the Combined Benefit Fund.

We, and members of the National Association of Abandoned Mine Land Programs that consists of 26 states and Indian tribes provided comments to Congressman Nick Rahall (D-W.Va.) in the

#### budget?

**SMITH:** For Fiscal Year 2002, which begins October 1st, 2001, Congress appropriated \$203 million to the AML Fund and of that amount, just over \$159 million was distributed to the 26 States and Indian Tribes across the nation.

# GL: How much was allocated to West Virginia for FY2002?

**SMITH:** West Virginia received a Total Grant Award of \$25 million for Fiscal Year 2002. Of that amount, \$21 million was for the AML Program, \$3 million was for the Emergency Program,

We are blessed with many great contractors in this state that can really accomplish fantastic reclamation.

preparation of H. R. 297.

There is another important piece of legislation recently introduced by Congressman Rahall and Congressman Bob Ney (Ohio) (H. R. 3813), which modifies the requirements relating to allocation of interest that accrues to the Abandoned Mine Reclamation Fund known as the "Coal Accountability and Retired Employee Act for the 21st Century." The proposed legislation to transfer all interest credited to the AML Trust Fund to the Combined Fund. As you recall, the Coal Industry Retiree Health Benefit Act of 1992 merged the 1950 and 1974 benefit plans of the United Mine Workers of America in to the "Combined Benefit Fund." Interest payments from the AML Fund are intended to defray costs of providing health care benefits to "unassigned" beneficiaries only. An unassigned beneficiary is one who cannot be assigned to a coal company because the responsible company is no longer in business.

GL: How much money did Congress appropriate to the AML fund nationally for the 2002

and just over \$1 million was for the Appalachian Clean Stream Initiative (ACSI).

# GL: How much have the West Virginia Coal Companies paid into the AML Trust Fund in the past 25 years?

**SMITH:** Through FY2001 State Share Collections total more than \$660 million. However, during the allocation process, only 50 percent or less of this amount is used in each year's grant distribution.

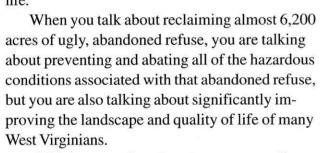
# **GL:** How much has the State received during that same time period?

**SMITH:** West Virginia has received numerous awards since the program began in the form of Cooperative Agreements and various types of grant awards. The total received to date is \$492 million, which includes the FY2002 Award.

GL: How much money is left in the AML Trust Fund and how much of that amount is eligible to be allocated to West Virginia? **SMITH:** As of September 30th, 2001, the balance in the AML Trust Fund was \$1.49 billion. And, of that amount, West Virginia is eligible to receive just over \$108 million in State Share Funding and \$40 million in Federal Share Funding for a total of \$148 million.

# GL: Since this is the Silver Anniversary, what are the notable accomplishments of the state's AML program?

SMITH: A lot of projects come to mind in which we have changed the landscape in a spectacular way. For instance, in Minden we have reclaimed numerous acres of abandoned refuse that has improved the community's outlook. If you wake up in the morning and look at a nicely reclaimed area with a lot of green as opposed to a visually degrading huge abandoned gob pile, it has to improve your entire outlook on life.



I think one project that was an outstanding accomplishment was Bear Run Refuse in Gilmer County. We made many enhancements on the Bear Run Refuse project that now attract wildlife. Here is a table (Table 1) compiled from Abandoned Mine Land Inventory System that indicates our program's accomplishments, and what public health and safety problems still need to be addressed.

#### GL: I hear that the Office of Surface Mining is

planning an award ceremony for active and abandoned mine land programs in the White House Rose Garden on the 25th Anniversary of SMCRA. Is this true?

**SMITH:** The Office of Surface Mining in 1992 initiated an annual Abandoned Mine Land Reclamation Awards Program. The Program recognizes outstanding abandoned mine land reclamation and publicizes exemplary reclamation techniques. There will be three regional awards,

Appalachian, Mid-Continent and Western, and one national award winner.

The process used to select the winners include, judging by those most closely involved with reclamation projects - state and federal reclamation program staff. Each state/tribal AML Program selects its best project within its boundary. The nominations will then be posted on the Internet and using an electronic ballot, a

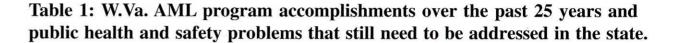
representative from each state/tribal program and Office of Surface Mining Field Office selects the winning reclamation by ranking the nominations.

In addition, the public will select one project they thought was the best and the project receiving the most votes becomes the winner of the "People's Choice Award." OSM, as I understand, is planning an awards ceremony for both the active mining operation and abandoned mine land programs to commemorate the 25th Anniversary of the Surface Mining Control and Reclamation Act of 1977 at the White House Rose Garden on August 3rd.

GL: You mentioned a People's Choice Award.

Does this mean that the general public can
vote to select the award winner?

SMITH: Yes, the public can go the Office of
Surface Mining Web site www.osmre.gov, click



Problem Type Clogged Streams (miles of streams clogged by	<b>Units Unfunded</b>	<b>Units Funded</b>
sediment from waste piles, etc.) (miles)	22.5	47.3
Clogged Streams Lands (acres of land affected by spoil directly contriburing to clogged stream) (acre	es) 166.8	160.3
Dangerous Highwall (linear feet of priority one and two highwalls)	1,401,622	232,190
Dangerous Impoundments (includes above ground and underground impoundments (Count)	607	548
Industrial and Residential Waste (Unauthorized use of AML areas for waste disposal) (acres)	49.5	2
Dangerous Piles or Embankments (Acres)	1203.7	4975.1
Dangerous Slides (Acres)	337.9	497.7
Gases: Hazardous/Explosives (Count)	0	4.3
Hazardous Equipment and Facilities (Priority 1 and 2 abandoned equipment) (Count)	723	587
Portals (Count)	1787	2248
Polluted Water: Agriculture and Industrial (Surface or subsurface waters used for agriculture or industrial purposes polluted by AML (Count)	128	49
Polluted Water: Human Consumption (Surface or subsurface waters used for human consumption polluted by AML) (Count)	2325	9570
Subsidence (Acres)	760.4	287.7
Surface Burning (Acres)	83.9	454.8
Underground Mine Fire (Acres)	1937	19.3
Vertical Openings (Count)	154	137
Source: Abandoned Mine Land Inventory System	1	

on "nomination" and vote on a project that they perceive as the best. This will be the "People's Choice Award."

GL: Did West Virginia submit a nominee for OSM's 2002 awards? If so, tell me about it. SMITH: On March 15, we submitted a project to OSM for consideration for the 2002 awards. That project is "Grass Run Refuse" located three miles west of Weston and one mile north of Interstate 79 in Lewis County. The site consisted of nine water treatment ponds; 30 acres of unvegetated, toxic coal refuse, and more than a half-mile dangerous highwall. Several of these ponds were nearly full of slurry from eroded coal fines and sediment. A few of the ponds had breached, allowing most of their contents to wash downstream. Another problem surrounded this site's production of acid mine drainage. Gradually, the

drainage flowed into Grass Run, eventually in to Stonecoal Creek.

The Grass Run Refuse project not only eliminated the threat of flooding for residents along Grass Run, but also turned damaged water treatment ponds into valuable wetland habitat. Water quality improvement for both residents and wildlife was accomplished along Stonecoal Creek and further downstream in the West Fork River.





The Grass Run Refuse project near Weston in Lewis County was submitted for a national award given by the Office of Surface Mining. The site consisted of nine water treatment ponds; 30 acres of unvegetated, toxic coal refuse, and more than a half-mile highwall. The contractor, Alwood Company, was presented the 2000 West Virginia Wetlands Award for its outstanding reclamation work on the project.

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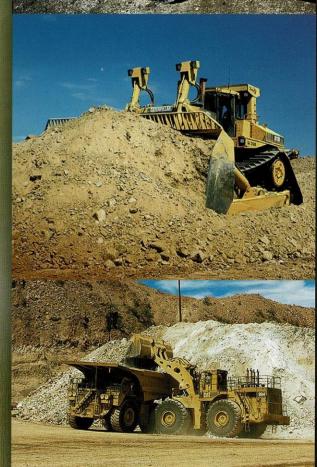


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# Blue Pennant Complex Boone County



Work included excavation, extinguishing, stabilization of burning refuse, constucting mine seals, demolition of abandoned mining-related structures, constructing surface and subsurface drainage channels, and soil-covering.

The project began in June of 2000, and was completed in July, 2001 at a cost of just over \$997,000.

# Bridge Run Refuse Upshur County

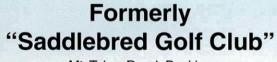
Located just west of Buckhannon, this 20-acre project had uncontrolled run-off and erosion of coal fines from the larger site severely degraded water quality in Bridge Run. Approximately 28,000 cubic yards of coal refuse was excavated, regraded and covered the material with soil; streambank protection; restored several thousand feet of stream channel; and conditioned and revegetated the entire project area. Construction was completed during the summer of 2001.





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# Bull Run #35

Preston County



Located near Masontown, this 18-acre project consisted of numerous collapsed deep mine portals, exposed coal refuse, two partially collapsed wooden tipples with acid mine drainage that degraded water quality in Bull Run as well as the Cheat River. To address these problems, 95,150 cubic yards of spoil material and refuse were excavated, regraded and covered with soil, wet sealed eleven mine portals, as well as provided surface and subsurface water drainage controls. Construction was completed during the spring of 2001.

# Galloway Mine Portals

Harrison County



This four-acre project, about two miles north of Clarksburg, addressed problems including eroding coal refuse, open and collapsed deep mine portals, mine subsidence impounded water and acid mine drainage. A total of 7,700 cubic yards of coal refuse was excavated and regraded, covered with soil and revegetated the entire site. The project was completed in the fall of 2001.



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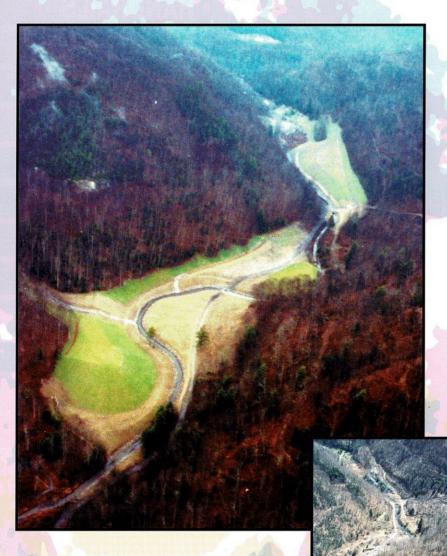
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# Pinnacle Creek Refuse Pile Wyoming County



Located near Crumpler, this project had sedimentation of receiving streams, unstable refuse piles, open mine portals, a landslide, and mine drainage. Abatement work involved regrading and stabilization of the refuse, stream channel improvement, mine seal construction, removal and stabilization of the slide material, and soil covering/revegetation of all disturbance. The project was completed in November of 2000 at a cost of a little more than \$430,000.

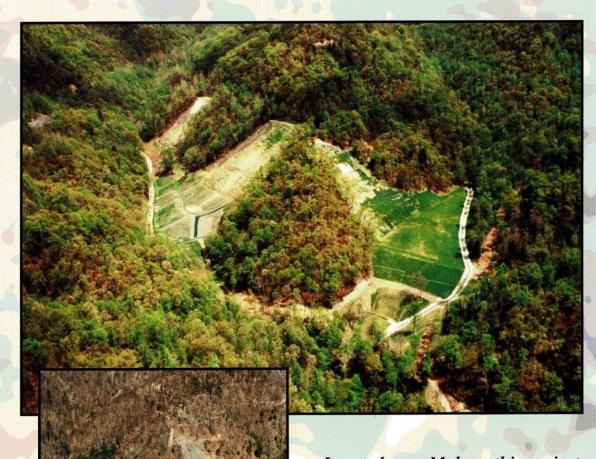
# Sovern Run Preston County



This 30-acre project, located near Kingwood, had water quality problems created by deep mine portals. Acid mine drainage affected Sovern Run, Big Sandy Creek and the Cheat River, further downstream. To correct these problems spoil material and refuse piles were regraded and covered with soil and eight deep mine portals were sealed providing surface and subsurface water drainage controls. Limestone was added into Sovern Run, which helped to improve this stream's water quality. Construction was completed during the fall of 2001.



# Spring Branch Fayette County



Located near Mahan, this project included sedimentation of Paint Creek, a high quality stream visible to travelers on the West Virginia Turnpike. Abatement work included construction of drainage channels and revegetation. The work was completed in May of 2001 at a cost of just over \$1 million.

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# Arch Coal Commits \$50,000 to WVU Reforestation Study

Arch's Samples Mine, WVU's National Mine Land Reclamation Center break ground in first-of-its-kind research in West Virginia

Continuing its efforts to advance the science of land reclamation, Arch Coal announced on May 24th that its Samples mine has entered into a long-term research fellowship with West Virginia University's National Mine Land Reclamation Center (NMLRC).

Arch's Samples Mine, one of the largest surface coal mines in the eastern U.S., presented \$50,000 to establish a first-of-its-kind graduate fellowship at the NMLRC for the support of research leading to improved practices in the conversion of surface mine lands to forests.

"We're pleased WVU is working on this ground-breaking reforestation research with us," said Peter Lawson, president and general manager of Arch's Catenary Coal subsidiary and Samples mine. "As an industry leader in reclamation, Arch intends to share our findings with regulatory agencies and other coal companies to improve future reclamation efforts in Appalachia."

Researchers will conduct the study at Samples Mine, located primarily in Kanawha County, W.Va. The study includes 14 experimental plots, approximately one acre each. The experiment will test the growth potential of two types of subsoil and three types of topsoil. Nearly 21,000 seedlings of red, white, black and pin oak, white ash, Norway spruce, sugar maple, black walnut and white pine are required for the study.

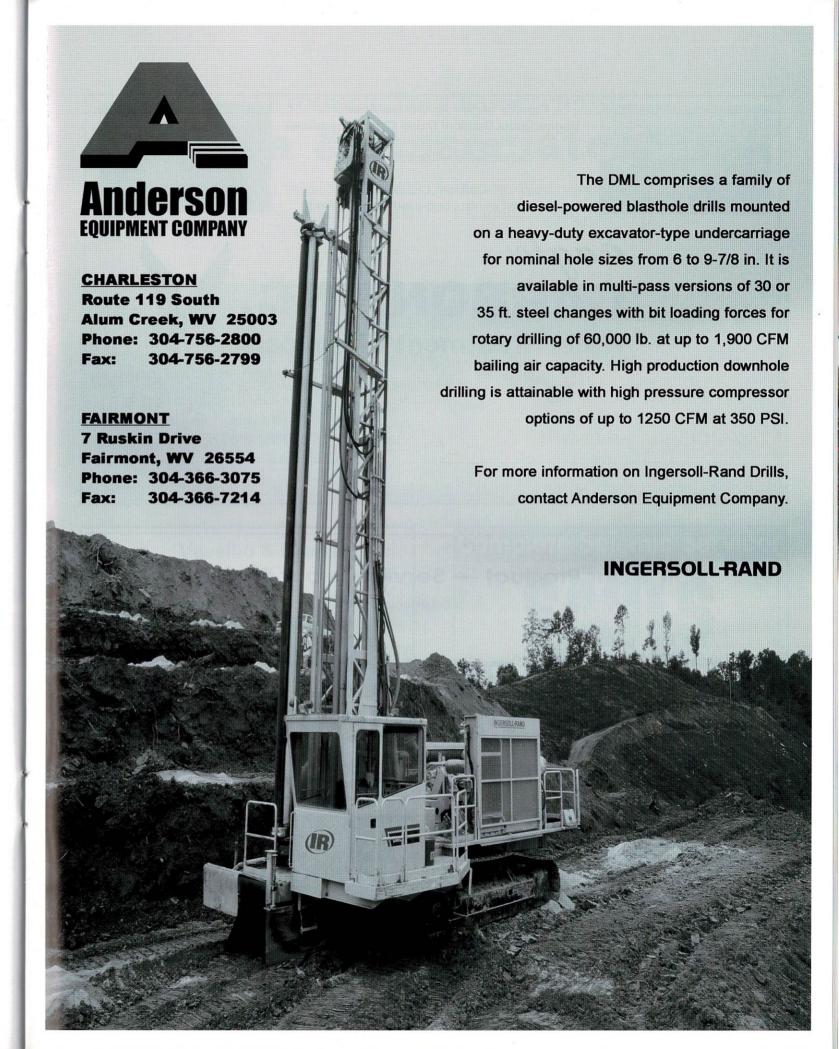
"The take-away from the research fellowship is the identification of the best combination of topsoil and subsoil for the promotion of hardwood growth," says Dr. Paul Ziemkiewicz, director of NMLRC. "This study of native hardwoods and soil handling will measure real-life variables and see what works and what doesn't work. These experimental designs will yield rigorous, yet easyto-interpret, scientific results that will end the speculation."

#### About Arch Coal, Inc.

Arch Coal is the nation's second largest coal producer. Nearly 2,000 people are employed at Arch's operations in West Virginia. As one of the largest surface coal mining operations in the eastern U.S., Samples mine produced roughly 6.1 million tons of low-sulfur, high-quality coal in 2001. Arch Coal is listed on the New York Stock Exchange (NYSE: ACI) and maintains its corporate headquarters in St. Louis, Mo. More information is available at <a href="https://www.archcoal.com">www.archcoal.com</a>.

# **About National Mine Land Reclamation Center**

In 1988, Congress recognized the need for an organization to specifically address reclamation challenges and authorized the formation of the National Mine Land Reclamation Center (NMLRC). The NMLRC functions within West Virginia University as a program development agency, an administrative unit and a research unit. The Center is funded through grants and contracts with private, state and federal agencies. The Center concentrates on project progress and completion, which bridges the traditional academic method of project conduct and the results oriented world of the private and public sectors. More information is available at wwwri.nrcce.wvu.edu/centerNMLRC.htm.





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- 21st International Conference on 6-8 **Ground Control in Mining.** Lakeview Scantion Resort and Conference Center, Morgantown, WV. Contact Karen Centofanti (304) 293-7680, ext. 3304, website: www.cemr.wvu.edu/~wwwmine.
- 19 8th Annual Everett Thompson Memorial Scholarship Golf Outing, Twisted Gun Golf Course, Wharncliffe, WV, Mingo County.
- 26 **Coal Foundation Golf Outing,** Twisted Gun Golf Course, Wharncliffe, WV, Mingo County. Contact Sandi Davison (304) 346-5318.

### October

- Coal Foundation Golf Outing, Pete Dye Golf Course, Bridgeport, WV. Contact Sandi Davison (304) 346-5318.
- 17 **Everett Thompson Memorial** Scholarship October Golf Outing, Twisted Gun Golf Course, Wharncliffe, WV, Mingo County. Contact Wayne Hawley (304) 664-4051 for registration forms.
- 17 **Tug Valley Mining Institute** Monthly Meeting, Twisted Gun Golf Club. Meeting to be held directly after golf tournament. Contact Wayne Hawley, (304) 664-4051. (TVMI meets on the third Thursday of the month.)
- 24-26 WVCA Fall Board Meeting, Lakeview Scantion Resort and Conference Center, Morgantown, WV. Contact Sandi Davison (304) 346-5318.

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# **Changes in Assigned Effluent Limits Under TMDL and Anti-degradation**

### Jeff Skousen West Virginia University

In the last Green Lands, I gave a brief history and description of the Clean Water Act and the National Pollutant Discharge Elimination System (NPDES). I also explained that each state is given authority to assign streams and rivers into water use categories, which include categories such as public water supply, warmwater and coldwater fisheries, recreational and industrial waters. Each state then must establish numeric criteria or narrative statements for each of these water use categories to protect the water quality and to ensure that of pollutant in the stream from that source. the stream or river can support the uses in that category. Entities that discharge water into these receiving streams and rivers must receive an NPDES permit. The NPDES permit for each discharge outlet then sets effluent limits at concentrations of pollutant that will protect the uses of the water body. Even with the NPDES program, which regulates the amounts of pollutant that can be discharged from point sources, there is still pollution from non-point source discharges and from other unregulated point discharges.

Some streams and rivers meet the water quality standards set for them based on their designated water use category, while others do not meet the water quality standards.

The Clean Water Act requires each state to develop a list of impaired streams, rivers, and lakes, which do not meet the water qual-

ity standards necessary for their designated category. Such impaired waters are placed on the 303(d) list and are targeted as waters that must be given Total Maximum Daily Loads (TMDL). The TMDL is a pollution reduction plan, which allocates amounts of pollutants that may be discharged from a point or nonpoint discharge source to reduce the total amount of pollutant in the stream. Therefore, entities holding NPDES permits may be given lower effluent limits to reduce the total amount

Other pollution-contributing sources within the watershed (such as non-point discharges from abandoned mine lands or farming / logging operations) may be reclaimed or managed so that their pollution load is diminished or eliminated. In a TMDL allocation, both point and nonpoint sources are evaluated for their impact on the receiving stream and both are assigned pollution loads that may be allowed.

Anti-degradation is another program that allows states to evaluate the discharge of pollutants into streams and rivers. Discharges into streams currently meeting water quality standards will be reviewed for Anti-degradation effluent limits. Under Anti-degradation, activities causing a discharge of pollutants into a water body must be evaluated to determine if the discharge will significantly degrade the stream from its current good water quality level. Streams

are placed into one of four "tiers" of protection. Each tier has specific criteria for protection. For example, streams protected under Tier 3 receive very strict reviews. Water in these Tier 3 streams cannot be degraded and very careful scrutiny will be done on activities in these watersheds that discharge into the stream. Streams receiving Tiers 1, 2 and 2.5 designations will not be so restrictive in discharge effluent limits, but activities causing discharges into these streams will still be carefully reviewed.

NPDES point discharges into impaired streams (those streams not meeting the water quality standards for their water use category) will not undergo Anti-degradation review, but instead will be targeted for TMDL pollution reductions as will non-point discharges in the watershed. It should be noted, however, that new discharges into impaired streams will be reviewed under Tier 1 Anti-degradation protection, and this will entail setting the numeric criteria for a pollutant, establishing a waste load allocation, then calculating the effluent limits.

Very few NPDES permits have been issued with the new TMDL and Anti-degradation effluent limits. Much discussion and negotiation has occurred among WVDEP permit writers, EPA, and operators wanting NPDES permits under these new guidelines. Here are two examples of effluent limits being assigned under these new Clean Water Act programs.

#### Case Study #1 (TMDL)

A TMDL pollution reduction plan was calculated for an impaired watershed in the central part of West Virginia. Surface and deep mining had been ongoing for several decades before surface mining operations began in the late 1970s on this site. A creek, which had been impaired by previous mining activities, fed into a large river, which was also impaired. The creek was largely impaired as a result of the

early mining, but also due to a lesser extent from a slurry impoundment on the site and from drainage from the recent surface mining activities. Two acid mine drainage treatment facilities were constructed on the property and the original NPDES discharge permits were given technology-based effluent limits.

As a result of a lawsuit and settlement agreement, the technology-based effluent limits for this surface mining operation were changed to water quality-based effluent limits. The discharge water under this permit must have a pH between 6 and 9, an average monthly iron concentration of 1 mg/L or less, and average monthly manganese concentration of 1 mg/L or less, and an average monthly aluminum concentration of 1.3 mg/L or less.

Since this creek and river are impaired, the watershed was targeted for TMDL development. The EPA uses a water quality model called WARMF, which stands for Watershed Analysis Risk Management Framework. Information about the water quality and quantity from various point and non-point sources, as well as the in-stream water quality and quantity from various flow situations (baseline and precipitation events) were input to the model. Based on calculations within the model, a load of pollutants was determined for the stream and then the TMDL plan allocated the amount of pollutants coming from point and non-point discharges within the watershed. Once the loads of pollutant coming from the various sources were allocated and evaluated, a plan for reducing the amounts of pollutants was developed. Therefore, a reduced load from each source was assessed and these loads were then converted into a concentration limit for the various pollutants at effluent points.

For this particular site, the TMDL pollution reduction plan decreased the discharge limits for two outlets (point sources) for two pollutants that the stream was not in compliance with.

above amounts (in the water quality-based NPDES permit) were decreased to an average monthly iron concentration of 0.47 mg/L or less, an average monthly aluminum concentration of 0.58 mg/L or less, while the manganese concentration was left the same.

#### Case Study #2 (Anti-degradation)

A surface mine operator in northern West Virginia has been surface mining for several years in a northern West Virginia watershed, which is drained by a stream designated as a warmwater fishery. Originally at NPDES permit issuance, the operator received technologybased effluent limits, thereby allowing discharge water to have a pH between 6 and 9, an average monthly iron concentration of 3 mg/L or less, and an average monthly manganese concentration of 2 mg/L or less. The water from this site discharged into a good quality stream that meets water quality standards for its designated use (warmwater fishery).

The WV Department of Natural Resources recently re-categorized this stream from a warmwater fishery to a coldwater fishery. This re-designation of the stream prompted a review of the NPDES permit. The operator also desired to expand the mining activity and, under **Summary** the new Anti-degradation policy (since this stream meets water quality standards for its new category and is not impaired), the NPDES permit for this site was changed from the technology-based limits to more strict water qualitybased effluent limits (Anti-degradation limits). The discharge water now must have a pH of 6 to 9, an average monthly iron concentration of 0.29 mg/L or less (daily maximum concentration of 0.51 mg/L), an average monthly manganese concentration of 0.15 mg/L or less, and an average monthly aluminum concentration of 0.58 mg/L. The reason for this change in efflu-

Concentrations of iron and aluminum from the ent limits was to protect the stream from being degraded from its current condition. This stream as a coldwater fishery was reviewed under the Tier 2.5 guidelines.

> The current condition of the stream was determined from the operator's monitoring stations upstream of the surface mining operation. Ideally, the baseline condition and water quality of the stream would have been determined before any disturbance activity had been developed on the stream. But this was not possible, since monitoring had not been done prior to the previous surface mine's operation.

The Anti-degradation effluent limits were determined by calculating the amount of pollutant (a load) in the stream currently above the operation, which was based on a set of flow conditions from the disturbed acreage and the concentrations of iron and manganese in the water. The average value was used to establish the baseline for the stream. Next, 10% of the assimilative capacity was determined. Then the values were plugged into the Mass Balance Equation to calculate the waste load. From the waste load number, the effluent limits were determined, both monthly averages and daily maximums.

The NPDES program is undergoing changes in the way that effluent limits are being assigned for point source outlets into streams and rivers. I have presented two examples of NPDES effluent limits (originally assigned by technology-based criteria) being changed to lower effluent limits based on TMDL criteria and Anti-degradation criteria. I have not gone into detail about TMDL modeling nor into the baseline water quality assessments necessary to make these calculations, but I have tried to give the pertinent facts for each example. In both cases, effluent concentration limits were

lowered. While all the details and information costs in meeting these limits, and much disconcerning these two case studies were not cussion and appeal will occur as future provided, these examples provide a framework for the kinds of decisions that are being made for developing new effluent limits. It is Acknowledgment anticipated that operators with these more stringent effluent limits will have increased

NPDES permits are applied for and issued.

The author appreciates the help and suggestions of Ron Hamric, Tiff Hilton, Louis McDonald, and Ken Politan.



Acid mine drainage from an abandoned mine land site is flowing untreated into Muddy Creek, a tributary of the Cheat River in northern West Virginia. Non-point discharges like this do not receive NPDES permits. Muddy Creek is an impaired stream, so this non-point discharge along with other non-point and point discharges in the watershed will be targeted for TMDL reductions.

Point discharges must receive an NPDES permit under the Clean Water Act and effluent limits are assigned based on the receiving stream. At each outlet, a sign must be posted that designates the permit number and other information.



This stream is categorized as a coldwater fishery. During low flow periods like fall in West Virginia, discharges into these streams can have an impact on the quality of the stream. For this reason, streams meeting their water quality standards for their designated use will be protected under Anti-degradation, and this stream would likely fall under Tier 2.5 protection.





This point discharge of acid mine drainage is not permitted under the NPDES program because it comes from an abandoned deep mine. The stream that this water flows into is impaired due to this site and other similar sites. TMDL reductions will soon be assigned to the discharges in this watershed.

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