



High Country News

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Lander, Wyoming

Friday, January 9, 1981

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McMahon Collection Photo

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by Conrad Gilbert

"I'm a juggie and I jugged all day for \$100." That was the first line I wrote in a journal that I kept last summer while working for Consolidated Georex Geophysics.

Seismograph work—or "jugging," as it is known in the business—definitely had its advantages. You earn \$100 a day for hiking in the mountains of northwestern Wyoming, living outdoors, making "James Bond" entries and exits by helicopter and seeing country few people have seen. No previous experience required. An ideal job in many ways.

Some friends berated me for working for the oil companies. The corporations that would buy the seismographic information were "the heart of the problem" and I was helping to destroy wilderness. But my friends were often dressed head-to-toe in Gore-Tex, loading their plastic kayaks into pick-up trucks, readying themselves for a day of communing with nature. You can hate the producer and love the product so much. I would use that paradox in my defense sometimes. I was never sure that I believed it myself.

I had reservations about the work, but that \$100 a day talked louder. I had tried heavy construction work and roughnecking on oil rigs—selling myself for three months so that I could live well the other nine.

Looking back, I am amazed that outdoor work so fun, so pleasant and so exciting could lead in the end to oil recovery which, in the long run, can be so harmful to the environment.

I check the day's game plan at 6:30 a.m. and find out I'm working back crew today. That's fine with me. For some reason I like back crew. It means I get to sit in camp for an extra half hour drinking coffee and writing this morning. Shooters and primates go out first to start making us all money.

Consolidated is a French company with U.S. headquarters in Denver. They have done seismic studies all over the world. When they decide where they want to explore, they draw a straight line on the map along which the crew will test. Most of the western United States has been mapped out in square mile grids, and the seismic companies are drawing a lot of lines.

The goal is to discover gas or oil deposits within the geological strata of an area. This is done by blowing up dynamite, sending shock waves through the ground. The results of these tests are then analyzed by geologists who decide whether the area

"I'm a juggie"



Photo by Richard Murphy, Jackson Hole News

HELICOPTERS CARRY equipment for seismic testing into rugged mountain areas in northwestern Wyoming. Crews leapfrog each other in the whirlybirds, setting off explosives, picking up the equipment, and moving to the head of the seismic testing line.

can be economically developed.

A portable crew like ours, working in mountains or rough terrain, has about 30 people. Two miles of electrical cables and jugs (small seismic sensors that are stamped into the ground to pick up the shock waves) are laid out along the line. Dynamite is detonated near the middle

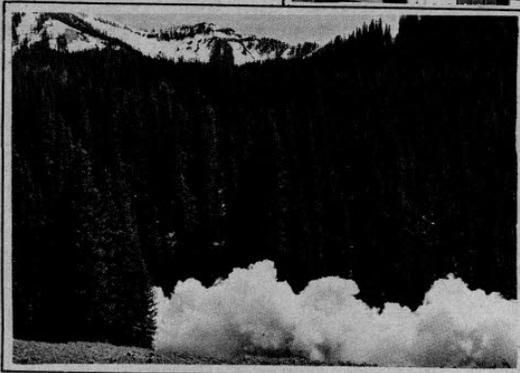
so the shock waves are recorded both in front and in back of the explosion.

The operation leapfrogs continuously. The back crew picks up cables and jugs and loads them onto a helicopter which takes them to the front of the line where they are laid out again. As
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Juggie...

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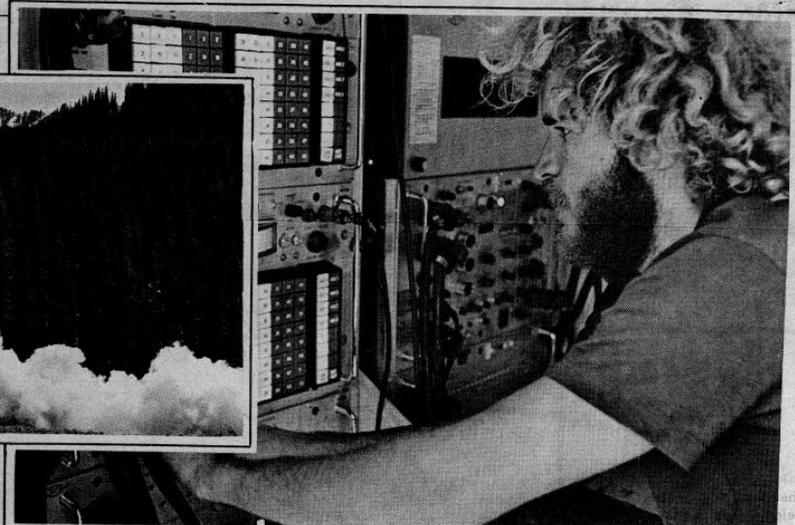


the explosions move forward, so does the line. The teamwork involves people who are miles apart. If back crew is slow, front crew can't lay out. If front crew can't lay out, you can't shoot (dynamite). If you can't shoot, no money. We try to work together.

There are six crews. Survey crew is the favorite — seniority is the only way to get there. Survey crew marks the line for everyone else to follow. The job involves map-reading and orienteering. The best part about survey is that you stay in front of the explosions. The land hasn't been violated yet. Other crews are still behind. There is wildlife. Survey crew finds all the nice moose antlers.

Front crew comes next, laying out the line. Your load gets lighter as you roll out cables and stamp in jugs.

Prima Cord crew or "primates," as they are called in seismo jive, are next.



EXPLOSIONS along a seismic line in northwestern Wyoming forest are monitored by a sophisticated recorder, which charts shock waves bouncing off underground geological strata. The information is sold to energy companies, which review it for clues to the location of oil and gas.

Primates handle the dynamite, setting up the shots, and are rewarded with headaches and irritated skin. Nitrate dust from the dynamite is nasty stuff and it gets everywhere. The dynamite is set on stakes three feet off the ground, one five pound stick every 15 feet. The shots are connected with Prima Cord, an electrically stimulated flash cord used to ignite the dynamite. Usually 12 sticks of dynamite make up one shot; 60 pounds of TNT per blast.

Next come the shooters and fire crew. The shooters are the glamour boys of the job. They set off the charges, usually standing no more than 20-30 yards away. It's a dusty, noisy, fourth of July job. I hate those explosions. The con-

cession rolls right through. It rattles your brain. The fire crew comes running in behind the shot with shovels and water to make sure a fire hasn't started.

A few hundred yards behind the shot is the recorder, a fancy and very expensive piece of equipment that monitors and depicts graphically the shock waves. The recorder is run by one person, the observer, who oversees the whole operation, communicating to all the crews by radio.

Coming up the rear is back crew, the least popular job. Back crew picks up cables and jugs and any trash left behind. No wildlife but plenty of exercise.

The ride out in the chopper is cold, even in August; 80 miles-per-hour in an open chopper at 9,000 feet. Even though we're freezing, we hang out the doors of the chopper like dogs in a pick-up truck, marvelling at where we are.

On the line first thing in the morning it is quiet and peaceful. Time to relax in the sun, eat some breakfast. I write:

Presently sitting on an approach ridge to the Wyoming Range, east of Cliff Creek. 360 degree mountains. To the southeast the Winds are socked in with storms, lightning and thunder, and I can see fresh snow on some of the peaks when the clouds lift a little. The Gros Ventres to the northeast are also

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Another view of seismic testing...

Editors' note: Environmentally, seismographic testing for oil and gas can in many cases be a relatively benign practice, as Conrad Gilbert says. However, there are instances when the areas explored, the techniques used, the season of activity, and the habits of seismic crews have posed a threat to wildlife and wilderness. HCN asked Sierra Club Northern Plains representative Bruce Hamilton to comment on some of the environmental impacts:

Conservationists recognize that the impacts of seismic exploration can, in most cases, be minimized. To date major confrontations between seismic testing companies and conservationists have been few. I know of only two: One in the Bob Marshall Wilderness complex in Montana and one in the DuNoir proposed wilderness in Wyoming. The Sierra Club was one of several groups that objected to both these proposals.

In the case of the DuNoir, the Forest Service approved a request by Chevron to conduct summer and/or winter seismic exploration, despite the Forest Service's own environmental analysis' conclusion that winter-only exploration was environmentally preferable. Summer operations would have in-

involved disturbance of wildlife, livestock, backpackers and fishermen. In winter these conflicts would be greatly reduced. The winter-only operations also posed less hazard of fire and caused less damage to surface vegetation. After reopening the public comment period the Forest Service revised Chevron's permit to require winter-only operations, and the Sierra Club withdrew its objection to the proposal.

Seismic operations in the Bob Marshall, Great Bear and Scapegoat Wilderness complex have been proposed by Consolidated Georex Geophysics, the same firm for which Gilbert worked. In this case the straight lines on a map that CGG submitted for approval were extremely insensitively drawn. One went right along the Chinese Wall — one of the most outstanding natural features in the Bob. The lines ran right through the heart of one of the last strongholds of the grizzly bear — a species classified as threatened under the Endangered Species Act. Grizzlies are extremely sensitive to man's activities and dynamiting near a den site or flying helicopters around a feeding ground could jeopardize the bears.

Some of these impacts could be mitigated, others not. But conservationists, including the Sierra Club, felt that a

clear line had to be drawn. Why permit seismic exploration in an area where oil and gas development was so clearly inappropriate?

To open this rugged, spectacular country to dynamiting, roads, drill rigs, pipelines and gas sweetening plants would be first-order desecration, so why permit even the first step down this road to destruction?

Gilbert has described one of the least damaging types of seismic operations — portable crews and stand-off changes. If you want to see the other side of the seismic coin fly over Wyoming's Red Desert. There, the flag men are followed by bulldozers that rip straight scars across the face of the desert that last for decades. The bulldozers clear the way for trucks carrying seismic instruments, although the trucks could, in most cases, travel cross-country without the benefit of a road. Tens of thousands of acres of previously unroaded wilderness have been destroyed in this manner.

In summary, seismic operations can cause minimal environmental damage if they are conducted in the right place, at the right time, with the least disruptive techniques, and if the crews conduct themselves responsibly. When these unwritten rules are violated, as they have been in the past, seismic operators can expect to meet opposition.

— Bruce Hamilton

Dear Friends,

"Journalism consists of buying white paper at two cents a pound and selling it at 10 cents a pound."

For most of the year, we at HCN like to think that our business is strictly the news: Finding it, writing it, illustrating it, distributing it, and waiting for the echo when our investigations bounce off the wall of our readers, be they bureaucrats, ranchers or school teachers.

It is not that simple, of course. Publisher Charles A. Dana, quoted above, knew that almost a century ago, and his remark is a good remedy for swollen-headed writers. But it is not that simple, either.

Once a year, HCN gives an obligatory bow to economic reality and reports on its balance sheets. Sometimes it's exhilarating, as it was last year when subscriptions topped 4,000. But that was just one good sign amid several more ominous portents. This year the hopeful signs have disappeared and the perennial problems loom large. HCN is in serious trouble.

Very generally this is the situation: We have scrimped ourselves into a corner. With almost no capital to back us up, HCN has survived by getting extra hours from staff and volunteers, using antiquated equipment, and paying employees only \$6,398 a year. With expenses for printing, rent, and other services going up rapidly and readership dropping this year, even our scrimping will not get us by.

Indications that we need financial resuscitation have cropped up throughout 1980. After a six-month search, no qualified news editor would come to work for our salary. Staff members have found the pay is not enough to support themselves and their families. It has hurt us outside the office, too: Our freelance rates are far below the norm, and the number of writers who can afford to contribute has diminished rapidly. The spirit is willing, but not the wallet.

Perhaps I should leave it at that, and ask you to send money. But before I do that, I'd like to explore some of the reasons HCN exists, and map out our plans for turning the paper around. If we succeed, HCN will have a much stronger voice in the region, and please like this will not be made again.

HCN is, in many ways, a paper that reflects and belongs to its readers. Like many of you, it lives a respectful distance from the power centers that control so many lives and so much land. It is paid for primarily by your subscriptions — we have few ads, and there is no wealthy bankroller behind us. The staff gets much of its motivation from the encouragement in letters from our readers.

What we try to offer in return is thorough, clear-headed coverage of issues that are crucial to this region's future. In a time when media are rapidly consolidating and homogenizing, we remain small and independent, and still able to add the personal touches and critical views of individuals, not conglomerates. Experience has made us skeptical of "objective" journalism — which so often simply avoids controversy — but we strive for fairness nevertheless.

There is a lot of dedication here, too. A reporter knows he or she can have more impact writing for HCN than reporting for, say, *Newsweek*; that helps make up for the low wages. Nobody is looking for sympathy — we're doing what we like best.

But this is not an easy time for doing what we like best.

A 1976 study of independent publications by the Northern Rockies Action Group concluded: "A natural market for (independent) newspapers is not among the region's vast benefits." Possibly so. Publications are folding up their tents around us — *Straight Creek Journal* and *Mountain Gazette* in Colorado, and *Borrowed Times* in Montana, to name only the most recent casualties.

We are not at all eager to join the list. Nor do we think we have to. We believe the paper is strong enough, and important enough, to pay its own way.

But when new expenses hit — rent raises (30 percent this year) and increased printing costs (also 30 percent) — there is no easy way for us to absorb them. We cut back here and there, and the staff agrees again to forego cost-of-living raises. Unhappily, we find ourselves dying a slow death, shrinking while the issues we cover grow mammoth before us.

Is there any way out? We think so.

If HCN mounted a sophisticated promotion campaign, improved its newsstand look with higher quality paper, and could afford an advertising and promotion person, it could reach a vast new audience. Because we have no capital reserves, none of these things were possible in 1980, essential as they are to our survival.

The impact shows up in our subscriptions and renewals. On Jan. 1, 1980, after a major promotional campaign in the fall, we had 4,032 subscribers. In the last six months of 1979, we tallied almost 900 new subscribers and a 70 percent renewal rate.

Compare that to 1980, when we have not had the funds to promote the paper. In the last six months we have had a 60 percent renewal rate, and only 385 new subscribers. Subscriptions are down to 3,289.

How important is our survival? Look through your regional reading material. Where do you turn for background on the origins and schemes of the Sagebrush Rebels? Where do you find out about uranium tailings used in the foundations of thousands of homes around the region? Where can you explore what it's like to live in an energy boomtown — after the boom?

A new administration in Washington vows radical changes in public lands management. Clean and renewable energy technologies move to the federal backburner. The struggle between our region's development surge and the desire to conserve its natural wonders intensifies. How important is HCN?

In our quest to put our chronic financial problems behind us, we have thought about seeking investors. What we encountered was enormous expense to meet

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securities laws before we could even approach possible investors (and we felt a twinge of sympathy for industries that complain about over-regulation). The only investors we could approach — those already familiar with the publishing business — would have insisted on taking control of HCN.

So we are turning to our readers, and not for the first time. But this is not a request for the few thousand dollars we would need to struggle through 1981. I feel it's unfair to keep asking the staff to subsidize the paper year after year. The budget we have developed is designed to put the paper on a healthy, self-sustaining basis for years to come.

Can it work? We think so. HCN has a history of confounding the odds. Our past might surprise a few bankers or finance experts. And we would relish the chance to take another unconventional step toward raising our cry in the high country. Strong convictions need strong voices.

Many of you have given to the research fund, which finances travel and research expenses for reporters. We are asking now that you help directly with the business side of the paper's ledgers. There are several ways to do this:

Extend your present subscription one, two or three years at the full rate, \$15 per year.

Send us a donation, if you can afford it.

Take out a lifetime subscription for \$500.

Perhaps best of all, help us raise money by giving gift subscriptions to as many persons as you can dream up — aiding us financially and helping us reach more readers.

If you have a business, take out an ad in the paper (our rates are low).

And you can spread the word to others that an old friend is in trouble.

You may have other ideas. Feel free to write or call us and we'll discuss them, as well as any questions you may have about our predicament.

We know that we are asking a great deal. It took many staff discussions and considerable research to decide to go public with our problems. Our conclusion is that HCN is worth saving, and the paper's friends can help.

There are difficult years ahead. We in the West need the facts — all the facts — and the ideas of creative minds, if we are to navigate those years. Getting those facts, and giving them to you — that's what this paper is all about.

Geoffrey O'Gara

Sign up here and join the HCN lifeline.

Yes, I'd like to pump up HCN's circulation.
 Please make my subscription a lifetime deal.
Enclosed is my check for \$500.

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Enclosed is \$15 for each year (25 issues).

And here's a donation to help keep HCN kicking.

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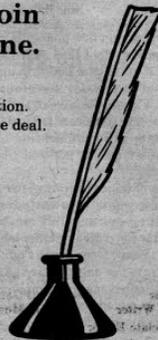
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The legislature merry-go-round

Western officials mount up for the 1981 sessions

"Good morning," a reader wrote the Idaho Statesman last week. "No person's life, liberty, or property (including public lands) are safe while the legislators are in session." Graced by that note, most of the region's state houses open for business this month.

With pre-filed bills running in the hundreds, legislative agendas include everything from fighting the federal 55 mph speed limit to redistributing education funds. There's a smattering of tax relief, property reassessments, budget cutbacks, and program slashing on almost every docket.

What follows is a preview of the major energy and natural resource issues likely to come up in this year's sessions. As legislators and lobbyists ascend capitol steps, from Boise to Lincoln and Helena to Santa Fe, to conduct their business, HCN will bring you news of the most significant developments.

COLORADO

Democratic Gov. Dick Lamm has never enjoyed good relations with the Colorado legislature, and this session he'll have one less potential supporter in the House, where Democrats lost one of their 27 votes to the Republicans' 39-seat majority.

The Republican Senate leadership remains unchanged. But within the House, political observers expect combative stands from the new minority leader, Rep. Federico Peña, described as a "young Turk" by Republican Party staffer David Diepenbrock.

Highway maintenance and property tax reassessments, fueled by redistricting battles, will top the agenda. Natural resource issues should include minimum stream flow proposals, plans by Senate President Fred Anderson to push for a state dam building agency and other pro-water development schemes. Various Sagebrush Rebellion bills involving transfer of federal lands to the state and reclassification of the state's water quality act will also be considered.

In light of the controversy surrounding the Lowry hazardous waste disposal site, a siting guidance bill can be expected. But Reed Kelley, chief lobbyist for the Colorado Open Space Council in Denver, says the only positive gain for conservationists may be improvements in the state mined land reclamation act for noncoal minerals.

IDAHO

The hot topic in Boise, capital of the potato state, is whether newly-elected state Sen. John Peavey (D-Carey) can hold on to his seat. Peavey, whose victory was called the "only shining ray" in the election by state conservationists, is being challenged by his November opponent in a voter registration dispute.

If Peavey is ousted, and apparently the Republican-dominated Senate will decide the question, that body would swing to a two-thirds, veto-overriding house, spelling trouble for Democratic Gov. John Evans. The current make-up is 23 Republicans and 12 Democrats; in the House, it's 55 Republicans to 15 Democrats.

Peavey, a state representative for seven years, foresees a legislature



"closely tied to big business and working damn hard on economic issues." If he retains his seat, he says his first priority will be allowances for cities, and irrigation and canal companies to sell revenue bonds to construct alternative energy projects, such as geothermal and small storage dams. The proposal is opposed by utilities.

Pat Ford, chief lobbyist for the Idaho Conservation League, says he'll be fighting new Sagebrush Rebellion proposals, a repeal of the local land use planning act (which mandates county land use plans), and water quality relaxations.

Given time and opportunity, he says he'll support a ban on dredge mining, three additions to the minimum stream flow system, and a new mineral severance tax of five percent proposed by the governor. With a projected \$8 million annual revenue, "that's not much money," says Ford. "But we're preparing for the day that oil and gas are found in Idaho."

Ford also hopes to influence an upcoming Idaho Utility Commission appointment, to be confirmed by the legislature. The commission among other issues will decide whether to allow a coal-fired power plant for southern Idaho.

Fiscal wrestling, however, should take the lead through much of the session's 60-plus days. "After two years of making across-the-board cuts," the Idaho Statesman reports, "the next Legislature may have to cut whole programs to reduce costs."

THE GREAT PLAINS

Nebraska's unique unicameral (one house) non-partisan legislature opened its doors last Wednesday for at least a 90-day session. Republican Gov. Charles Thone says his basket for this session holds just three eggs — tax relief, budget items and water. The legislature, conservative as usual, seems amenable.

But since William Jennings Bryan swept the state with populist prairie radicalism in the 1930s, there's been a smattering of alternative ideologies. Conservationists, says Rose McCullough, a paid lobbyist for the Sierra Club, will back new in-stream flow

policies, ground and surface water management reforms, and financial incentives for saying energy on the farm.

Nebraska conservationists will be bucking a proposed two-cent cigarette tax to finance state water development projects, not so much on its merits (less than \$4 million would be generated a year and some projects are environmentally benign, says McCullough), but rather as a bargaining chip for getting in-stream flow reforms.

In the wheat country to the north, where a quarter of the residents still live on the farm, mineral owners and surface landowners in North Dakota will be battling each other. Mineral owners, coalesced into the North Dakota Lignite Council and boosted by the new governor's chief of staff, John Smith, a former council lobbyist, are pushing for legislation that would give coal owners with 51 percent or more of the mineral resource the right of eminent domain over surface owners. To date, the principal mineral owner has had to petition other mineral owners for a consensus and farmers, by obtaining even a tiny fraction of mineral rights, have effectively stymied coal development.

The distribution of an increased oil production tax (more than doubled from last year's five percent) will also be considered by the 150-member North Dakota Legislature in this 60-day session. John Norton in Dickinson, one of six paid lobbyists for the North Dakota Resource Council, says power plant siting, coal severance taxes and seismograph crew regulations will also get attention in what he foresees as largely a "defensive" year for conservationists.

With some 400 bills prefiled, Carl Limvere of the Farmers Union says he's already overwhelmed, but that with two other lobbyists he hopes to effect new property tax reforms and energy development impact funding for communities.

The predominant fiscal conservatism in the region could translate into funding cuts for new water projects, says Maxine McKeown, a farm organizer with the South Dakota Resources Council in Bushnell. The South Dakota legislature, expected to focus largely on revenue problems, may also consider policies on railroad rights-of-way purchases and industrial facility siting.

MONTANA

The Montana legislature, rocked by the Anaconda copper smelter closing and general criticism from businessmen, will probably spend most of the 1981 session undoing what the state government has done in the past.

Legislation has been pre-filed or announced to weaken the recently approved state ambient air quality standards, to streamline and make exemptions to the state's Major Facility Siting Act, and to repeal or modify the 1973 Water Use Act, which allows the state to reserve in-stream flows.

Sen. Tom Conroy (D-Hardin) plans legislation to repeal the nuclear-waste initiative, which voters approved by a slim margin last fall. "Our daily lives are surrounded by more potential damage from radiation from microwave ovens, solar panels and television sets than from mill tailings," said Conroy of the initiative, which would ban disposal of uranium mill tailings within the state.

Anaconda officials and others testified this month before legislative committees, saying that corporations now view the business climate in Montana as hostile. Along with politicians like retiring Gov. Thomas Judge, businessmen warned against a proposed hardrock mining severance tax advanced by state Sen. Tom Towe (D-Billings).

Don Snow, of the Environmental Information Center, ranked the defense of air standards, the siting act, and the water reservations system as top priorities for his organization. The EIC is also pushing legislation to tighten up the state Subdivision and Platting Act, which, according to a recent EIC survey, has been repeatedly bypassed by subdividers using 11 exemptions allowed under the act.

Bills are also expected to set up an income tax check-off for a fund to manage income non-game wildlife, and to create agricultural districts that would allow farmers and ranchers to take property tax breaks in return for keeping their land in agricultural production for a period of years.

Like most states in the region, Montana will consider a Sagebrush Rebellion bill. This one will be initiated by Sen. Mark Etchart (R-Glasgow), empowering the state to claim most federal lands within the state.

Republicans, who have taken control of the state legislature for the first time in 28 years, are promising tax relief, which House Speaker Robert Marks (R-Clancy) said would include property, income and business tax relief. Democrats say the Republicans may go too far, leaving important state programs without the revenues to operate.

Pete Jackson, spokesman for the pro-development Western Environmental Trade Association, said the legislature was trying to "simplify the process and give business a reasonable break."

NEW MEXICO

The New Mexico state legislature has never been very friendly to environmental issues, "but at least it won't be much worse than it has been historically," according to Don Hancock of the Southwest Research and Information

Center. Much of the legislation in 1981 will be aimed at dismantling existing environmental laws and programs.

A major thrust of the assault is being directed at the state Environmental Improvement Division. Legislation is certain to be introduced which would reduce the division's enforcement power. Hancock says, "The division has been historically understaffed and it has been difficult for them to do effective regulation." The proposed legislation would require the division to get approval from the Environmental Improvement Board — the division's board of directors — before taking any regulatory action. According to one activist, "This would virtually nullify effective enforcement action."

Several New Mexico laws, notably the strip mine and clean air laws, need amending to bring them into compliance with federal statutes. In order to remain a compliance state and avoid federal interference, New Mexico will have to keep some fairly stringent enforcement authority.

The uranium industry is apparently going to ask for a reduction in the state severance tax on uranium. The tax was just raised last year, but the industry, pointing to recent layoffs and the depressed market will claim that it is too high. Observers say the chances are about even that the industry will get its way.

John Bartlit, state chairman of New Mexico Citizens for Clean Air and Water, said his group will again attempt to push through a major facility siting act, modeled after existing laws in Montana and Wyoming. The proposal has been introduced in the past and defeated. Bartlit is hoping to get some support from companies and groups outside the environmental community.

"If it is only pushed as an environmental bill, it won't go anywhere," he says.

A stalled geothermal electric power demonstration project near Los Alamos may also receive some legislative attention. The project is a joint effort of Public Service of New Mexico and Union Oil Co., and has been embroiled in a number of environmental disputes and jurisdictional squabbles. A Los Alamos legislator is planning to introduce a bill to exempt demonstration projects from environmental review.

A bottle recycling bill, non-smoker's rights legislation, and auto inspection and maintenance to control air pollution may also come up. If past experience is any indication, these bills are given a very slim chance of passage.

WYOMING

The Wyoming legislature's bill docket for 1981 will be awash in the state's scarcest commodity: water. The Republican-dominated legislature, little changed from last year, will be considering bills to allow water export for coal slurry lines and to authorize the state to acquire and protect minimum in-stream flow in Wyoming rivers.

Attempts will also be made to bring natural gas "sweetening" plants under the state's Industrial Siting Act (similar legislation passed the House last year but failed in the Senate) and to modify the state's Environmental Quality Act. The usual debate over whether to raise or lower the severance tax will take place: Backers of the depressed uranium industry want to lower the 5.5 percent rate on that commodity; environmentalist groups want to up the oil and gas severance tax, presently at four percent.

Members of the Sheridan-Little Horn

Water Group, who have failed in the past to get approval to export water in a coal slurry line, are back again. While the group has not yet named a legislator to introduce its legislation, spokesman John Jenkins calls the outlook for passage favorable — in the meantime, an expensive media campaign is under way.

Both the Powder River Basin Resource Council and the Wyoming Outdoor Council are fighting the Little Horn slurry proposal. The groups argue that it will not discourage synthetic fuel and power plants from being built within the state (as Jenkins claims) or necessarily force railroads to lower their haulage rates. Public opposition to exporting the state's water remains fairly high, according to polls.

Wyoming Outdoor Council Director Pete Kozisek thinks 1981 may offer the best chance for passage of in-stream flow legislation. An initiative drive is under way. Gov. Ed Herschler plans to back one bill, and several others are in the works. Most of them would recognize in-stream flow as a beneficial use and authorize the state Game and Fish Department to purchase, but not condemn, water rights to protect fish and plant life in streams.

UTAH

No one likes their budget cut, and Dan Lawrence, head of Utah's Division of Water Resources, a key mover behind the Central Utah Project, is no exception. But to the delight of Salt Lake environmentalists, he would lose funds and three staff positions in the legislature's proposed budget.

Fully one-third of the state's legislators are brand new, but the overall

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make-up remains the same: The typical Utah solon is white, male, Mormon, college-educated, business-oriented and making above-average income; environmental quality is expected to receive little support in the 60-day session that starts Jan. 12.

Other expected issues, says G. G. Brandt of the League of Women Voters, include a nuclear and hazardous waste dump siting bill, flood control programs, various mass transit schemes for Salt Lake and several solar energy bills. Most state officials now want a severance tax, but tempers may flare over how to distribute the windfall. The state Land Board will push for new controls on mining hardrock minerals on state land.



Trackings

followups on previous stories

Deal to stop Forbes Ranch development falls through

(see HCN 4-4-80 for previous story)

Efforts to acquire and preserve the 12,000-acre Forbes ranch in southwest Montana collapsed last month when it became clear the U.S. Forest Service could not come up with the \$6.15 million purchase price.

The ranch, bounded by Yellowstone National Park and the Yellowstone River, is considered a key extension of the park's natural system, according to Mike Williams, a lands specialist with the Gallatin National Forest. It contains critical winter range for the park's elk herd and several thousand acres of grizzly bear habitat, Williams said.

The Forest Service has been trying for years to add the ranch to the public domain, in part because Malcolm Forbes, publisher of Forbes magazine, at one time planned to subdivide the property. Forbes bought it in 1970.

The Forest Service in April signed an option with the wealthy Forbes family for the land purchase, and negotiations advanced to the stage in October where a final deal was imminent — until the national elections threw a wrench into the works.

The Forest Service, unable to squeeze funds out of the current and upcoming budgets to use the option, earlier this year asked the Nature Conservancy to step in and buy the ranch, with a promise that the Forest Service would buy it

back in January 1982.

At a meeting in October in New York with Leonard Yablou, executive vice president of the Forbes organization, it was agreed the Conservancy would be substituted for the Forest Service in the already-signed option. The focus turned to determining whether the Forest Service could make a firm commitment for the funds, said Bob Kiesling, the Conservancy's Montana coordinator.

Prospects were good that the Forest Service would secure the funds in its Fiscal Year 1982 budget, but Ronald Reagan's victory and the seizure of control of the U.S. Senate by the Republicans "caused considerable deterioration in the likelihood of funding for the Forest Service at a later date," Kiesling said.

"After taking the pulse of the new administration, we decided there will be scant money at the federal level for acquisition of private lands," he said.

The arrangement was dependent on the Forest Service stepping in at a firm point, as the interest payments on the \$6.15 million purchase were going to be very costly to the Conservancy, Kiesling said.

Kiesling and Williams said they have not given up hope of keeping the ranch intact and acquiring the land in the future. Kiesling said he is pursuing the possibility of finding private investors willing to buy the ranch from Forbes and then establish a "conservation

trust" on the property.

Kiesling said he is hopeful Forbes will hold onto it for now in its present form. Forbes' asking price is \$7 million on the open market.

Williams said the purchase was the top priority in the Forest Service's Northern Region.

"We offered to forgo any other land acquisitions for years in Montana if they (national headquarters) would shift acquisition funds," Williams said.

In addition to providing permanent protection for the wildlife habitat, the purchase would have opened public access to three mountain areas and seven miles of river frontage, he said.

MX impact study suffers attacking reviews

(see HCN 12-12-80 for previous story.)

With the incoming administration still undecided on the system, the Air Force has released the draft environmental impact statement on the proposed MX nuclear missile.

Costing a reported \$17 million and weighing 20 pounds, the nine-volume tome has received a drubbing from numerous federal and state agencies privy to review copies.

Other reviewers have attacked the draft on a host of grounds, summarized by the Idaho Statesman in a December 23 editorial: "...it provides more

The ranch contains the famous Devil's Slide and the ghost towns of Aldrich and Evandale. The purchase would also have given the Forest Service ownership of two homesteads on Bassett Creek, across the river inside the boundaries of the Absaroka-Beartooth Wilderness.

In addition to the possibility of direct purchase by the Forest Service or the Nature Conservancy, the Forest Service also looked into a complicated land exchange with Forbes, involving lands in the Rattlesnake area near Missoula and public coal lands in eastern Montana, Williams said.

— Dan Holloway

Energy

"Wind easements" sought for Livingston project

by Dan Hollow

LIVINGSTON, Mont. — A handful of southern Montana ranchers and an East Coast corporation took the first steps in early December toward what may become the country's largest wind power project. U.S. Windpower, Inc., of Burlington, Mass., has zeroed in on the wind-racked benchland east of Livingston as a site for a vast, 90-megawatt array of small wind machines.

As the first step in the project, the firm's marketing expert, Alvin Duskin of San Francisco, flew to Livingston to arrange "wind easements" with the ranchers. U.S. Windpower's goal is the construction of 1,800 machines spread out on about 5,000 acres of land. This represents a capital investment of about \$180 million, according to Bob Fitzgerald, manager of the company's Montana-Wyoming operations.

U.S. Windpower also plans similar-sized arrays at Cape Blanco on the southern Oregon coast; at Goldendale,

Wash.; and at Pacheco Pass, southeast of San Francisco. Fitzgerald said the Livingston site could be the first to see the installations, in about two years, provided the city is successful in drawing federal investment incentives.

When the full array, which will take about four years to construct, is complete, the 50-kilowatt machines would produce about 90 megawatts of power. The electricity would be sold to Montana Power Company at rates set by the Montana Public Service Commission.

Fitzgerald said the capital cost of the wind array would be about the same as for an equivalent-output coal-fired plant, while labor costs are higher. "The only thing that saves us is that the fuel is free," he said. The Montana ranchers who signed the "wind easements" stand to receive royalties of two percent of the gross output of any wind turbines put on their land. "It's like an oil exploration lease, only we know the wind's there," Fitzgerald said.

U.S. Windpower's Duskin said his company intends to be the first to mass

produce wind turbines — at a rate of more than 200,000 a year. "We'll make them like John Deere makes tractors," he said. The firm recently completed installation of a small, 20-machine array in New Hampshire. Tests showed the 28-foot blades generated very low noise levels and caused no interference with television signals.

Fitzgerald said U.S. Windpower is also looking at a fifth potential site, Medicine Bow, Wyo., as a location for an array of the small turbines. The Federal Water and Power Resources Service has already awarded a \$6 million contract to Hamilton Standard of Connecticut to build a 2,000 kilowatt turbine near Medicine Bow. If that project is successful, the government wants to erect 50 of the machines.

OTHER PROJECTS

Southern Montana is also the prospective site of a couple of other wind power projects. In early December, the city of Livingston received \$53,250

from the state's renewable energy program to provide 15 percent funding for a small wind farm proposed to power the city's expanded sewage treatment plant. Community Development Director Ed Stern said that prospects are good for Environmental Protection Agency sponsorship of the remaining 85 percent. The city's plan calls for eight 25-kilowatt or two 125-kilowatt machines.

The Department of Energy in September erected a 170-foot wind measuring tower near Livingston after it was designated one of 18 "candidate sites" nationwide for a 4,000-kilowatt turbine planned by General Electric and Boeing. Other sites in the Rockies competing with Livingston for the wind turbine are Bridger Butte, Wyo., Finley Air Force Base, N.D.; Minot, N.D.; and Wells, Nev.

Dan Hollow is a reporter for the Livingston Enterprise. This article was paid for by the HCN Research Fund.

The Department of Energy last month issued its second round of grants for "alternative fuels." DOE awarded a total of \$270 million for 79 out of a field of 1,000 proposals. The projects range from coal gasification plants to peatburning facilities, but the bulk of the funding went to synthetic fuels.

A third round of awards totaling \$30 million will be announced later this year. The third round will focus on innovative ways to burn coal, wood or peat.

Grants were given for construction work and feasibility studies. The following projects in our region received DOE awards:

DOE ALTERNATIVE FUELS GRANTS

DECEMBER 1980

KEY

- COAL GASIFICATION, LIQUEFACTION OR COAL-OIL BOILER FUEL PLANT
- OIL SHALE PLANT
- △ ETHANOL PLANT
- ▽ TAR SANDS PLANT
- □ ▽ COOPERATIVE AGREEMENT
- ■ ▲ FEASIBILITY STUDY

COOPERATIVE AGREEMENTS

Superior Oil Co. A plant to convert daily 20,000 tons of oil shale into 15,000 barrels of shale oil. Cost: \$14.67 million; requested from DOE: \$7.3 million. Location: near Rifle, Colo.

Paraho Development Corp. A plant to convert daily 45,000 tons of oil shale into 30,000 barrels of shale oil. Cost: \$35.2 million; requested from DOE: \$17.6 million. Location: Bonanza, Utah.

Sugar Mill Ltd. Ethanol plant to produce 20 million gallons a year of 200 proof ethanol from corn. Cost for study: \$654,762; requested from DOE: \$654,762. Location: Longmont, Colo.

Public Service Co. of New Mexico. An underground coal gasification project to produce electric power generating fuel. Cost for study: \$2.7 million; requested from DOE: \$2.7 million. Location: San Juan Co., N.M.

Northern Natural Gas Co. A plant to process North Dakota lignite coal to produce methanol and natural gas. Cost for study: \$4 million; request from DOE: \$3 million. Location: Oliver Co., N.D.

American Natural Service Co. A plant to process North Dakota lignite coal to produce gasoline and natural gas. Cost for study: \$1.9 million; requested from DOE: \$1.9 million. Location: Mercer Co., N.D.

Syntana-Utah. A plant to produce oil from oil shale. Cost for study: \$4.7 million; requested from DOE: \$4 million. Location: Bonanza, Utah.

Tenneco Coal Gasification Co. Engineering for a 280 million cubic-foot-per-day high-BTU coal gasification plant using Lurgi technology. Cost: \$39.9 million; requested of DOE: \$19.97 million. Location: Wibaux, Mont., or Glendive, Mont.

Mobil Research and Development Corp. A 40,000 barrel per day coal liquefaction plant including mine, coal gasification and methanol facilities. Cost: \$73.3 million; requested from DOE: \$25 million. Location: Buffalo, Wyo.

FEASIBILITY STUDIES

Plateau, Inc. Modification of an existing refinery to process shale oil. Cost for study: \$5 million; requested from DOE: \$4 million. Location: Roosevelt, Utah.

Great National Corp. A tar sands plant. Cost for study: \$3.4 million; requested from DOE: \$3.4 million. Location: Sunnyside, Utah.

Mountain Fuel Resources. A plant to produce synthetic natural gas and methanol from coal. Cost for study: \$7 million; requested from DOE: \$3.6 million. Location: Emery Co., Utah.

Rocket Research Co. Ethanol plant to produce 10 million gallons a year of 200 proof ethanol using potato waste, potato culls and barley. Cost for study: \$439,048; requested from DOE: \$368,800. Location: Fort Hall, Idaho.

Pacific Hydrocarbon Energy Co. A plant to produce a boiler fuel mixture of low sulfur coal and oil from California and Alaska. Cost for study: \$1 million; requested from DOE: \$1 million. Location: Miles City, Mont.

Energy

Tribes, frustrated with lack of federal regs, consider code

Western tribes with valuable energy resources are considering adopting a comprehensive environmental code, which could lead to court fights over who has the right to regulate development on Indian lands.

The Native American Rights Fund, a private legal assistance organization, prepared the code at the request of several energy-rich tribes. It will be up to individual tribal councils to decide whether to adopt any or all of the code's six ordinances covering air, water, noise, radiation, waste and underground injection. The tribes also will set their own pollution limits, which federal agencies say must be as strict as federal standards.

The ordinances were requested because, with a few exceptions such as in the clean water and the strip mining acts, Congress did not mention Indian reservations in environmental legislation. That makes it unclear whether federal environmental laws apply on Indian lands. Some activities directly related to mining, such as land reclamation, are covered by Bureau of Indian Affairs or Office of Surface Mining regulations, but tribes have complained of inadequate enforcement of these rules. Although some states try to enforce their regulations on reservations, the Interior Department says state rules are not applicable there.

To deal with the regulatory vacuum,

a few tribes, such as the Crow, have composed their own reclamation and zoning codes. The Native American Rights Fund models are designed to make it easier for other tribes.

Duane Bird Bear, an Environmental Protection Agency staff member who prepared the new code for NARF as a private consultant, says that a majority of the members of the local commissions that will enforce the code will be enrolled tribal members, but that non-Indian reservation residents will also be included. To discourage bureaucra-

tic delays, the ordinances set time limits for tribal decisions. They also provide for appeals through the tribal courts if disputes cannot be settled through administrative channels.

John Echohawk, director of NARF, says tribes should expect legal challenges if they adopt the environmental ordinances. "As in many other areas of tribal law, the jurisdiction of tribes, states and the federal government has not been clarified. Unfortunately, it will require litigation," he says.

A decision on the jurisdictional ques-

tion is still pending in federal district court in New Mexico, where United Nuclear Corporation is challenging the Navajos' rights to sue the company in tribal courts for alleged damages caused by UNC's Churchrock tailings dam break in July 1979.



North Dakota gas plant uprooted by court

The U.S. Court of Appeals for the District of Columbia has dealt what may be a fatal blow to the proposed Great Plains Coal Gasification Project. The court overturned a ruling by the Federal Energy Regulatory Commission which would have allowed the consortium building the \$2 billion coal gasification plant to pass along the increased cost of the synthetic gas through a surcharge to its current customers. The surcharge is necessary for the company to convince private lenders to help finance the project.

Officials of American Natural Resources Co., the leader of the seven-company consortium, called the ruling a "very serious setback" for the future of the plant. The companies have had a

lot of trouble obtaining financing for the plant. In late November of last year, the Department of Energy approved a conditional loan guarantee for the plant of \$1.5 billion. However, the guarantees were granted on the condition that the surcharge be upheld.

The court ruled that FERC had overstepped its power in authorizing the consortium to collect a surcharge from their customers during the four years the plant will be under construction. The fee would have been used to cover cost overruns. Private bankers viewed the surcharge as a necessary condition for granting private sector loans.

In addition, the court said FERC cannot set a tariff, or price, under which the synthetic gas could be sold. In a

scathing comment on FERC's handling of the matter, the 3-0 court ruling said FERC "was never given the job of developing a comprehensive strategy for developing the nation's synfuel industry... (FERC) possesses no expertise in making determinations regarding the relative merits of different synfuel processes, methods or technologies."

The suit was brought by a number of the consortium's gas customers, including General Motors Corp., who balked at being forced to pay premium prices for their energy. ANR said the decision will mean a delay of at least a year. The company did not say whether it would appeal or not.

PAID ADVERTISEMENT

PAID ADVERTISEMENT

For the last three years James G. Watt

has made a career of trying to gut environmental laws and hamstring conservation agencies.

Through Mountain States Legal Foundation, Watt has filed legal actions to:

- stop the Bureau of Land Management from preventing livestock overgrazing of the public lands;
- open up the Bob Marshall Wilderness to oil and gas exploration;
- stop the Environmental Protection Agency from cleaning up Denver's polluted air;
- deny Indians the right to levy a severance

tax on mineral development on their own reservations;

- stop the National Park Service from implementing a management plan to protect the Colorado River in the Grand Canyon;
- prevent state public utilities commissions from implementing lifeline utility rates for disabled and senior citizens.

Watt's clients and contributors are the major exploiters

of the Rocky Mountain West. As Secretary of the Interior, Watt will be doling out the public's natural resources to these same parties.

We feel Watt has an ineradicable conflict of interest

and an unbalanced record that makes him unfit to assume the responsibilities as chief steward of the nation's natural resources.

We urge you to call immediately

or send telegrams to your senators and urge them to vote against the confirmation of James G. Watt as Secretary of the Department of the Interior.

Citizens for a Good Secretary of the Interior

V. Crane Wright, Chairman, 631 Emerson St., Denver, Colorado 80218

8-High Country News — Jan. 9, 1981

OLD-TIME SKIING

WHEN 'SKIS' WERE 'SNOWSHOES'

by J



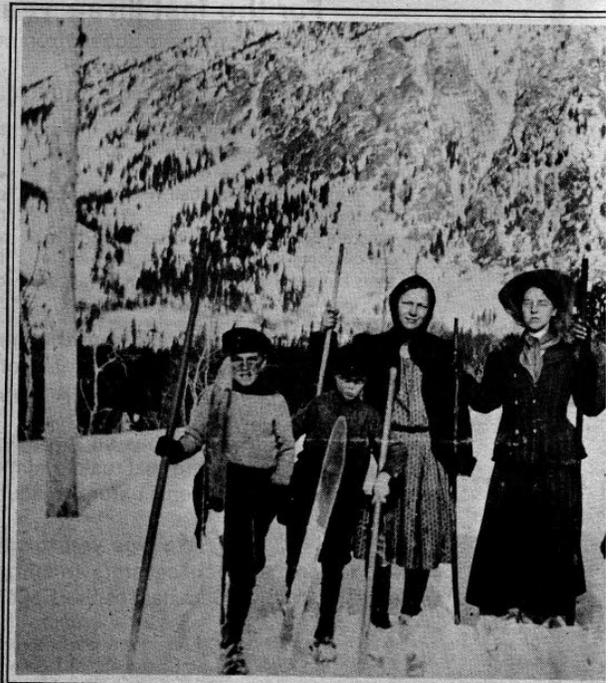
ED GAETZ skiing with a baby on his back in the once active mining town of Atlanta, located south of the Sawtooth Wilderness in central Idaho. Circa 1890.



WILLIAM BORDEN was one of the "skitrols" located on the western edge of today's Rive taken in Warrens, the starting point of Bo Gold Rush, the last gold rush in Idaho hi



UNTIL THE EARLY 1900s in the Intermountain West, snowshoes, such as these used by Dan McRae and George Short in traveling from Warrens to Big Creek in central Idaho, were commonly called "webs." Skis were called "snowshoes."



SKIING IN THE ROCKIES

by Ron Watters

AND 'SNOWSHOES' WERE 'WEBS'

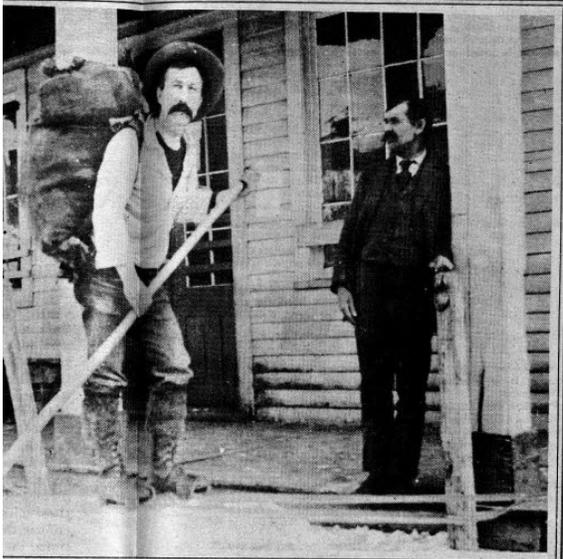


Photo courtesy of Idaho Historical Society

One of the "ski troops" who carried mail into Thunder Mountain, a mining area of today's River of No Return Wilderness in Idaho. This 1897 photograph was the starting point of Borden's mail route, a few years before the Thunder Mountain area was established as a national forest in Idaho history.

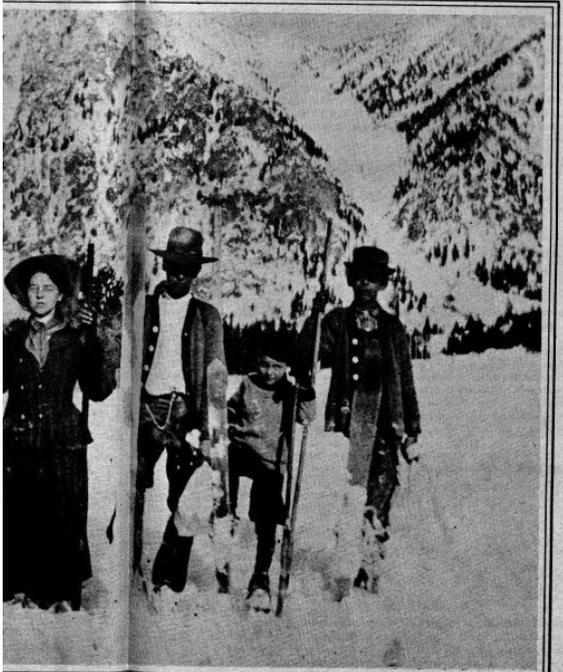


Photo courtesy of Idaho Historical Society

OLD-TIME SKIS

Skis in the early days were cut with a draw knife out of one solid piece of pine, fir, or whatever wood was preferred and available in the skier's locale. The tips were immersed in boiling water or steamed and bent upward to keep the ski from diving while gliding across the snow. Lengths of skis varied from short to the 9- to 10-foot range. Some skiers used a concoction of beeswax and paraffin for climbing and gliding, while other used loops of rope for long uphill treks. One skier even reported some success with bacon rinds.

Ron Watters is the author of *Ski Trails and Old-timers' Tales*, in which some of these photos appear. His most recent book is *Ski Camping*, available from Chronicle Books. He is associate coordinator of the Idaho State University Outdoor Program. This article was paid for by the HCN Research Fund.

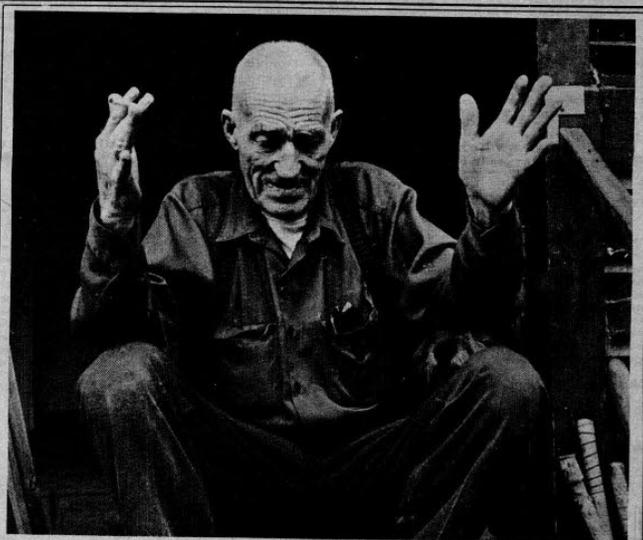


Photo by Ron Watters

LUM TURNER

I first met Lum Turner in a bar in Riggins, Idaho, three years ago when I was travelling Idaho searching for bits and pieces of historic information. I followed Lum's pick-up as he meandered back and forth on the winding, narrow road above the Salmon River that led to his home. Among the wonderful old-timers with whom I talked, Lum was one who still advocated the use of one pole instead of two for skiing.

In the winter, Lum carried supplies from the Kimberly Mine down the steep slopes of the Salmon River canyon to his home he had built in 1928. He told me how he'd put the single pole between his legs and use it as a brake to slow him down on his wild, hair-raising ski ride, his canvas pack brimming with supplies. With his eyes wide and hands motioning, he was again on his skis, dropping several thousand feet down the canyon. "Hell," he said, "when you get going 40 miles an hour, you need that pole. You got to stop!"

Lum died the summer before last, taking one last short ride down the canyon. Returning home from Riggins, his pole or skis couldn't stop him — he drove off the narrow road and his pick-up plunged into the Salmon River.

"I FEEL SORRY for people that have to live where they cannot snowshoe," wrote W. Pettit from Atlanta, Idaho, in 1880. "Life must indeed be a burden when there are no amusements but dancing." During Atlanta's livelier days, the group at left used skis for both work and play.

10-High Country News — Jan. 9, 1981

State of Wyoming Public Notice

PURPOSE OF PUBLIC NOTICE

THE PURPOSE OF THIS PUBLIC NOTICE IS TO STATE THE STATE OF WYOMING'S INTENTION TO ISSUE WASTE WATER DISCHARGE PERMITS UNDER THE FEDERAL WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972 (FWPCA), P.L. 92-500 AND THE WYOMING ENVIRONMENTAL QUALITY ACT (35-1-101 et. seq., WYOMING STATUTES 1957, CUMULATIVE SUPPLEMENT 1973). IT IS THE STATE OF WYOMING'S INTENTION TO ISSUE WASTE WATER DISCHARGE PERMITS TO (3) INDUSTRIAL FACILITIES, AND (1) COMMERCIAL FACILITY, TO MODIFY (1) INDUSTRIAL PERMIT, (2) OIL TREATER PERMITS, AND (1) MUNICIPAL PERMIT, AND TO RENEW (8) INDUSTRIAL PERMITS, (1) COMMERCIAL PERMIT, (21) OIL TREATER PERMITS, AND (1) FEEDLOT PERMIT.

APPLICANT INFORMATION

(1) APPLICANT NAME:

Wyoming Fuel Company

MAILING ADDRESS:

12055 West 2nd Place
Lakewood, Colorado 80215

FACILITY LOCATION:

Black Mountain Coal Mine
Sheridan County, Wyoming

PERMIT NUMBER:

Wy-0028975

The Wyoming Fuel Company plans to construct an open-pit coal mine north of the City of Sheridan, Wyoming which will be known as the Black Mountain Mine. The only "process water" discharge at the mine will be the outfall from a settling pond designed to collect runoff from the coal crushing and loading area. This discharge will enter an unnamed dry gulch approximately 2500 feet from the Tongue River (Class II Water). This discharge must meet effluent limitations which are considered by the State of Wyoming to represent "best available treatment." However, the permit also contains a "re-opener clause" which requires the permit to be modified should more stringent limitations be developed at the federal level.

Runoff from disturbed areas will be controlled by sedimentation ponds which are designed to completely contain the ten year - 24 hour precipitation event. Because these ponds will not normally discharge, they are not specifically identified in the permit but are covered by specific operation maintenance requirements. Periodic monitoring of effluent quality and quantity is required with reporting of results quarterly. The permit is scheduled to expire December 31, 1985.

(2) APPLICANT NAME:

Big Three Industries

MAILING ADDRESS:

P.O. Box 3047
Houston, Texas 77001

FACILITY LOCATION:

Casper Air Separation Plant
Natrona County, Wyoming

PERMIT NUMBER:

Wy-0030201

Big Three Industries Inc. plans to build an air separation plant at the junction of 13th Street and the North Platte River in Casper, Wyoming. The plant will cool ambient air and draw off liquefied Oxygen, Nitrogen, and Argon. The only wastewater from the facility will be approximately 30,000 gallons per day of non-contact cooling tower blow down which will be discharged to the North Platte River (Class II Water).

The proposed permit limits the quantity of discharge to that proposed by the Company. The permit also limits the discharge of total residual chlorine, heat, and pH. Cooling tower additives are limited to specific non-toxic anti-foulants and corrosion inhibitors, and no other additives may be used without written permission.

Effluent quality and quantity must be monitored on a regular basis and reports must be submitted quarterly. The permit is scheduled to expire December 31, 1985.

(3) APPLICANT NAME:

Black Butte Coal Company

MAILING ADDRESS:

P.O. Box 98
Point of Rocks, WY 82901

FACILITY LOCATION:

Rock Springs, Wyoming
Sweetwater County

PERMIT NUMBER:

Wy-0030261

The Black Butte Coal Company is in the process of developing an open pit coal mine located approximately thirty miles east of the City of Rock Springs, Wyoming. The only wastewaters associated with the mine will be runoff from disturbed areas and these waters will be held in ponds which are designed to completely contain the 10-year-24 hour precipitation event. Therefore, no specific discharge points are identified in the permit, but the proposed permit does contain requirements concerning the operation and maintenance of the runoff control ponds. All discharges which do occur will be in the Bitter Creek (Class III Water) drainage.

Self-monitoring of effluent quality and quantity is required whenever a discharge occurs with reporting of results within thirty days of the event. The permit is scheduled to expire January 31, 1986.

(4) APPLICANT NAME:

Covered Wagon Park — Joint Venture

MAILING ADDRESS:

471 North 110 East
Bountiful, Utah 84010

FACILITY LOCATION:

Green River, Wyoming
Sweetwater County

PERMIT NUMBER:

WY-0030236

The Covered Wagon Park subdivision is a development which will consist of a permanent housing subdivision of 150 units, a mobile home park of 150 units, 250 apartment units, and 50 commercial buildings. The development will be located at the crossing of Interstate Highway 80 and the Green River approximately one mile northwest of the City of Green River. The proposed method of wastewater treatment is an aerated lagoon which will discharge into the Green River (Class II water).

The proposed permit requires compliance with National Secondary Treatment Standards and Wyoming's In-Stream Water Quality Standards effective immediately. Effluent limitations were based on the following:

The effluent limitations included in the proposed permit are actually more stringent than necessary to assure compliance with the above Water Quality Standards, however, they are limitations which can easily be achieved with the aerated stabilization pond system which is proposed.

The proposed permit requires periodic monitoring of effluent quality and quantity with reporting of results quarterly. The permit is scheduled to expire December 31, 1985.

(5) APPLICANT NAME:

Husky Oil Company — Cheyenne,
Wyoming Refinery

MAILING ADDRESS:

P.O. Box 1558
Cheyenne WY 82001

FACILITY LOCATION:

Cheyenne, Wyoming
Laramie County

PERMIT NUMBER:

Wy-0000442

The Husky Oil Company's Cheyenne, Wyoming refinery does not currently discharge to surface waters of the State of Wyoming. However, the Company does have a discharge permit which authorizes a discharge to Crow Creek (Class IV Water). Under the existing permit, any discharge would have to meet "Best Available Treatment Standards" on January 1, 1981.

When Husky began complete containment of its wastewater in July of 1977, legal action was taken by a conservation of downstream water users who claim damage for loss of water which was previously flowing in the stream. The Company is now attempting to settle that legal action by discharging a portion of its treated wastewater back into Crow Creek. The Company believes it can discharge a significant quantity of water if it

only required to meet "best practicable treatment" limitations, however, only a very small volume of water could be released if "best available treatment" standards have to be met. Therefore, the Company has requested that its discharge permit be modified to extend the period of time during which it will be required to meet only "best practicable" limitations. The statutory deadline for achievement of "best available" limitations is July 1, 1984.

Crow Creek is a Class IV Water for a distance of approximately 25-30 stream miles below the discharge. Because achievement of best practicable treatment standards is sufficient to protect the existing use of the stream (irrigation), and because the maximum discharge from Husky (5 MGD) is minor compared to the City of Cheyenne's sewage discharges to Crow Creek (8.5 MGD), this Department proposes to modify the discharge permit as requested by the Company.

Monitoring of effluent quality and quantity is required and the Company must report results monthly. The expiration date of the proposed permit (June 30, 1984) corresponds to the statutory deadline for achievement of Best Available Treatment Standards (July 1, 1984).

Under recently promulgated federal regulations, no discharge permit may be issued to an oil refinery unless a scan of 129 toxic chemicals has been performed on the discharge. The Company has been made aware of this requirement and this proposed permit will not be issued until such time as that information has been submitted and evaluated.

(6) APPLICANT NAME:

Sohio Petroleum

MAILING ADDRESS:

P.O. Box 673
Russell, Kansas 67665

FACILITY LOCATION:

Government Moore Lease, East
Tisdale Field, NE4, Section 27,
T41N, R31W, Johnson County, Wyoming

PERMIT NUMBER:

Wy-0000531

(7) APPLICANT NAME:

Terra Resources

MAILING ADDRESS:

P.O. Box 2500
Casper, WY 82602

FACILITY LOCATION:

Texas N Battery, Salt Creek Field,
Section 19, T78N, R39W, Natrona
County, Wyoming

PERMIT NUMBER:

Wy-0024252

Facilities are a typical oil treaters located in Johnson and Natrona Counties, Wyoming. The produced water is separated from the petroleum product through the use of heater treaters and skin ponds. The discharges are to Wall Creek and Castle Creek (Class IV Waters).

The discharges must meet Wyoming's Produced Water Criteria effective immediately. Chapter VII of the Wyoming Water Quality Rules and Regulations infers that as long as the Produced Water Criteria is met, the water is suitable for beneficial use. There is no evidence to indicate that limitations more stringent than the Produced Water Criteria are needed to meet Wyoming's Water Quality Standards. The Department will continue to evaluate the discharges and, if necessary, will modify the permits if evidence indicates that more stringent limitations are needed.

Semi-annual self-monitoring is required for all parameters with the exception of oil and grease, which must be monitored quarterly. The proposed expiration date for the permits is December 31, 1985.

(8) APPLICANT NAME:

Town of Buffalo

MAILING ADDRESS:

P.O. Box 430
Buffalo, Wyoming 82834

FACILITY LOCATION:

Buffalo, Wyoming
Johnson County

PERMIT NUMBER:

Wy-0021024

The proposed permit contains a schedule of compliance for achieving the ammonia limitations for BOD5, Total Suspended Solids, pH, Fecal Coliform Bacteria, and Total Residual Chlorine.

The limitations on BOD5 are based on National Secondary Treatment Standards for that parameter and at this time it is believed to be adequate to insure that there are no violations of Wyoming's in-stream standards will be modified to include more stringent standards.

For the discharge to Redman Ditch which will occur during the summer, all limitations were based on National Secondary Treatment Standards except the limitation on fecal coliform bacteria which was based on Wyoming's In-Stream Water Quality Standards for Class IV Waters (200 organisms—100m). In addition, the town applied for and received less stringent effluent limitations for the parameter total suspended solids as authorized by federal regulations for stabilization pond systems with a design flow of 2.0 MGD or less.

The permit requires periodic monitoring of effluent quality and quantity with reporting of results quarterly. The permit is scheduled to expire January 31, 1986.

(9) APPLICANT NAME:

Peter Kiewit Sons' Company —
Whitney Mine

MAILING ADDRESS:

Box 3049
Sheridan, WY 82801

FACILITY LOCATION:

Sheridan, Wyoming
Sheridan County

PERMIT NUMBER:

Wy-0027812

The Peter Kiewit Sons' Company plans to construct an open pit coal mine approximately ten miles north of the City of Sheridan, Wyoming which will be known as the Whitney Mine. "Process water" discharges at the mine consist of the following:

The above discharge flows into the Tongue River (Class II Water) via an unnamed drainage.

The above discharge must meet effluent limitations which are considered by the State of Wyoming to represent "best available treatment." However, the permit also contains a "re-opener clause" which requires the permit to be modified should more stringent limitations be developed at the federal level.

Runoff from disturbed areas will be controlled by sedimentation ponds which are designed to completely contain the runoff resulting from a 10-year-24 hour precipitation event. Because these ponds will not normally discharge, they are not specifically identified in the permit but are covered by operation and maintenance provisions.

Periodic self-monitoring of effluent quality and quantity is required with reporting of results monthly. The permit is scheduled to expire January 31, 1986.

(10) APPLICANT NAME:

Shell Oil Company — Buckskin Mine

MAILING ADDRESS:

P.O. Box 818
Gillette, WY 82716

FACILITY LOCATION:

Gillette, Wyoming
Campbell County

PERMIT NUMBER:

Wy-0028479

The Shell Oil Company is in the process of developing a large open-pit coal mine approximately ten miles north of the City of Gillette, Wyoming, which will be known as the Buckskin Mine. The mine will have five separate points of discharge. Three of the discharge points will consist of pit dewatering, coal handling and washdown water. The remaining two points will consist of discharges of treated domestic sewage. The discharges are to Rawhide Creek and Spring Draw (Class IV waters).

The proposed permit requires that the discharges comply with effluent limitations which are considered by

the State of Wyoming to represent "best available treatment" effective immediately. However, the proposed permit also contains a "reopener" clause which requires the permit to be modified if more stringent limitations are developed at the federal level. The proposed permit contains a provision exempting the permittee from effluent limitations when a precipitation event exceeding the 10 year-24 hour storm occurs. The proposed permit also requires control of runoff from disturbed areas.

Self-monitoring of effluent quality and quantity is required on a regular basis with reporting of results quarterly. The permit is scheduled to expire January 31, 1986.

(11) APPLICANT NAME: Arch Mineral Corporation—Seminole No. 2 Mine
 MAILING ADDRESS: P.O. Box 530 Hanna, WY 82327
 FACILITY LOCATION: Hanna, Wyoming Carbon County
 PERMIT NUMBER: Wy-0022926

The Arch Mineral Corporation operates an open pit coal mine located approximately five miles northeast of the Town of Hanna, Wyoming which is known as the Seminole No. 2 Mine. "Process water" discharges at the mine consist of the following:

The above discharges flow into Palmer Draw and Arch Draw (Class IV Waters). The above discharges must meet effluent limitations which are considered by the State of Wyoming to represent "best available treatment." However, the permit also contains a "reopener clause" which requires the permit to be modified should more stringent limitations be developed at the federal level.

Runoff from disturbed areas will be controlled by sedimentation ponds which are designed to completely contain the runoff resulting from a 10 year-24 hour precipitation event. Because these ponds will not normally discharge, they are not specifically identified in the permit but are covered by operation and maintenance provisions.

Periodic self-monitoring of effluent quality and quantity is required with reporting of results quarterly. The permit is scheduled to expire January 31, 1986.

(12) APPLICANT NAME: Arch Mineral Corporation—Seminole No. 1 Mine
 MAILING ADDRESS: P.O. Box 530 Hanna, WY 82327
 FACILITY LOCATION: Hanna, Wyoming Carbon County
 PERMIT NUMBER: Wy-0022918

The Arch Mineral Corporation operates a large open pit coal mine located approximately ten miles west of the Town of Hanna, Wyoming which is known as the Seminole No. 1 Mine. There are no "process water" discharges at this mine, therefore no discharge points are specifically identified in the permit.

Runoff from disturbed areas will be controlled by sedimentation ponds which are designed to completely contain the runoff resulting from a 10 year-24 hour precipitation event. Because these ponds will not normally discharge, they are not specifically identified in the permit but are covered by operation and maintenance provisions.

Self-monitoring of effluent quality and quantity is required whenever a discharge occurs with reporting of results within thirty days of the discharge. The permit is scheduled to expire January 31, 1986.

(13) APPLICANT NAME: Amax Coal Company—Belle Ayr Mine
 MAILING ADDRESS: P.O. Box 3005 Gillette, WY 82716
 FACILITY LOCATION: Gillette, Wyoming Campbell County
 PERMIT NUMBER: Wy-0003514

The Amax Coal Company operates a large open pit coal mine located approximately fifteen miles south of Gillette, Wyoming which is known as the Belle Ayr Mine. Mine pit water is treated in any of six sedimentation ponds which discharge to Caballo Creek (Class II-Warmwater Stream), Duck Nest Creek (Class IV Water), or Draw No. 2 (Class IV Water). One of these ponds (discharge point 002) also receives wastewater from the coal processing plant. A seventh pond (discharge 009) collects runoff from disturbed areas only, but since it is not designed to completely contain the 10 year-24 hour precipitation event it is considered a "process water" discharge.

The proposed permit requires that the discharges comply with effluent limitations which are considered by the State of Wyoming to represent "best available treatment" effective immediately. However, the proposed permit also contains a "reopener" clause which requires the permit to be modified if more stringent limitations are developed at the federal level. The proposed permit contains a provision exempting the permittee from effluent limitations when a precipitation event exceeding the 10 year 24-hour storm occurs. The proposed permit also requires control of runoff from disturbed areas.

Self-monitoring of effluent quality and quantity is required on a regular basis with reporting of results monthly. The permit is scheduled to expire January 31, 1986.

(14) APPLICANT NAME: Kemmerer Coal Company - Elkol-Sorenson Mine
 MAILING ADDRESS: Frontier, WY 83121
 FACILITY LOCATION: Kemmerer, Wyoming Lincoln County
 PERMIT NUMBER: Wy-0000051

The Kemmerer Coal Company operates a large, open-pit coal mine which is located approximately three miles west of the Town of Kemmerer, and which is known as the Elkol-Sorenson Mine. Mine drainage from the south mining area is treated in one settling pond and mine drainage from the I-U-D pit is treated in another settling pond. The discharges from both ponds enter the North Fork of Little Muddy Creek (Class III Water) via an unnamed drainage.

The proposed permit requires that the discharges comply with effluent limitations which are considered by the State of Wyoming to represent "best available treatment" effective immediately. However, the proposed permit also contains a "reopener" clause which requires the permit to be modified if more stringent limitations are developed at the federal level. The proposed permit contains a provision exempting the permittee from effluent limitations when a precipitation event exceeding the 10 year-24 hour storm occurs. The proposed permit also requires control of runoff from disturbed areas.

Self-monitoring of effluent quality and quantity is required on a regular basis with reporting of results quarterly. The permit is scheduled to expire January 31, 1986.

(15) APPLICANT NAME: Carbon County Coal Co. Carbon No. 1 Mine
 MAILING ADDRESS: P.O. Box 530 Hanna, WY 82327
 FACILITY LOCATION: Hanna, Wyoming Carbon County
 PERMIT NUMBER: Wy-0027952

The Carbon County Coal Company operates an underground coal mine located approximately five miles northeast of Hanna, Wyoming. Wastewaters consist of mine drainage, area runoff, and equipment washwater. These wastes are treated in two settling ponds, one of which discharges to Big Ditch (Class IV Water) via an

unnamed drainage. The other pond discharges to Hanna Draw (Class IV Water).

The proposed permit requires that the discharges comply with effluent limitations which are considered by the State of Wyoming to represent "best available treatment" effective immediately. However, the proposed permit also contains a "reopener" clause which requires the permit to be modified if more stringent limitations are developed at the federal level. The proposed permit contains a provision exempting the permittee from effluent limitations when a precipitation event exceeding the 10 year-24 hour storm occurs. The proposed permit also requires control of runoff from disturbed areas.

Self-monitoring of effluent quality and quantity is required on a regular basis with reporting of results quarterly. The permit is scheduled to expire January 31, 1986.

(16) APPLICANT NAME: Amax Coal Company-Eagle Butte Mine
 MAILING ADDRESS: P.O. Box 3005 Gillette, WY 82716
 FACILITY LOCATION: Gillette, Wyoming Campbell County
 PERMIT NUMBER: Wy-0026018

The Amax Coal Company's Eagle Butte Coal Mine is a large open pit mine located north of the City of Gillette, Wyoming. Wastewaters consist of pumpage from the mine pit and runoff from the coal processing plant area. Wastewaters are treated in a total of nine different settling ponds which discharge to Little Rawhide Creek, Draw No. 2, the Northwest Diversion Channel and Diversion No. 4 (all Class IV Waters). Discharge point 003 which is included in the existing permit has been eliminated and is not included in this modified permit.

The proposed permit requires that the discharges comply with effluent limitations which are considered by the State of Wyoming to represent "best available treatment" effective immediately. However, the proposed permit also contains a "reopener" clause which requires the permit to be modified if more stringent limitations are developed at the federal level. The proposed permit contains a provision exempting the permittee from effluent limitations when a precipitation event exceeding the 10 year-24 hour storm occurs. The proposed permit also requires control of runoff from disturbed areas.

Self-monitoring of effluent quality and quantity is required on a regular basis with reporting of results quarterly. The permit is scheduled to expire January 31, 1986.

(17) APPLICANT NAME: Deer Park Campground and Mobile Home Park
 MAILING ADDRESS: P.O. Box 568 Buffalo, Wyoming 82834
 FACILITY LOCATION: Buffalo, Wyoming Johnson County, Wyoming
 PERMIT NUMBER: Wy-0025941

The Deer Park Campground and Mobile Home Park is the same facility as the old Buffalo KOA campground. Wastewater treatment consists of an biological package treatment plant followed by chlorination. The discharge is to an unnamed drainage which flows approximately 1/4 of a mile before entering Clear Creek (Class II Water).

The proposed permit requires compliance with National Secondary Treatment Standards and Wyoming's in-stream Water Quality Standards effective immediately. Because of the distance from the plant to Clear Creek the permit contains a stringent year-round limitation on fecal coliform bacteria (200-100 mls) with a liberal limitation on total residual chlorine.

The proposed permit requires periodic monitoring of effluent quality and quantity with reporting of results quarterly. The permit is scheduled to expire February 28, 1986.

(18) APPLICANT NAME: Atlantic Richfield
 MAILING ADDRESS: P.O. Box 5540 Denver, Colorado 80217
 FACILITY LOCATION: Burke Ranch Unit, SE 1/4, Section 7, T37N, R78W, Natrona County, Wyoming
 PERMIT NUMBER: Wy-0000736

(19) APPLICANT NAME: Continental Oil Company
 MAILING ADDRESS: 907 Rancho Road Casper, Wyoming 82601
 FACILITY LOCATION: Meadow Creek Tensleep A Unit, N 1/4, Section 11, T41N, R78W, Johnson County, Wyoming
 PERMIT NUMBER: Wy-0000868

FACILITY LOCATION: North Tisdale Central Tank Battery, NW 1/4, Section 9, T41N, R81W, Johnson County, Wyoming
 PERMIT NUMBER: Wy-0027511

(20) APPLICANT NAME: Terra Resources
 MAILING ADDRESS: P.O. Box 2500 Casper, Wyoming 82601
 FACILITY LOCATION: Salt Creek Unit South, Waterflood System, SE 1/4, Section 15, T39N, R78W, Natrona County, Wyoming
 PERMIT NUMBER: Wy-0027588

FACILITY LOCATION: Salt Creek South Unit No. 4, SW 1/4, SE 1/4, Section 12, T39N, R79W, Natrona County, Wyoming
 PERMIT NUMBER: Wy-0028380

FACILITY LOCATION: Well No. 3-A, Tract 10, Salt Creek Unit South, NE 1/4, NW 1/4, Section 7, T39N, R78W, Natrona County, Wyoming
 PERMIT NUMBER: Wy-0028703

FACILITY LOCATION: Well No. 1A, Tract 8, Salt Creek Unit South, NE 1/4, NW 1/4, Section 17, T39N, R78W, Natrona County, Wyoming
 PERMIT NUMBER: Wy-0028711

FACILITY LOCATION: Well 7AX, Tract 26, Salt Creek Unit South, SE 1/4, NW 1/4, Section 18, T39N, R78W, Natrona County, Wyoming
 (continued on page 12)

Western Roundup

Housing slump eases northern timber cuts

A depressed housing market, with new home construction frozen by high interest rates, has put the timber industry on the skids.

The timber harvest level on the northern national forests last year was the lowest since 1955, down 16 percent from 1979, and rumors of large layoffs are spreading through area mills.

Over one billion board feet of sawtimber was sold last year in the U.S. Forest Service's Northern Region, which covers 15 national forests in eastern Washington, northern Idaho, Montana and the Dakotas. But only 835 million board feet were harvested, with the balance to be cut at some future date.

The amount of uncut timber under contract in the region is steadily growing and now stands at over three billion board feet.

Critics of the agency's timber policies say the deferral process is one reason the Forest Service is losing money on its operations. Although more timber was sold last year than in 1979, the agency received roughly a third less receipts because of lower market prices. The timber sold and paid for this year will be resold by the timber companies presumably in a stronger market year — they generally have five years to cut and market timber after it is purchased.

Of the timber that was cut last year, almost a third was in the Idaho panhandle. But mills there, nonetheless, are more abuzz with rumors of worker layoffs than with sawtimber.

Louisiana-Pacific has already given 11,000 employees three weeks of unpaid vacation over the holidays, and most other mills predict layoffs next spring unless the interest rates come down.



Photo by Idaho Dept. of Commerce

WHEN THERE'S WORK, this logger will cut 11,595 board feet of timber to build the average 17,000 square foot home.

Grounding copper

Practical results may be a long time coming, but a search is underway for ways to make copper mining in Arizona less threatening to the state's ground water supply.

Arizona is the nation's sixth largest user of ground water, and overdrafts of more than two million acre-feet per year have caused extensive land subsi-

Potato kings feud over spud farm

In a corporate version of the family farm feud, two Pacific Northwest potato kings have gone to court over control of a giant spud farm in northcentral Oregon.

The 30,000-acre farm has been co-operated by P.J. Taggares and J.R. Simplot, millionaire potato kings from Washington state and Idaho, respectively, and reportedly long-standing personal and business friends.

The two spud magnates gained fame in 1974 when they were fined and booted out of the New York Mercantile Exchange for defaulting on their futures contracts to deliver Maine

potatoes. The Simplot Corp. has a wide range of food industry investments, including a major share of the southeastern Idaho phosphate mining industry.

The spud kings have been bickering over management decisions on the farm for some time, with farm employees getting conflicting instructions on such matters as when to plant and harvest.

The outcome of the dispute, to be sure, is no baked potato. The farm, which is leased from the Boeing Aircraft Co., which in turn leases the land from the state of Oregon, last year produced 1.5 percent of the nation's total spud crop, and there's an option to double the acreage.

BLM saturated with desert claims

Proposals to develop public desert land in southern Idaho will no longer be accepted until the Bureau of Land Management can wade through an existing backlog of claims.

Under the Desert Land Act of 1877, individuals may be granted up to 320 acres of public land if they can turn the acreage into irrigated farmland. While the agency charges a mere \$1.25 per acre processing fee, BLM officials say it can easily cost \$100,000 to make a 320 acre parcel bloom.

The agency has received some 1,500 applications to date to transfer almost

half a million acres of southern Idaho desert. The BLM, however, says only a fifth of that acreage is economically developable and that it will take about five years to sort out the existing claims for that acreage.

The state of Idaho recently lost a legal action challenging the BLM's final authority to determine what lands to develop. The state has also pushed for speedier consideration of applications both under the Desert Act and the related Carey Act, which gives states a limited role in helping individuals obtain federal land.

dence, or sinking, and fears of water supply shortages.

The state's copper industry, producing one-half of the country's output, has long been tagged as a major villain in the ground water crisis. It takes 700 gallons of water to extract only 11 pounds of metal from a ton of ore; contaminants leaching back into water sources affect water quality.

The new study, funded by the U.S. Bureau of Mines, will scrutinize mining in the Globe-Miami area, a 500-

square-mile mining district east of Phoenix. The goal is to provide data for designing new operation plans that conserve water quantity and quality.

Outgoing Secretary of Interior Cecil Andrus has repeatedly stressed the irony of building new water projects, such as the multi-billion dollar Central Arizona Project, if existing water sources are being misused. The Carter Administration made continued federal support for that project contingent on better management techniques.

PERMIT NUMBER:	(continued from page 11)	Wy-0028720
FACILITY LOCATION:	Well No.13-66, Tract 30, Salt Creek Unit South, NE $\frac{1}{4}$, NE $\frac{1}{4}$, Section 13, T39N, R79W, Natrona County, Wyoming	
PERMIT NUMBER:		Wy-0028738
(21) APPLICANT NAME:		Texaco, Inc.
MAILING ADDRESS:		P.O. Box 2100 80201
FACILITY LOCATION:	Battery No.1, Dugout Creek, Shannon Sand Unit, SE $\frac{1}{4}$, Section 33, T43N, R80W, Johnson County, Wyoming	
PERMIT NUMBER:		Wy-0002399
FACILITY LOCATION:	North Fork Field, NE $\frac{1}{4}$, Section 24, T44N, R82W, Johnson County, Wyoming	
PERMIT NUMBER:		Wy-0002402
(22) APPLICANT NAME:		Sun Oil Company
MAILING ADDRESS:		P.O. Box 35567, Tulsa, Oklahoma 74135
FACILITY LOCATION:	East Tisdale Field, Newman Unit, NE $\frac{1}{4}$, NW $\frac{1}{4}$, Section 23, T41N, R81W, Johnson County, Wyoming	
PERMIT NUMBER:		Wy-0000806
FACILITY LOCATION:	East Tisdale Field, Morton Lease, SW $\frac{1}{4}$, Section 23, T41N, R81W, Johnson County, Wyoming	
PERMIT NUMBER:		Wy-0001139
FACILITIES ARE TYPICAL OIL TREATERS LOCATED IN NATRONA AND JOHNSON COUNTIES, WYOMING. THE PRODUCED WATER IS SEPARATED FROM THE PETROLEUM PRODUCT THROUGH THE USE OF HEATER TREATERS AND SKIM PONDS. THE DISCHARGES ARE TO EAST TEAPOT CREEK, PERRY DRAW, SOUTH FORK OF POWDER RIVER, TEAPOT CREEK, CASTLE CREEK, SALT CREEK, POLLARD DRAW, THOMAS CREEK AND WALL CREEK (CLASS IV) AND NORTH FORK OF POWDER RIVER (CLASS II).		
PERMIT NUMBER:		Wy-0003476
FACILITY LOCATION:	B-1-35 Tank Battery, SW, Section 35, T39N, R78W, Natrona County, Wyoming	
PERMIT NUMBER:		Wy-0003484
FACILITY LOCATION:	B-1-20 Tank Battery, SE $\frac{1}{4}$, Section 20, T39N, R78W, Natrona County, Wyoming	
PERMIT NUMBER:		Wy-0028274
(24) APPLICANT NAME:		Union Oil Company of California
MAILING ADDRESS:		P.O. Box 79 Worland, WY 82401
FACILITY LOCATION:	East Teapot Unit, SW $\frac{1}{4}$, Section 26, T39N, R78W, Natrona County, Wyoming	
PERMIT NUMBER:		Wy-0001121
FACILITIES ARE TYPICAL OIL TREATERS LOCATED IN NATRONA COUNTY, WYOMING. THE PRODUCED WATER IS SEPARATED FROM THE PETROLEUM PRODUCT THROUGH THE USE OF HEATER TREATERS AND SKIM PONDS. THE DISCHARGES ARE TO TEAPOT, LITTLE TEAPOT CREEK AND SAND CREEK (CLASS IV WATER). THE DISCHARGES MUST MEET WYOMING'S PRODUCED WATER CRITERIA EFFECTIVE IMMEDIATELY. NO CHEMICAL LIMITATIONS.		

Western Roundup

Drive-up windows fuel Boise smog

To idle or not to idle. That is the question facing the Boise City Council as the officials grope with ways to regulate drive-up service windows to reduce air pollution.

The Idaho capital is plagued by carbon monoxide, especially during the winter, and was given until 1987 to meet federal clean air standards by the Environmental Protection Agency. The city council has been looking at several approaches to cutting pollution, and last May voted for a four-month moratorium on new drive-ups at fast-food restaurants.

But owners of businesses objected. And a subsequent study shows that shutting off and restarting engines may cause more fumes. The council voted last month to rescind the moratorium and adopt new regulations which the Idaho Statesman called "a token not likely to have much effect on pollution."

The new ordinance requires all businesses planning to open new drive-ups to obtain a special permit and show that the facility will minimize pollution. Suggested measures include building more than one window to speed service, and asking customers to park and do business inside or by mail, in the case of banks.

The council was pressed into looking at drive-ups by a county planning re-



Photo by Wyoming State Journal

WOOD SMOKE and other large suspended particles such as this contribute to haze over Lander, Wyo., and may be causing lung ailments in school age children.

Wood smoke linked to lung ills

A Montana air pollution study has linked the inhalable particulates found in wood smoke with decreased lung functions among elementary school age children.

In one of the country's first such investigations, the tests showed that children in Anaconda, Billings, Butte and Missoula consistently scored lower on lung function tests than children in Great Falls, where the air is cleaner.

Inhalable particulates, as opposed to larger, non-respirable pollutants, constrict the bronchial chords to reduce the flow of air in and out of the lungs, the recent study showed. Wood smoke, according to other Montana tests, creates some two-thirds of the wintertime inhalable particulates.

The Environmental Protection Agency is considering adopting separate standards for inhalables, which are currently lumped together with non-respirable particulates for a combined suspended particulate count. A separate standard, the Missoulian reports, could mean restrictions on wood burning.

But, state health officials note, the cost of such regulation would be high — special air monitoring equipment alone would cost \$20,000 each for an indeterminate number of machines.

The inhalable particle tests were conducted by Missoula pediatrician Kit Johnson for the state Montana Air Pollution Study, which is working on a comprehensive state wide study.



tions have been imposed on these facilities except for oil and grease (10mg-l) and pH (6.5-8.5). This is due to the extreme aridness of the area which allows for beneficial use of the water for agricultural purposes. There is no evidence to indicate that limitations more stringent than the Produced Water Criteria are needed to meet Wyoming's Water Quality Standards. The Department will continue to evaluate the discharges and, if necessary, will modify the permits if evidence indicates that more stringent limitations are needed.

Semi-annual self-monitoring is required for all parameters with the exception of oil and grease, which must be monitored quarterly. The proposed expiration date for the permits is September 30, 1981 for the Fenix and Selson facilities and December 31, 1985 for the Union facility.

(25) APPLICANT NAME:	Texaco, Inc.
MAILING ADDRESS:	P.O. Box 2100 Denver, Colorado 80201
FACILITY LOCATION:	State "G" Battery, Cellar's Ranch Field SW¼, Section 13, T44N R22W, Johnson County, Wyoming
PERMIT NUMBER:	Wy-0002305
FACILITY LOCATION:	Brannon Harris Battery, Cellar's Ranch Field NW¼, Section 24, T44N, R22W, Johnson County, Wyoming
PERMIT NUMBER:	Wy-0002321
FACILITY LOCATION:	Battery No. 3, Dugout Creek Shannon Sand Unit, SE¼, Section 34, T43N, R20W, Johnson County, Wyoming
PERMIT NUMBER:	Wy-0002348
FACILITY LOCATION:	Cellar's "A-B" Battery, Cellar's Ranch Field SE¼, Section 14, T44N, R22W, Johnson County, Wyoming
PERMIT NUMBER:	Wy-0002381

Facilities are a typical oil treaters located in Johnson County, Wyoming. The produced water is separated from the petroleum product through the use of heater treaters and skim ponds. The discharges to the North Fork of Powder River (Class II Water) and Indian Draw (Class IV Water). The discharges must meet Wyoming's Produced Water Criteria effective immediately. No chemical limitations have been imposed on these facilities except for oil and grease (10 mg-l) and pH (6.5-8.5). This is due to the extreme aridness of the area which allows for beneficial use of the water for agricultural purposes. There is no evidence to indicate that limitations more stringent than the Produced Water Criteria are needed to meet Wyoming's Water Quality Standards. The Department will continue to evaluate the discharges and, if

necessary, will modify the permits if evidence indicates that more stringent limitations are needed. Semi-annual self-monitoring is required for all parameters with the exception of oil and grease, which must be monitored quarterly. The proposed expiration date for the permits is December 31, 1985.

(26) APPLICANT NAME:	Smith Sheep Company Feedlot
MAILING ADDRESS:	207 North 4th Street Douglas, Wyoming 82633
FACILITY LOCATION:	Douglas, Wyoming Converse County, Wyoming
PERMIT NUMBER:	Wy-0025046
STATE-EPA TENTATIVE DETERMINATIONS	The Smith Sheep Company Feedlot is an open lot with a capacity of 500 cattle located on the north bank of the North Platte River approximately one mile above the Douglas water treatment plant intake. Natural springs occur in and above the feedlot and water from these springs is routed to two sumps which discharge via an underground pipe to a complete containment holding pond. These sumps would also collect any precipitation runoff which occurred on all but the far east side of the feedlot. Runoff from the far east side of the feedlot flows into a completely contained natural depression. The existing system appears capable of handling, without discharge, the springs and the runoff from a 25 year-24 hour precipitation event. The proposed permit requires that the existing control system be properly operated and maintained through the life of the permit which will extend to February 28, 1986.
PUBLIC COMMENTS	Tentative determinations have been made by the State of Wyoming in cooperation with the EPA staff relative to effluent limitations and conditions to be imposed on the permits. These limitations and conditions will assure that State water quality standards and applicable provisions of the FWPCA will be protected.
PUBLIC COMMENTS	Public comments are invited any time prior to February 9, 1981. Comments may be directed to the Wyoming Department of Environmental Quality, Water Quality Division, Permits Section, Hethaway Building, Cheyenne, Wyoming 82002, or the U.S. Environmental Protection Agency, Region VIII, Enforcement Division, Permits Administration and Compliance Branch, 1840 Lincoln Street, Denver, Colorado 80295. All comments received prior to February 9, 1981 will be considered in the formulation of final determinations to be imposed on the permits.
ADDITIONAL INFORMATION	Additional information may be obtained upon request by calling the State of Wyoming, (307) 777-7781, or EPA, (303) 327-3874, or by writing to the aforementioned addresses. The complete applications, draft permits and related documents are available for review and reproduction at the aforementioned addresses.

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Bulletin Board

IDLE ELDERS

Finding meaningful work for retired workers can have pleasant results for more than the job winner. The Connecticut Environmental Protection Agency, for example, has used federal funds to hire 19 workers to help manage water quality, air compliance, solid waste, open space acquisition and noise control programs. Called the Senior Environmental Employment program, it is being coordinated by the HEW, Office of Human Development Services, Administration on Aging, 200 Independence Ave., S.W., Washington, D.C. 20201. A similar program is being promoted by the Wyoming Farmers Union, wherein employers engaged in energy conservation or alternative resources development can hire elderly employees, with a 50 percent matching grant for salaries during a training period. Contact Fidal Nottage, Director, Green Thumb, Inc., 1902 Thomes, Cheyenne, Wyo. 82001.

WILD STUDIES

The Bureau of Land Management's proposal for studying Wilderness Study Areas was published in the Dec. 22 *Federal Register*. The guidelines cover data collection, analysis, evaluation, public involvement and decision-making. Public comment on the proposed guidelines will be accepted through February.

RURAL RABBLE ROUSERS

The North Country Institute in Vermont is offering two, four-day training sessions in January and June for persons organizing rural communities. For \$200, attendees will be treated to workshops on economic development, direct action, grassroots fundraising, co-ops, union organizing — all in the rural perspective. Contact Meg Campbell, NCI, P.O. Box 8, South Newbury, Vt. 05066; (802) 866-5603.

CHLORINATED WATER

"Water? Never touch the stuff. Fish fornicate in it," W.C. Fields once said. With this latest report from the Council on Environmental Quality, he would have had even more ammunition against the substance. The CEQ has found new evidence of a possible link between chlorinated drinking water and certain kinds of cancer. The preliminary report shows connections between rectal, colon and bladder cancer and chlorinated drinking water. Copies of the report, "Drinking Water and Cancer: Review of Recent Findings and Assessment of Risks," will be available at the end of January from the National Information Service, U.S. Department of Commerce, Springfield, Va., 22151.

GROWING PAINS

Land use and ownership changes in rural areas are the focus of a new film sponsored by the Conservation Foundation. For more information on obtaining "Growing Pains: Rural America in the 1980s," contact CF, 1717 Massachusetts Ave., N.W., Washington, DC 20036.



WASTE TO WANT

Converting solid waste into fuel for power plants is the subject of a Feb. 10-13 conference in Nashville, Tenn. Sponsored by the Department of Energy and the Environmental Protection Agency, it's being organized by Argonne Laboratory and for \$135 promises that "community officials, regulators, consultants and citizens can meet with the manufacturers of waste-to-energy prepared fuel systems to discuss the application of this option." Contact Miriam Holden, Argonne National Laboratory, 9700 South Cass Ave., Argonne, Ill. 60439.

SMALL FARM AID

Though it may be only a drop in the bucket to the beleaguered small farmer, the federal government has a network of agricultural research and extension programs to aid the little guy. From training programs in Wadesboro, N.C., to a new research center in Beltsville, Md., the U.S. Department of Agriculture spent almost \$60 million last year to help small farmers. For an update on the federal programs, contact the General Accounting Office (Document Handling and Information Services Facility, P.O. Box 6015, Gaithersburg, Md. 20760) and ask for the 14-page, Oct. 17 letter CED-81-18.

THE TOXIC VOID

The General Accounting Office has taken the Environmental Protection Agency to task for its sloppy handling of chemicals regulation. With 2 million chemicals now in circulation, and over 10,000 firms turning out 500 billion pounds and 1,000 new chemicals every year, regulation is an overwhelming task. For a copy of the report, contact the GAO (see above) and ask for "EPA is slow to carry out its Responsibility to Control Harmful Chemicals," CED-81-1, Oct. 28.

DISASTEROLOGY

For what must be the most complete survey of literature on disasters and disaster management, contact Springer-Verlag New York Inc., 175 Fifth Ave., New York, N.Y. 10010. They have books and journals, at only semi-disastrous prices.

HELP NEEDED

The Solar Energy Research Institute in Golden, Colo., is looking for summer interns. For 10 weeks, students can work with SERI staff on the "broad problems associated with the practical widespread utilization of solar energy." Application deadline is Feb. 1. Contact the Academic and University Program Branch, 1617 Cole Blvd., Golden, Colo. 80401; (303) 231-1235.

LET THERE BE

Lighting systems that use natural sources to save energy. That's the theme of a Jan. 23-24 seminar in Santa Fe sponsored by the Oklahoma State University Architectural Extension. In addition to touring the local sites, attendees for \$175 will be treated to instructions from five lighting architects, with topics unsurprisingly covering lamps and luminaires, mirrors, computer analysis and earth sheltered buildings. Contact Jody Proppe, Oklahoma U., 120 Architecture Bldg., Stillwater, Okla. 74075; (504) 624-6286.

OIL SHALE

In what could be the first of many such meetings, the Colorado Department of Natural Resources' Joint Review Process is having two public hearings on proposed oil shale projects — the Rio Blanco and Multi Mineral Corporation. Both meetings are scheduled for Jan. 20, starting 10:30 a.m. in the Grand Mesa Room, Holiday Inn, 755 Horizon Dr., Grand Junction, Colo.

Juggie...

(continued from page 2)



Photo by Richard Murphy

stormy today but no snow. Headed due west into the weather but so far no rain. The red cliffs in this part of the Wyoming Range gleam brightly in the morning sun next to the lush green grass that is so fresh up here."

Alain, the Frenchman who is the head of this motley crew, is the observer today. His accent and the stream of French profanity that comes over the radio all day when he is in the recorder is good for a few laughs and makes the day go faster.

The shots begin. At the back they are muted and inoffensive. We do twenty as quickly as possible. After twenty we get a dollar for every shot we do. Seventy shots a day is not uncommon. Out near Big Piney we set the world record for a portable crew with 112 shots.

One line started in Bonduant, Wyo., went over the Wyoming Range, the Salt River Range and west into Idaho. In Bonduant we crossed the highway, and Rory, one of the more colorful back road members, ran up to the bar to get some beer. We sat in the sun drinking while the observer kept calling on the radio wondering why no loads were coming forward. An old rancher rode by on his horse and stopped to talk with us. He said the fishing was great in the

Hoback River. I asked him what he would think of oil rigs in his valley drilling for oil. "Hell, let 'em come," he said. "Can't do no harm 'round here." What about that great fishing in the Hoback, I asked. "What about it?" he demanded.

We travel in beelines. Got to follow that line. In this country that can be pretty damn tough. Doesn't matter what's in the way — thickets, swamps, creeks, cliffs, scree fields, whatever — we go straight through it. No matter that ten yards to the side there is an easier way — the oil companies pay for straight lines. I'm told Teddy Roosevelt used to take beeline hikes in North Dakota and I think about him as I fight my way through some stickers with 40 pounds of cable around my neck.

John Boy is the head of back crew today. He very rarely eats. Everyone else carries small packs full of sweaters and rain gear, books, cameras, journals and food. John Boy carries a small fanny pack full of beer. He is quiet, strong as an ox and nobody ever questions him. He is the only one among us who does this kind of work year-round. Delbert is from California; he went to Santa Barbara College and served in the Navy. He is constantly going on about Finnegan's Wake or metaphysics or some such thing. It's hard to have a normal conversation with him. Chris is one of the five women on the crew and a delight to have around. She has a master's in forestry from the University of Arizona and has lived in the Grand Canyon for a long time. Billy is a Latin major from Columbia University and the son of a well-known American historian. He doesn't say much and reads Virgil if we aren't moving.

I write in my journal: "Sitting on a grassy hillock in the Hoback Range

west of the Little Greys River, getting ready to drop down to the water. Shady cool forests with little underbrush, just long thick grasses perfect for a quick snooze. I have learned to sleep anywhere on this job. No matter if we are on a steep hill or in the rocks. If we have half an hour, I can sleep."

A portable crew works with two helicopters. The choppers take the crew in and out of the field, move loads forward, bring dynamite to the primates, and move the recorder as the line moves. All that work used to be done by mule teams in this country. In South America, Africa and Asia where CGG has done a lot of work, they have found it cheaper to hire natives to move the loads.

The chopper pilots are very good. They fly in the mountains with gusty winds and unstable air. They have to set down in tight spots and pick up loads in forests where they can hardly see. They are in the air for as much as ten hours a day. It takes concentration and stamina.

Most of the pilots are military veterans. John, our best pilot, is a Korean War vet. He is unflappable. I've seen him do pickups in forest clearings with only a foot to spare from the ends of the blades to the trees, and in creek beds where the blades whirl only inches off the banks. One day some cables fell off John's chopper into the top of a pine tree. John bent the tree over with the bubble of the chopper and hooked the cables with the skid. Most pilots have crash and emergency landing stories. Not John. He says he has never been down.

A five-pound stick of dynamite exploding three feet off the ground does not leave many visible scars. In grassy

areas, the blast will blow clean the earth around the shot in a six foot circle.

In sagebrush it will blow the leaves off the plants, sagebrush is hardy stuff. In a pine forest, with needles and twigs covering the forest floor, it is very difficult to see where the explosion took place. In rocky terrain the explosion is almost unnoticeable. Of course, at higher elevations even minor damage takes a long time to heal.

We move. Picking up jugs is mindless, easy and enjoyable. The movements are mechanical and repeat themselves all day. Some days we hurry so we can get caught up and sit down. Other days we just saunter along enjoying the motion, picking up jugs and wildflowers.

A cable count shows some missing cables so I head back to see if I overlooked some. Back crew has picked up all the markers on the line so I have to follow the shots. I walk for a few miles and then get lost in a forest. I retrace my steps until I get back on the line. It is quiet and peaceful back here and I stop and rest and think about what I'm doing.

If seismic results weren't used for anything, if this was the final product, it wouldn't matter much. But it isn't. The results are auctioned off to oil companies that come in with drilling rigs if the surveys look favorable.

At 8 o'clock and 76 shots later, we call it a day. On a rocky outcropping at 9,500 feet with the whole wild world below me and the rising moon in a purple sky above me, I pull myself up into the hovering chopper and we bank away for home.

Conrad Gilbert is a freelance writer presently attending the University of Montana. Research for this article was paid for by the HCN Research Fund.

Opinion



Is this an Interior Secretary, or Watt?

"What is the real motive of the extreme environmentalists, who appear determined to accomplish their objectives at whatever cost to society: Is it to simply protect the environment? Is it to delay and deny energy development? Is it to weaken America?"

— speech at the annual meeting of the National Water Resources Association in Boise, Idaho, Oct. 27, 1977

"Nuclear power is the only environmentally and politically reliable source of abundant, competitively priced power for the continuous maintenance and betterment of our civilization."

— speech distributed by MSLF in 1977

I am a part of the Sagebrush Rebellion. The Sagebrush Rebellion has exploded in the Western states in the last three or four years because of the oppressive actions of the Bureau of Land Management. If we properly manage those lands under the laws Congress has enacted, we need not bring about massive land transfers to calm the rebellious nature of people like me and other westerners. Some of the lands do need to be transferred."

— press conference, Denver Hilton, Dec. 24, 1980

"As a white man, in 10 years...I'm going to be very hesitant to allow a black doctor to operate on me because I'll always have the feeling that he may have been carried by the quota system."

— quoted in the *Straight Creek Journal*, Oct. 6, 1977

"The emphasis of all these (public interest) groups is to work toward judicial decisions restricting economic growth, blocking freedom of individual location, redistributing wealth from the productive to the unproductive, hindering national defense, and substituting government for individual decision making."

— speech distributed by MSLF in 1977

"The longterm threat to the business person is that, because of the rapidly escalating costs of energy, some political leader from the Northeast will find it politically expedient to blame the high costs of energy to his region on the failure of the private sector to properly develop the abundant energy resources of the West. Because of the continued political clout of the East Coast and the industrial states, a political leader may be able to persuade Congress to nationalize the energy industries of the nation and create a crash program to develop Wyoming and Western coal, uranium and oil shale.

"If that were to happen, our Western ecology, way of life and economic freedom would be lost. The cause would not have been the failure of private enterprise, but rather the no-growth advocates masquerading in the courts as environmentalists and a government that encumbered the private sector beyond its ability to cope."

— speech at the University of Wyoming, Oct. 28, 1980

A selection of contributors of over \$500 to the Mountain States Legal Foundation, dated July 15, 1978.

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James G. Watt

Photo by Ron Wolf

"I fear that our states may be ravaged as a result of the actions of environmentalists, the greatest threat to the ecology of the West."



"A HIRED GUN"

Dear HCN,

To the formidable list of anti-environment lawsuits filed by Mountain States Legal Foundation under James Watt you can add the so-called Rio Puerco case in New Mexico. Its immediate and long range purpose is to hinder if not kill the capability of the Bureau of Land Management to implement initially 212, now 145, environmental impact statements mandated by federal court order (a consent decree). That came in 1975 in the celebrated *NRDC v. Morton* case.

MSLF's Attorney Lance P. Wells wrote at length about that 1979 lawsuit to one Bob Jones, head of the New Mexico Public Lands Council.

The letter said, "It may be important

for you to know that it appears as though each and every environmental impact statement that proposes to do any significant economic harm to the communities and state where they are done will most likely be litigated and challenged... Attorneys are beginning to recognize that this will be a very profitable field of litigation for them during the next several years."

The letter added that court challenges were being prepared in Utah, Arizona and Colorado, and had already been "commenced in California." Further lawsuits were being prepared "on the East Socorro and East Roswell" EISs in New Mexico.

And this man Watt is now seen by Senator Simpson as not being "at the other end of the spectrum" from those who have a regard for the ranges under BLM? Depends on where you yourself stand, I suppose. For one, I'll side with a former high official of an Interior Department agency (not BLM) who wrote me recently that from his personal experience with Watt he had to categorize him as no more than "a hired gun." He also said that the Sagebrush Rascals are small potatoes to what we'll see if the man is confirmed in office.

William Voigt, Jr.
Blackshear, GA.

16-High Country News — Jan. 9, 1981

Books

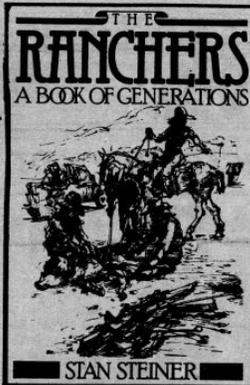


by Stan Steiner, Alfred A. Knopf, New York, 1980. \$13.95, hard cover, 241 pages. Drawings.

Review by Peter Wild

For some years now, Stan Steiner has bounced over the back roads of the Rocky Mountain West. He has found, or at least thinks he has found, what he was seeking — wisdom from the descendants of pioneer ranch families still making a go of it on the old homesteads.

These folks — like the Spragues, a Montana couple living thirty miles from town in a log house without telephone or electricity — are oracles to Steiner. He approached them, tape recorder in hand, to ask: "how did you survive, and what, if anything, do you think the country can learn from the way you have survived?"



However, the book contains little in the way of survival tips. The isolated ranchers proved themselves most obliging, even garrulous, before Steiner's microphone, but few of them want to talk about how they keep the rabbits out of the turnip patch or how to strike a match with frozen fingers. Instead, they offer memories of the old days and salty opinions about what has gone

wrong with the world.

They can be informative, iconoclastic, even hilarious. One informant recalls an old cure for diphtheria. The sick person urinated in a cup of green carrots and hung the cup on the chimney for eight days. William Lumpkin tells about his mother's arrival in the West. As a bride-to-be from a sedate Philadelphia family, she stepped off the train in Clayton, New Mexico: "The cowboys from my father's ranch were there, lined up along the tracks. They had gone two weeks without bathing. Or shaving. Or anything. And they were shooting off their guns and raising the ruckus for the old man when he brings his bride out west."

Wally McRae gives a sharp slap to the romantic image of pioneers. From his Rocker Six spread in Montana, McRae says that people today don't realize "that some old guy, with a gimpy leg, rode around on a horse when it was twenty-two below zero, for all of his lifetime, just to build that ranch." Somewhat in contrast, HCN associate editor Joan Nice is also in the book explaining her commitment to small-town living in Lander, Wyoming.

Anger breaks through in many of these interviews, anger over coal companies and high taxes, over too many

city families moving in with their urban ways. Snorting at the forest of real estate signs in the Bitterroot Valley south of Missoula, Rex Bundy rails: "The trouble with most of these young people is they don't know how to work."

Dutifully, too dutifully, Easterner Steiner writes it all down. The West indeed is changing. But what many of these older rural people see as moral problems stem instead from the ills of overpopulation and the invasions of technology. Steiner records without probing beyond the surface of frustrations.

Most ranchers, as Stan Steiner must know by now, love to talk. What he hasn't learned is that they can be as full of bravura and nonsense as any of the rest of us — perhaps a bit more. One New Mexican rears up to boast that all ranchers are conservationists. She maintains "that no one ever overgrazes." That's a big wad of Bazooka gum, but Steiner doesn't even bother to look out the window.

He does include "Sisters of Ruth," a valuable section on women in the old-time West. However, for much of the way the fun of the book is in watching how easily the crusty ranchers hoodwink the unquestioning city-slicker.

A Policy Approach to Political Representation

Lessons from the Four Corners States

A Book About Resources for the Future



Helen Ingram, et al, Resources for the Future, The Johns Hopkins University Press, Baltimore, 1980, 262 pages.

Review by Michael Moss

If the Reagan cards can be read at face value, that lowly body of public servants, the state legislature, is due for a big boost of new federalism, spiced by a rousing chorus of "States' Rights."

For social reformers, that is disturbing news. With the exception of a few exemplars like California, western state legislatures hold reputations for consistently sacrificing environmental quality to economic development. State legislatures have repeatedly failed to act decisively in one policy area after another — social welfare, housing, education, civil rights, the environment. When they have moved, it's been more often a response to federal initiatives, intended to forestall intervention or collect federal aid, than due to any homegrown inspiration. State legislatures have reputations that range from low intelligence to deliberate prejudice in favor of resource developers. Collectively, their fame is typified by Arizona's state house, known as the tool of the three C's: Copper, Cattle, and Cotton.

All this is confirmed by a new study by Resources for the Future, a Washington, D.C.-based research group with a penchant for scrutinizing government institutions and running public opinion polls. The cause is more institutional than individual, the authors conclude, and there's hope that a good dose of public participation can retool the system.

There's a wide literary void on the long-neglected state legislature, and **A Policy Approach to Political Representation** is filled with fascinating tidbits: Sixty percent of Colorado's state senators have served more than four years, compared to 14 percent for Arizona; Colorado legislators get \$12,000 per year, Arizonans half that, and Utah and New Mexico legislators nothing; the typical senator is male, middle-aged, pursuing a business career, well-educated and financially well-off.

My major disappointment in the study is embodied in its subtitle, "Lessons from the Four Corner States" — the project only covers Arizona, Colorado, New Mexico and Utah, and one is left wishing for similar statistics on the rest of the region's legislatures.

But the heart of the book can be generally applied throughout the region. Its major find, based on comparing and contrasting the attitudes of voters and state legislators on a wide range of environmental and institutional questions, is this: That the relatively pro-environment sentiments of the region's voters are shared by most of the state representatives polled. Furthermore, most legislators say they are committed to accurately reflecting the opinion of the voters.

To be sure, readers are advised to take this conclusion with several grains of salt. There is ample evidence in legislative history that the motivations of some legislators are questionable. But some of the institution's failing lies in the system, the authors say — an institutional make-up that comes from Thomas Jefferson's vision of the citizen legislator, who is kept in check by having to live and work like everyone else, and only makes laws as a civic duty on the side.

That Jeffersonian ideal, the authors report, has created the following situa-

tion: "In sum, the Four Corners state legislatures are amateur institutions in which sessions are short and intense, and legislators serve with minimal pay. Turnover is high. It is necessary each session to initiate numbers of freshmen. Staff resources are scarce. The opportunity for rank and file members to influence legislation is limited by leadership control of committee assignments and legislative agenda. Leadership tends to be personal rather than programmatic."

Even well-intentioned state senators, the study found, "have severely restricted resources with which to discern what is good public policy and what voters want." In other words, legislators don't vote right often because they don't know what is right.

To amend the situation, the authors

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