

# **THE FOUR CORNERS**

## **A National Sacrifice Area?**

### **RESOURCE GUIDE**

by Christopher McLeod, Randy Hayes, and Glenn Switkes

*Foreword by David R. Brower*

*Christopher McLeod, Randy Hayes, and Glenn Switkes produced the Academy Award-winning film, "The Four Corners: A National Sacrifice Area?" which was aired on public television stations nationwide in 1983. The film, written and directed by McLeod, documents the ecological and cultural costs of energy development on the Colorado Plateau of the Southwest, a region that includes parts of Arizona, Colorado, New Mexico, and Utah. The "Four Corners" — the well-known meeting point of the four states — lies near the center of the plateau and gives the area its popular name.*

*The Four Corners Resource Guide is an action manual for citizens. It updates and supplements information in the film "The Four Corners" and is for use in conjunction with it. It is designed to answer the question most often asked by those who see the film: "What can I do?" But the guide also stands alone, independent of the film, as an informative resource that documents in print the continuing high cost of energy development in the Four Corners — and what citizens can do to fight it. — Editor*

#### **FOREWORD**

The Four Corners made its indelible mark upon me a long time ago. In 1939, without knowing we were violating something sacred, three friends and I made the first ascent of Shiprock in northwestern New Mexico. It took months of planning and four days of climbing. As the third day ended we bivouacked not far below the summit and looked out over the desert as the shadow of the peak reached east and vanished. Campfires twinkled under the stars — scores of campfires, scattered over the arid vastness we had thought empty. I found myself

feeling an empathy I had never felt before. Who was around that fire, the other fires, the farthest one? What tradition, being understood and enjoyed around each fire, had kept these people so well in touch with their land for so long?

More recently I approached the rostrum at a United Nations conference on disarmament with two Hopi elders. They were denied a chance to speak, but I was given the opportunity to deliver their message in behalf of world peace and to advance their plea that the world not use its nuclear weapons — weapons made from uranium mined in the Four Corners area. They asked that the beauty of the Southwest, the planet, and its creatures be respected, and not burned up in a moment, leaving radioactive ashes in the wind.

Literal ashes, far too many, darken the Four Corners sky. Our civilization, soaring to power by using up its environmental capital, now exports its power plant pollution to what were the clean skies of the Southwest. To have taken the land was not enough; the air and the water had to be taken too, so that Los Angeles, central Arizona, and Las Vegas could grow without limits, and damn the expense as long as it wasn't theirs — as long as it could be denied that there was a cost. Now, acid rains on the Rocky Mountains.

The film "The Four Corners" exposes the hidden costs of this so-called development. Herein, its producers have compiled a resource guide as a working companion to the film. From it you can learn more about the human and environmental costs of the boom-and-bust economy that derives from the insatiable search for energy and the wasteful use of it. More important, the guide provides suggestions about how individuals can involve themselves in solving some of these problems.

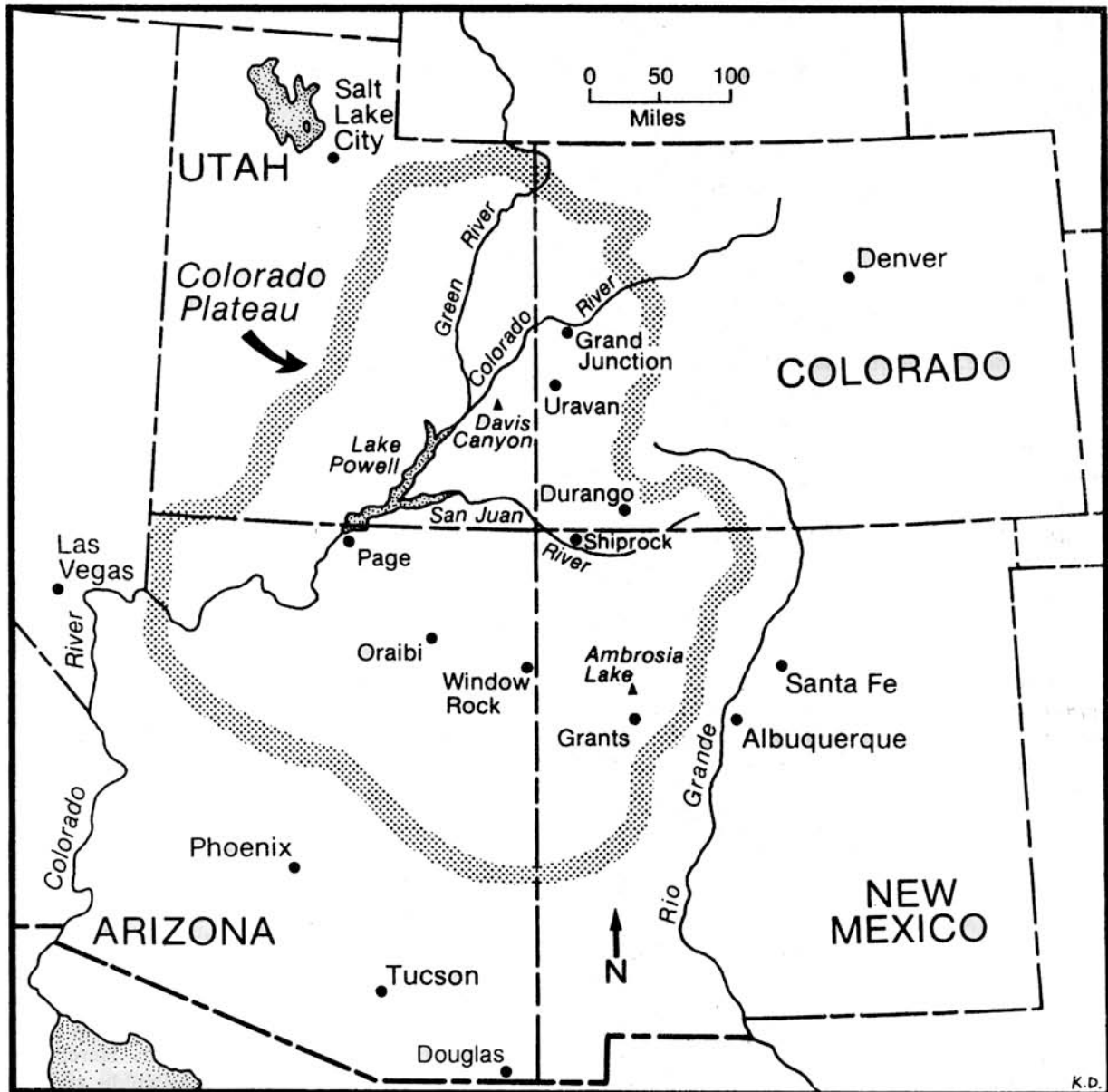
*(Cont.)*

Your diligence is critical. People like you stopped, at least for now, the building of dams in the Grand Canyon. Had we been equally determined in Glen Canyon, the Colorado River would still flow there wild and free. You can be the whistle-blower and the watchdog for the Four Corners, if you choose to invest some of your time now in your future and your children's future. Senators and representatives pay attention to public opinion, and they keep track of the mail they receive. Of course it

goes without saying that we must all live the lowest-impact lifestyle possible. The solutions to these complex problems are inseparable from our daily lives. So hike those canyons, run those rivers, and write those letters. If you join the cause and work for the protection of this remote land, the beauty of things that live there will endure.

*David R. Brower, Chairman  
Friends of the Earth*

## THE FOUR CORNERS



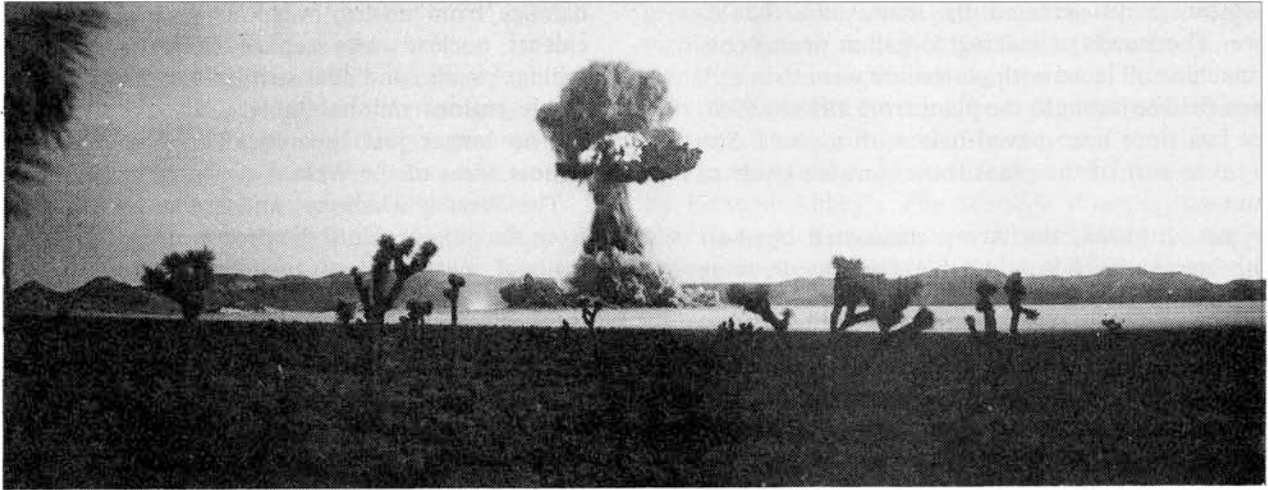
### Acknowledgments

*This Resource Guide was researched and compiled by Christopher ("Toby") McLeod, Randy Hayes, and Glenn Switkes, with the help of numerous activists and organizations in the Four Corners states.*

*The major portion of the text was written by Christopher McLeod. Randy Hayes wrote the sections on synfuels and the Navajo-Hopi land dispute, and he is coordinating distribution strategy for the Resource*

*Guide. Glenn Switkes wrote the sections on coal leasing and the power plant proposed for Navajo land, and he coauthored "Saving Four Corners." Christina Strelhoff drew the wildlife portraits in the body of the guide, and Ken Duffy produced the map above.*

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Atomic testing, Las Vegas Test Site, 1953

## INTRODUCTION: SACRIFICING THE WEST

We all store the stuff we don't know what to do with under the bed, in the closet, or in the garage. We all know the meaning of "out of sight, out of mind." It is a universal principle.

It is no accident, therefore, that the "remote," "sparsely populated" West has been targeted so often in recent years by eastern policy makers as the receptacle of deadly technological experiments. It's not just that we get these experiments because there's more room out here. It's more deliberate than that. This is a consciously evolved policy, a dangerous trend in United States history, and it has resulted in a de facto national policy of trading ecosystems — national sacrifice areas — for economic gain, scientific data, and national security.

Consider the wide array of technologies that has been tested, or soon will be tested, at sites west of the 100th meridian:

**The Bomb.** The atom bomb was first tested at Alamogordo, New Mexico, after secret development at Los Alamos, located in the Jemez Mountains in the north-central part of the same state. The U.S. has since tested its nuclear weapons primarily at the Nevada Test Site north of Las Vegas, where to date the government has conducted 634 announced nuclear test firings, 84 of them above-ground prior to the Atmospheric Test Ban Treaty of 1963. Some 500,000 soldiers and citizens downwind of the atmospheric tests were exposed to deadly clouds of radiation.

**Megamining.** In the Rockies, whole mountains were taken down for molybdenum and copper, leaving thousands of acres of heavy metal-laden toxic waste to contaminate the West's watersheds. In the deserts, the largest machines on earth dig coal from ecologically fragile lands which many scientists believe may never recover. The National Academy of Sciences, in fact, coined the phrase "national sacrifice area" when it

warned in 1974 that strip mining in arid regions of the Southwest might permanently damage the land.

**Coal slurry pipelines.** In Hopi-Navajo country, near Black Mesa, Arizona, millions of gallons of underground water are pumped to the surface each day to move pulverized coal through pipes across hundreds of miles of desert to a power plant in Nevada. Although the Black Mesa slurry line is the only one operating in the United States, seven more are proposed, all in the West. Those most concerned about the impact of the slurry lines in this water-short region are farmers, ranchers, and Indians, and their concerns are rarely heard.

**Uranium mining and milling.** Uranium mining has been linked to lung cancer, and studies have recently established high rates of birth defects in uranium producing areas in Arizona and New Mexico. Nearly 200 million tons of radioactive mill wastes, called tailings, have accumulated in the West. They blow in the wind, wash into rivers, and contaminate underground water supplies.

**Plutonium.** Major fires in 1957 and 1967 at Rocky Flats, a nuclear bomb factory 16 miles upwind of

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Denver, sent 48 pounds of plutonium, one of the most toxic substances yet created by man, into the atmosphere. Thousands of leaking 55-gallon drums containing machine oil laced with plutonium were "stored" in an open field adjacent to the plant from 1958 to 1967. The area has since been paved over with asphalt. Soil samples taken east of the plant show elevated levels of plutonium.

**Nerve gas.** In 1968, the Army conducted open-air tests with nerve gas XV at Utah's Dugway Proving Ground, in one test spraying 320 gallons of the lethal chemical over a target area. Some of the poison drifted 45 miles away and killed 3,000 sheep. Later, during the moratorium on nerve gas production, part of the nation's 40,000-ton supply was stored near the Denver airport. A public outcry in Colorado resulted in shipment of the stockpile to Tooele Army Depot west of Salt Lake City, where leaking canisters are now stored in concrete igloos. The Army has destroyed 17 tons of nerve gas at a large demonstration incineration plant at Tooele, and the Pentagon has asked Congress for \$1.4 million to build a biological weapons testing laboratory at Dugway Proving Ground.

**High-level nuclear waste.** Since no one knows what to do with waste from nuclear reactors, or whether the soon-to-be-built repositories will be able to contain their ultrahot contents, federal policy has not surprisingly dictated that four of the five sites named for final consideration for America's first nuclear waste dump are in the West — Nevada, Texas, Washington, and Utah. For good measure, some of the military's nonhigh-level nuclear waste will be buried in New Mexico, near Carlsbad.

One could argue persuasively that the entire United States, from the West to Times Beach to Appalachia to Three Mile Island and Love Canal — or even the whole earth — is a technological testing ground which is fast becoming a "sacrifice area." After all, when Los Alamos scientists tested their first atom bomb in the New Mexico desert, they could not guarantee it would not destroy the earth's atmosphere.

But whatever the global possibilities, that first test was in New Mexico, and there is something sinister about the total amount of destructive technology that is dumped on the West. These new technologies possess a destructive capability unknown in history, and they are understood only through trial and error over a long

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period of time. And there have been errors. Widespread damage from nuclear weapons testing, nerve gas accidents, nuclear waste seepage, spills from uranium mill tailings ponds, and coal strip mining threaten to make whole regions uninhabitable. National sacrifice areas are no longer just theoretical possibilities. In a few remote areas of the West they are very real.

The West is a colony, and a change will not come from the outside. Until the people of the West develop a regional awareness of the danger that government-corporate-military policies represent for their fragile environment, the future of that environment is in jeopardy. Until the West, as a region, develops strong mechanisms to protect itself, along with locally based, self-sustaining economies, it will continue to be raped and plundered like any other colony.

A microcosm of the West exists in the Four Corners. There, the largest population of Native American people in the U.S. lives on arid land now legendary for both its unique beauty and its energy riches — oil, gas, coal, uranium, oil shale, and tar sands. The names of some of the protected places on the Colorado Plateau give a hint of the power of Four Corners: Grand Canyon, Natural Bridges, Arches, Canyonlands, Petrified Forest, Mesa Verde, Chaco Canyon. Yet neither indigenous culture nor wild nature is guaranteed protection from the juggernaut of technology — neither has significant political leverage in a world of aggressive special interests. And with so few to speak for the region, Four Corners is fast becoming America's preeminent sacrifice area.

## URANIUM'S LEGACY

The deepening uranium depression — a downturn that has caused the closure of dozens of mines and mills and the layoffs of thousands of uranium workers — has not lessened the health and environmental impacts of 35 years of uranium operations on the Colorado Plateau. In fact, many of those impacts worsened as facilities shut down and owners became increasingly reluctant to spend money to clean up.

The legacy of uranium mining and milling in the Four Corners reads like a textbook of environmental problems brought about by uncontrolled energy development. From lung cancer deaths among miners of the early years to birth defects in their offspring, from long-term contamination of surface and ground waters exposed to uranium wastes to region-wide increases in atmospheric levels of radioactive gases, uranium has left an indelible mark on the people, lands, and resources of the Southwest.

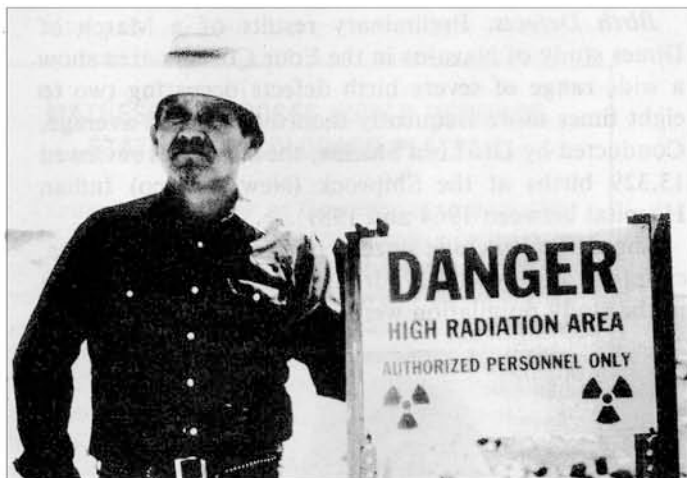
As the uranium industry teeters on the edge of financial collapse, the impetus grows among elected officials, regulators, and some members of the public for exempting individual operations from costly cleanup requirements, or alternatively, for setting up mechanisms for public financing of that cleanup. As recent

regulatory decisions in New Mexico, Colorado, and Washington, D.C., suggest, that sentiment may lead to the designation of "contamination reservations" in the Four Corners — national sacrifice areas come true.

#### Sacrifices for Uranium on the Colorado Plateau

Without hundreds of millions of dollars in cleanup funds, large areas of the Southwest could become off limits to the public owing to widespread uranium contamination.

**Ambrosia Lake.** A group of scientists reviewing the adequacy of New Mexico's radiation protection regulations recently stated that in view of the extent of contamination in Ambrosia Lake, the state's principal uranium district, and the lack of sufficient financial resources to clean up that contamination, "the only reasonable solution may be State control of these lands to restrict [their] use for any activity. . . . The State



Former uranium miner Kee Begay, a Navajo

should control . . . habitation, farming, grazing, industrial development, mining and milling, and . . . waste disposal to minimize exposure to off-site individuals."

The 250-square-mile Ambrosia Lake area, approximately 25 miles northwest of Grants, is home to three of New Mexico's five licensed uranium mills and one of the state's two abandoned uranium mills. About 82 million tons of radioactive uranium mill tailings are stored in piles at those sites. The region also supports more than four dozen active and abandoned uranium mines and several hundred miles of ore haulage routes. (Grants, once the "Uranium Capital of the World," housed 8,000 uranium workers in 1979; today fewer than 500 work in the industry.)

**Uravan.** The risk of contracting lung cancer from residual radioactivity in Uravan, Colorado — home of the Union Carbide Corporation Umetco uranium mill — is so high that state regulators in 1984 approved a licensing arrangement sought by the Environmental Defense Fund (EDF) that called for the evacuation and demolition of the company town if radon gas levels are not brought within regulatory limits by 1988.

An EDF report said the excess risk of contracting lung cancer due to the contamination in Uravan is 56,000 cases per million persons, or 1 in 18. The report noted that the U.S. Environmental Protection Agency (EPA) banned the use as a grain preservative of the synthetic organic chemical EDB (ethylenedibromide), which carries a lung cancer risk substantially lower than that at Uravan: 30 to 300 cases per million persons.

Umetco's current operations in Uravan include a 10-million-ton tailings pile on Club Mesa and seven unlined waste water ponds located on the banks of the San Miguel River. State officials, concerned that the tailings could avalanche down the hill and into the town, have asked the company to find a new tailings disposal site capable of handling another 9 million tons of tailings and 350 gallons of waste water per minute for a 17-year period. The Colorado Department of Health estimates that the firm's current waste water handling ponds allow 10 to 50 gallons per minute of waste water to seep into the river.

★**FOR FURTHER INFORMATION:** Colorado Department of Health; Environmental Defense Fund. (For addresses of all citizen organizations and government offices named in the *Resource Guide*, see lists at end.)

**Risk Dumps.** A 1982 EPA proposal called for imposing such "institutional" controls as fencing and land use restrictions in the place of health-based, engineered safety requirements for abandoned uranium mill tailings piles. The piles in question are part of a federal cleanup program administered by the U.S. Department of Energy (DOE).

The proposal, which apparently was killed by public opposition, would have set the less stringent standards for piles DOE had designated as "medium" or "low" priority for cleanup — piles not surprisingly located in sparsely populated, remote regions of the West, including three sites on the Navajo Indian Reservation.

One-and-a-half years later, in October 1983, EPA adopted general environmental standards for mill tailings at the nation's 27 "active" (currently licensed) uranium mills that established the highest residual risk ever allowed by the agency. For other pollutants, EPA has historically set cleanup standards at levels that would reduce lung cancer risks to 1 in 100,000 to 1 in 1 million. But the standards set by EPA for active mill tailings left an excess cancer risk of 1 in 1,000 — after cleanup.

An unnamed EPA official told the *New York Times* two weeks before the standards were publicly unveiled that EPA's approach to uranium mill tailings regulation could result in sparsely populated regions of the West becoming "risk dumps" where higher exposures to hazardous substances are permitted because fewer people are exposed.

**Tailings Reclamation Fund.** Facing a mill tailings cleanup bill approaching \$1 billion, the uranium in-

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dustry has approached Congress with a proposal to create a publicly financed fund to pay for the cost of cleaning up and stabilizing the nation's 200 million tons of uranium mill tailings at the 27 mill sites.

The proposal, introduced as separate pieces of legislation by Senator Pete Domenici and Representative Bill Richardson, both of New Mexico, calls for the creation of a national Uranium Tailings Reclamation Fund to be financed by utilities with nuclear power plants (55 percent), the federal government (30 percent), and mill owners (15 percent). The sponsors call the approach an "equitable" method of financing tailings cleanup by passing on the majority of the cost to the consumers of nuclear power. New Mexico Governor Toney Anaya has publicly announced his support for the proposal.

Some environmental groups are opposing the concept as an unnecessary public bailout of a financially troubled industry. The groups, which include Southwest Research and Information Center (SRIC), contend the legislation allows mill operators to decide when cleanups can begin, thus opening the door to delays and making cleanup no more likely than it is under current law. They also contend that mill operators should have set aside reclamation funds during the boom period of the late seventies, noting that existing federal law requires mill operators to pay for reclamation.

★ **WHAT YOU CAN DO:** Urge your senators and your representative to oppose the concept of public financing of uranium mill tailings cleanup. Remind them that current law establishes the mill operators' cleanup responsibilities.

★ **FOR FURTHER INFORMATION:** Environmental Defense Fund (Boulder, Colorado); Environmental Policy Institute; Southwest Research and Information Center.

#### Uranium's Legacy: The Health Data

The epidemiologic evidence connecting exposure to uranium-decay radionuclides and uranium wastes with lung cancer, respiratory diseases, and birth defects continues to mount. With more than 20 years of data now in hand, researchers are continuing to find increased incidences of death and diseases among former uranium miners and higher rates of birth defects among children from former uranium mining and milling districts.

*Uranium Miners.* A federal court in 1984 ruled against 85 former Navajo uranium miners and their survivors who claimed in a \$30-million lawsuit against the federal government that their lung cancers and respiratory diseases had been caused by their work in unventilated uranium mines in the fifties and sixties. Epidemiologic studies by various researchers since 1964 have documented a fivefold excess lung cancer risk among uranium miners of the forties, fifties, and sixties.

The court in Phoenix rejected the miners' arguments that the federal government was responsible for their

deaths and injuries because it had purchased all the uranium mined in the Four Corners area during that period for use in the bomb program of the old Atomic Energy Commission (AEC). The court found that the government could not be held responsible because it had chosen to give the states regulatory control over uranium mine safety. Although the ruling is being appealed, it effectively dashed hopes for a court-imposed compensation program for miners' widows and families and for a number of surviving miners.

★ **WHAT YOU CAN DO:** Tell your senators and your representative in Congress that former uranium miners and their survivors need financial compensation.

★ **FOR FURTHER INFORMATION:** Environmental Policy Institute; National Association of Radiation Survivors; Southwest Research and Information Center.

*Birth Defects.* Preliminary results of a March of Dimes study of Navajos in the Four Corners area show a wide range of severe birth defects occurring two to eight times more frequently than the national average. Conducted by Dr. Lora Shields, the study has reviewed 13,329 births at the Shiprock (New Mexico) Indian Hospital between 1964 and 1981.

The defects include dozens of cases of cleft palate, club feet, and Down's syndrome. More than 100 women in the study population were found to have given birth



Therapist and child with birth defects, Navajo Reservation

to two or more abnormal infants each. And until about 1975, stillbirths and infant deaths (occurring before age one) were found to be abnormally high.

Residents of Shiprock and the uranium-bearing hills of northwest New Mexico and northeast Arizona have been exposed to a variety of radiation sources for more than 30 years. A 1.7-million-ton abandoned tailings pile covers 72 acres on the south side of the San Juan River within a half-mile of downtown Shiprock. Not surprisingly, the March of Dimes study showed that the number of birth defects started dropping in 1974, a year after the tailings pile was partially covered to reduce radon gas emissions.

About 100 abandoned uranium mines dot the hills west of Shiprock. The open shafts and cliffside tunnels attract local children and sheepherders. Dozens of homes in the Red Valley-Cove area in northeast Arizona were constructed of rocks from abandoned ore stockpiles and waste piles. Tribal officials said they have received requests for radiation surveys of homes in 10 different communities but have no idea where they will get the funds to conduct such investigations.

★ **WHAT YOU CAN DO:** Urge your senators and your representative in Congress to direct the appropriate federal agencies to conduct comprehensive studies of health conditions in communities near current and past uranium mining and milling activities. Urge your elected state officials to support the establishment of a state birth defects registry if your state does not have one.

★ **FOR FURTHER INFORMATION:** March of Dimes; Navajo Nation Division of Natural Resources; Southwest Research and Information Center.

### **Mill Tailings, Radon, and Abandoned Mines**

The Colorado Plateau has hosted the United States uranium industry since the days of the Manhattan Project in the mid-forties. Since then, more than half of the nation's 200 million tons of uranium mill tailings have accumulated in large, uncovered piles at 20 sites throughout the Four Corners area. A dozen tailings piles have been abandoned at sites next to the Colorado River or its major tributaries. And hundreds of mines have opened and closed leaving unreclaimed ore stockpiles and waste-rock piles exposed to wind and water erosion.

**Active Mill Tailings.** Radiation levels in tailings at active mills typically are hundreds to thousands of times greater than natural background levels and, according to EPA studies, will remain elevated at levels hazardous to health "for hundreds of thousands of years." A December 1983 study by SRIC, based on published federal reports, found that ground water has been contaminated by seepage from waste water ponds at most of the 27 active mills in the U.S.

Despite those impacts, EPA in 1983 chose to adopt environmental standards for licensed mills that were in many cases substantially weaker than regulations

adopted by the U.S. Nuclear Regulatory Commission (NRC) in 1980. EPA decided to allow 10 times more radon emissions from reclaimed tailings piles than NRC, and three times more residual radium-226 in contaminated soils than the Carter Administration's EPA had proposed in January 1981 for abandoned tailings piles. Further, the rules exempted existing piles from state-of-the-art seepage control techniques.



Cow grazing on tailings pile, Mexican Hat, Utah

**Radon.** A federal court in San Francisco had to find former EPA Administrator William Ruckelshaus in contempt before the agency finally issued rules controlling radon emissions from underground uranium mines in April 1985. Still, the final rules did not control emissions at the mine vent as required by the federal Clean Air Act. Rather, EPA chose to limit radon emissions by imposing certain in-mine construction techniques that the agency said would reduce radon leaving the mine by only 10 to 60 percent. According to Bob Yuhnke, regional counsel for the Environmental Defense Fund in Boulder, Colorado, as many as two nearby residents per year will die of lung cancer as a result of exposure to radon from uranium mines under the new EPA regulations. EDF has sued EPA challenging those regulations.

A continuous air sampling program conducted by the state of New Mexico in the Ambrosia Lake area in 1978 and 1979 tracked elevated levels of radon downwind of tailings piles, mine vents, and ore haulage routes. The levels violated state and federal limits at about a dozen of more than 30 sampling stations.

**Abandoned Mill Tailings.** Environmentalists are beginning to question whether DOE will be able to meet a March 1990 deadline for stabilizing 24 abandoned or "inactive" tailings piles in the U.S. A dozen of those piles are located next to the Colorado River or one of its

major tributaries.

DOE's original plans for the \$500-million reclamation project called for moving nine tailings piles located in population centers or along water courses. However, with the imposition of less stringent environmental standards by EPA, DOE is now expected to clean up most of the abandoned piles in their current locations, covering them with 5 feet to 10 feet of dirt and rocks. Only those piles at Salt Lake City, Utah; Durango, Colorado; and Lakeview, Oregon, are expected to be moved, giving rise to speculation by some conservation groups that "medium" and "low" priority piles in remote areas may never be reclaimed.

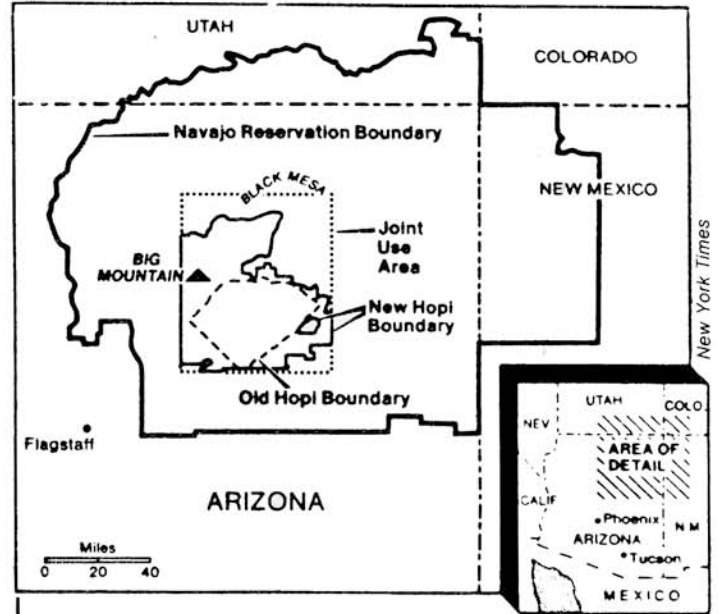
**Abandoned Uranium Mines.** A 1983 EPA study concluded that limited evidence of water quality impacts from abandoned uranium mines and above-background levels of radioactivity in past mining areas was not sufficient to warrant the attention of Congress or federal environmental agencies. The finding effectively closed any doors to the establishment of a comprehensive federal program to reclaim the hundreds of abandoned uranium mines in the Four Corners area.

More than 350 abandoned mines are on the Navajo Reservation alone. In the Cameron, Arizona, area, several open-pit mines have filled with water and become inviting swimming holes for Navajo children and watering tanks for area livestock. Navajo tribal data show elevated levels of radioactivity in water in those pits. Contamination by radioactive materials is so great around abandoned and active uranium mines in New Mexico that the same group of scientists who recommended state land use controls for the Ambrosia Lake area also recommended state licensing and regulation of uranium mines.

**★WHAT YOU CAN DO:** Write EPA Administrator Lee Thomas requesting that he (1) revise EPA's mill tailings regulations to reduce the unacceptably high residual risks allowed; (2) revise the agency's uranium mine emission rule to reflect a radon emission standard at the mine vent; and (3) order a reexamination of EPA's uranium mine study and propose to Congress methods for dealing with abandoned uranium mines.

Write your senators and your representative calling attention to EPA's unacceptable approach to regulating risks from uranium operations and DOE's lack of progress in carrying out remedial action at abandoned tailings sites. Also point out to those elected officials that no federal program addresses reclamation of abandoned uranium mines. Remind them that the hazards posed by abandoned, active, and new uranium mines are not being controlled.

**★FOR FURTHER INFORMATION:** Environmental Defense Fund (Boulder, Colorado); Environmental Policy Institute; Friends of the Earth (Colorado Program); Radiation Education Council; Sierra Club Legal Defense Fund (Denver); Southwest Research and Information Center.



### NAVAJO-HOPI LAND DISPUTE

Just south of the Peabody Coal Company strip mine at Black Mesa, the U.S. government is forcibly relocating 10,000 Navajos and 100 Hopis in what has come to be known as the Navajo-Hopi land dispute.

In 1974, Congress passed Public Law 93-531, which created a Relocation Commission and declared that Navajos and Hopis living on the wrong side of the partition line drawn by Congress would have to move. Native leaders charge that the relocation is designed to facilitate access to minerals, primarily coal, underlying the disputed lands. Relocation is currently being accelerated by livestock seizures, fencing by government crews, a housing construction ban, and harassment of Navajos resisting relocation. Navajos who have voluntarily moved to nearby cities have fallen victim to fraudulent real estate deals and loan-sharking.

The congressional deadline for voluntary relocation is July 1986. With the deadline approaching and Navajos in the Big Mountain area of Black Mesa determined to remain in their homeland, President Reagan recently appointed former Secretary of the Interior William Clark as special envoy to resolve the increasingly expensive conflict. The cost of relocation, originally estimated at \$35 million to \$62 million, has soared to a projected \$340 million to \$500 million.

**★WHAT YOU CAN DO:** Write your legislators and demand a halt to forced relocation. Call for a thorough investigation of the failure of the Relocation Commission's ten-year program. Request that the commission's funds be reapplied to relieve the hardship already caused by the program.

**★FOR MORE INFORMATION:** Big Mountain Defense Committee (Flagstaff); "Big Mountain News," a quarterly from Big Mountain Support Group (Berkeley).



## SAN JUAN BASIN COAL LEASING REVIVED

After a two-year moratorium, the coal leasing program of the U.S. Department of Interior (DOI) is being revived, paving the way for the leasing of up to 3 billion tons of public coal in vast areas of New Mexico's scenic San Juan Basin in the northwest part of the state.

The federal coal leasing program was curtailed by Congress in 1983 after Interior's disastrous Powder River (Montana-Wyoming) and Fort Union (North Dakota) coal sales cost the federal treasury an estimated \$100 million in lease revenues because bids for the coal came in at levels far less than fair market value. Interior's new round of leasing comes at a time when 18 billion tons of western coal have been leased, but never mined. Only 1 billion tons of federally owned coal have been mined in the U.S. in the last 60 years.

Conservationists assert that Interior's "modified" coal management plan, as outlined in a U.S. Bureau of Land Management (BLM) draft Environmental Impact Statement (EIS), repeats then-Interior Secretary James Watt's mistakes of three years ago, and could — as his plans did — lead to the fire-sale giveaways of billions of tons of federal coal. Conservationists complain that adding large quantities of public coal to an already glutted coal market does not make economic sense and that strip mining vast areas of public lands in the West does not make environmental sense.

Problems environmentalists identify in the San Juan Basin coal leasing proposals are typical of those likely to accompany uncontrolled federal coal development throughout the West. Here are some examples:

—*Unsuitability of Strip Mining Lands in the Arid Southwest:* BLM's draft EIS for coal management in the San Juan Basin claims that "most of the region's soils have a fair to good reclamation potential," contradicting earlier findings by the agency that "reclamation in the lower precipitation areas (less than 8 inches) is difficult." Most areas of the basin receive 8 inches of rain or less annually. Carolyn Johnson, coauthor of *Still Stripping the Law on Coal*, a Public Lands Institute (PLI) study of enforcement of the Surface Mining Act, agrees with BLM's earlier assessment: "If you make reclamation a deciding factor, then mining in that area should not be done."

—*Surface Mining Enforcement:* BLM's coal program assumes that coal companies will fully comply with strip mining regulations, despite studies that document spoty enforcement by both state inspection agencies and the federal Office of Surface Mining (OSM). For example, the PLI study noted above found that in New Mexico only three citations were issued to coal mine operators in 1982 for the 32 violations observed by state mine inspectors.

—*Limited Water Resources:* Proposed coal development in the basin, including the construction of a 2,000-megawatt coal-fired power plant, would consume more than 30,000 acre-feet of water per year from sur-



Drag line at Peabody Coal strip mine, Black Mesa, Arizona

face and underground supplies, most of which is claimed by Navajos in the area. Such water requirements represent about one-half of Albuquerque's current annual consumption alone. Water for coal mining would further deplete the already overallocated Colorado River system and displace the water needs of Indian farming and livestock operations and Indian and non-Indian municipalities.

—*Cultural Impacts:* Hundreds of traditional Navajo families in the area will be forced to relocate if coal is mined on their land. Despite that fact, the Navajo Nation has been denied a voting membership on the Regional Coal Team, the BLM's advisory group for San Juan Basin coal leasing.

—*Archaeological Resources:* Coal development in the San Juan Basin will destroy many artifacts of the Chacoan Anasazi civilization. (See "Anasazi Archaeological Resources" under "Threats to the Parks" below.) The BLM has failed to conduct complete archaeological surveys even as it plans regional coal lease sales.

—**Coal-Hauling Railroads:** Major increases in coal production in northwest New Mexico will probably require construction of railroad spurs to connect San Juan Basin strip mines with main rail lines to provide access to coal markets, including utilities and industrial users throughout the West.

—**Due Diligence:** This important provision of the 1976 Federal Coal Leasing Amendments requires leaseholders to bring their coal leases into production within ten years of issuance, thus curbing speculation in federal coal leases and ensuring production of coal to meet public needs. The relaxation or outright abolition of due diligence provisions is a major objective of energy industry lobbyists in the current session of Congress. A 1984 Sierra Club study found that the relaxation of due diligence provisions would benefit large oil, coal, steel, and utility companies that hold those leases; seven major oil companies alone hold 3.2 billion tons of coal.

### THE NAVAJO NATION: CONNECTING TO POWER?

The Navajo Tribe, hard hit by federal budget cuts and high unemployment, has indicated its interest in participating in the construction of a 2,000-megawatt power plant at the eastern edge of its land. The \$6-billion project would make the Navajos partners with energy giants Bechtel and General Electric and with Public Service Company of New Mexico (PNM), the state's largest utility. The tribe has signed an "outline of principles" with its potential partners and has initiated feasibility studies. Although the current market for electric power is soft, the tribal government and PNM claim the electricity generated by the plant can be marketed in Southern California and other urban areas of the West in the 1990s.

The power plant, dubbed the New Mexico Generating Station (NMGS), would burn coal strip mined in the San Juan Basin, much of it from land the Navajos have obtained through provisions of the Navajo-Hopi Relocation Act. Up to 500 million tons of coal may underlie the Navajo claim. Three coal-rich areas acquired by the Navajos — De-na-zin, Ah-shi-sle-pah, and Fossil Forest — were involved in the battle over the San Juan Basin Wilderness Act of 1984, and plans to strip mine in or around those areas will surely lead to a clash between the tribe and conservationists.

The new plant would affect local air quality. With other area power plants (San Juan and Four Corners) already spewing pollutants into the once clear New Mexico air, a new plant only 50 miles to the south will add a significant increment. The plant would be constructed 11 miles upwind of Chaco Culture National Historical Park, the unique archaeological site thought to have been a ceremonial center of the ancient Anasazi.

Despite the urgent need for jobs and tribal revenue, all indications are that the administration of Chairman Peterson Zah faces an uphill battle in its efforts to persuade the Navajo people of the benefits of a new coal-fired power plant. Zah has repeatedly stated that development will not proceed against the wishes of the local people. But Leonard Tsosie, president of the White Horse Lake Chapter near the coal fields, says of NMGS that "the majority of people are not willing to let it be constructed. The people out here see the project as more foreign exploitation by foreign corporations."

★ **FOR FURTHER INFORMATION:** Committee on Coal; Crownpoint Citizens Alliance.

★ **WHAT YOU CAN DO:** Write your federal and state senators and representatives and your governor to state your concern about regional coal leasing. State your opinion about current efforts to repeal Section 3 of the Federal Coal Leasing Act Amendment, the so-called due diligence provisions.

★ **FOR FURTHER INFORMATION:** Committee on Coal; Council on Economic Priorities; Southwest Research and Information Center.

### SYNFUELS: GOVERNMENT SUBSIDIZED FAILURE

The Synthetic Fuels Corporation (SFC) was created in 1980 to speed the development of technologies that may someday convert oil shale into jet fuel and gasoline, tar sands into oil, and coal into natural gas or gasoline. The Energy Security Act committed up to \$88 billion over 12 years to subsidize the new industries. With much of the U.S.'s richest oil shale located on the Colorado Plateau along with billions of tons of coal, it is a virtual certainty that some of the massive synfuels projects will be developed and tested in the Four Corners.

Congressional support for synfuels, however, has been eroding recently. Of the \$16.061 billion SFC has so far received, \$2 billion was rescinded in 1983. In 1984, Congress rescinded an additional \$5.37 billion. As of January 1985, contracts and administrative expenses totaled about \$750 million. Representatives Mike Synar (D-OK) and Howard Wolpe (D-MI) have introduced legislation that would terminate SFC and recapture almost \$8 billion, including almost \$6.8 billion in SFC letters and statements of intent. Critics of SFC argue that to cut funding for energy conservation and renewable energy programs — as Congress has done — while continuing the multibillion-dollar subsidy of a potentially uneconomic technology is absurd.

Three major oil companies — Exxon, Sohio, and Ashland Oil — have sharply curtailed synfuels development, and Westinghouse has sold its synfuels division, but other oil companies are moving to seek SFC funding and state and federal permitting for several large projects.

Union Oil Company's oil shale project at Parachute



Oil shale country, Colorado

© Christopher McLeod

Creek, Colorado, received \$400 million in price guarantees in SFC's Phase I giveaway, and the company has a \$2.7 billion letter of intent for Phase II, in spite of the fact that the technology developed during Phase I of the program has so far been a technical failure. Occidental Petroleum has signed a \$2.19 billion letter of intent to subsidize its Cathedral Bluffs, Colorado, project, using a process that burns half the shale underground and the other half at the surface.

Numerous environmental problems with synfuels will apparently be solved only as various technologies are tested and developed. Worker safety, air pollution, and waste disposal are major issues. Water requirements for synfuels are so enormous, and the Colorado River is so overallocated, that oil companies are buying water rights from farmers and planning reservoirs to store hundreds of thousands of acre-feet of water.

Most of the environmental legislation governing air and water quality was passed prior to the push for synfuels development and is inadequate to regulate the new industries that are emerging. The economic situation of synfuels is so tenuous, however, that the oil companies are pressing for *relaxed* health, safety, and cleanup regulations, to be applied by the states and not the federal government.

★ **WHAT YOU CAN DO:** Write your representative expressing your opinion about termination of the Synthetic Fuels Corporation. Suggest that if SFC is dismantled, its remaining \$8 billion be diverted into conservation and the development of renewable energy sources.

★ **FOR MORE INFORMATION:** Environmental Policy Institute; "The FOE Retort" from Friends of the Earth (Colorado).

## WATER: DEFICIT SPENDING WESTERN STYLE

A water crisis lies ahead in the arid Southwest. The Sun Belt is still booming, and cities like Phoenix, Denver, and Los Angeles have staked their survival on water from the Colorado River system. At current growth rates there simply will not be enough water in the Southwest to sustain what has been built, let alone meet Indians' first-claim water rights, *and* supply the grandiose energy development schemes currently on corporate drawing boards, *and* keep river rafts floating and endangered species of fish swimming.

Energy development requires huge quantities of water. In 1977, at the height of the push for western energy development, the Federal Energy Administration predicted that by 1990 energy production in the West would require an increased annual commitment of 2.3 million to 3.1 million acre-feet. But the Colorado River is overallocated — current estimates project that only about 1 million acre-feet of the river's total annual flow of 13.8 million acre-feet are left to develop.

This growing water demand will increase pressure to dam the Colorado's remaining wild canyons, including even the Grand Canyon. As Upper Basin states push for water projects like the Dolores, the Animas-LaPlata, Juniper-Cross Mountain, and Homestake II, all in Colorado, and the Central Utah, diminished stream flows will intensify salinity and pollution problems. As a final irony, all of the dams will eventually silt up . . . *what then?*

Confronted by the prospect of energy extraction and urban growth draining the rivers dry, environmentalists are seeking a minimum required flow for the Colorado and its tributaries to ensure supplies adequate to support recreational purposes, preserve aquatic habitat, and protect three endangered species of fish. Water developers are seeking a set of amendments to the Endangered Species Act that would exempt certain water projects on the Colorado from the requirements of the law.

★ **WHAT YOU CAN DO:** Write your senators and your representative and state your position on reauthorization of the Endangered Species Act. State your opinion about Colorado River Basin water development interests that are seeking exemptions from the Act.

**Water Quality:** The headwaters of the Colorado are being polluted with toxic heavy metals — zinc, copper, lead, selenium — elements that *never* decompose and are dangerous in relatively low concentrations. One large molybdenum mine, AMAX's Climax facility, which sits directly on the Continental Divide west of Denver, has generated 1 billion tons of heavy metal-laden tailings that have been dumped into subalpine valleys at the headwaters of the Colorado River.

Also in the high country of the Rockies, acidic drainage water from hundreds of abandoned gold, silver, lead, and zinc mines empties directly into surface water — the abandoned mines have filled with water and are overflowing. According to the Colorado Wildlife Department, 450 miles of streams in Colorado are devoid of life as a result of acid mine drainage.

Meanwhile, acid rain and melting acid snow leach toxic heavy metals from granite peaks and thin mountain soils and carry them into aquatic systems. Acid rain also leaches more metals from tailings than does normal rainwater.



Farther downstream, 12 million tons of abandoned uranium tailings sit at a dozen sites on the banks of the Colorado and its major tributaries. Ground water contamination is common at most of the active uranium mills in the West. A number of wells on the Navajo Reservation, some of which are near uranium operations, have been sealed off owing to unacceptable levels of radioactivity in the water. Oil and gas operations have seriously contaminated ground water. Salinity in the river is an unsolved problem. Clearly, a crisis in water quality is as imminent as a crisis in water quantity.

## THE CENTRAL ARIZONA PROJECT

The water crisis in the Southwest will intensify with the completion of the Central Arizona Project (CAP), the \$3.5-billion federal water project designed to save booming Phoenix and Tucson from ground water depletion. In late 1985, CAP is due to begin pumping 1.2 million acre-feet of Colorado River water annually to the swimming pools, plush lawns, and irrigated farms of Arizona's desert empire. The quantity of CAP water will decrease when all Upper Basin water rights are asserted and when severe droughts occur. CAP water is already overallocated because of prior Indian water rights, and when DOI in 1983 announced CAP allocations for 1985, they totalled 250,000 acre-feet *more* than the quantity projected to be available for the first CAP deliveries. Former Arizona Congressman Sam Steiger has called CAP an "unconfessed screwup" and "one of the most monumental blunders in this nation's reclamation history."

Ramifications of CAP affect the entire West. Colorado, the Upper Basin state with the most allocated but unused water, fears the loss of 1 million acre-feet to CAP under the "use it or lose it" doctrine. Anticipating a drought-induced crisis, Colorado has started a major push for additional storage capacity through the construction of dams. Denver wants to build Two Forks Reservoir, which would hold 1 million acre-feet of water diverted from the headwaters of the Colorado. Colorado Springs plans to divert water from the Holy Cross Wilderness Area via the Homestake II project. And in southwest Colorado, developers and agricultural interests are still bucking the proposed federal \$500-million Animas-La Plata storage project. The city of San Diego has even offered to build reservoirs in Colorado to store one million acre-feet of water, which San Diego would then lease and export to the West Coast, thus helping Colorado "use" its water.

CAP has also revived controversial plans for damming the Grand Canyon. The Arizona Power Authority in February 1985 agreed to spend \$8,000 to revise cost estimates for building a hydroelectric dam in the western Grand Canyon. The dam would flood Bridge Canyon, and power generated by the dam would be sold to help fund CAP-related projects.

**★WHAT YOU CAN DO:** Write your senators and your representative and express your opinion about the upcoming appropriation of \$2 billion of taxpayers' money to subsidize a project (CAP) which will encourage further growth in an area where population already exceeds carrying capacity. Also insist: **NO DAMS IN THE GRAND CANYON.** Ask your congressional representatives for their positions on these issues.

**★FOR FURTHER INFORMATION:** Friends of the River (Colorado Plateau Chapter); Maricopa Audubon Society.

Rather than adapt to the limits of a fixed supply, some planners advance technical schemes to "solve" the water supply problem in the West. Such schemes abound in the form of proposed diversions from other watersheds — the Missouri River, the Columbia River, the Great Lakes, and the Canadian Rockies. Meanwhile, the Bureau of Reclamation, pushed by water-starved southern California, is studying cloud seeding in the Rockies to add 1 million acre-feet per year of snowmelt to the flow of the rivers.

Conservation and a recognition of limits are the only real solutions to the water crisis. The 1980 Arizona Ground Water Management Act has been effective. In Tucson, a 24-percent drop in per capita water use was achieved by a combination of price increases and public education to encourage the installation of household water-saving devices and the replacement of watered lawns with desert landscaping. The Environmental Defense Fund has suggested that lining leaky irrigation canals with concrete could save millions of gallons of water.

**★WHAT YOU CAN DO:** Write your senators and your representative and express your opinion about reauthorization of a strong Clean Water Act. Monitor the activities of state and federal agencies, especially the Bureau of Reclamation, the Army Corps of Engineers, the Fish and Wildlife Service, and EPA. Write EPA's Denver office and express your concern about high altitude acid mine drainage and heavy metal contamination of the Colorado. Encourage water conservation in your community.

**★FOR FURTHER INFORMATION:** Friends of the Earth (Colorado Program); Intermountain Water Alliance; Rocky Mountain Institute; Western Network.

## AIR QUALITY: ACID RAIN ALERT

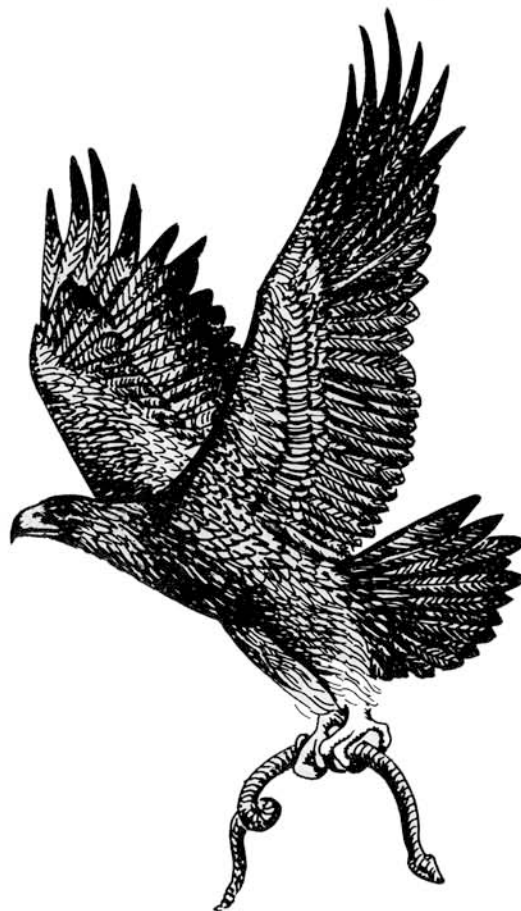
Acid rain is falling in the West, particularly in the high country of the Rocky Mountains. Its sources range from the sulfur dioxide emitted by copper smelters in southern Arizona and Mexico and coal-fired power plants on the Colorado Plateau to nitrogen oxides in the exhaust of cars and trucks in California. Possible adverse effects of acid rain in the West include damage to sensitive high mountain lakes, forests, and fisheries; accelerated leaching of toxic heavy metals from mine and mill wastes into drinking water supplies; deterioration of archaeological ruins; and diminished tourism as environmental quality wanes.

Many of the 10,000 high country lakes in the Rockies, the Sierras, and the Cascades are more vulnerable to acid rain than the lakes in the East because granite bedrock, thin soils, and sparse vegetation deprive the lakes of alkalinity, which can neutralize incoming acids.

Recent data from the Colorado Rockies reveal an alarming increase in acidity levels in high altitude lakes.

In one lake above Crested Butte, which has been under study for the last five years by John Harte of the University of California at Berkeley, acidity levels rose 70-fold during snowmelt and remained at that acidified level for one month before returning to normal. Harte originally counted a thriving colony of 50 salamanders in the lake. "Last year, due to acidity, there were fewer than a half-dozen salamanders," Harte said. Meanwhile, the U.S. Forest Service has released data on 23 lakes in the San Juan Mountains of southwest Colorado for which historical data exist. On average, the lakes showed almost a tenfold increase in acidity over a 10-year period.

The principal source of the problem appears to be copper smelters. Of the twelve copper smelters in the West, seven are clustered in southern Arizona and one is just across the border in Mexico. Together those



smelters emit more than 1.2 million tons of sulfur dioxide per year, and collectively they account for 70 percent of that pollutant generated in the intermountain West. Although sulfur dioxide control equipment has been installed in five of the Arizona smelters in recent years in compliance with the Clean Air Act, one lacks sufficient controls to comply with the law, and one is entirely uncontrolled, as is the smelter in Cananea, Mexico.

The Phelps Dodge smelter in Douglas, Arizona, currently spews more than 300,000 tons of sulfur dioxide per year, making it the largest uncontrolled source of sulfur pollution in the western United States and the fourth largest in the nation. A few miles away, the

Magma smelter pumps more than 200,000 tons of the same pollutant into the air each year. Those two smelters alone are responsible for about one-third of the annual sulfur dioxide emissions in the intermountain West, according to Bob Yuhnke of the EDF.

The copper industry, with the support of New Mexico Senator Pete Domenici, is currently seeking a third five-year extension of its exemption from the Clean Air Act. That would delay cleanup of emissions from Phelps Dodge and Magma until 1993.

EDF recently sued Phelps Dodge and Magma to force them to comply with the Clean Air Act, which requires the two smelters to reduce emissions to no more than 150,000 tons per year by 1986. EDF charges the firms are not installing emissions control equipment because they expect to win another Clean Air Act exemption.

To make matters worse, a massive new copper smelter in Nacozari, Mexico, just 60 miles south of the border, will soon begin operation with no pollution controls. It will emit 500,000 tons of sulfur dioxide per year into the western airshed, making it by far the largest source of that pollutant in the region — larger than any in the U.S. It will undo all of the gains made in controlling sulfur dioxide emissions in the western U.S. When the Nacozari smelter fires up, the levels of sulfur dioxide in the West will consistently exceed levels that have killed high altitude lakes in Norway and Sweden.

Failure to control copper smelter emissions in Arizona and Mexico could result in widespread damage to lakes and forests in the Rockies and could also block future development of western oil shale refineries, coal-fired power plants, and gas processing facilities if the EPA concludes that the region's sulfur tolerance levels have already been exceeded. On the other hand, weakened air quality regulation — a major goal of the energy industry and its lobbying wing, the Western Regional Council — would permit both energy expansion and higher emissions levels. The stakes are high. The energy industry's long-range plans call for 31 new

coal power plants and 25 synfuels facilities in the West, and those new facilities will emit hundreds of thousands of tons of sulfur and nitrogen oxides.



★ **WHAT YOU CAN DO:** Write President Reagan urging support for acid rain controls which will reduce annual U.S. sulfur dioxide emissions by at least 12 million tons by 1993. Ask him to pressure Mexico to install emissions controls on its two copper smelters just south of the Arizona border.

Write your senators and your representative and express your opinion about acid rain controls and reauthorization of the Clean Air Act. Ask them for their positions on the following proposals: establishing regional limits on sulfur dioxide and nitrogen oxide emissions, imposing more stringent limits on car and truck emissions, and bringing all copper smelters into compliance. Ask your congressional representatives to encourage strict EPA enforcement of air quality regulations and to urge the President to negotiate with Mexico to control smelter emissions.

Support increased funding to EPA for monitoring acid rain and visibility in the West and to the U.S. Forest Service to allow EPA to conduct a high altitude wilderness lake survey. Also support increased funding to DOE for energy conservation and renewable energy programs.

Write Arizona Representative Morris Udall and New Mexico Senator Pete Domenici expressing your opinion about Clean Air Act exemptions for the copper industry. Urge enforcement of the January 1988 deadline for compliance.

Write Arizona Governor Bruce Babbitt supporting his efforts to ensure compliance with existing federal law by denying the Douglas smelter an operating permit. Encourage him to pressure EPA and the State Department to obtain a guarantee from Mexico that the Nacozari smelter will not open without pollution controls.

★ **FOR FURTHER INFORMATION:** Environmental Defense Fund; Friends of the Earth, San Francisco; Groups Against Smelter Pollution (GASP).

## The Four Corners

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## THREATS TO THE PARKS

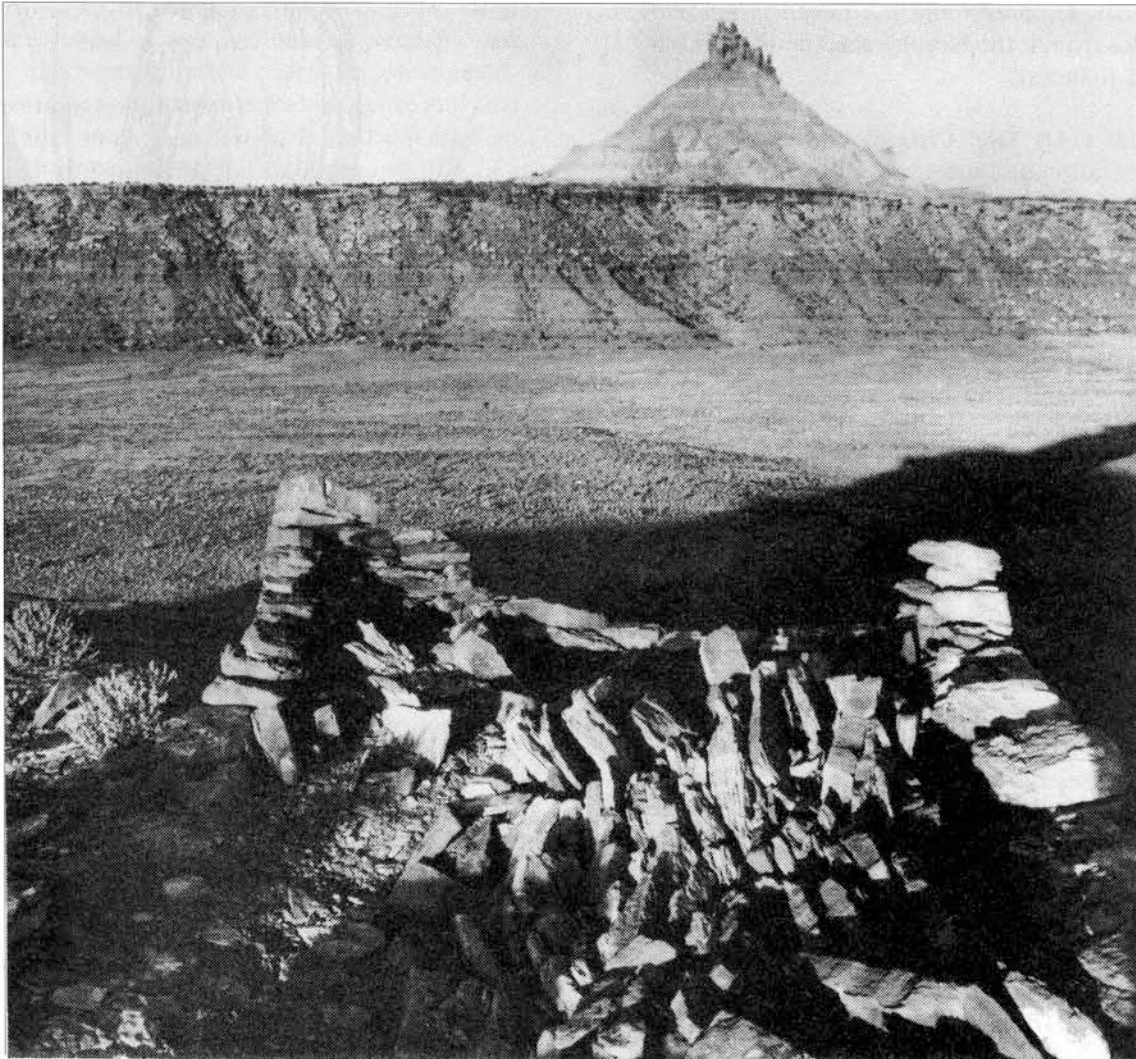
The National Park Service recently listed 184 energy projects that pose dangers to various units of the park system. A summary of major threats to the national parks in the Southwest follows:

### *CANYONLANDS NATIONAL PARK, UTAH*

**Nuclear Waste:** The Department of Energy has officially ruled that Davis and Lavender Canyons, just east of the park boundary, are two of nine "suitable" sites for the first permanent high-level nuclear waste dump in the U.S. If DOE drops any of its three tentative sites (at Hanford, Washington; the Nevada Test Site; or Deaf Smith County, Texas) Davis Canyon will probably move into the top three and would then be subjected to a disfiguring, \$500-million testing program called "site characterization." Even if DOE sticks with Washington state, Nevada, and Texas as final candidates for its first repository, Canyonlands is still vulnerable because Lavender Canyon will still be eligible to host a second national repository.

Imagine a mile-square, \$4 billion industrial facility, floodlit all night, just east of Squaw Flat Campground and magnificent features of the park like Druid Arch, the Needles, and Chesler Park. From the overlooks that ring Canyonlands Basin you would be able to watch as DOE contractors blast a new rail and highway route into the basin to carry 34,000 nuclear waste shipments to the repository over a 30-year period. Imagine 50 acres of land covered 35 feet deep in salt, with 1,800 construction workers and 1,500 repository operators living nearby, and high-level radioactive waste buried within 11 miles of the Colorado River.

A footnote: In a classic political maneuver, Representative Jim Hansen (R-UT) has proposed the "1985 Park Wilderness Bill," which would enlarge Canyonlands National Park by a minimal number of acres to include the Davis and Lavender Canyon sites, thus permanently laying to rest the possibility of a Canyonlands nuclear waste dump. In return, Hansen wants full federal funding to pave the so-called San Juan Loop road inside Canyonlands Park, an idea that generated widespread public opposition in the late '70s and was subsequently dropped. The San Juan Loop would extend the road



Proposed site of nuclear waste repository, Davis Canyon, Utah. Anasazi ruin in foreground; South Six Shooter Peak in background.

© Christopher McLeod

### NUCLEAR WASTE: KEEP OUT!

A Department of Energy (DOE) contractor displayed typical sacrifice area thinking in a recent report exploring possible ways to keep the next 300 generations of human beings away from its permanent nuclear waste repository site (as yet not chosen). Among the ideas DOE is considering are: building a "modern Stonehenge" surrounding the dump to keep people from digging there; erecting a huge cartoon narrative depicting the danger of nuclear waste; making the area "repulsively malodorous" so the stench will drive people away; and setting into circulation "an artificially created and nurtured ritual and legend" that would produce "accumulated superstition to shun a certain area permanently." The DOE report also mentions genetically encoding a warning in human genes through "microsurgical intervention with the human molecular blueprint."

from Squaw Flat Campground to the overlook of the confluence of the Colorado and the Green rivers and continue south through the Needles section of the park to the town of Blanding.

**★WHAT YOU CAN DO:** Citizens concerned about Canyonlands National Park can still write DOE Secretary John Herrington to express outrage that Canyonlands is considered "suitable" for a nuclear waste dump. Public pressure is essential until at least October 1985, when DOE plans to announce its final decision on the three sites to be tested. After that announcement, if Washington state, Nevada, or Texas is eliminated for technical reasons (as many observers expect), public pressure will once again be essential to prevent DOE from destroying Davis Canyon and the integrity of the national park system. Send copies of your letter to the Secretary of the Interior, your senators and representative, and Utah Governor Norman Bangert.

Also, write Representative Jim Hansen questioning whether we need to sacrifice part of a national park in order to save it. Request rim-to-rim expansion of Canyonlands Park, to include the whole Canyonlands Basin, and support maintenance of the primitive character of the park (i.e., no further road paving).

**★FOR FURTHER INFORMATION:** Don't Waste Utah Campaign; Friends of the Earth (Utah); Utahns for Canyonlands.

**Tar Sands:** Just west of Canyonlands, in the Glen Canyon National Recreation Area, an area dubbed the "Tar Sands Triangle" contains one of the world's richest deposits of tar sands — sandstone impregnated with oil. Holders of oil and gas leases in the area have proposed a massive tar sands development project that would in time occupy 66,040 acres. Under the Com-

bined Hydrocarbon Leasing Act of 1981, existing oil and gas leases would be converted to allow tar sands extraction and processing, provided the development plan "assures reasonable protection of the environment."

Full-scale development of the project, which relies on an unproven technology, would entail sequential construction of 18 extraction zones over 160 years, with each 1,400-acre zone containing 1,000 production wells and 940 steam injection wells. An on-site refinery would process the tar sands into crude oil, using a 32-megawatt steam generator, which in turn would be fueled by the extracted hydrocarbon. Pump stations, pipelines, roads, storage tanks, a sulfur recovery plant, and reinjection wells for waste water disposal would be constructed, and 2,400 workers would be housed nearby. Leaseholders include Sohio, Texaco, Santa Fe Energy Company, and Aztec Oil Company.



According to the Interior Department's draft EIS, the proposed tar sands development would contaminate ground water, dry up springs, damage archaeological resources, and violate federal clean air standards for Canyonlands and Arches national parks. (Arches is 50 miles away.)

Another tar sands proposal in an environmentally sensitive area involves the Circle Cliffs, west of Capitol Reef National Park. Lease applicants have proposed a 32,000-barrel-per-day project that would have major air quality, water quality, and noise impacts on Capitol Reef National Park, Glen Canyon National Recreation Area, and a number of BLM wilderness study areas.



## THE BURR TRAIL

The Burr Trail is an unobtrusive dirt road that winds through 66 miles of magnificent country in southeastern Utah. Beginning at the small town of Boulder, it passes between North Escalante Canyon and The Gulch (two BLM wilderness study areas), crosses Waterpocket Fold in Capitol Reef National Park, and leads to Del Webb Recreation Properties' Bullfrog Marina on Lake Powell. The trail is the target of an intensive effort to open remote southern Utah to major industrial development.

Under the guise of supporting a "scenic highway" that would increase tourism, development interests seek the paving of the trail to provide access to the Circle Cliffs tar sands area and to open a corridor for electric transmission lines. The paving also would help link carbon dioxide fields deep within the Box-Death Hollow Wilderness Area, 10 miles west of Boulder, Utah, to oil fields in New Mexico and Texas.

Conservationists contend that upgrading the Burr Trail to an all-weather highway would entail extensive road cuts and realignments, the blasting and widening of the steep switchbacks in Capitol Reef National Park, and the construction of six major bridges. The project would destroy the primitive character of the area.

Proponents of paving are seeking \$21 million in federal and Utah state funds for the project. So far they have squeezed only \$600,000 from state coffers for an engineering study and \$200,000 from Congress for an Environmental Assessment by the Park Service, which was released in May. The Utah congressional delegation, especially Senator Jake Garn, continues to exert strong political pressure in support of paving. Representative Sidney Yates (D-IL) has so far been instrumental in helping to defeat the project. Meanwhile, Garfield County has paved the first two miles of the road out of Boulder and is preparing to pave two more.

**★WHAT YOU CAN DO:** Obtain a copy of the draft environmental assessment from the National Park Service (Utah or Colorado) and send them your comments. Request preparation of a full environmental impact statement that addresses wilderness values.

Write Representative Sidney Yates (Chairman, Subcommittee on Interior Appropriations) and thank him for opposing federal funding to pave the Burr Trail. Ask if he plans to continue his opposition to this economically and environmentally unsound project.

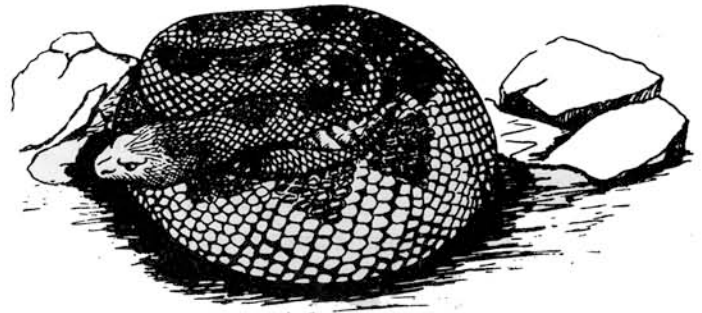
Write Utah Governor Bangerter in support of leaving the Burr Trail as a dirt road.

Send copies of your letters to members of the Utah congressional delegation (Senators Jake Garn and Orrin Hatch and Representatives Jim Hansen, Dave Monson, and Howard Nielson).

**★FOR FURTHER INFORMATION:** Friends of the Earth (Utah); National Parks and Conservation Association (Utah); Sierra Club (Arizona Office); Southern Utah Wilderness Alliance.

**★WHAT YOU CAN DO:** Write the National Park Service (Denver office) and the Bureau of Land Management (Utah office) and oppose the proposed conversion of leases in the Tar Sands Triangle and the Circle Cliffs area. Cite the resulting impacts and point out that none of the alternative levels of development comply with the legal requirement of "reasonable protection of the environment" and the protection of Canyonlands and Capitol Reef national parks from "significant adverse impacts." Question whether tar sands development is technically and economically feasible. Support the no-action alternative. Send a copy of your letter to Secretary of the Interior Donald Hodel and point out that tar sands development threatens national parks and wilderness areas.

**★FOR FURTHER INFORMATION:** National Parks and Conservation Association (Utah).



## THE GRAND CANYON

**Uranium Mining:** Energy Fuels Nuclear (EFN), a Denver-based uranium mining company, has filed 40,000 uranium claims affecting millions of acres of public land north and south of the Grand Canyon, where extremely rich uranium deposits have been discovered. EFN currently has three uranium mines in production or development on the Arizona Strip, the 160-mile-long plateau that borders the canyon's North Rim, and the company plans to spend \$5 million to \$10 million a year exploring for new uranium deposits on the high plateaus that surround the Grand Canyon. EFN exports 30 percent to 40 percent of its uranium to Europe for use in nuclear reactors there.

In November 1984, EFN submitted a proposal to the U.S. Forest Service for the development of the \$20-million "Canyon Mine," in the Kaibab National Forest in Arizona, 13 miles south of Grand Canyon Village. That would be the first uranium mine on the South Rim.

**★WHAT YOU CAN DO:** Write Representative John Seiberling's House Subcommittee on Public Lands and National Parks and express your concern about the cumulative impacts of uranium exploration, mining, and milling around the Grand Canyon. Request over-

sight hearings on comprehensive development problems in the Grand Canyon area. Send the Forest Service your comments on EFN's proposal to mine uranium on the South Rim (address comments to Tusayan Ranger District, P.O. Box 3088, Tusayan, AZ 86023). Write the BLM (Arizona) requesting a cumulative environmental impact statement (EIS) on uranium mining in the Grand Canyon area.

★ **FOR FURTHER INFORMATION:** Arizona Wildlife Federation; Southwest Resource Council.

**Peak Power Releases:** With Lake Powell behind Glen Canyon Dam finally full after some 20 years, the Bureau of Reclamation is operating the hydroelectric dam to maximize "peak power" generation — holding the water back and releasing it when electricity is most in demand in Phoenix and Los Angeles, thus bringing in the maximum revenue. This results in widely fluctuating flows that have a devastating effect on the beaches and the wildlife in Grand Canyon National Park and create havoc for river runners.

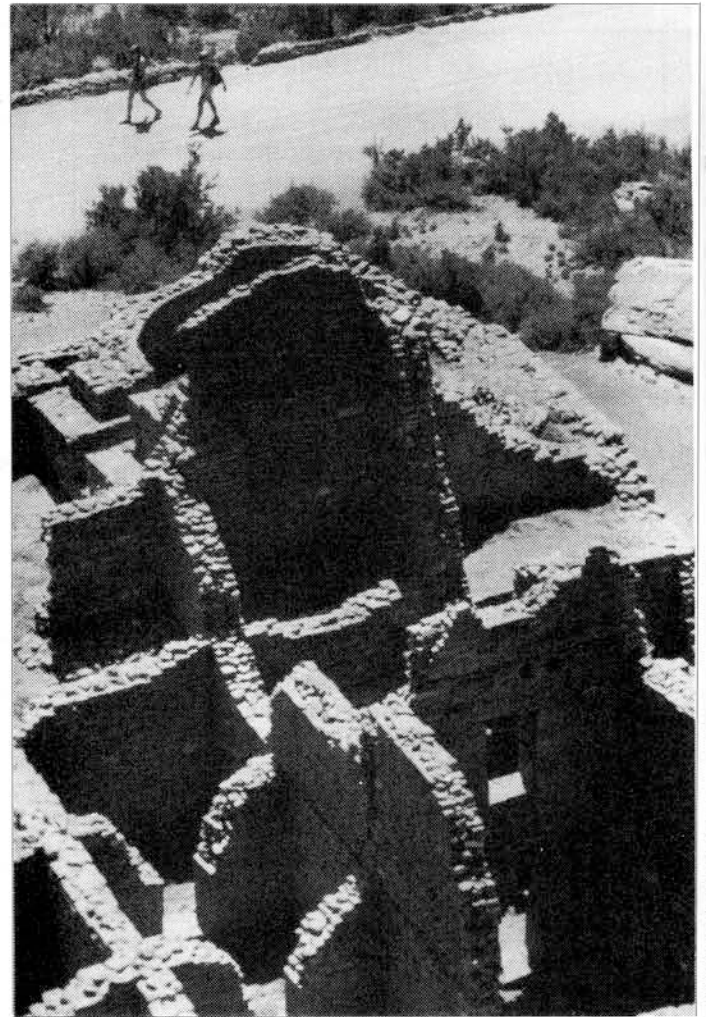
★ **WHAT YOU CAN DO:** Write the Bureau of Reclamation and state your opposition to peak power releases. Request that Glen Canyon Dam be returned to a "base-loaded flow regime." Send copies of your letter to your senators and your representative and to Representative John Seiberling's House Subcommittee on Public Lands and National Parks, with a cover letter urging protection of Grand Canyon National Park.

★ **FOR FURTHER INFORMATION:** Friends of the River (Colorado Plateau Chapter).

#### **ANASAZI ARCHAEOLOGICAL RESOURCES**

The Anasazi, ancestors of the Hopi and other Pueblo tribes, built an extensive civilization that thrived in the Four Corners area, dying out about 1300 A.D. At the heart of the Anasazi culture lay Chaco Canyon, now Chaco Culture National Historical Park. Chaco is surrounded by tracts of federal land open to coal leasing, and strip mines within two miles of the park boundary are planned. Noise from blasting would certainly reach the park, and vibration could contribute to deterioration of the ancient stone and mortar walls of Pueblo Bonito and other major ruins. Public Service Company of New Mexico is planning a 2,000-megawatt coal power plant 14 miles northwest of the park.

One hundred miles northwest of Chaco Canyon, the BLM has designated as the "Anasazi Culture Multiple Use Area" 156,000 acres surrounding Mesa Verde National Park and Yucca House National Monument (both in Colorado) and Hovenweep National Monument (which spans the Colorado-Utah border). In some parts of the area there are as many as 100 archaeological sites per square mile, the highest site density in the U.S.



Anasazi Ruins, Chaco Culture National Historical Park

Shell and Mobil plan to develop carbon dioxide fields in the area. The \$1.2-billion project would entail 150 wells requiring 2 acres each, 150 miles of roads, 400 miles of underground pipeline, and 85 miles of electric transmission lines. To date, Shell has completed 23 wells and installed two gas treatment and compression facilities to transport the carbon dioxide via underground pipeline to Texas.

The Chimney Rock Archaeological Area, near Pagosa Springs in the San Juan National Forest of southwestern Colorado, is one of numerous Chaco Canyon outliers. Sitting in one of the two giant kivas (communal structures) at the site one can hear the trucks and the blasts of a nearby strip mine operated by Perma Resources, which wants to expand its operation and strip mine 2 million tons of coal that lie just beneath 80 acres inside the 3,160-acre archaeological preserve. In September 1984 the Forest Service denied Perma permission for the expansion. The company has appealed the decision, claiming that 120 jobs and an annual \$1 million in local payroll will be lost if the expansion is not allowed. The Interior Department will soon present to Congress a federal joint management plan to help pro-

tect Chimney Rock and 32 other Chaco outliers, many of which are connected by prehistoric roads.

★ **WHAT YOU CAN DO:** Write BLM (Washington, D.C.) urging protection of Anasazi cultural resources by allocating additional funds to hire archaeologists to conduct site inventories. Send copies of your letter to BLM offices in Colorado, New Mexico, and Utah. Also encourage strict law enforcement to stop the pothunters who have been raiding unexcavated Anasazi sites on BLM land. Send a copy of your letter to your senators and your representative with a cover letter urging increased funding for cultural resource protection and management.

★ **FOR FURTHER INFORMATION:** National Parks and Conservation Association (Utah); White Mesa Institute.

### MATHESON PROPOSES WORLD HERITAGE STATUS FOR COLORADO PLATEAU

During his last week as Governor of Utah in 1984, Scott Matheson took steps to formally nominate the nine national parks, twelve national monuments, two national recreation areas and twenty-six wilderness areas of the Colorado Plateau as "World Heritage Sites." The proposal is being considered by the National Park Service, the agency that nominates U.S. sites to the United Nations World Heritage Convention, a multinational effort to establish a global park-wilderness system. Matheson's proposal links all the protected places on the plateau by establishing the common themes of erosional landforms, archaeological significance, and symbolic embodiment of the American cultural value of conservation.

Matheson hopes that World Heritage status will help educate Americans and the international community about the unique qualities of the plateau, thus giving tourism a boost and providing the rural towns of the plateau with a viable alternative to energy development. By establishing beauty and solitude as the most important resources of the plateau, the stakes will be raised in conflicts over large-scale industrial development, and energy megaplans like nuclear waste dumps and strip mines will have a harder time getting off the ground. "The best way to protect the Colorado Plateau is to make the public aware of what's there," says Rod Millar of the Utah Energy Office.

★ **WHAT YOU CAN DO:** Write the National Park Service (Washington, D.C.) in support of the Colorado Plateau Thematic World Heritage Site proposal. Address your letters, "Attn.: World Heritage Convention."

★ **FOR FURTHER INFORMATION:** National Parks and Conservation Association (Utah).

### LET WILDERNESS BE WILDERNESS!

The hard work of hundreds of wilderness devotees paid off in 1984 when Congress added 8.6 million acres of wilderness in 21 states to the National Wilderness Preservation System. In the Four Corner states, areas winning wilderness protection in 1984 included New Mexico's spectacular Bisti Badlands, Utah's High Uintas and Box-Death Hollow, and Arizona's Vermilion Cliffs, Paria Canyon, and parts of Kanab Creek. Even so, plans for drilling, mining, road building, timber sales, and water projects threaten dozens of important roadless areas not yet designated as wilderness, *as well as many areas which have achieved wilderness status.*

Colorado wilderness legislation stalled in 1984 over water issues. The House had passed a 580,000-acre bill, but Senator William Armstrong (R-CO) recommended 450,000 acres. Armstrong's bill contained a ban prohibiting the Forest Service from seeking reserved water rights for wilderness purposes. The ban was prompted by a Sierra Club lawsuit aimed at forcing the government to lay claim to wilderness water rights and to maintain minimum instream flows. According to Michael Scott of the Wilderness Society, Armstrong's proposed ban on instream flow protection could encourage transmountain diversions to the Denver area.

Senator Gary Hart (D-CO) and Representative Tim Wirth (D-CO) have proposed the Colorado Wilderness Act of 1985, legislation that would protect 770,000 acres in the state. The measure would create eleven new wilderness areas (including the largest roadless area left in Colorado — 225,000 acres in the Sangre de Cristo Mountains) and expand seven others. Oh-Be-Joyful,



near Crested Butte, which will be added to the Raggeds Wilderness, and Fossil Ridge, near Gunnison, are the most controversial. Oh-Be-Joyful lies adjacent to one of the world's largest molybdenum deposits at Mt. Emmons, and Fossil Ridge is coveted by motorcyclists.

The existing Mount of the Holy Cross Wilderness Area in west central Colorado is threatened by the \$100-million Homestake II Water Diversion Project, which would drain 90 percent of spring runoff from the glacially carved valleys of the wilderness to booming Colorado Springs and Aurora.

★ **WHAT YOU CAN DO:** Write your senators and your representative and ask them to consider "spot"

wilderness bills for specific roadless areas in your state. Identify released regions that should have been protected and familiarize yourself with the areas. Request protection for the boundaries of designated wilderness areas. For example, there should be no drilling or logging within several miles of a boundary. Urge action on the Colorado Wilderness Act of 1985. Write Colorado Senator William Armstrong and express your views about Colorado wilderness.

Work through the Forest Service planning process to demand that roadless areas be protected from mining and logging by virtue of their value for wildlife habitat and recreational use. File appeals or work with a group like Earth First! to contest Forest Service timber sales, road projects, and mining in roadless areas.

★ **FOR FURTHER INFORMATION:** Earth First!; Sierra Club; Southern Utah Wilderness Alliance; Utah Wilderness Association; The Wilderness Society.

### THE MILITARIZATION OF THE WEST

The Defense Department is seizing huge areas of undeveloped western lands containing wilderness study areas, endangered wildlife habitat, and archaeological sites.

The Air Force and Navy are initiating low altitude jet combat training at supersonic speeds over sparsely populated rural areas in Nevada, New Mexico, Utah, Arizona, and Texas. The flights will result in 20 to 100 sonic booms a day in Dixie Valley, Nevada, and up to 600 a month around Holloman Air Force Base near Alamogordo, New Mexico. To accommodate the flights, the military wants to enlarge several "Supersonic Operations Areas" (SOAs) by annexing public lands around existing military bases — 5,600 square miles in central Nevada around Fallon Naval Air Station, 3,000 square miles near the Gandy Mountains of western Utah, and 500 square miles near Reserve, New Mexico, adjacent to the Gila Wilderness Area and near the Aldo Leopold Wilderness Area.

In April 1984 the Air Force seized, without public notice or input, 89,000 acres of BLM land in the Groom Range of Nevada and annexed it to Nellis Air Force Base. The Groom Range is a BLM Wilderness Study Area adjacent to the 1.5-million-acre Desert National Wildlife Refuge. It is now totally closed to public entry.

★ **WHAT YOU CAN DO:** Write your senators and your representative and protest expanded military operations and land grabs in the West. Send a copy of your letter to Representative John Seiberling's Public Lands and Parks Subcommittee. Write Defense Secretary Caspar Weinberger and state your position.

★ **FOR FURTHER INFORMATION:** National Public Lands Task Force.

### UTAH'S UPCOMING BLM WILDERNESS BATTLE

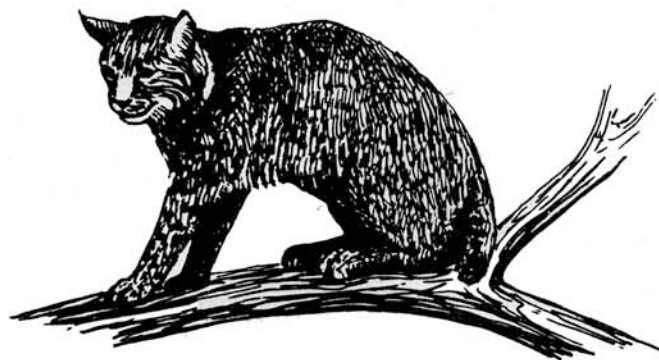
Utah conservationists are now poised for a major battle over BLM wilderness study areas. After successfully appealing numerous BLM decisions that would have eliminated roadless areas from further study, wilderness advocates are shaping proposals for between 3.8 million and 5 million acres, including pristine regions in the Henry Mountains, Canyonlands, the Kaiparowits Plateau, the Escalante canyons, and the Grand Gulch-Cedar Mesa areas. BLM's wilderness recommendation for Utah, due as a draft EIS in July, is expected to propose only 1.8 million acres out of a roadless base of 6 million acres.

Conservationists contend that BLM not only consistently drops prime areas from wilderness consideration, but also fails to protect designated wilderness study areas (WSAs) throughout the West, as required by law. Nowhere is this failure more evident than in Utah. BLM allowed Exxon to bulldoze a road up Mt. Ellen, a WSA in the Henry Mountains, and to assemble and operate a drill rig there. Conservationists have counted 75 similar violations of BLM management policy for WSAs in Utah alone.

This magnificent region is the heart of the Colorado Plateau. If you want to be involved in one of the most important wilderness battles of the decade, join this one. Your support is urgently needed.

★ **WHAT YOU CAN DO:** After BLM makes its recommendation in the draft EIS, there will be a 90-day comment period before the issue goes to Congress. Write BLM supporting the higher of the Utah conservationists' two wilderness proposals — for 5 million acres — and send copies of your letter to your representative, your senators, and the House Interior Committee. A national constituency for southern Utah's wild canyons, plateaus, and mountains is essential to prevent BLM and the Utah congressional delegation from defining this as a local Utah issue. Protest BLM's failure to protect designated wilderness study areas like Mt. Ellen.

★ **FOR FURTHER INFORMATION:** Earth First!; Sierra Club (Arizona), Southwestern Utah Wilderness Alliance; Utah Wilderness Association; The Wilderness Society.



## SAVING FOUR CORNERS

The power of energy multinationals, government bureaucracies, and the military appear overwhelming when compared to Hopi corn growers, Navajo sheepherders, Hispanic farmers, and Mormon ranchers. Yet, the fact that citizens have succeeded in their opposition to large-scale energy projects proposed in the last decade is cause for hope.

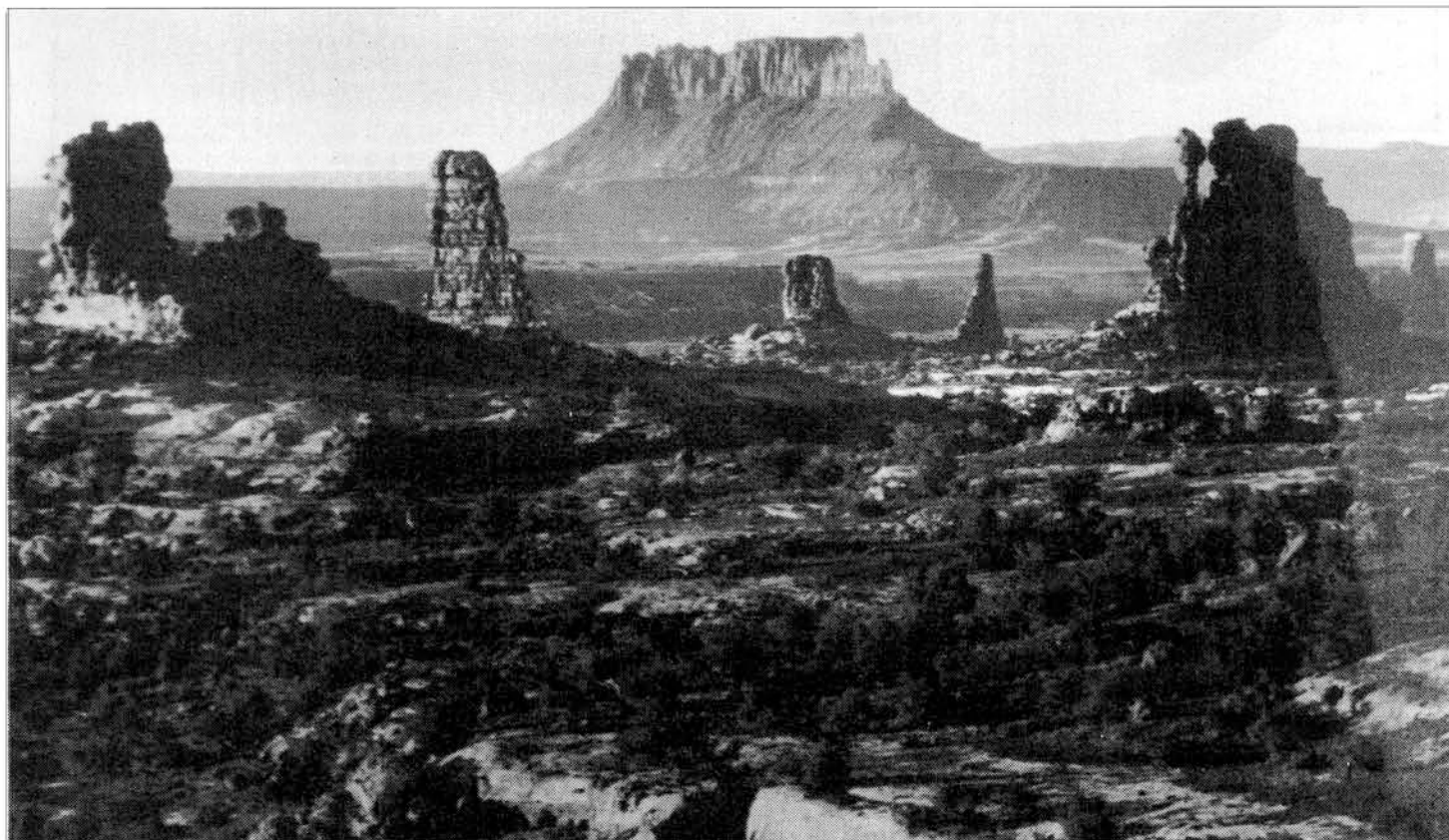
During the fifties and sixties citizen protests saved the Grand Canyon and Dinosaur National Monument in Utah from planned hydroelectric dams, though Glen Canyon in Utah was sacrificed because too few were aware of its beauty. The secret leasing of Black Mesa and the disclosure of plans to build a massive grid of mine-to-mouth coal-fired power plants in the Four Corners stimulated a network of activists that joined forces with traditional Native Americans to investigate and expose the cumulative impacts of such development. The tide turned quickly.

Coal gasification on Navajo land, the Kaiparowits power plant in Utah's canyon country, and AMAX's molybdenum mine in Crested Butte were all defeated in part by organized opposition. Navajos living along the Puerco River in New Mexico and Arizona brought national attention to the long-term effects of a uranium tailings spill through litigation. SRIC and other western citizen groups helped build rural peoples' awareness and understanding of the hazards of uranium development.

Conservative Utah ranchers joined with environmental groups and successfully petitioned the Interior Department to declare an area adjacent to Bryce Canyon National Park unsuitable for strip mining. Forced relocation of Hopis and Navajos from Big Mountain may yet be averted owing to public scrutiny and pressure.

A growing emphasis on direct action, inspired in part by Edward Abbey's *The Monkey Wrench Gang*, has also emerged. Greenpeace activists climbed the Magma copper smelter smokestack and draped a banner from it in protest against acid rain. The American Indian Movement occupied the site of a proposed strip mine on land of the Navajo Nation. Earth First! adopted the slogan, "No compromise in defense of Mother Earth" and injected a militant voice into the environmental movement.

Meanwhile, a quieter trend in cities and towns far from the Four Corners has reshaped the U.S.'s energy future. The U.S. consumed less energy in 1983 than in 1973. In fact, the ratio of energy consumption to gross national product declined by 25 percent — we used one-quarter less energy to run our economy at the same level as a decade earlier. DOE has projected that if the conservation trends of the seventies continue, energy use could fall by another 10 percent by 1995. The direct result is less demand for new power plants and strip mines in the Four Corners, more time for alternative energy sources to be developed and installed, and more time for the people of the West to find alternative forms of economic development.



View of Canyonlands National Park, Utah

## GOVERNMENT OFFICES

**Honorable \_\_\_\_\_**  
U.S. Senate  
Washington, DC 20510

**Honorable \_\_\_\_\_**  
U.S. House of Representatives  
Washington, DC 20515

**President Ronald Reagan**  
The White House  
Washington, DC 20500

**Bureau of Land Management**  
Washington, DC 20240

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Denver, CO 80205

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4210 E. 11th Ave.  
Denver, CO 80220

**Department of Defense**  
The Pentagon  
Washington, DC 20301

**Department of Energy**  
1000 Independence Ave., S.W.  
Washington, DC 20585



**Environmental Protection Agency**  
401 M St., S.W.  
Washington, DC 20460

**Region VI (New Mexico)**  
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Dallas, TX 75270

**Region VIII (Colorado and Utah)**  
1860 Lincoln St.  
Denver, CO 80203

**Region IX (Arizona)**  
215 Fremont St.  
San Francisco, CA 94105

**Governor Bruce Babbitt**  
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Phoenix, AZ 85007

**Governor Richard Lamm**  
State Capitol  
Denver, CO 80203

**Governor Toney Anaya**  
State Capitol  
Santa Fe, NM 87501

**Governor Norman Bangert**  
Capitol Bldg.  
Salt Lake City, UT 84114

**National Park Service**  
Department of the Interior  
Washington, DC 20240

P.O. Box 25287  
Denver, CO 80255

125 S. State St.  
Salt Lake City, UT 84238

## CITIZEN ORGANIZATIONS

**Arizona Wildlife Federation**  
Rt. 3, Box 50  
Flagstaff, AZ 86002

**Big Mountain Defense Committee**  
124 N. San Francisco St., Suite B  
Flagstaff, AZ 86001  
(602) 774-6923

**Big Mountain Support Group**  
1412 Cypress  
Berkeley, CA 94703  
(415) 841-6500

**Citizen's Call**  
126 So. 1400 West  
Cedar City, UT 84720  
(801) 586-6674



**Citizens for Alternatives to Radioactive Dumping**  
P.O. Box 555  
Albuquerque, NM 87103

**Colorado Environmental Lobby**  
1724 Gilpin St.  
Denver, CO 80218  
(303) 320-0329

**Colorado Open Space Council**  
2239 E. Colfax  
Denver, CO 80206  
(303) 399-2288

**Committee on Coal**  
P.O. Box 7493  
Albuquerque, NM 87194  
(505) 344-7988

**Council on Economic Priorities**  
30 Irving Place  
New York, NY 10003  
(212) 420-1133

**Critical Mass**  
215 Pennsylvania Ave.  
Washington, DC 20003

**Crownpoint Citizens Alliance**  
P.O. Box 155  
Crownpoint, NM 87313

**DNA People's Legal Services**  
P.O. Box 116  
Crownpoint, NM 87317  
(505) 786-5277

P.O. Box 306  
Window Rock, AZ 86515  
(602) 871-4151

**Denver Solar Energy Association**  
1662 Lafayette  
Denver, CO 80218  
(303) 863-0909

**Desert West News Service**  
100 N. San Francisco St. #101  
Flagstaff, AZ 86001  
(602) 774-0611

**Don't Waste Utah Campaign**  
P.O. Box 1563  
Salt Lake City, UT 84110  
(801) 532-4796

**Earth First!**  
P.O. Box 5871  
Tucson, AZ 85703  
(602) 774-0623

**Economic Development Program**  
Seventh Generation Fund  
P.O. Box 3245  
Flagstaff, AZ 86003  
(602) 526-6410

**Environmental Action, Inc.**  
1346 Connecticut Ave., N.W.  
Washington, DC 20036  
(202) 833-1845

**Environmental Defense Fund**  
1405 Arapahoe  
Boulder, CO 80302  
(303) 440-4901

**Environmental Policy Institute**  
218 D Street S.E.  
Washington, DC 20003  
(202) 544-2600

**Environmental Research Group**  
P.O. Box 2190  
Aspen, CO 81612  
(303) 925-2832

**Friends of the Earth**  
1045 Sansome St.  
San Francisco, CA 94111  
(415) 433-7373

**Colorado Program**  
P.O. Box 728  
Palisade, CO 81526  
(303) 464-5329

P.O. Box 450  
Moab, UT 84532  
(801) 259-8493

**Friends of the River**  
Fort Mason Center, Bldg. C  
San Francisco, CA 94123  
(415) 771-0400

Colorado Plateau Chapter  
Box 1115, 20½ E. Cherry Ave.  
Flagstaff, AZ 86002  
(602) 959-0052

**Future**  
P.O. Box 2625  
Denver, CO 80201

**Groups Against Smelter Pollution (GASP)**  
P.O. Box DB  
Bisbee, AZ 85603  
(602) 432-3721

**High Country Citizens Alliance**  
P.O. Box 1066  
Crested Butte, CO 81224  
(303) 349-5640

**Huerfano Valley Citizens Alliance**  
P.O. Box 696  
Redwing, CO 81066  
(303) 746-2286

**Indian Law Resource Center**  
601 E Street, S.E.  
Washington, DC 20003  
(202) 547-2800

**Institute for Resource Management**  
19 Exchange Place  
Salt Lake City, UT 84111  
(801) 322-0530

**Intermountain Water Alliance**  
168 W. 500 North  
Salt Lake City, UT 84103  
(801) 531-7330

**Kimochi, Inc./Hopi Project**  
P.O. Box 316  
Boulder, CO 80306



**La Colectiva**  
P.O. Box 1287  
Española, NM 87532

**La Raza Unida**  
General Delivery  
La Madera, NM 87539

**League of Women Voters**  
1600 Race St.  
Denver, CO 80206  
(303) 320-8493

**March of Dimes**  
622 3rd Avenue, 35th Floor  
New York, NY 10017  
(212) 922-1460

**Maricopa Audubon Society**  
4619 E. Arcadia Lane  
Phoenix, AZ 85018  
(602) 959-0052

**Moqui (Hopi) Project**  
P.O. Box 112  
Oraibi, AZ 86039

**National Association of Radiation Survivors**  
78 El Camino Real  
Berkeley, CA 94705  
(415) 652-4400



**National Audubon Society**  
950 Third Avenue  
New York, NY 10022

4150 Darley, No. 5  
Boulder, CO 80303  
(303) 499-0219

[Also see Maricopa Audubon Society]

**National Indian Youth Council**  
201 Hermosa Dr. NE  
Albuquerque, NM 87108  
(505) 266-7966

**National Parks & Conservation Association**  
3101 Park Center Dr.  
Alexandria, VA 22302  
(703) 820-4940

P.O. Box 67  
Cottonwood, AZ 86326  
(602) 634-5758

P.O. Box 1563  
Salt Lake City, UT 84110  
(801) 532-4796

**National Public Lands Task Force**  
P.O. Box 1245  
Carson City, NV 89702  
(702) 883-1169

**National Wildlife Federation**  
Natural Resources Clinic  
University of Colorado School of Law  
Boulder, CO 80309  
(303) 492-6552

**Natural Resources Defense Council**  
1350 New York Ave., N.W., Suite 300  
Washington, DC 20005  
(202) 783-7800

25 Kearny St.  
San Francisco, CA 94108  
(415) 421-6561

**Navajo Nation Division of Natural Resources**  
Navajo Nation  
P.O. Box 308  
Window Rock, AZ 86515

**New Mexicans for Clean Air & Water**  
113 Monte Rey Drive, N.  
Los Alamos, NM 87544

**Nuclear Free State**  
1114 N. Rincon  
Tucson, AZ 85719  
(602) 622-8785

**Nuclear Information Resource Service**  
1346 Connecticut Ave., N.W., Room 401  
Washington, DC 20036  
(202) 296-7552

**Palo Verde Truth Force**  
1322 W. Roosevelt St., No. 6  
Phoenix, AZ 85007  
(602) 258-0089

**Pikes Peak Justice and Peace Committee**  
235 Fountain Blvd.  
Colorado Springs, CO 80903

**Project Lighthawk**  
P.O. Box 8163  
Santa Fe, NM 87104  
(505) 982-9656

**Public Media Center**  
25 Scotland St.  
San Francisco, CA 94103  
(415) 343-1403

**Radiation Education Council**  
P.O. Box 705  
Lakeview, OR 97630

**Rocky Flats Action Group**  
1428 Lafayette St.  
Denver, CO 80218

**Rocky Mountain Institute**  
Drawer 248  
Old Snowmass, CO 81605  
(303) 927-3851

**Sacred Mountain Alliance**  
Rt. 3, P.O. Box 125  
Flagstaff, AZ 86001

**San Juan Agricultural Project**  
P.O. Box 1099  
San Juan Pueblo, NM 852-4400

**San Luis Valley Solar**  
8125 S. River Rd.  
Alamosa, CO 81101  
(303) 589-2233



**Sandoval Environmental Action Committee**  
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Bernalillo, NM 87004  
(505) 867-2046

**Sierra Club**  
727 Walnut  
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P.O. Box 25271  
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3201 N. 16th St., Ste. 6-A  
Phoenix, AZ 85016  
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**Sierra Club Legal Defense Fund**  
820 16th St., Suite 514  
Denver, CO 80202  
(303) 892-6301

**Solar Lobby Center for Renewable Resources**  
1001 Connecticut Ave., N.W., Suite 510  
Washington, DC 20036  
(202) 466-6880

**Southern Utah Residents Concerned About Their Environment**  
P.O. Box 1453  
Cedar City, UT 84720



**Southern Utah Wilderness Alliance**  
P.O. Box 348  
Escalante, UT 84726

**Southwest Research & Information Center**  
P.O. Box 4524  
Albuquerque, NM 87106  
(505) 262-1862

**Southwest Resource Council**  
P.O. Box 1182  
Hurricane, UT 84737  
(801) 635-4804

**Taos Environmental Association**  
P.O. Box 231  
Arroyo Seco, NM 87514  
(505) 776-8218

**Taxpayers for Responsible Water Projects**  
1840 Centaur Village Dr.  
Lafayette, CO 80026  
(303) 665-2582

**Tuba City Citizens Committee for Uranium Radiation Control**  
P.O. Box 532  
Tuba City, AZ 86045  
(602) 283-5403

**Utah Wilderness Association**  
455 E. 400 South, D-40  
Salt Lake City, UT 84111  
(801) 359-1337

**Utahns for Canyonlands**  
50 S. Main, Ste. 600  
Salt Lake City, UT 84144  
(801) 363-7042

**Western Colorado Congress**  
Box 472  
Montrose, CO 81402  
(303) 249-1978

**Western Network**  
214 McKenzie St.  
Santa Fe, NM 87501  
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**Western Organization of Resource Councils**  
P.O. Box 1742  
Montrose, CO 81402  
(303) 249-5474

**White Mesa Institute**  
College of Eastern Utah  
Blanding, UT 84511

**The Wilderness Society**  
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Washington, DC 20005  
(202) 842-3400  
1720 Race St.  
Denver, CO 80206  
(303) 388-5801



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