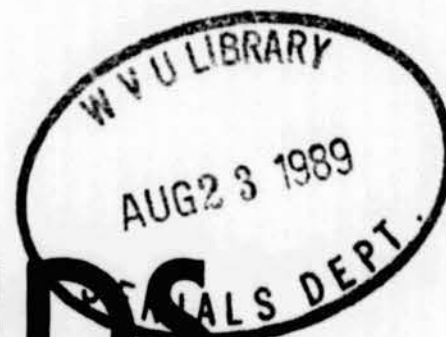




# THE HIGHLANDS VOICE



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## Interior Department Withdraws Mining Rule

by SKIP DEEGANS

Environmentalists applauded the U. S. Department of the Interior for withdrawing a controversial rule that could have opened over 50 million acres of federally protected land to coal strip mining.

Following over 4,700 individual public comments - a record - Secretary of the Interior Manuel Lujan withdrew a December 1988 proposal to determine when property owners have "valid existing rights" to mine coal in areas protected by the Surface Mining Control and Reclamation Act. Interior's proposal would have opened up areas to strip mining like National Parks, National Wildlife Refuges, Wilderness Areas, state parks, historic sites, and buffer zones around houses, schools, churches, public roads and buildings and cemeteries. Over 50 million acres were threatened.

"All citizens involved in protecting these critical areas can claim a well-earned victory," said Skip Deegans, Mining Specialist for the National Wildlife Federation. "The clear intent of Congress when it passed the Surface Mining Control and Reclamation Act in 1977 was to protect these areas. We are gratified that Secretary Lujan has recognized that the previous Administration's proposed rule was contemptuous of Congressional intent to protect sensitive areas from the ravages of strip mining. We congratulate Secretary Lujan for withdrawing the proposal," said Deegans.

WVHC and other conservation groups joined Congressional leaders in opposing this proposal. Recognizing the immediate threat to the New River and the Monongahela National Forest, Senator Jay Rockefeller and Congressman Nick Rahall were out in front in Congressional efforts to stop OSM's proposed rule.

## Concerns for the Cranberry

by RIVERS COMMITTEE

Congressman Harley Staggers (D-WV) introduced House Bill 1576 to the House this Spring that will cut 11 acres from the Cranberry Wilderness area to site a limestone water treatment plant. The treatment plant, planned by the Department of Natural Resources, will decrease acid loading from acid rain dropped on the North Fork tributary, and thus reduce the threat of the river's lowered pH to trout fisheries. The Dogway and North Forks of the Cranberry are contributing most to the lowered pH of the river, due to the limited capacity of the soils and geology of those drainages to buffer acidic rain. The lime treatment plant will be located near the mouth of the North Fork approximately 1000 feet from the Cranberry River road (F.S. road 102), and will be similar to the already constructed Dogway plant described in the adjoining article.

The Department of Natural Resources has prescribed a program for the Cranberry River that will very likely work to save the trout fisheries in this beautiful mountain river. But, like many prescriptions for an illness, the remedy for the sick fisheries habitat creates a side effect all its own. Because it will exclude 11 acres from the Wilderness area, and will require construction and maintenance activity around the facility, the North Fork limestone treatment plant will not enhance the wilderness experience of the visitor traveling down the North Fork to the Cranberry River. However, this "next door" activity may prove to be only a minor deterrent from the wilderness experience, and one that most wilderness lovers would tolerate in order to save the trout fisheries in the Cranberry River.

But the combination of several activities around the Cranberry Wilderness may contribute to a sum of disturbances that encroach upon the wilderness too much. As in our own neighborhoods, where an increased degree of goings-on next door can decrease the solitude in our own house, the allowable activities in and around the Cran-

berry wilderness may combine to take the solitude from the wilderness neighborhood and the "wild" out of the wilderness experience.

The WVHC Board of Directors is to not opposing the building of the North Fork limestone treatment facility, but will continue to watchdog other activities proposed for the Cranberry Wilderness neighborhood. As example: future timbering in the Rough Run Opportunity Area (OA) that lies immediately west of the Cranberry Wilderness. This area was given a 2.0 management prescription designation in the 1986 U.S.F.S. Land and Resource Management Plan, which emphasizes timber harvest of shade tolerant timber, and will require select-cutting and the construction of logging roads to access the timber. The management plan for the Rough Run OA will be reviewed in 1990 - and will provide an opportunity for public comment.

We're wondering too what impact DNR's decision to eliminate the Black Bear Sanctuary in the Cranberry Wilderness area will have on that area. DNR wildlife biologists report that the Black Bear population is doing well and no longer needs the extra protection from hunting that a sanctuary provides. But will there be an increased disturbance from bear hunting in the wilderness, and will bear hunters be able to train their dogs in off season in the Cranberry Wilderness?

The management plan for the Cranberry Wilderness Opportunity Area is scheduled to be reviewed by the U. S. Forest Service in 1991. Management policies that will define allowable and non allowable activities will be established in greater detail at that time. This is an important Opportunity Area analysis, and one that the Conservancy will be looking forward to offering input. For members interested in this OA analysis, and the Rough Run OA, the contact person is Ranger Dave Benson, Gauley Ranger District, U.S.F.S. Richwood, WV, 26261.

## WVHC Summer Board Meeting

Half buried from the sun and heat the Summer Board meeting was held at Woodlands Institute in the earth-sheltered office building. The Fall Meeting is scheduled for October 13-15 at Bluestone State Park.

A focus on the administrative costs, more specifically, Voice printing costs, solemnified members for about 30 minutes. The Treasurer will continue his evaluation of these costs and other Committee expenditures in the coming months. The advantages of a central location for historical and current materials was noted. Plans for a catalogue of items for purchase (benefitting WVHC) will be finalized. Major substantive topics included the fall legislative coalition meeting and the out of court settlement of the DOE suit.

Nascent concepts, ideas and suggestions for legislative priorities for the fall will be refined by WVHC attendees to the September legislative coalition meeting. House Speaker Chambers will be in attendance and representatives from other local environmental groups and local chapters of national environmental groups will attend.

Again sponsored by the Groundwater Coalition, the principal effort is expected to be groundwater legislation. Thanks to the performance and efforts of Norm Steenstra and the support of CAG, the Groundwater Coalition has been refunded for the year.

Explicit details of the months of grueling negotiations in the DOE suit can only be described in legal and political dialectic understood by individual players through their individual terms. The slow pace over weeks and months did not represent steady and developing understanding and agreements but a frenetic series of changes by the hour. Cindy Rank, President, cautioned against interpreting the settlement as a victory for environmental interests. Efforts in this area will continue.

Less oxymoronic news; yet, still to test your sense of balance, was the update on the Woodguard Treatment Plant in Monroe County. Permit procedures submitted according to DNR regulation may be responded to by the agency only for approval. Not to be denied is the continued danger to surface and ground waters if wood treatment plants are allowed to leak or release contaminants. One count places the number of plants at 32.

Ongoing issues of Canaan Valley protection, Greenbrier River studies, surface mining regulation ruling in Washington, Forest Service analyses of military use and oil & gas leases, spraying of Bti, Corridor G routes, wilderness boundary adjustments, DNR liming treatments, Greenbottom Society forensic studies, opportunities for cooperation with DNR, Air Pollution Control Commission regulations, Groundwater Coalition/CAG recycling petition efforts, wetlands designation and protection, Army Corps and Section 404, WVHC representation at regional forums and panels, were briefly discussed.

## Support for DNR REGS

State environmentalists, county representatives, and industry representatives addressed the Joint Legislative Rule-Making Review Committee, July 31, 1989, on the DNR emergency regulations for solid waste. The Solid Waste Management Bill (HR 3146) passed in the 1988 legislative session. Larry George, Deputy Director, and a handful of Department specialists were present for Committee questioning. Requests for additional information and further review tabled any decision until the September meeting.

Cindy Rank, President, WVHC, spoke in support of the existing regulations, "The Conservancy has gone on record supporting the regulations as presented for public comment in November, 1988, and continues this support. As a resident of rural Upshur

County, I support the regulations despite the difficulties adherence to the law may present."

Other environmental organizations present included MACE, Save Our Mountains, Groundwater Coalition, Halt Out-of-State Garbage, Audubon Society, Citizens Action Group, Citizens for a Clean Environment, and the Sierra Club. Industry representatives included the WV Manufacturing Association, Ohio Power, Monongahela Power, and Appalachian Power.

In a briefing prior to the 4:00 p.m. meeting, Norm Steenstra, underscored the significance of the Committee meeting: "This is the area where traditionally environmental issues are maimed. Past representation at this stage of review has historically been an opportunity for industry to dilute or develop

details of the law."

The majority of addresses spoke in support of DNR regulations. Martha Huffman, Wetzel County Solid Waste Authority, urged consideration of 100-200 year monitoring period for land-fill sites. Studies demonstrate the current 10 year period to be inadequate when anaerobic conditions of compacted materials leave newspapers readable after 15 years and an unfinished hot dog of the same age recognizable.

Several speakers urged bifurcation of land-fill regulations. Industrial waste (monofills) and commercial waste being the distinction. Other requests for exemptions concluded DNR authority for groundwater protection is exceeded.

Continued on Page 8



## Farewell To A Friend

by Cindy Rank

As summer winds down our Past President John Purbaugh is leaving West Virginia to take a position in the Tacoma-Olympia area of the State of Washington.

As he goes, John leaves behind a long list of accomplishments and a wealth of memories for those of us who have worked with him on any number of issues these past many years.

John worked hard to preserve the environmental health and well-being of West Virginia, and he worked hard as a member of the Conservancy. Whether the question was rivers, or water quality, or mining, or outings and meetings, John was always there with ideas, suggestions, directions and encouragement. And for those of us not always anxious to move, there was the prodding - sometimes subtle, sometimes not.

John's insight and opinions are invaluable as is his perspective that allows him to sense the bigger picture, to connect the specific incident with the broader issue.

His willingness to help individuals in need and his ability to address most aspects of any question will be sorely missed - as will his imaginative and colorful quips that regularly enlivened any discussion.

John, we are forever grateful.

We wish you well and hope that you, Julie, Tom and Emily find strength and wisdom and beauty and happiness in the great Pacific Northwest.

Let us hear from you now and then.

## Dear Friends:

I moved to West Virginia as a college student in 1969 in a footlocker. 20 years later it will take the largest U HAUL truck and the considerable pain of separation to leave.

Though I wasn't native-born, my mother was, from Farmington, in Marion County. Visiting my grandparents, my early memories included the metronome-like breakfast radio announcements: "Consol number 9 will work, WILL work". (In the evenings, we listened to "Gunsmoke" on the radio). The barber and the grocery clerk worked the cat eye shift, and my retired grandpa lost them and a lot more friends in the disaster that again reminded Congress that coal mining might be an industry that needed looking into.

As a college student at WV Wesleyan from '69-73, I saw the coming of the strip mine abolitionist, Jay Rockefeller. A lot of good people were there, too: Denise Giardinia and Dave Grubb, among them. With a degree in history, I was equipped to do most anything, except earn a living. After stints in a national park and a rock band, I tried law school.

I owe the legal community in WV the largest debt possible: here I learned to practice my trade. After twelve and a half years as a legal services lawyer, I still want to do the work. I get my non-monetary rewards by planning and litigating cases against the federal and state governments.

Throughout my 20 years in WV I have constantly been hiking, canoeing, camping and learning. Emerging from Dolly Sods after being lost, I ran into someone who had a guidebook to hiking trails in the Monongahela National Forest. From the guidebook, I learned about the organization that published it, and sent in my dues. From attending my first Fall Review to being president, the Conservancy has been a source of inspiration, leavened with frustration. The amazing thing about WVHC is not that we don't accomplish more, but that we accomplish anything at all! Any all volunteer organization, linked together by a newsletter and four meetings a year, that got congressional protection for 4 wilderness areas and three rivers, is doing something right. Whatever it is, keep doing it.

In September, 1989 I will move to Gig Harbor, Washington and work in nearby Tacoma as the executive director of Puget Sound Legal Services. In sight of both Mt. Rainier and the Olympic Range, I will not be without mountains or rivers.

Signed, JOHN PURBAUGH

## Letter to the Editor

I note with interest your article in the latest *Voice* [June] about contributions to the West Virginia Wildlife Endowment Fund. I am happy to see this mentioned but I would like to call your attention to a serious omission which leads to a definite misrepresentation. I assume that you wrote the short article as a result of an announcement from Marshall Snedegar's office, so the matter I am bringing up is not your fault.

The tone of the article leads one to believe that contributions would go to help all wildlife in the state. This may not be true. Let me explain by starting with the origin of the endowment fund which comes originally from the sale of Lifetime Hunting and Fishing Licenses. The allocation of that money was established by law as being split 40% for fish and game management, 40% for Law Enforcement, and 20% for Administration. I may have the figures slightly off but you get the point. Since it is money coming from the hunters and fishermen this is a fair allocation.

The trouble arises in that an unspecified gift to the endowment fund is also allocated by the same formula. There is no provision for the Non-Game program, and so the article as written is misleading in that it says that people can contribute to Non-Game activities. As it stands they cannot.

However, if a donor specifies that his contribution should go to Non-Game activities it will be set aside for that purpose. That no mention was made in the article that a donor must specify this constitutes an omission that seriously misleads the non-hunting public.

I think a clarification should be published in the *Voice*. This matter was discussed thoroughly at a recent meeting of the Non-Game Wildlife Advisory Council.

George A. Hall, Member  
Non-Game Advisory Council, WV DNR

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## Arabis Serotina

*Arabis serotina*, shale barren rock cress, has been determined endangered by the Fish and Wildlife Service under the Endangered Species Act. 26 known populations occur mostly in George Washington National Forest and Monongahela National Forest. The ruling is effective August 14, 1989.

A member of the Mustard family (Brassicaceae) it is endemic to dry, exposed mid-Appalachian shale slopes of Paleozoic age. The restricted range is believed to be a result of biogeographic events. It has been listed as Category 2 - probably endangered but sufficient data lacking - since 1983.

The Nature Conservancy conducted a status survey in 1985. Their report recommended listing. In West Virginia and Virginia populations have been partially destroyed by road construction. Deer are also known to browse the plant. Effects of the 1987 and 1988 droughts were devastating.

For additional information contact: Sharon W. Morgan, Fish and Wildlife Biologist, Ecological Services Field Office, Suite 322, 315 S. Allen Street, State College, PA 16801.



## Commentary

# LET'S PROTECT OUR LAND AND WATER NOW BECAUSE THE END OF MAJOR COAL MINING IS IN SIGHT

by RICHARD S. diPRETORO

How long can West Virginia depend on coal?

West Virginia has about 56 billion tons of recoverable coal left and we produce about 140 million tons per year. If we try to figure out how long we can depend on coal by dividing the first figure by the second, we come up with **400 years**. The Rockefeller administration produced a glossy poster claiming that West Virginia alone could supply all U. S. needs for **200 years**. When I worked in a large underground mine in Marshall County from 1972-1975, the average age of the workers was 26. We were told that there was **50 years** worth of coal in that one mine. We were told that we could retire from that mine and so could our sons. That mine recently reopened (after a four-year shutdown) with one quarter the employees it had when I worked there.

Such propaganda and statistical lies are designed to obscure the truth of the situation to protect coal investments and profits and to help keep West Virginians in servitude to the coal industry.

Because the truth is the **end of coal mining is in sight**. In sight means: the end of coal mining as an economic mainstay in West Virginia will be an effective reality in **25-40 years**. Within the lifetime of most people now living in West Virginia, widespread coal mining will be a fading memory with much coal still in the ground.

How can I be so sure about that?

Consider global warming, acid rain, productivity, and the damage done to the land and water where the coal is mined.

*First consider global warming* from coal burning. Carbon dioxide is universally acknowledged as the major gas contributing to global warming. Fossil fuel burning is the single most important human-induced cause of carbon dioxide buildup in the atmosphere. Of the fossil fuels, coal is the worst offender, producing more carbon dioxide per unit of electricity than oil or gas. The sulfur content of the coal is irrelevant to global warming: the point of all coal burning is the oxidation of carbon.

Coal mining also releases major amounts of methane directly to the atmosphere from the mines. Pound for pound, methane is twenty times more powerful a greenhouse gas than carbon dioxide.

*Second consider acid rain* from coal burning. Even most coal industry apologists now at least tacitly admit that what goes up from coal stacks does come down as acid rain. The staggering toll on soil, water, crops, structures, wild animals and plants, and human health is only beginning to be calculated. Burning "low-sulfur" or "clean" coal still causes copious amounts of acid rain.

The first two aspects of coal use have broad international implications. International policy is not subject to the political stranglehold that coal has had on West Virginia because the global economy is much more diverse than West Virginia's. Concern about global warming and acid rain has led to, and will continue to lead to, laws and policies quite properly designed to discourage coal use. As such laws and policies (including electricity conservation measures) take increasing effect, demand for coal will drop. As a major coal and electricity exporter, West Virginia's coal production will reflect that drop in demand.

The *third* reason coal will soon vanish from all but memory for most people in West Virginia is *productivity*. Productivity is measured by the amount of coal produced for each worker in a day, month, or year. In the last 15 years, we have already seen steeply declining coal-mining employment. Greater productivity of surface and longwall mining compared to room-and-pillar mining is the major cause of the decline. Further increases in productivity, with a corresponding decline in employment, are possible with such developments as remote controlled mining and hydraulic mining.

Just as we are already seeing the effects of greater productivity on employment, we will also see its effects on the coal itself. For instance, the West Virginia Geological and Economic Survey published a report on the amount of coal left in Monongalia County as of 1983. Based on rates at that time, I calculated that the amount of coal left represented about 40 years of production. Increases in productivity and production have occurred since then, lowering that 40-year figure substantially. Earlier this year, the Pursglove mine, one of six large underground mines of Consolidation Coal Co. in Monongalia County, shut down permanently because its reserves are worked out. Of the other five, only one has enough reserves left to allow it to remain in production beyond 10-15 years. Monongalia County is now and has been for several years the largest underground producer in the state.

In southern West Virginia, the experience of Mercer County gives a glimpse of the future for many other counties. As recently as 1982, Mercer County produced over 700,000 tons of coal employing over 400 miners. The last reported coal production was in 1985: about 1000 tons with 15 miners. There has been no production since. The coal is gone in Mercer County, leaving only shattered communities and absentee corporate ownership of the depleted land.

Of course, yearly production could (and I hope will) drop in counties such as Monongalia because of policies to regulate global warming and acid rain. If that happens, the time left until the reserves are worked out could be greater than 40 years. But in that case, very few miners would be working. That's because there's a finite maximum number of worker-years required to recover a given amount of coal at a given rate of productivity. We can produce the coal rapidly using a relatively large number of miners for a short time, or we can produce the coal less rapidly using fewer miners for a longer time. Adjoining counties such as Marion County, WV, and Greene County, PA, are in situations similar to that of Monongalia County.

The *fourth* reason why coal mining is destined to become an anachronism in our lifetime is *damage to the land and water where it is mined*. For example, the major underground mining in western Monongalia County is leaving an as-yet-unrecognized legacy of massive groundwater depletion and pollution. Almost all mining in the northern part of the state results in long-term acid mine drainage. In the south, huge mountaintop removals and valley fills will cause erosion and sedimentation problems for generations if not centuries to come.

Localized environmental damage is probably the facet of coal's decline of greatest interest to Conservancy members. Unfortunately, the immediate, localized damage caused by coal mining is the least important of the major reasons for coal's decline because relatively few people across the nation or the world are as aware of it as we are. Still, there is growing awareness of that damage and that awareness adds to the call for the phasing out of coal mining and burning.

So what is the point of all this for us as West Virginians or Conservancy members? The point is that the day is not far off when coal mining will not support us no matter what we do. It is more important than ever to protect from coal mining our land and water here and now. Most of West Virginia's economic alternatives to coal (agriculture, forestry, tourism, and even high-tech) depend heavily on healthy land and water. Coal mining interferes with almost all the alternatives.

In one generation or so, the only coal mining activity in West Virginia will be the picking of the bones of the old coal fields such as we see occurring today in the anthracite fields of eastern Pennsylvania. We need to conserve as much vitality in the land and water as we can. Toward the end, the most damaging types of coal mining should be ended now as a first step toward the eventual ending of all mining. Those types including mining in acid producing seams and mining which reduces the quality or quantity of water available on the land affected. Clean water and productive land, not coal, are West Virginia's most important natural resources. We will depend on them forever; the coal will be gone soon.

## Black Fly Spraying Hurts Environment

by ANDREW MAIER

I know that saying this won't make us popular, but here it is anyway: Spraying pesticide in the New and Greenbrier rivers to kill the black flies is a waste of tax dollars and can only hurt the environment and economy of Raleigh and Summers counties.

Let me explain. Our group, Save Our Mountains, has worked for more than 10 years to protect our beautiful and healthful West Virginia environment. We've tackled strip mining, pesticide and herbicide spraying, water quality monitoring and landfill policy. We were the first Summers County group to join the Adopt-A-Highway program. By the way, we also led the fight to keep the Mountain State from becoming the nation's high-level nuclear waste dump when we stopped the MRS.

The black fly spraying, as it's now being done, clearly violates state law. Section 20-5a-5 of West Virginia Law says that no one may pollute our state's waters without first getting a permit. "Pollution" means the man-made "alteration of the chemical,

physical, biological and radiological integrity of the waters of the state." Both sides agree that spraying is killing insects that are part of the rivers' natural faunal community. That's the spraying's purpose. Our state Department of Natural Resources issues the permit that the law requires, but they also contract to have the spraying done.

Now, why don't they issue themselves a permit? It would seem to be simple enough for them to do. Their failure to obtain a permit makes us very suspicious.

Therein lies the rub. To issue a permit, the DNR must hold a public hearing where both sides can be heard. That's where they would have to hear that, according to a study reported in *The Register-Herald*, the Bti spraying is killing fully half of the insect life in the rivers. This means that the spraying will wreck the fishing-based tourism industry here in Summers County. It doesn't take a Ph.D. to see that if half the insects are killed, the fish that eat these bugs will starve and that our fishing industry will suffer in turn.

They would have to hear that Bti isn't supposed to be sprayed on drinking water supplies, or fishermen, for that matter. And that Bti might turn out to be just another in a long line of pest control measures - dating back to DDT - that promised to be completely safe, but were later proven to cause cancer and other human health effects. Our DNR's role in this debate has been a disgrace. We assume, perhaps naively, that the DNR should protect and preserve our environment, not help destroy it.

The pesticide spraying is costing us taxpayers \$240,000 each year. Here in Summers County, where the spray lands, we face a situation where our county commission needs about \$30,000 to balance this year's budget. Last year we almost lost our library and health department. The health department is our last line of defense against some very real and deadly diseases. When I think about its elimination, I recall that the World Health Organization said the gnats are not a health hazard, just a nuisance. We could sure use some of that \$240,000 to help us

build a new sewage treatment plant. I'll bet keeping sewage out of the river will help cut down on all kinds of pesky flies.

Of course we sympathize with people who want to enjoy the outdoors, the "environment," without being tormented by swarms of black flies. I don't mind telling

*Continued on Page 5*

### CHAPTER FORMING...

Let the Audubon Society surprise you. New chapter organization is ongoing in the Charleston area. Emphasis includes all aspects of the natural environment in addition to the identification of and study of birds.

Contact: Joyce Cooper  
WV Citizens Action Group  
1324 Virginia Street, East  
Charleston, WV 25301  
(346-5891)



# The Environment Ethic of Justice William O. Douglas

by MONTY J. PODVA

In 1960, long before environmental issues were popular concerns, Justice Douglas began expressing an environmental ethic in his judicial opinions. From that time forward he refined and often reiterated his concern for the ecology in his judicial writings. His views on the interpretation of the law invariably favor the preservation of the rapidly dwindling natural environment.

The ethic he espouses calls for tighter controls over the use of our air, water, and land resources. He suggests that all persons living within a watershed should be allowed to vote on a proposed dam before it permanently changes the landscape. He suggests that inanimate objects should be allowed their day in court when they are threatened with destruction. He strongly urges society to take heed of the price of "progress." He challenges the desirability of more river-ruining dams, more land-leveling highways, and more air and water polluting poisons in the form of insecticides or radiation from nuclear power plants. Although the basis for his environmental philosophy grew from his own appreciation of the outdoors, he is very much concerned that the needs of future generations will not be met unless we launch a conscious effort to insure a safe and healthy environment for them.

Prior to the adoption by Congress of a formal policy respecting the environment, Justice Douglas relied heavily upon the long-standing "public interest" doctrine when confronted with a case involving the damming of a free flowing river which would have a devastating effect on migratory fish.

"The test is whether the project will be in the public interest, and that determination can be made only after an exploration of all issues relevant to the 'public interest', including future power demand and supply, alternate sources of power, the public interest in preserving reaches of wild rivers and wilderness areas, the preservation of anadromous fish for commercial and recreational purposes, and the protection of wildlife."

The Justice was always cognizant that the ecology of a river varied considerably from that of a reservoir created by a dam. Armed with this information he consistently emphasized,

"The importance of salmon and steelhead in our outdoor life as well as in commerce is so great that there certainly comes a time when their destruction might necessitate a halt in so-called 'improvement' or 'development of waterways'."

Justice Douglas' concern for the salmon was not restricted to the impact of dams on their migratory pathways but against other perils as well. In 1962 the Court decided against the use of fish traps by native Alaskan Indians, but allowed them to be used until the end of the fishing season. Justice Douglas agreed that such 'nefarious and destructive devices' should be banned, but urged that the ban be ordered immediately to prevent any further unnecessary demise in the salmon spawning population.

In cases where the Nation's waterways were being threatened by pollution the Justice often referred in his opinions to the teaching of Mr. Justice Holmes that "a river is more than an amenity, it is a treasure."

It was in one such case that an oil company has allowed gasoline to flow into the St. Johns River. The company's contention was that such commercially valuable gasoline was not "refuse matter" and thus did not fall under the jurisdiction of the Rivers and Harbors Act. Justice Douglas, writing for the Court, quickly pointed out:

"Oil is oil and whether useable or not by industrial standards it has the same deleterious effect on waterways. In either case, its presence in our rivers and harbors is both a menace to navigation and a pollutant."

He consistently applied this straightforward approach when handling specious arguments where the sanctity of the environment was in jeopardy.

In another instance a lower court held that a State statute providing for strict liability for any oil spill damage was preempted by Federal laws relating to oil spills. The lower court was unanimously overruled and Justice Douglas made a special effort to point out that oil spills were "an insidious form of pollution of vast concern to every coastal city or port and to all the estuaries on which the life of the ocean and the lives of the coastal people are greatly dependent."

He firmly upheld the right of the States to protect their coastlines and waterways independently of any Federal actions against pollution.

Perhaps the clearest expression of his environmental philosophy appears in his ringing dissent to an order issued by the Court in 1974. The air and water of Lake Superior were receiving dangerous discharges of asbestos fibers from mining operations. The lower court has issued an injunction halting the discharge and effectively closing down the operations. The appeals court and the Supreme Court refused to vacate the stay. Justice Douglas vividly describes the reasons for his opposition to the Court's inaction:

"If equal Justice is the Federal standard we should be as alert to protect people and their rights as the Court of Appeals is to protect 'maximizing profits'. If as the Court of Appeals indicates, there is a doubt, it should be resolved in favor of humanity, lest in the end our judicial system be part and parcel of a regime that makes people, the sovereign power in this Nation, the victims of the great god Progress which is behind the stay permitting this vast pollution of Lake Superior and its environs. I am not aware of a constitutional principle that allows either private or public enterprises to despoil any part of the domain that belongs to all of the people. Our guiding principle should be Mr. Justice Holmes' dictum that our waterways, great and small, are treasures, not garbage dumps or cesspools."

The depth of Justice Douglas' concern for the Nation's waterways was again expressed when the court refused to grant original jurisdiction to decide whether or not a public nuisance was created by dumping toxic mercury into Lake Erie. He was dismayed when the Court refused to accept the responsibility for making an important decision respecting the purity of interstate waterways. His exasperation was reflected in his dissent when he wrote, "I can think of no case of more transcending importance than this one." Later when the Court held that the franchise could be limited to property owners in the creation and maintenance of a watershed improvement district, Justice Douglas spoke out in dissent on behalf of the lessees and tenants within the district who would have no vote on future water projects:

"The enormity of the violation of our environmental ethics is only increased when the ballot is restricted to or heavily weighted on behalf of the few who are important only because they are wealthy."

Justice Douglas first expressed his environmental concern in a judicial opinion in 1960 in a dissent from a denial of certiorari. The case arose over DDT being dropped from airplanes in an effort to control the gypsy moth infestation of trees.

When it came to highway construction that would invade inner-city parklands, Justice Douglas used the same arguments he had dramatically presented a decade or so earlier when he led the drive to save the C&O Canal from becoming a freeway. He pointed out:

"One need not be an expert to realize how awful the consequences are when urban sanctuaries are filled with structures, paved with concrete or asphalt, and converted into thoroughfares of high speed modern traffic."

On the question of litter, Justice Douglas saw an opportunity to implement his environmental ethic. He would have eased the freight rate structure for recyclable material. He explained it this way:

"Rates affecting litter, like rates affecting other commodities, obviously are relevant to the ease and expedition with which it will be transported. To get the litter to appropriate recycling plants in the quantities needed to protect our fast depleting forests and our non-renewable resources and to relieve our landscape of the litter that plagues us may need special incentive rates."

As in other areas, in his discussion of nuclear power plants Justice Douglas had an eye on the future. He knew that once a power plant was built, economic factors would compel its usage despite potential flaws in its safe operation. He was adamant in his dissenting opinion that the safety issue had to be resolved *before* a construction permit was granted and not merely before the completed plant was licensed to operate. He condemned the Court for going along with the Atomic Energy Commission's decision which he witnessed as being "a light-hearted approach to the most awesome, the most deadly, the most dangerous process that man has ever conceived."

Clearly there is one opinion issued by Justice Douglas that epitomizes his environmental ethic, and that dissenting opinion came when the Court ruled that the Sierra Club failed to show why it should be allowed to bring suit to prevent the commercial development of the pristine Mineral King area in the Sierra Nevada. Douglas would have none of this and suggested that the "standing" requirements be changed to fit the needs of the times:

"Contemporary public concern for protecting nature's ecological equilibrium should lead to the conferral of standing upon environmental objects to sue for their own preservation."

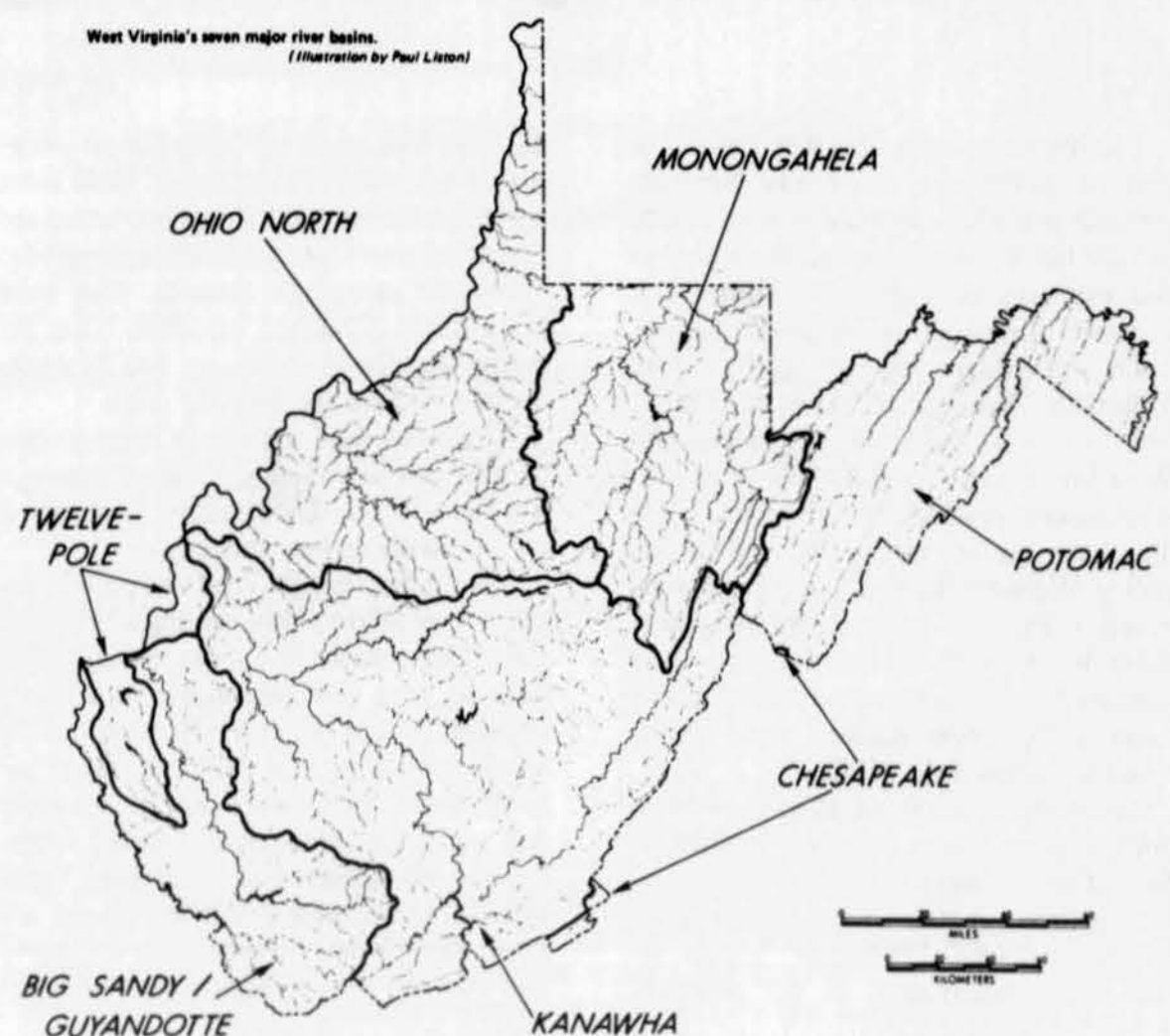
He did not stop there. He went on to fashion such a rule that would allow those who possessed intimate knowledge of an inanimate object to be its spokesman. He decreed:

"The river as plaintiff speaks for the ecological unit of life that is part of it. Those people who have a meaningful relation to that body of water - whether it be a fisherman, a canoeist, a zoologist, or a logger - must be able to speak for the values which the river represents and which are threatened with destruction."

Not only does Justice Douglas reveal an environmental ethic in his judicial opinions, he also calls for a renaissance in legal thinking when the environment is at stake. He warns against the longstanding policy of listening solely to the manufacturing-industrial complex as they call for "progress" by urging us to strip our land and use "our rivers, lakes, and atmosphere as technological sewers." He calls for a greater sensitivity to our ecology that would enhance our own lives as well as the lives of successive generations. "Ecology," he wrote in the Mineral King case, "reflects the land ethic." The land ethic he referred to was Aldo Leopold's notion that the community of mankind must be expanded "to include soils, water, plants, and animals, or collectively: the land."

Monty Podva has served as Law Clerk to retired Justice Douglas since 1977. He previously served as emergency planning analyst with the California Energy Commission.

— EPA JOURNAL, November/December 1979





## Coal-Cleaning Process Could Help Utilities Cut Pollution Cheaply

By JON R. LUOMA

Researchers at a California company say they have developed and tested a new process for chemically "washing" most of the sulfur from high-sulfur coals.

If the process can be shown to work on a commercial scale and at a competitive price, it could allow coal-burning electric utilities to reduce air pollution linked to acid rain without installing costly filtering equipment called scrubbers.

Officials at the Department of Energy, which helped finance the research, suggest that costs for the new process may be competitive almost immediately with scrubbers in limited cases, particularly with extremely expensive installations at some smaller power plants.

"No other coal-cleaning process has shown this kind of promise," said Richard Hucko, a department official who supervised a \$5 million grant to the California company, TRW Inc., to demonstrate the technology in a pilot plant.

If the new process can be proven to work commercially, it could dramatically alter industry's approach to reducing sulfur dioxide. Instead of filtering the pollution from stack gases after combustion, the new process would remove the potential for pollution before the coal was burned.

When sulfur is burned with coal it forms sulfur dioxide gas. The pollutant is regulated by the Environmental Protection Agency as a respiratory threat, but the gas also can become acid precipitation. A number of bills pending in Congress call for dramatic reductions in sulfur dioxide emissions from power plants to help control acid rain.

Scrubbers, the most commonly used technology for sulfur dioxide control, filter the pollutant gas after combustion by spraying lime or a similar calcium compound and water across the emission stream just before it escapes up a smokestack. The sulfur dioxide bonds to the spray and settles as a mud-like slurry that can be pumped out for disposal. But the process is extremely expensive, typically costing \$100 million or more for installation at a large plant.

The new washing process removes 90 percent or more of the sulfur from coal. Since little sulfur dioxide would be created from the clean coal during combustion, utilities could meet the most stringent current Federal air quality standards without installing scrubbers.

### "Organic Sulfur" Left Behind

Limited coal "washing" techniques have existed for nearly 100 years. But these removed only a portion of the iron pyrite, a sulfur-rich impurity that commonly runs through veins of coal. Left behind was "organic sulfur" bound into the carbon molecules of the coal. The organic sulfur can constitute up to half of the total sulfur in higher sulfur coals.

TRW's system injects sodium and potassium hydroxides into a kiln, where they are mixed with high-sulfur coal and heated to about 750 degrees Fahrenheit. At those temperatures, the chemicals melt, are absorbed into the coal molecules, and react with and dissolve sulfur and several minerals.

Removed from the kiln, the mixture passes through a series of water and acid washes and filters to remove both the pyritic and organic sulfur and separate the purified coal. The process also recovers a few trace contaminants in the coal, including alumina, cresylic acids and activated carbon, all of which can be sold on the industrial market.

The system also reconstitutes the sodium and potassium hydroxide and removes wash water, all of which can be recycled in the process.

In 10 weeks of tests completed in May, the process eliminated more than 90 percent of the sulfur in samples of even the highest sulphur coals, coal containing about 4.5 percent sulfur taken from Ohio, West Virginia and Kentucky.

Robert A. Meyers, the TRW researcher who managed the research project, said the cleaned coal would meet the E.P.A.'s most stringent regulations with no further filtering. Additionally, he says, the coal produces more heat energy than contaminated coal - about 14,000 British Thermal Units per pound as against about 12,500 B.T.U.'s. Since it also produces a purer and more combustible coal, combustion produces far less ash. Typically, ash-clogged equipment causes maintenance and shutdown problems at coal-burning power plants.

### Impact on Dirtier Plants

But the new coal-washing technology is hardly cheap, costing from \$25 to \$30 per ton of coal burned. Dr. Meyers said the company has projected that those costs could decrease by about 20 percent with improvements in efficiency. At that point, he suggests, the cost would be about \$1.60 per million B.T.U.'s of energy produced, approaching the cost of scrubbers in new installations.

Richard Tischer, project manager for flue gas cleaning research at the Department of Energy's Pittsburgh Energy Technology Center, said, however, that he was "somewhat skeptical" that those costs would be competitive with new installations in the near term.

The real impact of the new process could come at older, dirtier plants, Dr. Tischer said. Installing and operating scrubbers there can cost up to 50 percent more than at newer plants because furnaces were not designed to accommodate scrubbers. In some cases, scrubbers would be difficult to install because of design problems.

In fact, the most urgent need for sulfur dioxide control is at the dozens of older coal burners in the Ohio River Valley and elsewhere in the Midwest that are not equipped with scrubbers. Delivering washed coal to those plants could be at least one-third less expensive than installing scrubbers, Dr. Meyers said.

"We'd expect to be extremely competitive at smaller plants and with retrofits, the kind of plants peppered all over acid rain country, like the Ohio River Valley," he said.

Further, costs might improve dramatically in time. "Scrubbers have been around for a long time, and the economies of scale and learning curves are pretty well done," said Clark Harrison, manager of the Coal Quality Development Center for the Electric Power Research Institute, the research arm of the electric utility industry. "But history tends to teach us that new technology gets cheaper as we learn more about it."

The TRW research team and Department of Energy experts have also suggested that the washed coal could replace fuel oil in many instances. That indeed may turn out to be one of its key uses, said Mr. Hucko of the Department of Energy. It is roughly as pure as lower sulfur fuel oils and with the addition of a small amount of water, can be turned into a slurry "with the consistency of ket-

## DOE's Dual Focus Is Questioned Anew

BLACKWATER FALLS - Visitors to West Virginia last week asked the same question environmentalists have asked since the inception of the West Virginia Department of Energy (DOE) - how can the same department promote energy development and protect the environment?

The group of eight Europeans and one Canadian spent two days in the Mountain State on the last leg of a month-long look at environmental protection efforts in the United States. The tour was sponsored by the Visitor Program Service (VPS) under a grant from the United States Information Service (USIA).

DOE commissioner George Dials stressed the importance of mining in West Virginia's economy and applauded the dual role of his department - to promote, encourage and enhance the exploration, development and production of energy resources, while ensuring the protection of the state's human and environmental resources.

"Development and protection go hand-in-hand," the commissioner said. But his comments met with surprise and skepticism from the group, which included government ministers and politicians, full-time journalists and the spokesperson for a major environmental organization from Austria, Canada, Czechoslovakia, Malta, the Federal Republic of Germany, France, Norway, Sweden and the Organization for Economic Cooperation and Development (OECD).

"There is no environmental department?" asked Brendon Gillespie of England, administrator of the environment directorate of the OECD based in Paris. "How do you develop an overall policy?"

"The DOE is responsible for all inspection and enforcement for the coal, oil and gas industry. We have the ability to shut-down an operation," Dials explained. "Performance standards are well-defined and will be better defined when we get through this negotiation and resolve the litigation brought by the environmental community."

Last year about 15 environmental and public interest groups sued the DOE to compel it to enforce provisions of the state and federal surface mining and reclamation acts. The groups charged that the DOE did not have enough inspectors to fulfill its obligations to do routine inspections, let alone

respond to citizen complaints, and testify at hearing on enforcement actions.

The groups cited information from U. S. Office of Surface Mining documents to prove that citations were issued by the DOE for only about 20 percent of violations. Once cited, a mining company's compliance with the law remained voluntary, the suit charged. Fewer than five percent of any civil penalties levied against companies for violations were ever collected.

Operators were not required to keep reclamation current and reclamation bonds are insufficient to reclaim an area if the bond is forfeited, the suit charged. Mines have been classified as "temporarily inactive" for as much as six years. Inspections are reduced and the site may, in essence, be abandoned, but bond forfeiture is delayed and the operator is free to continue mining coal in the state without reclaiming the site.

Moreover, bonds are not sufficient to complete reclamation if an operator abandons the site and the suit charged that bonds have been returned to operators while permit violations still existed. Two-acre "prospecting permits" were routinely used to subvert the regular permitting process, the suit charged.

The suit seemed to highlight what the group considered the shortcomings of a fragmented environmental policy. Enforcement is a burden the government should bear, said Jacques-Andre Rivard, a journalist with the Canadian Broadcasting Corporation. Instead, the responsibility rested on citizens. If the same agency is responsible for promotion of an industry and protection from it, there seemed an obvious conflict of interest.

Rivard's views were echoed by Cindy Rank, president of the Highlands Conservancy. Rank was invited to the workshop to represent the environmental community. "As citizens it is so difficult. We have to educate ourselves to know and use the law and to deal with each department or division of state government," Rank said. Problems with water pollution may fall under a variety of departments depending on the source of the pollution, Rank said. "It becomes very difficult from a citizens point of view."

— THE RECORD DELTA,  
119th Year/No.77

### Continued from Page 3

you, those flies can drive me nuts. But they need to be there. You can't rationally make a distinction between "the flies" and "the environment." The flies are part of the environment. They always have been, and God willing, they always will be. Our environment includes all of creation, the parts we like and the parts we don't.

The people of southern West Virginia have been given fabulous gifts: immense mineral wealth, spectacular scenic beauty and a natural environment envied by our more developed neighbors. We were given the New River Gorge. Will we strip mine it, or build landfills there? Given the rich

chup," says Dr. Meyers. Despite the water, the slurry is highly combustible and could be used in a wide range of industrial furnaces and perhaps even railroad locomotives, which now rely on diesel fuel, he said.

— THE NEW YORK TIMES,  
Tuesday, July 18, 1989

southern metallurgical coal fields, should we dump nuclear waste? And given the New and Greenbrier rivers, arguably the best seven miles of freshwater fishing in the east, should we spend our money to kill the fish's food?

A century ago Mark Twain watched the wholesale slaughter of many animals that are today extinct, lost forever. He spoke of God's creation: "We praise all His works, with a fervent enthusiasm - of words; and in the same moment we kill a fly, which is as much one of His works as is any other." Twain asks us: "Does any of us inordinately praise a mother's whole family to her face, indiscriminately, and in that same moment slap one of her children?"

Let's save the gnats and the rivers. Long may they live. The gnats are the sign of a healthy river. The sign of a whole and healthy environment, for us and for our children.

Andrew Maier is president of Save Our Mountains, an environmental action group headquartered in Hinton.



# What's Going On Down There?

## *Pervasive groundwater contamination prompts new cleanup approaches*

By CHARLES E. KNOX

Who says we don't recycle our hazardous wastes? Chemicals washed, spilled or leaked into underground reservoirs can come pouring back through faucets. According to an October [1988] report by the U. S. Geological Survey (USGS), wells in every state in the United States - where drinking water for more than half the population comes primarily from groundwater - contain potentially dangerous substances exceeding acceptable levels set by the Environmental Protection Agency (EPA).

More than 10 million Americans probably now use tap water with contaminant levels that exceed EPA standards, says Jay H. Lehr of the Association of Groundwater Scientists and Engineers, in Worthington, Ohio. Although Lehr calls the EPA standards conservative and claims all U. S. Public water supplies are safe for drinking, many scientists believe more Americans will be directly affected by polluted groundwater in coming decades. Occasional events severely threatening local water quality and a growing awareness that groundwater pollution will not simply go away have led researchers to seek innovative ways to clean up the hidden contamination. "Even if we stop polluting by 2000, the residual problem will be around until at least 2030," Lehr says.

Every day, runoff tainted with hundreds of hazardous chemicals from city streets, fertilized fields and mining operations enters soil and aquifers, Earth's subsurface reservoirs. But hydrocarbons - such as crude oil, gasoline and creosote - leaked from storage tanks or spilled from vehicles have polluted more of the U. S. groundwater drinking supply by volume than has any other class of chemicals. Cleanup efforts have failed to keep pace with this toxic accumulation, in part because many physical and chemical properties of groundwater and aquifers - major influences on the success of cleanup strategies - remain poorly understood.

However, prospects for cleansing the nations' groundwater of contaminants appear brighter thanks to new computer programs that predict how effectively cleanup techniques will work at specific sites, and to a newly proven method for eliminating pollutants in soil above the water table. These approaches still need refining, but they could reduce the expense and increase the effectiveness of cleanup work in coming decades.

Many future cleanup efforts probably will harness the appetites of bacteria that thrive on hydrocarbon pollutants. Microbiologists have known since the late 1970s that microbes break down hydrocarbons in soil and groundwater into carbon dioxide and methane gases. These gases then escape to the atmosphere, leaving cleaner water and soil behind. Scientists wondered whether the bacteria entered the ground with the pollution or resided there naturally until recent experiments showed the microbes can be native to aquifers (SN: 3/5/88, p. 149).

More and more species capable of converting hydrocarbons to carbon dioxide in the presence of oxygen are being identified in ongoing laboratory and field studies at EPA's Robert S. Kerr Environmental Research Laboratory in Ada, Okla., Rice University in Houston and elsewhere. Other species that degrade hydrocarbons into methane under anaerobic conditions are being documented at facilities including the USGS Menlo Park, Calif., center and Stanford University.

Because of the very low natural concentrations of hydrocarbons below ground, "these bacteria are usually starving," says Calvin H. Ward of Rice. But when hydrocarbon pollutants flow into their realm, they flourish, feasting at will. Even so, explains John T. Wilson of the Kerr Laboratory, they can't consume enough hydrocarbons to restore water quality because they eat too slowly. Without human intervention, microorganisms typically degrade only about 1 percent of the hydrocarbon pollution flowing past, he says.

A lack of key chemicals in soil and groundwater slows bacterial digestion. To metabolize hydrocarbons more rapidly under anaerobic conditions, microbes need more nitrogen and phosphorus than naturally exist below ground. Aerobic microorganisms require more oxygen as well.

But if humans supply enough of these appetite-whetters, the microbes can eat "pounds of pollutants" quickly enough to restore the quality of water before it seeps beyond their reach, Ward says. To stimulate bacteria to gorge themselves, microbiologists have devised ways of pumping into soil and groundwater liquids containing oxygen and/or nutrients - sometimes increasing concentrations to more than 100 times their natural levels.

Working with EPA's Wilson, Rice environmental engineers Hanadi S. Rifai and Philip B. Bedient have developed a computer program to predict how fast stimulated aerobic microbes will consume hydrocarbons. They hope the estimates will help make many cleanup efforts more cost-efficient and thorough. Operating at more than 100 U. S. universities, regulatory agencies and consulting firms, the program works by calculating how quickly oxygen reacts with contaminants, and modeling where and how rapidly injected oxygenated water spreads underground.

In the October *Journal of Environmental Engineering*, the researchers report their program "reasonably" simulated the results of an actual two-year effort to speed removal of spilled aviation fuel at a Michigan site. The model predicted that with a specified amount of additional oxygen, microbes would consume about 1 percent of the remaining spill per day. Observations indicate the daily rate actually averaged about 1.25 percent. Wilson says pollutant levels at the site "are rapidly approaching concentrations not hazardous to human health." Rifai plans to expand the model so it also determines how strongly added nutrients supplement oxygen in speeding hydrocarbon consumption.

An important feature of the computer program is its ability to indicate how much added oxygen is too much, Wilson says. "There's a limit to how much the 'bugs' can use," so adding oxygen past this point wastes money. For future applications, EPA may switch to hydrogen peroxide. "It is much more soluble than oxygen, requiring orders of magnitude less time to flush a system," Wilson says.

Enhancing microbial munching just in small groundwater pockets may be enough to clean many polluted sites, says Stephen E. Ragone of the USGS Water Resources Division in Reston, Va. He cites new findings by Edward M. Godsy and his USGS co-workers in Menlo Park and by Dunja Grbić -Galić at Stanford that indicate microbes confined to areas as small as a cubic meter can clean contaminated regions up to 100 times larger by filtering groundwater flowing through the pockets they inhabit.

Microbes do not break down all groundwater contaminants. Efforts to remove these more-resistant pollutants involve wells that pump clean water into aquifers and others that pump out polluted groundwater, which is usually treated and returned to the ground. But cleanup crews can't flush out polluted groundwater until they find it, and locating contaminants proves very difficult.

Dozens of factors influence where groundwater flows, and these variables can change instantaneously and over tiny distances. To complicate matters, scientists usually possess little detailed information about the ground beneath a polluted site. To overcome this limitation, researchers seek ways to design effective pumping systems based mainly on groundwater samples, which are relatively easy to obtain.

Hydrologists at Stanford and USGS in Menlo Park have designed a computer program to establish the well locations and pumping rates that best clean specific sites. With more data to describe local groundwater flow, the model's solutions improve. But codeveloper Steven M. Gorelick of Stanford says its key innovation is providing good answers "when we really don't know much about the geology of the subsurface."

With data from a few groundwater samples, the model formulates thousands of possible maps for a single contamination plume. From these, the program randomly selects 30, an amount codeveloper Brain J. Wagner of USGS says virtually encompasses the area that all the possible plumes would cover. The model then produces a pumping plan that would reduce specified contaminants in each of the 30 possible plumes to acceptable levels within a set budget and time limits.

Described by Wagner in a September Stanford doctoral thesis, tests of the model using hypothetical situations show its solutions decontaminate at least 92 percent of those plumes. He says in real situations hydrologists can test groundwater at locations unique to the few plumes a devised pumping system would fail to clean adequately. If those samples suggest such plumes might really exist, another run of the model can come up with a new system that handles them. Wagner and Gorelick, who outlined the technique in the July 1987 *Water Resources Research*, say the program still needs improvement because it ignores vertical variations in aquifers.

In some cases, pollutants adhere to soil above the water table despite flushing with clean water. In others, contaminants in that unsaturated zone comprise the entire problem. A process similar to water flushing, pumping air into ground above the water table can remove hydrocarbon pollutants trapped in the soil, according to new observations by researchers from USGS and the University of Connecticut in Storrs.

Hydrologists have speculated that injected air could force volatile hydrocarbon contaminants to vaporize and escape from the soil. Although private engineering firms have utilized this concept since 1980, "a lack of study of this method has left researchers uncertain of its universal applicability," says Arthur L. Baehr of the USGS Trenton, N.J., office.

Baehr and George E. Hoag of the University of Connecticut led a team that used the technique, known as induced air venting, to decontaminate soil around a leaky tank at a Connecticut gas station. Their results, scheduled for publication early next year in the *Journal of Contaminant Hydrology*, indicate the venting may have forced all the pollutants out of the ground.

"Whether or not the gas has been completely removed, the soil has been completely rehabilitated," Baehr says. "No one's worried about the site anymore." He says although expensive methods exist for collecting the vapors, "discharging them to the atmosphere is not nearly as bad a pollution problem as the exhaust from diesel trucks, and certainly is preferable to leaving contaminants in the soil."

Baehr says air venting and other evolving methods, along with better understanding of the physics and chemistry of groundwater, will help regulators decide which sites pose the greatest threats to human safety and the environment and thus deserve high cleanup priority. Ironically, he says, in some cases the best decisions may involve less action: "It may eventually become possible for scientists and engineers to walk away from some sites," confident that groundwater cleanup efforts should be concentrated elsewhere.

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### **EVENING WATERFALL**

*What was the name you called me? —  
And why did you go so soon?*

*The crows lift their caw on the wind,  
And the wind changed and was lonely.*

*The warblers cry their sleepy songs  
Across the valley gloaming,  
Across the cattle-horns of early stars.*

*Feathers and people in the crotch of  
a treetop  
Throw an evening waterfall of  
sleepy-songs.*

*What was the name you called me? —  
And why did you go so soon?*

— Carl Sandburg

### **ON A FLY DRINKING OUT OF HIS CUP**

*Busy, curious, thirsty fly!  
Drink with me and drink as I:  
Freely welcome to my cup,  
Couldst thou sip and sip it up:  
Make the most of life you may,  
Life is short and wears away.*

*Both alike are mine and thine  
Hastening quick to their decline;  
Thine's a summer, mine's no more,  
Though repeated to threescore.  
Threescore summers, when  
they're gone,  
Will appear as short as one!*

— William Oldys



## A Calendar of WV Conservation Organizations' Outings And Other Nature-Related Activities

Aug 15-Oct 8	Bird Banding on Dolly Sods BCC
Aug 16	Moncove Lake with Sam English, Princeton, BIBBEE
Aug 19	About Wild Ginseng, 1-5 pm, Mgmt. BRAD
Aug 19-21	Oglebay Summer Wildflower Weekend
Aug 21	Crump's Bottom History w/Bob Farley, Pipestem area, BIBBEE
Aug 26-28	Oglebay Mushroom Weekend
Aug 28-29	FOOTMAD concert & MDI hike in Kanawha Valley, Doug Wood, WVSTA
Aug 31-Sept 4	BBC & BIBBEE Labor Day Weekend, Greenbrier Youth Camp, Anthony
Sept 10	Hunting Fall Mushrooms & Nature Exploration, Mgmt BRAD
Sept 15-17	Hawk-Watching Weekend at Dolly Sods BBC
Sept 15-19	Legislative Coalition Weekend, Cedar Lakes, Groundwater Coalition
Sept 16-18	East River Mountain Hawk Watching, BIBBEE
Sept 23	Fossil Hike in Eastern Panhandle TNC
Sept 23-24	Dolly Sods Fall Bird Migration Trip * BRAD
Sept 24-25	East River Mountain Hawk Watching, BIBBEE
Sept 29-Oct 1	NW Passage Chapter Overnighter, George Rosier, 296-5158, WVSTA
Oct 1	Annual Meeting and Wild Food Dinner, Lerona, WV, BIBBEE
Oct 8	Brush Creek Falls & Canby's Mt Lover w/Oliver Johnson, BIBBEE
Oct 7-9	ALLEGHENY TREK FOR LIFE AND BREATH, L. Schrader, 342-6600, WVSTA
Oct 13-15	BBC Annual Meeting at Cedar Lakes
Oct 14	TNC Braxton County Trek
Oct 13-15	WVHC Fall Review
Oct 14-16	BBC Annual Meeting, Cedar Lakes, Ripley
Oct 21-22	WV Wineries Tour * BRAD
Nov 5	BBC Board of Directors Meeting in Wheeling
Nov 9-12	BBC Eastern Shore Trip
Dec 2,3	A Grand Pre-Christmas Afternoon Driving Tour
Dec 14-Jan 2	BBC Christmas counts
Dec 17	Christmas Bird Count BBC, BIBBEE

This calendar is prepared for outdoor-lovers and conservation-minded folks as a service of Back Roads Adventures, Inc. For the entire year's listing to assist with planning to spend more time enjoying the WV outdoors, send \$3 and a stamped, self-addressed envelope to BRAD, Rt. 5, Box 228A, Morgantown, WV 26505.

### Key and Contact (if none given within):

**BBC** - Brooks Bird Club, Helen Conrad, Wheeling, 547-1053  
**BRAD** - Back Roads Adventures, Mgmt., 296-0565. Reservations needed.  
**GC** - Groundwater Coalition, WV Citizens Action Group, Charleston, 346-5891  
**HTSAS** - Huntington Tri-State Audubon Society, Tom Igou, 429-5409  
**MAS** - Mountaineer Audubon Society, Mgmt., Sally Stebbins, 599-7015  
**OGLEBAY** - Brooks Nature Center, Oglebay Park, Wheeling, WV 26003  
**TNC** - The Nature Conservancy (WV Chapter), Emily Grafton, 292-0229  
**WVHC** - The WV Highlands Conservancy, C. Rank, 924-5802  
**WVSC** - The WV Sierra Club, Greg Good, 296-6850  
**WVSTA** - WV Scenic Trails Association, George Rosier, 296-5158

## Despite Rules, Toxic Chemicals Still Abound

West Virginia's air, water and land are still being polluted with toxic chemicals despite 15 years of federal and state regulations and more recent voluntary curbs by industry, according to a report by the West Virginia Citizens Action Group.

WV-CAG Director David Grubb said West Virginia's largest chemical manufacturers produced nearly 170 million pounds of toxic waste during 1987, and about 9 percent - 16 million pounds - of that is suspected of causing cancer.

"If you would have stepped into the same room 15 years ago, you would have heard the same thing," Grubb said at an afternoon press conference. "Federal and state policies have not kept pace."

The 32-page WV-CAG report, "Toxics in Our Midst," was compiled from 600 forms companies are required to file with the state Department of Health and Human Services. It found that just over half of the toxic waste was released into the state's waterways, 20 percent into the air, 17 percent into off-site waste treatment facilities, 7 percent to landfills and the rest into sewage treatment or underground injection sites.

The top 10 toxic polluters in West Virginia, their location and the amount of waste in pounds are: PPG Industries of Wetzel County, 26.9 million; Olin Corp. in Kanawha County, 22.1 million; DuPont in Kanawha, Wood and Berkeley counties, 18.5 million; Rhone-Poulenc AG Co. in Kanawha County, 15.1 million; Wheeling-Pittsburgh Steel in Ohio and Brooke counties, 11.6 million; Inco Alloys International in Cabell County, 7.6 million; Mobay Corp. in Marshall County, 7.5 million; Minnesota Mining in Jefferson County, 7 million; FMC Corp. in Kanawha and Putnam counties, 7 million.

The top five toxic counties, Kanawha, Marshall, Wood, Brooke, and Cabell, produce 81 percent of the toxic waste in the state. The top 10 firms produce 78 percent of the toxics in the state.

## Steam Treatment Station Dedicated

In recent years acid rain and the damage to lakes, streams, and forests it causes have become one of the major environmental problems facing the world. West Virginia has not been exempt from acid rain damage and one of the victims has been the Cranberry River.

Until the 1960's the Cranberry was one of the finest trout streams in the state. The river was capable of both maintaining a native trout population as well as retaining stocked fish from one year to the next. In the mid-1960's, however, the stream became increasingly acid and by the 1970's the native and holdover trout had been eliminated. Stocking was possible only in the late spring months.

The ultimate solution to the acidification of the Cranberry and other bodies of water is, of course, the elimination of acid rain. As anyone who keeps up with the news is aware, acid rain and its control have become as much a political problem as a scientific one and thus the final solution is years away.

Short of an over-all solution to acid rain, federal and state agencies are making efforts to find ways to mitigate the effects of acid rain on individual streams and lakes. One approach is the application of lime to a stream or lake to counter balance the increased acidity.

One such project is the Cranberry River Treatment Station, which was dedicated this past Saturday. The station is located on the Dogway Fork of the Cranberry in Webster County, about seven miles from Rt. 39. The Dogway Fork and North Fork are the source of most of the acid in the Cranberry River.

The station uses two water powered rotary drums to produce a slurry of CaCO<sub>3</sub> by the grinding of limestone aggregate within the drums. The outside of the drums have water buckets similar to those found on the water wheels that powered the old grist mills. Holes drilled in the cups allow water to flow in and out of the drums and carry off the finely ground limestone. To provide water to the drums, the Dogway Fork has been dammed and water diverted into a sluice. The water flows to the drums from overhead, (an "overshot wheel" on a grist mill).

The limestone is fed automatically into the drums from an overhead storage bin. The rotation of the drums activates the feeding mechanism.

The station regulates the amount of treatment based on stream flow. At high flow it will produce 15 grams per drum per second of ground limestone.

This water-powered rotary drum system was developed in the late 1950's by the West Virginia Department of Natural Resources under the leadership of DNR fish biologist Pete Zurbuch. The first experiment was on Condon Run of Otter Creek.

An improved self-feeding system was designed in a cooperative effort between the DNR and the College of Engineering at West Virginia University. A station similar to the one on Dogway Fork was put into operation on Otter Creek in 1983. The Dogway Station went into operation in the fall of last year.

The Dogway station is a joint project of the DNR, the U. S. Fish and Wildlife Service, and the U. S. Forest Service. The cost of the present two drum facility was \$302,000. The Fish and Wildlife Service provided \$247,640, the DNR \$45,300, and the Forest Service \$9,060.

This project is one of the four being sponsored by the Fish and Wildlife Service as part of its Acid Precipitation Program. The Dogway project will be in its research phase for another two years to collect data on how the treatment affects the stream. At the end of the research portion of the project, it is planned to add a third drum to the Dogway Fork Station.

The building at the site provides space for dry storage of the limestone aggregate and cover for the bins that feed the drums. The aggregate is also stored outside the building.

The construction firm for the project was Xcavations Company of Clarksburg.

A second treatment facility for the Cranberry River is being planned. It is to be located at the mouth of North Fork and will be a six drum facility. Fish biologists are hopeful that once both treatment facilities are in operation about 25 miles of the Cranberry River will be returned to a productive trout fishery.

On the day of the dedication the Dogway Fork Treatment Station was doing the job for which it was designed. Above the station the pH of the water (the measure of acidity and alkalinity) was a very acidic 4.38 but an almost neutral 6.54 along the two mile stretch of Dogway Fork below the station. The DNR began stocking Cranberry two months earlier than usual this year because of the presence of the treatment station.

U. S. Senator Robert Byrd was the keynote speaker for the dedication program on Saturday. He called the facility "a step toward recapturing the beauty and purity of an earlier environment" and referred to the project as an example of "constructive government investment at its best."

Senator Byrd stressed West Virginia's heritage of natural beauty and how this project is a step towards the renewal of that heritage.

DNR Director Ed Hamrick served as master of ceremonies for the program. He pointed out the efforts of Mr. Zurbuch in making the stream treatment program a reality.

Also making brief remarks were Governor Gaston Caperton, Congressman Alan Mollohan, and Dave Unger, Associate Deputy Chief of the U. S. Forest Service. Mr. Mollohan's remarks on the value of the project in restoring the Cranberry River as a fishing stream were underscored by his young children playing on a large pile of limestone aggregate as he spoke.

The site of the Dogway facility was the location of a lumber camp operated by the Cherry River Boom and Lumber Company in the 1910 period.

— THE POCAHONTAS TIMES, June 29, 1989

Grubb recommended stricter federal and state regulations to enforce air and water pollution as well as continuing public pressure on the chemical industry to reduce pollutants. He noted that two firms that announced plans to voluntarily reduce emissions, Monsanto and Union Carbide, are located in the Kanawha Valley where media attention and public pressure have increased since a chemical leak at Union Carbide's Institute plant leak in 1986.

Manufacturers in the Ohio River Valley have not faced the same pressures to reduce pollution and consequently "it is not as high on their corporate agenda."

WV-CAG's report recommends passage of a regulation proposed by the Air Pollution Control Commission which would require chemical firms to use the best available technology to control 14 toxic pollutants. On the federal level, it recommends passage of House Bill 2585, an alternative to President Bush's Clean Air Act, which Grubb said was too weak.

— The Charleston Gazette, Wednesday, July 26, 1989



**Registration Form  
WVHC 1989 Fall Review  
Bluestone State Park  
October 13 - 15**

Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 \_\_\_\_\_  
 Phone (        ) \_\_\_\_\_  
 # of people in party:    \_\_\_\_\_ adults(s)    \_\_\_\_\_ children

**LODGING** - The Bluestone State Park cabins each have two (2) bedrooms to sleep a total of four adults. We will assign two couples per cabin, except for families with children. Let us know if your family would like to reserve an entire cabin for the weekend. We can reserve two extra cots per cabin. Remember to call Pipestem State Park directly for reservations at the lodge, the toll-free number is 1-800-Call WVA, or (304) 466-1800.

**Registration fee:** \$3.00 per adult        \$ \_\_\_\_\_

**Cabin Reservations:**

Friday:        \$14.00 per person x \_\_\_\_\_ = \_\_\_\_\_

Cots:         \$ 4.00 per person x \_\_\_\_\_ = \_\_\_\_\_

Saturday:    \$14.00 per person x \_\_\_\_\_ = \_\_\_\_\_

Cots:         \$ 4.00 per person x \_\_\_\_\_ = \_\_\_\_\_

Total Lodging ..... \$ \_\_\_\_\_

**Whitewater Raft Trip:**

\$61.48 per person x \_\_\_\_\_ = \_\_\_\_\_  
 (Age 14 & over only)

Total to send in ..... \$ \_\_\_\_\_

Need Canoe Rental \_\_\_\_\_

**Saturday Buffet:** #adults \_\_\_\_\_ #children \_\_\_\_\_

The price of the catered buffet will be \$6.50 for adults and \$2.75 for children under 12. We will pay for our buffet on Saturday, but please indicate if you plan to join us, so we can plan ahead.

**Nature Skool:**

Children's Names \_\_\_\_\_ Age \_\_\_\_\_

\_\_\_\_\_ Age \_\_\_\_\_

\_\_\_\_\_ Age \_\_\_\_\_

**Children needing childcare during weekend**

Children's Names \_\_\_\_\_ Age \_\_\_\_\_

\_\_\_\_\_ Age \_\_\_\_\_

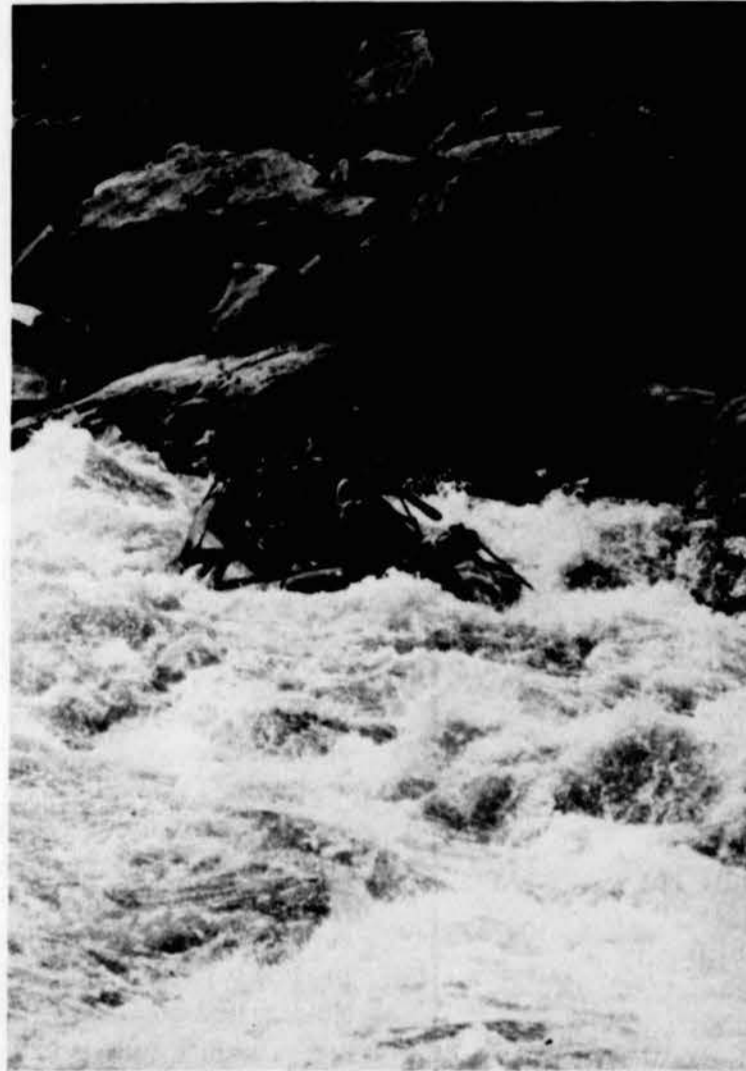
\_\_\_\_\_ Age \_\_\_\_\_

When we receive your reservations form, we will return a cabin assignment and a Bluestone State Park brochure. Friday dinner is on our own. We will have coffee and snacks available at the recreation hall for incoming guests.

Please make checks payable to WVHC Fall Review and return with this form to: Helen Kramer, Rt. 87, Box 43, Nimitz, WV 25978, or call Helen to reserve at (304) 466-3028.

**FINDING BLUESTONE STATE PARK**

Located in the southeastern section of the state, Bluestone State Park is accessible by several major highways. Take exit 139 (Sandstone/Hinton) off I-64 to WV 20, south, and drive 15 miles to the park. From the south on I-77, take the Athens Road Exit to WV 20, north, and travel 22 miles to the park.



**OUTINGS**

**Whitewater Raft Trip down the New River.** This year we're offering something very special for those WVHC guests who love river adventure, or who haven't yet experienced whitewater rafting. Wildwater Expeditions, Inc., will be our trip hosts. The cost of the trip will be \$61.48 per person. We need to guarantee the group number early, so please respond by September 1, with your reservation form if you plan to join us on this trip. Also, plan to be ready early Saturday morning to leave for this trip. Lunch will be provided for this trip.

**8-mile trek along the trail** between Bluestone State Park and Pipestem State Park. After a nice hike, members will have lunch at Pipestem before returning by foot or by car to Bluestone State Park.

**U. S. Park Service Tour of Historic Hinton,** and other Scenic and Historic Sites. The Park Service guide will discuss future plans for the New River National Park, and other Park Service developments in the area.

**Canoe trip down the Greenbrier River.** Join WVHC canoe guide in a trip down the scenic Greenbrier River, or the New River (depending on water level). Bring your own canoe or rent a canoe by indicating on the registration form. Helen Kramer will make prior arrangements for rentals.

*Continued from Page 1*

In stating his support of existing regulations, Norm Steenstra pointed out that an "escape clause" already exists. Case by case waivers may be given by DNR if industry demonstrates equivalent environmental protection. Steenstra underscored this by pointing out the burden in administration and watch-dogging bifurcation of the regulations would create. "Creating two sets of regulations - ones for municipal waste and one for flyash or industrial waste makes it twice as difficult for volunteer citizen groups to understand. If small rural land-fills are required to meet these tough regs then why exempt industry?"

Mark Cochran, H.O.G., reminded legislators and the seventy concerned observers that out-of-state garbage should not be allowed to escalate beyond control. Supporting DNR regulations is an important step in defining WV as a state actively protecting its environment.

**NATURE SCHOOL**

**SATURDAY, OCT. 14, 9:00 A.M. - 4:00 P.M.**

**Nature Skool** is a hands-on nature education program for children, ages 3-10. Activities include outdoor collecting trips, quiet observation, scavenger hunts, nature stories, microscope fun, and more. Children take home stickers, emblems, and simple tools to aid in their creative exploration of nature in their own backyards or neighborhoods. **ADVANCE REGISTRATION REQUIRED.**

**\$2.00 per hour per child**

WVHC will contribute the remaining \$2.00 hr.

**WVHC '89 FALL REVIEW WEEKEND**

**Focus**

The focus of the '89 Fall Review will be on the **Current Land & Water Conservation Issues in West Virginia.** Our Saturday evening guest speaker will be **Ed Hamrick, Director of the WV Department of Natural Resources,** who will present an overview of the management and conservation issues that DNR has addressed since January, 1989, and those that the department will be working on in the upcoming year. A question and answer session will follow the presentation. We're happy to have Mr. Hamrick join us.

Another specially planned event for the '89 Fall Review weekend is a **whitewater raft trip down the New River with Wildwater Expeditions.** If the adventurous part of your soul has not been well fed lately, come with us down the New River on Saturday, October 14 and replenish your spirit. We'll need your reservation early, so we can plan a great trip.

**Lodging & Meals**

Several cabins at Bluestone State Park have been reserved for WVHC members & guests. The Cabins have 2 bedrooms each, and available cots if needed. The cabins are heated and are well equipped with kitchen supplies and linens. Also, Pipestem State Park is just 9 miles from Bluestone State Park, and has rooms available in their lodge. To reserve a lodge room at Pipestem, call (304) 446-1800 or 1-800-Call WVA. Also camping space is available at Bluestone State Park.

WVHC will be providing a Saturday Evening buffet for Conservancy guests in the recreation hall, catered by Chef Walther from the *Something Special Restaurant* in Hinton, WV. The buffet will feature lasagna, eggplant parmesan, Italian mixed vegetables, salad & bread. For breakfast, the WVHC will have coffee, pastries, and fruit available each morning in the recreation hall. You're welcome to prepare any meals in the cabins as well. Guests should plan to prepare their own Saturday lunch to bring on the outings, except for the raft trip.

**Other Accomodations:**

Coast to Coast Motel, Hinton	466-2040
Newbrier Lodge Motel, Hinton	466-4378
Sandman Motel, Hinton	466-1700
Oak Supper Club	466-4800
Riverside Inn	466-2607
Something Special	466-4976

**Bluestone State Park**

Athens Star Rt., Box 3, Hinton, WV 25951  
 (304) 466-1922 or 1-800-Call WVA

**WEEKEND SCHEDULE**

**Friday, October 13, 1989**

- 4:00-11:00 P.M. - Registration & Welcome
- 8:00 P.M. - Slides and movies
- 9:00 P.M. - WVHC Committee Meeting
- 9:00 P.M. - Social Hour

**Saturday, October 14, 1989**

- 7:30 A.M. - Bird Walk
- 8:00 A.M. - Coffee & pastries at the Recreation Hall
- 9:00-4:00 P.M. - **Nature Skool** for young folks
- 9:15-3:00 P.M. - Outings, Meet at Recreation Hall
- 5:30 P.M. - Buffet Dinner at the Recreation Hall
- 7:15 P.M. - Saturday Evening presentation
- 9:00 P.M. - Old time music & square dance, at the Recreation Hall

**Sunday, October 15, 1989**

- 7:30 A.M. - Bird Walk
- 8:00 A.M. - Coffee & pastries
- 9:00 A.M. - Board of Directors Meeting
- 12:30 P.M. - Lunch on your own

