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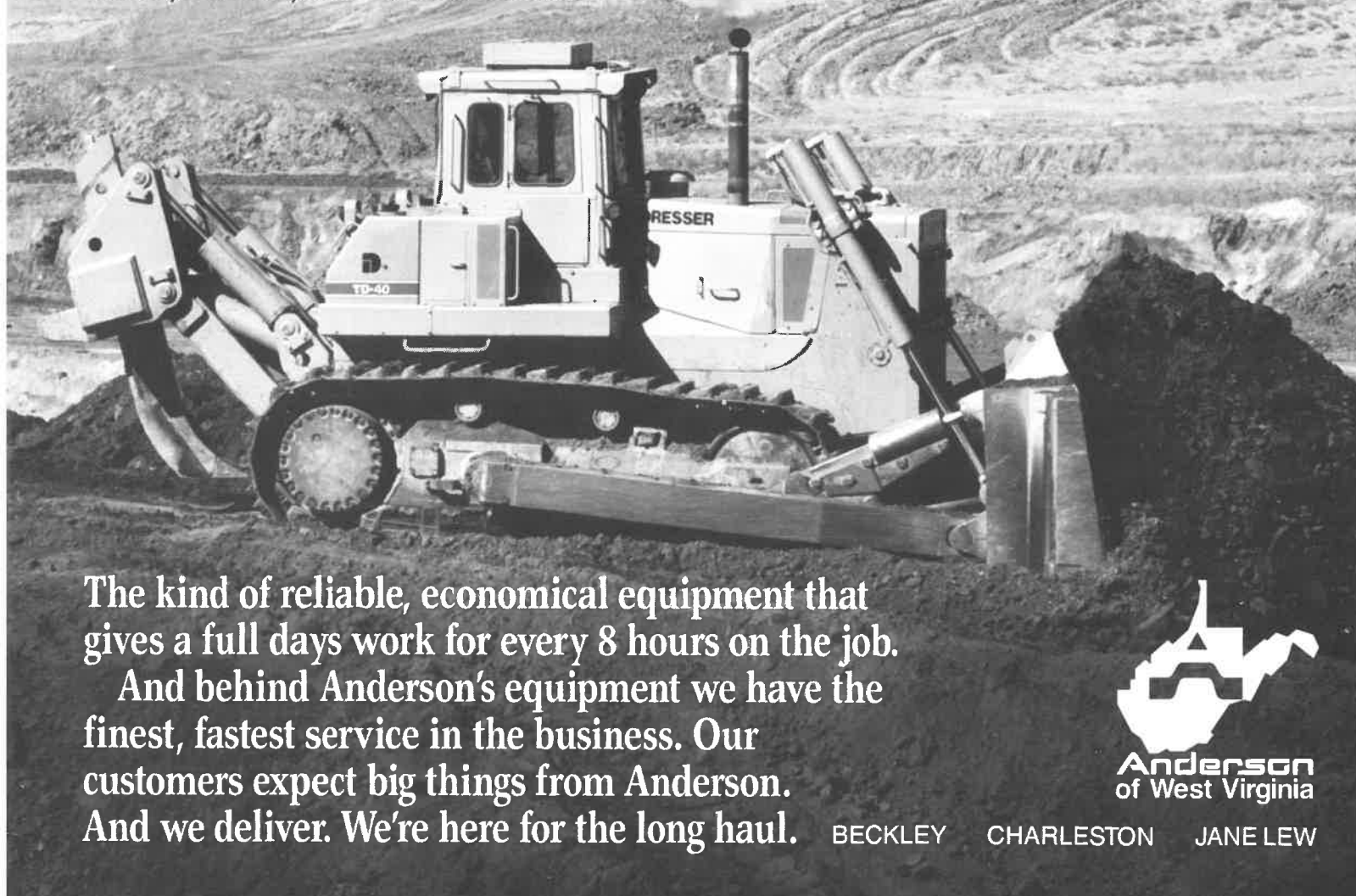
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Green Lands
is a quarterly publication of the
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(304) 346-5318.



Cover - Buffalo Coal Co. may be
the first mining company in the nation to
provide cemetery space for the surrounding community.
For more on the pioneering works of this outstanding
company, see the cover story,
beginning on page 10.

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1990 Mining & Reclamation Conference

Second Call for Papers and Posters

The 7th Annual Meeting of the American Society for Surface Mining & Reclamation will be held April 23-26, 1990, at the Civic Center in Charleston, West Virginia. This meeting will also incorporate the 1990 West Virginia Surface Mine Drainage Task Force Symposium.

Reclamation Technology and Regulation: Achieving a Balance

Two sessions will discuss the implementation of new technology and practices on mine sites, and resulting changes in policy and regulation. Concurrent sessions will also address other important issues in mining and reclamation, and include general session topics such as:

Acid Mine Drainage	Wetlands
Abandoned Mine Land Research	Reclamation for Wildlife
Minesoil Productivity	Forest Reestablishment
Overburden Analytical Research	Revegetation
Reclamation, Citizens, and the Media	Reclamation Policy
Reclamation and Economic Development	Ecology of Mine Lands

We invite you to submit a title and 300-500 word abstract, describing your proposed paper or poster. If you wish to present a paper not covered by the topics listed above, contact Jeff Skousen at West Virginia University (304) 293-6256, by August 1.

We will observe these firm dates:

Titles and abstracts due	August 1, 1989
Notification of authors	August 15, 1989
Manuscripts due	November 1, 1989
Manuscripts returned for revision	December 22, 1989
Camera ready manuscripts due	February 1, 1990

Editorial

Things Can Only Get Better

The first half of 1989 has not been kind to the West Virginia coal industry. And that's putting it mildly. Last year, West Virginia coal enjoyed it's best production year since 1968. Published reports have put 1989 ahead of last year's pace. That's the extent of the good news, because the next report won't be nearly so rosy.

Beginning in southwestern Virginia, and rapidly spreading through West Virginia, Kentucky, and other parts of the eastern coalfields, the illegal wildcat strike staged by the United Mine Workers has crippled production.

UMW officials, abetted by the media, have maintained the sham that the strike is a spontaneous thing, not called for by the Union. This is done in the hope of avoiding legal sanctions, in that the miners are striking in violation of their contract. Ironically, they are hurting the same companies which signed the industry contract in good faith, some of them before the old contract expired. Logic fails to explain this graphic infidelity.

In West Virginia's capitol, the Department of Energy is showing signs of capitulating to the outrageous demands of a "citizens' suit." The plaintiffs were recruited by a Washington lawyer who has made a career out of suing the government and collecting fat fees in out-of-court settlements.

The Commonwealth of Kentucky underwent the same process less than two years ago, and West Virginia is simply the next job down the line.

WV-DoE is legislatively charged with the dual responsibility of regulating and promoting the state's coal industry. So says its commissioner. If an agreement is signed handing over any part of its regulatory responsibility to private interests, and uses taxpayer funds to do it, then it is grossly violating both ends of its mission.

In Washington, D.C., the State's congressional delegation spent the first part of the year speaking of the inevitability of "acid rain" legislation, and stressing the need for West Virginia to accept the fact and to participate in the process.

In recent weeks this eminently reasonable position has been drop kicked into next year by President George Bush's plan to push for an accelerated timetable for sulfur emission reductions. The proposal hits hardest at the mid-western states, with no provision for national cost sharing.

While the President's plan will face stiff opposition in Congress, it is clear that the balance of power currently rests with those who really don't give a damn what happens to the coal industry.

Put all this together and you have a coal industry assaulted on all fronts. Things can only get better.

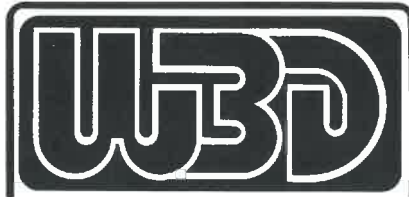
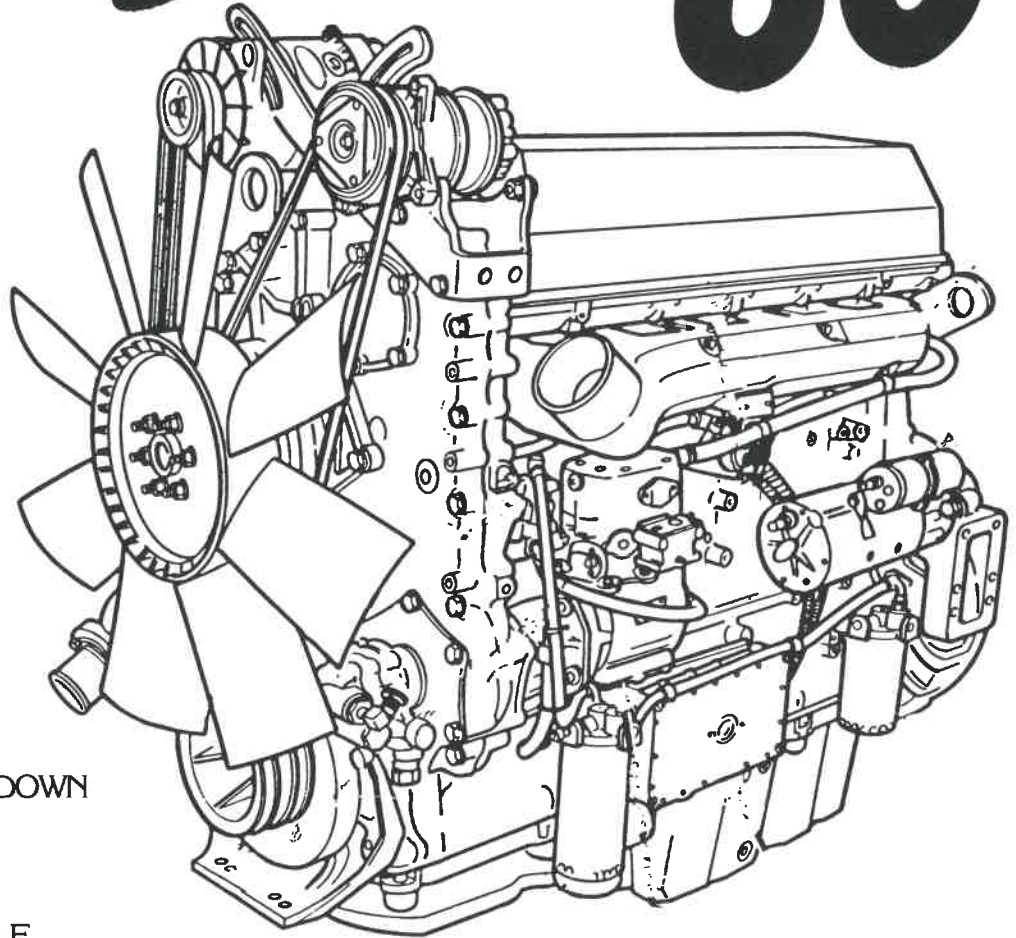


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A birdseye view of the entire area shows the existing cemetery at lower right, the expansion acreage near the center, and Buffalo's active operation at the upper left.

Buffalo Coal -- a Company of the Community

Buffalo Coal Company has always had a positive influence on the Tucker and Grant County communities where it operates.

You couldn't necessarily tell that just by passing through, but the boost to the local economy which Buffalo provides is undeniable. And the company's outstanding reclamation record makes landowners anxious to have Buffalo people mining their acreage.

Sometimes the company's presence is more visible, as in the case of the Davis town cemetery. As so often happens in many older communities, the town cemetery simply ran out of room. The cemetery happened to be located just across the county road from a Buffalo mining site. Cemetery officials approached the landowners about the possibility of expanding its boundaries into the mine site.

The decision was left up to Buffalo. After all it was the mining company which would have to make the necessary reclamation adjustments.

Happily, Buffalo was amenable. And thus occurred what is thought to be the first example of a cemetery located on a reclaimed mine.

Mining on the site was completed in 1983. Burials began on the property the following year. When the site is fully developed the acreage of the original cemetery will just about double.

"We had to be extra careful with our topsoil placement, considering the post mining land use," says Buffalo Vice President Steve Shaffer. "But we were glad to go to the extra trouble, because it was such a worthy cause."

Worthy causes are a byproduct of Buffalo's reclamation program.

"We often find ourselves in a position to help the communities around here," says Shaffer. "When we can, we are happy to help. After all, this is where we live, and if we can better the community, we're bettering ourselves as well."

Another case in point is the (town of Thomas) Knights of Columbus ballpark just off Route 32.

"That was a combination re-mining and special reclamation job," recalls Shaffer. "Before we went in there, the State Highway Department used it to store road materials. We knew it would eventually be turned into a ballfield, so we graded it that way with topsoil, and used a special seed mix designed for playing fields."

Buffalo has made other contributions to local recreation. The company is constructing a major wetland on another site near Davis.

"We disturbed about 30 acres of existing wetland," says Shaffer, "so we are putting that back, plus a little more." Why more?

"Well, just because we had the opportunity to do it that way. It will be good for wildlife, and good for the environment in general."

That's Buffalo Coal's standard operating procedure, and it's a story that needs to be told more often.



New gravesites began appearing on the property in 1984, and now the expanded acreage of the cemetery is starting to blend in with the old.

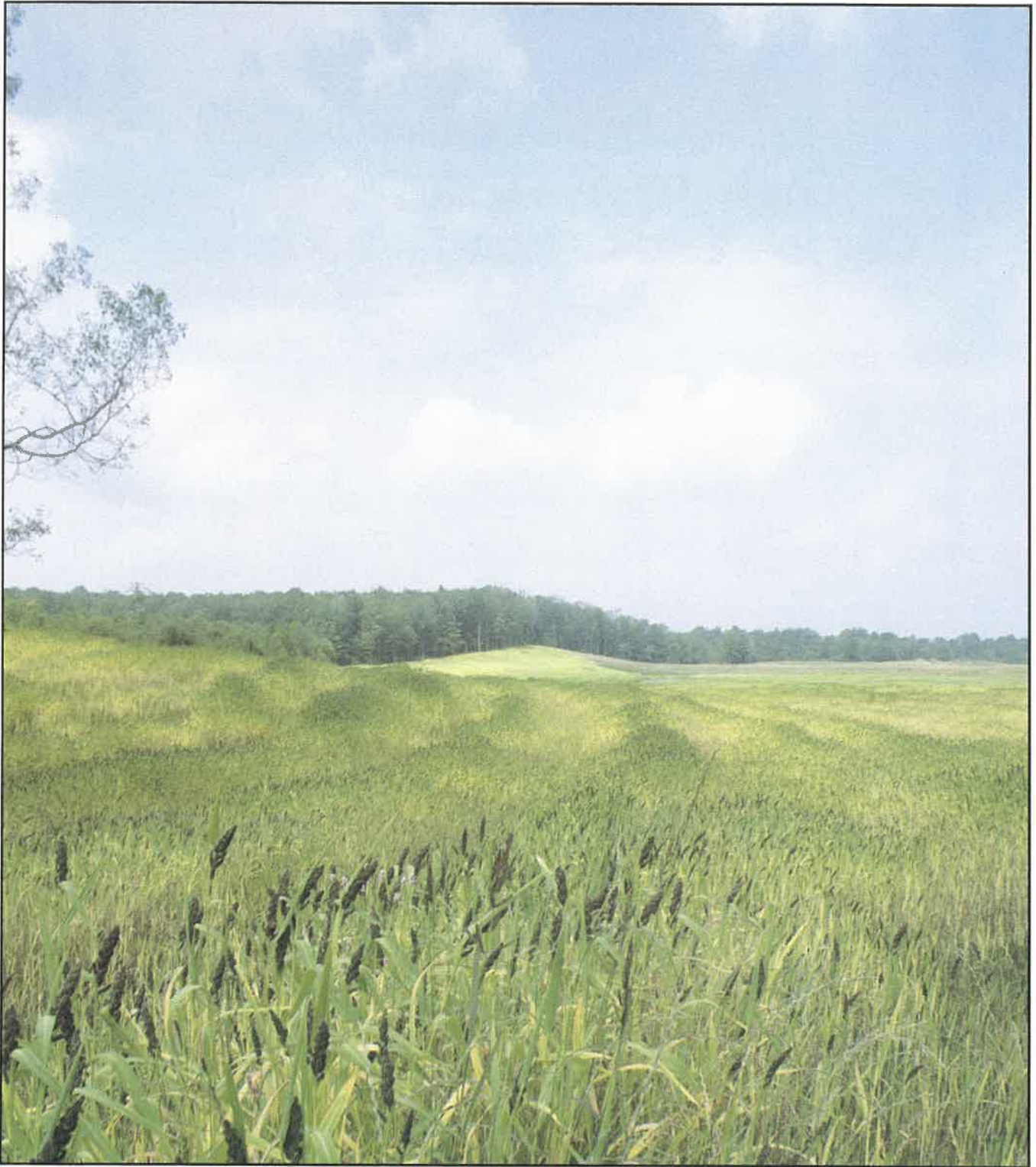




Buffalo went the extra mile to prepare this site near Thomas for ball field construction.



Buffalo is in the process of restoring this Tucker County wetland, bigger and better than its pre-mining condition.



Buffalo Coal's excellent reclamation techniques have made the company a perennial favorite for the annual Reclamation Awards, co-sponsored by WVMRA and the West Virginia Department of Energy.



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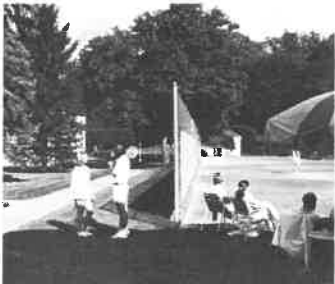
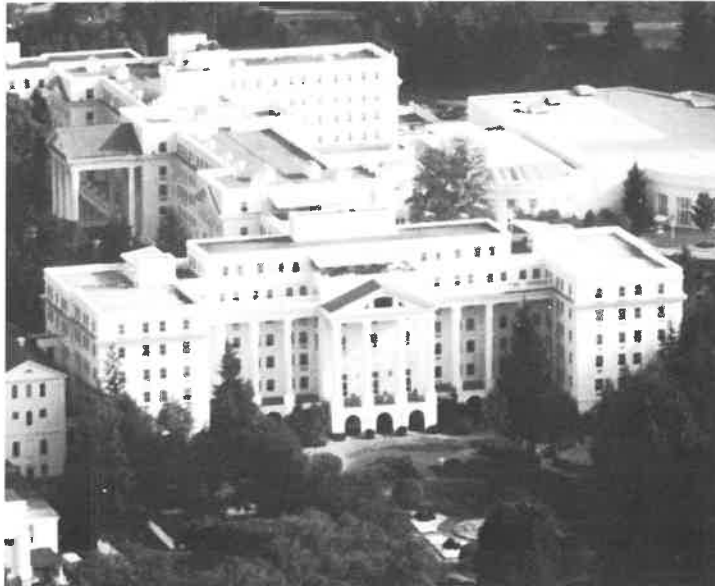
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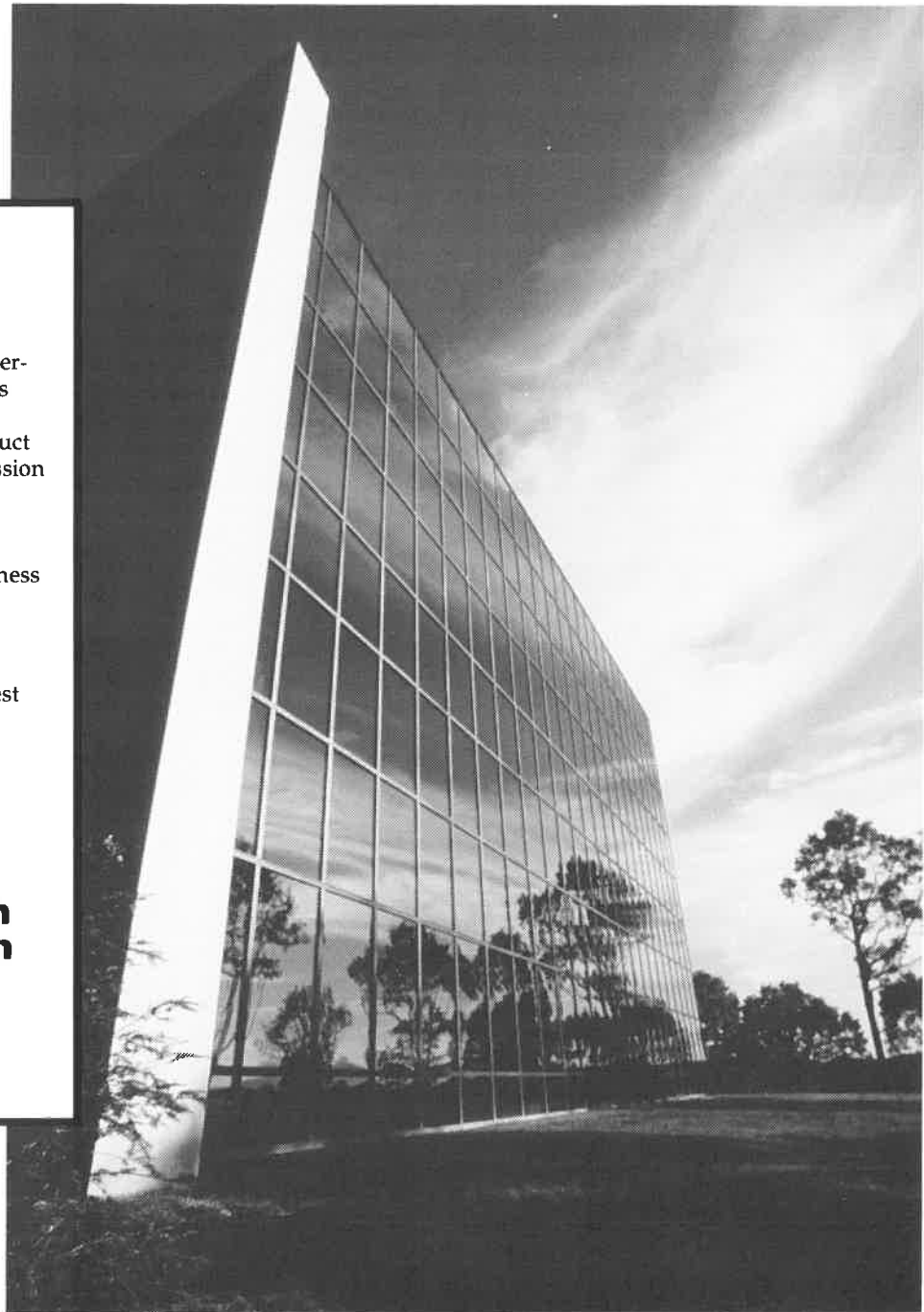
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Reclamation Research at the West Virginia Agricultural & Forestry Experiment Station¹

by John Sencindiver & Jeff Skousen
College of Agriculture and Forestry
West Virginia University

West Virginia was the first state in the nation to pass surface mining control legislation. That first law, in 1939, was passed in recognition of potential environmental problems associated with mining, and required that soil, subsoil and other strata removed in mining be used to refill excavations.

The goal was to prevent or minimize flooding, pollution of streams, and destruction of soil with agricultural potential. Some regrading of land was required, but planting or seeding was not.

Surface mine revegetation research at the West Virginia Agricultural and Forestry Experiment Station began in 1943. In a 1944 Experiment Station Bulletin, several photos of barren surface mines were presented. The caption under one read, "Our laws need to be revised to assure revegetation of strip mine spoil areas." According to the report, lime, fertilizer, and mulch were beneficial to revegetation of strip mine areas.

In 1945, the West Virginia Legislature required that mined land be seeded or planted to trees, shrubs, grasses or vines. Research at the Experiment Station from the 1940's through the late 1960's related primarily to revegetation of spoil banks left by mining. In 1945, two Station reports indicated an awareness of acidity problems caused by sulfides.

Experiment Station scientists recommended that strongly acid materials be buried at least a foot deep. Re-

vegetation was recommended to produce an erosion-protective cover, hasten soil development, start the growth of useful plants, and improve appearance of mined areas. Acidity was cited as the chief factor in determining ease of revegetation, and spoils were classified according to their acid levels.

On very acid spoils, the 1945 reports suggested planting Korean and sericea lespedeza. Species found suitable for low to high pH spoils were birdsfoot trefoil, alsike clover, white clover, hop clover, orchardgrass, redtop, tall meadow oatgrass, ryegrass, and timothy. Sweet clover was recommended for the high pH spoils.

Crown vetch was studied on surface mines from 1958 to 1962. This legume developed good stands only when planted in soil which was not compacted and which had a pH of 5.5 and above.

The study of trees suitable for surface mine revegetation also began in the 1940's. Black locust was the most extensively studied and successful species. Scotch pine, red pine, and white pine grew well in some of the early studies. Norway and red spruce had moderate survival rates, but grew very slowly for several years after planting. Oaks and cherry failed to grow, primarily because of rodent damage. In one bulletin, Experiment Station researchers reported that seeding of black locust was a viable alternative to planting.

Research on the use of fly ash, a waste product from the

¹ West Virginia University was founded in 1867. The Agricultural and Forestry Experiment Station was established in 1888 as an integral part of the College of Agriculture and Forestry, with funds appropriated by the Hatch Act, approved by Congress in 1887.

burning of coal as a soil amendment in mine revegetation, was first noted in the Station's 1967 Annual Report. In addition to revealing the potential for disposal of fly ash on mining sites, this work led to the development of other application techniques, and use of other waste products which could be beneficial amendments to harsh minesoils. This research continues today.

Current research in surface mine reclamation had its origins in the work of former Experiment Station scientists C.R. Orton, S. L. Galpin, E.H. Tyner, R. M. Smith, E. H. Tryon, H. A. Wilson, G. M. Browning, J. L. Brown, and others. In the 1950's and 1960's, Wilson conducted pioneering microbiological research on minesoils. His discovery of beneficial microorganisms in the minesoils, especially those enhanced by the presence of vegetation, is considered by many to be the classical work in this field.



Perhaps the Station's most influential research in surface mine reclamation has been the work of Richard M. Smith and his associates and students. Smith developed the Acid-Base method for characterizing the rocks and soils which lay atop the coal seam. The introduction of the Acid-Base Account revolutionized overburden analysis and handling.

A 1971 West Virginia law required that all new mining permits show the extent of acid-producing material which would be disturbed. This led to the concept of "controlled placement" of overburden materials in steep slope surface mining.

The past practice of pushing such material down the hillside, called "shoot and shove" mining, was outlawed. Instead, operators were required to analyze and segregate the overburden so that potentially acid-producing materials could be buried, and materials suitable for plant growth placed at or near the surface.



Although various methods of overburden analysis have been used in recent years, Smith's Acid-Base Account remains the standard in West Virginia and many other states. In recent years, Experiment Station scientists have investigated problems in revegetation, minesoil development and productivity, acid mine drainage, and land use on abandoned, reclaimed, and active surface mines.

One important program related to revegetation and land use has been wildlife biology. Research has led to improved reclamation practices which can create habitat for grouse, turkeys, songbirds and raptors.

The Station's continuing work in minesoil classification and mapping has led to the recognition of seven new soil series on mined lands. Scientists and students have assisted the USDA Soil Conservation Service in developing criteria for classifying, mapping and interpreting these soil series.

In 1945, when the West Virginia Legislature first required revegetation of mined land, the Experiment Station was given the specific responsibility of making regrading and revegetation recommendations to coal operators.

From that date until 1967, the Experiment Station had a statutory role in the reclamation of surface mined lands. Under a 1959 law, a State Agriculturalist, based at the Station, was empowered to approve or reject regrading and revegetation plans submitted by mine operators.

John G. Hall, who served as the agriculturalist, was also responsible for certifying that reclamation on a site had been completed according to plan, and for recommending release of reclamation bonds posted by operators. The title of this position was changed to State Reclamation Specialist in 1963. In 1967, the regulatory responsibility of the station terminated when the State established a Division of Reclamation within the Department of Natural Resources.

Cooperation among DNR, the Experiment Station, and other agencies concerned with surface mining has continued since the Station's regulatory role was abolished. From 1968 through 1985, Experiment Station scientists participated in the annual Interagency Evaluation Tour of surface mines organized by the Division of Reclamation.

Committees evaluated revegetation, water quality, drainage control, overburden handling, and other aspects of reclamation during the week-long tour of mines throughout the state. Their comments and recommendations were then published by the Division of Reclamation.

In 1978, the Director of the WVDNR established the Surface Mine Drainage Task Force, which included scientists from the Experiment Station. The Task Force was given the responsibility to keep the coal industry informed about new reclamation technology through field trips, annual symposia, and published bulletins. In 1979, Task Force members authored and published "Suggested Guidelines for Method of Operation in Surface Mining of Areas with Potentially Acid-Producing Materials."

The continuing work of the Task Force led to the establishment of a land reclamation specialist position at the Station in 1986. Jeff Skousen was appointed to this post, and with Experiment Station scientists John Sencindiver and Richard Smith, authored the second Task Force bulletin, "A Review of Procedures for Surface Mining and Reclamation in Areas with Acid-Producing Materials."



Currently reclamation research at the Experiment Station involves 12 scientists with more than 20 projects. Some of these projects are being conducted in cooperation with WVU faculty in other disciplines such as biology, geology, and engineering.

The barren landscapes that inspired West Virginia's 1939 surface mining law are no longer commonplace. In many respects, West Virginia has taken national leadership in surface mine legislation and reclamation. Much of the information that made this leadership possible was the result of the Experiment Stations's research over the past four decades.



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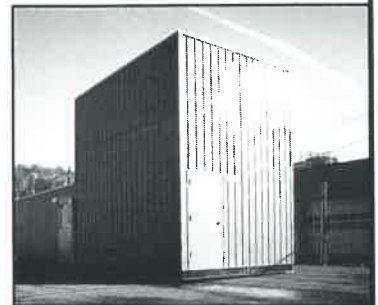
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Erodibility and Sediment Yield of Reconstructed Mine Soil and Spoil Materials ¹

by J.E. McIntosh,
R.I. Barnhisel, and J. L. Powell

*Editor's Note: The following article is reprinted with permission from the May, 1989 edition of **Reclamation News & Views**, a publication of the Cooperative Extension Service, U.S. Department of Agriculture and the University of Kentucky College of Agriculture.*

In an attempt to try and comply with Public Law 95-87, the Surface Mining Control and Reclamation Act of 1977, most mine operators construct sediment basins and implement other sediment control measures as a part of their normal mining operation. These structures are additionally used in conjunction with efforts to provide the quality of water necessary to meet federal effluent limitations for all water emanating from mined land watersheds.

The design of these basins, or sediment ponds, determines their effectiveness. Basins that are too small require frequent cleaning to assure that they work properly. Basins that are too large require excessive amounts of time, labor, space, and costs associated with earth-moving operations. The optimum balance between these two extremes must be to successfully create measures that will protect the environment, while still being able to make a profit, and thereby, stay in business.

¹ *This research was a cooperative effort of the Kentucky Energy Cabinet, Peabody Coal Co., and the Agronomy Department, University of Kentucky.*

Table 1. Runoff, sediment yield, and erodibility of reconstructed soils and mine spoil.

Material	Runoff (inches)	Sediment Yield (tons/acre)	Erodibility (K) Factor		
			Field*	Nomograph** English Units	Survey***
Topsoil	6.8	35.8	.35	.44	.43
Subsoil	8.3	51.5	.51	.57	----
Spoil	13.3	40.8	.39	.37	----

* Determined from actual field measurements.

** Predicted by Wischmeier et al. (1971) nomograph

*** Determined from soil interpretation record.

Erodibility of the material influences the amount of sediment that may potentially reach a given point of interest. Limited information exists regarding the erodibility of reconstructed soil and spoil materials. Available information under natural rainfall conditions is essentially non-existent. This article will discuss erodibility, how it can be measured, how it can be affected by mining operations, and how it varies among different reconstructed materials.

Factors influencing soil erodibility

“Soil erodibility” is a term that is completely different from that of “soil erosion” itself. Soil erosion describes a rate or amount of soil loss from a given area, and is influenced by rainfall amount and intensity, degree of land slope, consistency of vegetative cover, and management practices.

However, some soils erode at different rates, even though these factors may be the same for each soil. These differences are due to the innate properties of the soil itself, and are attributed to its erodibility.

Considerable research has been directed toward assessing the erodibility of naturally formed agricultural soils. These efforts have resulted in the development of prediction equations that indicate soil erodibility, and can be estimated from such material properties as particle size distribution, organic matter content, infiltration capacity, and aggregate cementing agents.

However, these same physical and chemical properties are potentially altered during removal-reconstruction phases in normal mining operations. Compared to undisturbed soils, reconstructed soils generally exhibit greater bulk densities, lower infiltration and permeability rates, and higher runoff volumes. It is important to know if erodibility of reconstructed materials is significantly different from their agricultural counterparts.

Methods for Determining Erodibility

There are two primary approaches to field measurements of soil erodibility. The most desirable method is by actual measurements of soil loss from selected sites, utilizing natural rainfall. This provides data of the highest quality, representing a large variety of rainstorms and antecedent soil moisture, and surface conditions.

A second way is by using simulated rainfall. A rainfall simulator is used under a controlled set of experimental conditions to approximate natural rainfall relations when averaged over many storms of the same intensity. Using rainfall simulators is quicker and may be less costly, as compared to testing soils under natural rainfall conditions. Greater caution, however, must be exercised to gather reliable data when using this method. Both natural and simulated rainfall have been used with much success to obtain characteristics for a wide range of medium textured agricultural soils (Wischmeier and Smith, 1978).

A quick estimate of erodibility can be derived by using the nomograph developed by W. H. Wischmeier and his associates in 1971 (available in standard engineering texts). Five soil parameters must be known to obtain a predictive estimate of erodibility:

- 1) percent silt plus very fine sand;
- 2) percent sand greater than 0.10 mm;
- 3) organic matter;
- 4) structure;
- 5) permeability.

The first three parameters may be determined by laboratory analyses, whereas structure and permeability estimates come from a soil survey manual or soil interpretation record for a particular soil series. The applicability of the nomograph to drastically disturbed soils has produced mixed results, and is still being investigated.

The K factor in the Universal Soil Loss Equation (USLE), which was used to develop the nomograph, is a quantitative measure of the ability of the soil to withstand the destructive forces of rainfall and runoff. This factor is a component of some computer models (e.g., SEDIMOT II) that engineers use to estimate sediment production from surface mined areas.

The higher the K value, the more erodible a given soil. It is a difficult factor to evaluate, and is considered by some to be the most important factor in designing practices that will help reduce soil erosion losses.

Erodibility of reconstructed minesoil materials

The erodibility of Kentucky mine soil and spoil materials began to be studied intensively under natural rainfall conditions in 1986. The research site is located in the western coalfields in Ohio County, Kentucky, near Big Rivers Electric Cooperative. Plots consist of reconstructed topsoil, subsoil, and spoil overburden. The soil materials are reconstructed Sadler silt loam, whereas the spoil is a mixture of siltstone, shale, and thinly interbedded sandstone overburden. The plots are being monitored daily for measurements of erodibility, total sediment yield, runoff, and particle size distribution of eroded sediment during each natural rainfall event.

Early results from this study indicate reconstructed subsoil to be more erodible than either topsoil or mine spoil (Table 1). This was primarily attributed to a greater mechanical breakdown in the subsoil structure during late fall and winter months, which produced significant rill development. In addition, the rills contributed to higher runoff rates when compared to the topsoil. This twofold effect resulted in greater erosion losses by changing the runoff patterns

from "sheets" to that of more concentrated flow patterns where erosive energy from overland flow is higher.

Also, the spoil is as erodible as the reconstructed topsoil. In past studies, mine spoil has been found to be much less erodible than topsoil materials. This was generally considered to be the result of the coarse fragment content of mine spoil, which produces an armored surface that behaved as a rock mulch, hence being more resistant to erodibility.

In an earlier rainfall simulation study at this same site, reconstructed topsoil was more than twice as erodible as the mine soil (Barfield et al., 1983). However, the spoil in the earlier simulation study was freshly exposed material, whereas the spoil in the present study has been subjected to physical and chemical weathering processes for seven years. These natural processes produced a higher percentage of very fine sand and silt particles (erodible separates) and a correspondingly lower coarse fragment content. The result was the creation of a significantly more erodible spoil material. This finding has important implications when assessing the erodibility and hence potential sediment from highly weathered mine spoil, as is the case with the reclamation of abandoned mine lands.

The erodibility of the subsoil and spoil was more accurately predicted by the nomograph than was the reconstructed topsoil (Table 1). It may be that topsoil is the layer most significantly affected by mining and reclamation processes. Subsequent years of data will need to be gathered to verify such a hypothesis. Nonetheless, the K factor measured from the topsoil field data is actually 80% of that estimated from the soil interpretation record for the Sadler series. These early results suggest that reconstructed topsoil is not inherently more erodible than when existing in its natural, undisturbed state when proper reclamation practices are followed.

Summary

Erodibility, the ability of the soil to withstand rainfall and runoff forces, is an important factor that influences potential sediment production from mined land watersheds. Results from a study conducted under natural rainfall conditions indicated subsoil material to be more erodible than either reconstructed topsoil or mine spoil.

Since topsoil and spoil are the dominant surface materials used in reclamation, these results have favorable implications. However, spoil material remaining in a barren condition for several years (e.g. abandoned mine lands) may be more than twice as erodible as freshly exposed spoils, depending on its geological composition.

These results have furthermore indicated that the reconstructed topsoil was not inherently more erodible than when existing in its natural, undisturbed state.

Therefore, factors which the mine operator can control (e.g. slope, vegetative cover, management practices) have

a greater influence on determining whether or not erosion losses on reconstructed soils are significantly greater than that which occurred under pre-mining conditions. Future results from this study will be made available in subsequent reports.

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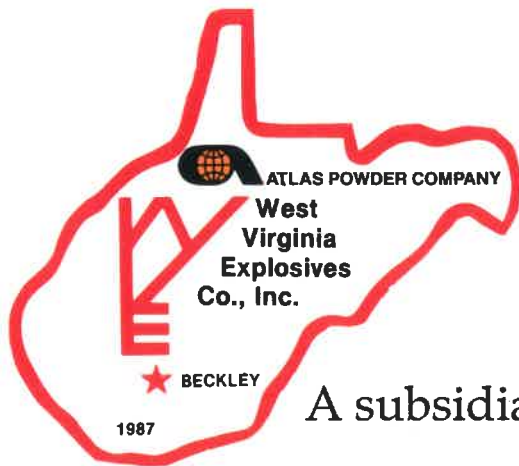
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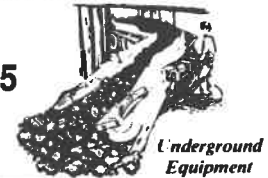


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Association Secretary Don Cussins (l) with NCA Vice President Dan Gerkin.



Association members (l-r) Ardie McMillion, Paul Hutchins, and John Bryan.

Board of Directors Meets in D.C.

The Board of Directors convened in the U.S. Capitol Building in mid-May, concluding the Association's two-day visit to Washington, D.C. and the State's congressional delegation.

Following a practice begun last spring, WVMRA members gathered in the Coal Building, headquarters for the National Coal Association, for an issues briefing from congressional staff members, and representatives of NCA and the American Mining Congress.

Later that evening, WVMRA hosted congressional staffers at an evening reception in the Rayburn House Office Building. Prior to the Board meeting, members had break-

fast with West Virginia Congressmen Nick Rahall, Alan Mollohan, Bob Wise, and Bucky Stagers. Senators Robert C. Byrd and Jay Rockefeller were unable to attend, due to prior commitments.

All four congressmen spoke briefly, the primary topic being the inevitability of "acid rain" legislation as part of the revised Clean Air Act. West Virginia's congressional strategy appears to be that of accepting passage, in return for maximum input to the form and substance of the bill.

Subsequent events, however, raise questions as to the amount of input coal burning states will have.

Much of the Board meeting was taken up with a discussion of the proposal to extend the Abandoned Mine Lands program beyond 1991. The consensus was "support with reservations," which Association President Ben Greene subsequently spelled out to Congressman Rahall's Subcommittee on Mining & Natural Resources.

The Board also voted to explore the possibility of reviving the Interagency Evaluation Tour, discontinued by the Department of Energy three years ago.

Nine companies, all in the Associate Division, were approved for membership. WVMRA welcomes the following: **Analabs, Inc.** - Beckley - Ronald Lilly, representative; **EIMCO Coal Machinery Inc.** - Fairmont - Allen Coppinger, representative; **Herman & Cormany, CPA's** - Charleston - Lee Diznoff, representative; **Lubricant Consultants, Inc. dba Lubricon** - Hurricane - John Halstead, representative; **McCoy & McCoy Environmental Consultants, Inc.** - Lexington, KY - Scott Smith, representative; **Pinnacle Leasing, Inc.** - Beckley - Tony Mamone, Jr., representative; **Scarlet Oaks Hydroseeding & Reclamation, Inc.** - Nitro - Daniel McDavid, representative; **Terradon Corp.** - Nitro - Ronald Potesta, representative.



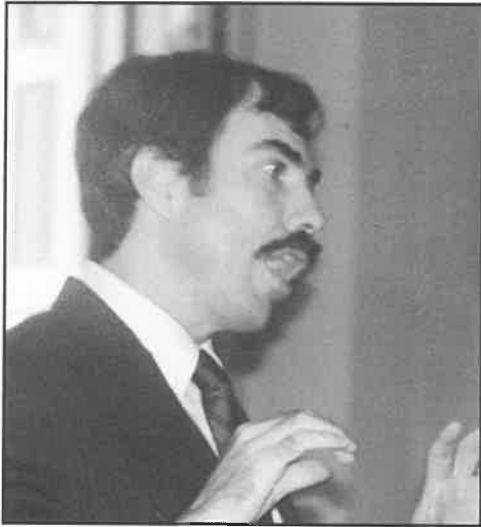
WVMRA Chairman Chick Lockard (l) and Janet Bakas.



Louise Ingram (l) of Congressman Mollohan's staff, with WVMRA President Ben Greene.



Congressman Alan Mollohan



Congressman Bob Wise



WV-DoE Health & Safety Director Bart Lay, Jr.(l), with Congressman Nick Rahall.



Congressman Bucky Staggers

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Coal Calendar

August

- 15-17 **Short Course - Introduction to Mining**, National Mine Health & Safety Academy, Beckley, contact Department of Resident Education, National Mine Health & Safety Academy, P.O. Box 1166, Beckley 25802, (304) 256-3313.
- 16-18 **Short Course - Surface Subsidence Engineering and WVU's Subsidence Model**, West Virginia University, Morgantown, contact Department of Mining Engineering, West Virginia University, P. O. Box 6070, Morgantown 26506, (304) 293-5695.
- 28-31 **Short Course - Coal Mine Explosion Prevention**, National Mine Health & Safety Academy, Beckley, contact Department of Resident Education, National Mine Health & Safety Academy, P.O. Box 1166, Beckley 25802, (304) 256-3313.
- 30-2 **1989 Joint Annual Meeting of the West Virginia Chamber of Commerce and the West Virginia Manufacturers Association**, The Greenbrier, White Sulphur Springs, contact WV C of C, P. O. Box 2789, Charleston 25330, (304) 342-1115, or WVMA, 405 Capitol St., Suite 505, Charleston 25301, (304) 342-2123.

September

- 20-21 **West Virginia Chamber of Commerce Congressional Executive Team Visitation**, Washington, D.C., contact Maggie Poling, WV C of C, P. O. Box 2789, Charleston 25330, (304) 342-1115.
- 24-27 **Professional Engineer Exam Review In Mining/Mineral Engineering**, West Virginia University, Morgantown, contact Department of Mining Engineering, West Virginia University, P. O. Box 6070, Morgantown 26506, (304) 293-5695.
- 29-1 **Fall Board Meeting - Contractors Association of West Virginia**, Lakeview Resort, Morgantown, contact CAWV, 405 Capitol St., Suite 608, Charleston 25301, (304) 342-1166.

October

- 14-15 **Fall Board of Directors Meeting - West Virginia Mining & Reclamation Association**, Lakeview Resort, Morgantown, contact Patty Bruce, WVMRA, 1624 Kanawha Blvd. E., Charleston 25311, (304) 346-5318.
- 24-26 **Appalachian Surface Mining & Reclamation Conference**, Charleston Civic Center, Charleston, contact Mark W. Sprouls, Coal Magazine, 29 North Wacker Dr., Chicago, IL 60606, (312) 726-2802.
- 30-31 **8th Annual International Coal Trade Conference**, Key Bridge Marriott Hotel, Washington, D.C., contact Fred Shear, Pasha Publications, 1401 Wilson Blvd., Suite 900, Arlington, VA 22209, 1-800-424-2908.

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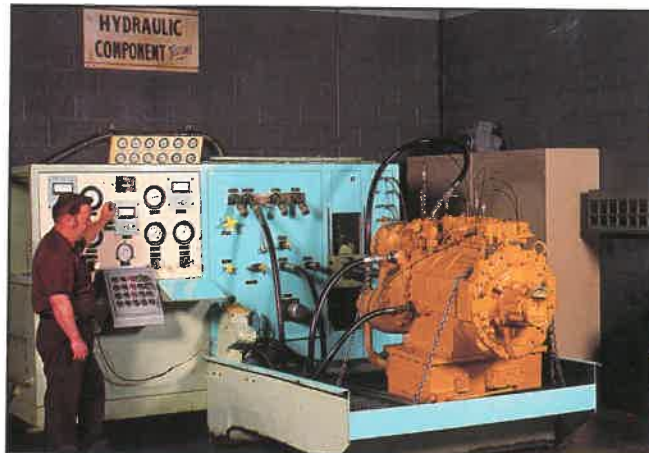
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Rish has committed hundreds of thousands of dollars to product support including:

- **Modern branch operations strategically located for easy access to customers throughout the area.**
- **A multi-million dollar parts inventory to insure replacement parts when they are needed.**
- **Computerized access to Komatsu's network of parts inventory nationwide.**
- **A Rebuild Center equipped with diagnostic and repair tools for repair of major machine components.**
- **A 24 hour Parts Loop delivery system which provides overnight parts delivery.**

- **On-going service training programs which last year exceeded 1,488 hours.**
- **A significant investment in field service vehicles including boom trucks and service trucks.**

Consider the total picture when considering your next equipment purchase. We're confident you'll join the growing numbers coming to Rish Equipment Company.

KOMATSU
KOMATSU MARKETING DIVISION

Rish
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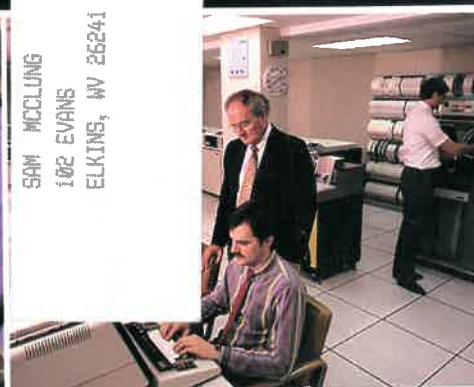
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 and Reclamation Association
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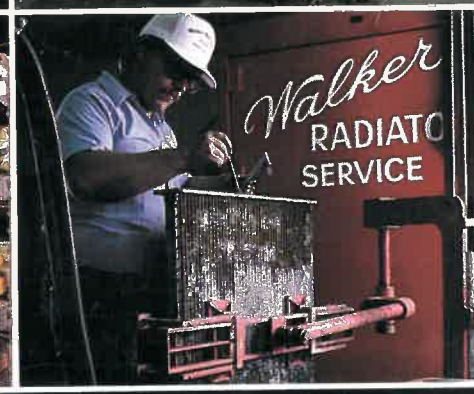
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**All this comes
 standard on
 every Cat machine
 from Walker.**



If you think we just sell Caterpillar machines, you're missing the big picture. We also service your machine. And offer a complete parts inventory. A maintenance program. On-site repairs. And more. To keep you and your machine on the job.

Our computer parts search system means that if we don't have it, we'll get it fast and deliver it free to your job site. We also offer a component exchange program for major parts to save you money.

If you need servicing, we have the technicians to get your machine working again — either in our shop or at your job site.

And to prevent unnecessary downtime, you can take advantage of our scheduled oil sampling and technical analysis programs.

Of course, we do have a complete line of Caterpillar machines, from a D11 tractor to our 416 backhoe loader. All with the strength, reliability and durability you expect from Caterpillar. And all with the unique product support system from Walker Machinery.

WALKER 
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