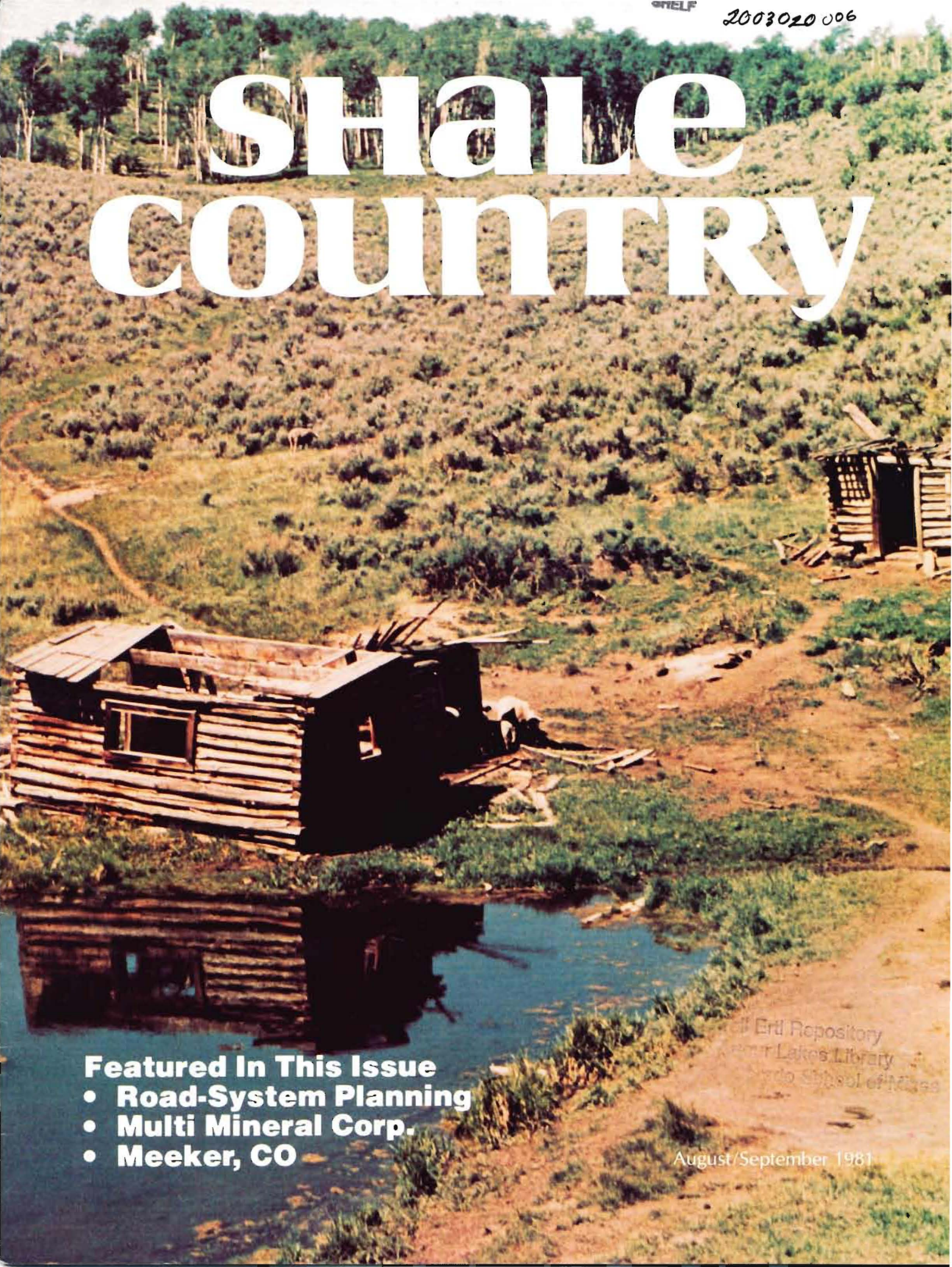


SHALE COUNTRY

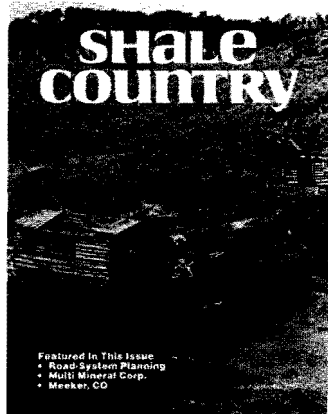


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 - Meeker, CO

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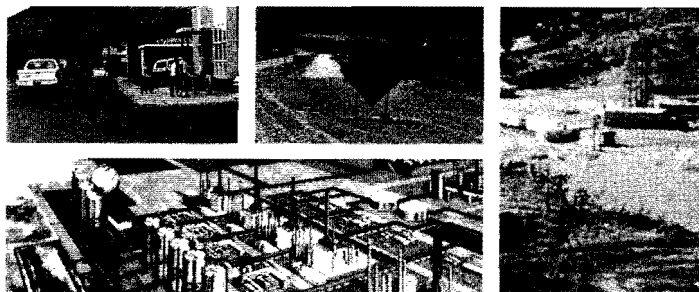
August/September 1981

THIS ISSUE



On the cover: A deserted cabin north of Meeker, CO.

SHALE COUNTRY travels down a few roads (p. 2-3), detours to examine nahcolite and dawsonite (p. 4-6), Eastern oil shale (p. 8-9), and winds up in Meeker (p. 10-12).



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SHALE COUNTRY

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Brightening Shale Country

Keeping the home lights burning, not to mention those of business, industry and government, is a major concern for companies that supply electrical power to shale country. With manpower and output projections increasing continuously, new challenges are confronting firms that must calculate just how much electricity will be needed.

"We're continually working with the oil companies to coordinate power needs," explains Donald Johnson, consumer services manager for the Western Div. of Public Service Co. of Colorado (PSCo). "But, the number of families and the support services they'll need keeps growing, and we sometimes have difficulty determining what factors to use to estimate future requirements."

Technology cuts figures

It used to be that figuring 2 kilowatts of electrical capacity for each barrel of shale oil produced was the industry standard. But as technology changes, so does the number, and it may eventually be lowered to 1 kilowatt per barrel. This means that, for an oil shale industry to produce 100,000 barrels of shale oil a day, electrical capacity would have to be increased by 100 megawatts (1,000 kilowatts equal 1 megawatt). Those figures, however, only include the actual shale oil production, and not the community needs to support that output.

According to John Bugas, president of Colorado-Ute Electrical Assn., Inc., a wholesale supplier of electricity in Montrose, CO, it takes approximately one oil shale worker to produce 24 barrels of oil per day. Again, for a 100,000-barrel-a-day plant, that would mean 4,000 employees. When you add the rule-of-thumb figure of five additional people per employee to cover families and support services, the number expands to 20,000 people. Bugas estimates the electrical industry needs a ca-

Looking Ahead

capacity of 1 kilowatt per person, making the total needs of a 100,000-barrel-a-day industry of 120 megawatts.

But all that electricity will not necessarily come from the electrical companies. "At some of the oil shale sites, large amounts of low-heating value (low-BTU) gas will be produced as a result of processing techniques," says James Lee, manager of engineering for the Moon Lake Electrical Assn. in Roosevelt, UT. "Although work still needs to be done on how to best use that energy to produce electricity, there's a chance the oil shale companies will be producing enough electricity to supply their own power, as well as having enough excess to sell."

But is there enough electrical capacity to meet current needs and those of the growing industry? Says Lee, "We have enough power now to handle domestic requirements, and those of construction and pilot plant start-up. However, once they start processing, we'll have to add more electrical capacity."

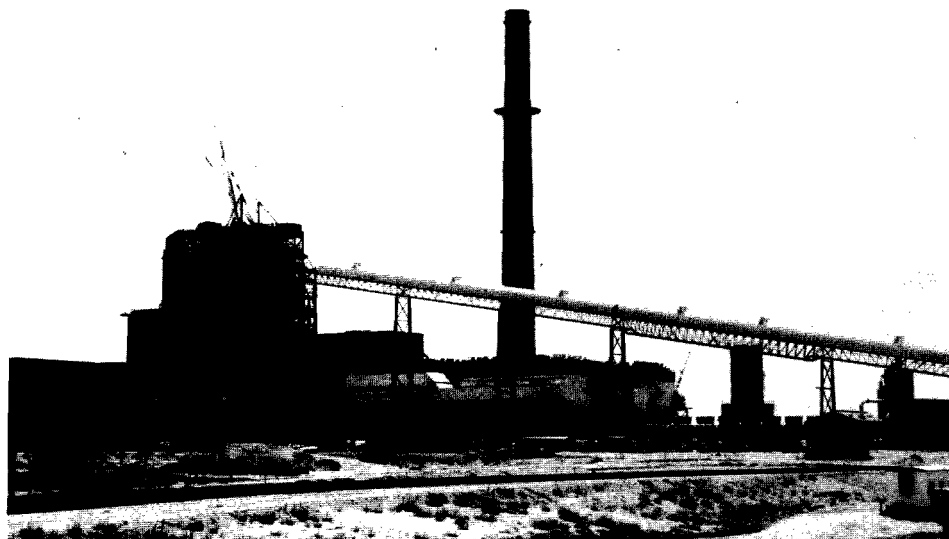
In Utah, a large amount of that electricity will be supplied by the new two-unit Moon Lake Power Plant, which is expected to be producing electricity by 1985. Although a minimum amount of the first unit's capacity will be reserved for oil shale development, there is enough capacity in the second unit

to handle the beginning of commercial shale oil production.

No drastic shortages

In Colorado, Bugas and Johnson don't foresee any drastic shortages of electrical power as the oil shale companies bring their plants to commercial production. "The bulk of our growth is outside of the oil shale area," Bugas explains. "Since we serve most of Western Colorado, a lot of our growth has come from an effort to fulfill the needs of the recreational and tourist industries."

Johnson feels PSCo can meet the expanding oil shale needs with its new Pawnee plant near Brush, CO, which should be on line this fall. But as more and more processing plants are brought on, PSCo is going to have to find the power to handle them. Fortunately for all the electrical companies supplying shale country, it takes almost as long to build a commercial shale oil plant as it does to get a power plant constructed. Most power companies plan on using that lead time to be certain they'll have the electrical capacity available when it is needed. And as projections and needs change, the electrical companies intend to continue working with oil shale processors to make certain the lights keep burning in shale country. S.L.P. □



The Pawnee Power Plant, under construction near Brush, CO, is almost 95 percent complete.

Road Planners Push for the Long Haul

As energy development shifts into gear, more and more trucks will be rumbling down shale country highways and byways. Trucks will be needed to haul construction, mining and processing equipment to the project sites, and in many cases, to transport mined and refined products from the projects to markets. Then add increased traffic from a growing population, and you have a situation more serious than a giant traffic jam—you have the real possibility of a greater number of accidents.

Thus, transportation planners in Colorado and Utah are examining what needs to be done, and trying to find ways to pay for it. According to Frank McGhghy, senior transportation specialist with the Colorado Dept. of Highways, "The weight of the equipment for a commercial oil shale operation often exceeds the 85,000-pound weight limit on state highways. For example, some of the machinery will weigh as much as 120,000 pounds and will be carried by 35,000-pound trucks, and some of the trucks will be as much as 300 feet long."

The types of improvements needed to accommodate heavier, longer loads include strengthening roadbeds, adding truck climbing lanes, widening roadway shoulders and upgrading bridges. According to McGhghy, some of the state highway-system roads on the Western Slope that are currently being impacted by energy development are: State Highway 13 from Rifle to Craig; State Highway 64 from Rangely to Meeker; and State Highway 139 from Loma over Douglas Pass to Rangely.

Financing: tricky terrain

But improving roads, whether they be federal, state or local, takes money, and

highway planners are examining optional ways of financing road improvements. "On the state level," McGhghy reports, "funding may vary somewhat from state to state, but the general principles are the same. Construction and reconstruction are funded through both federal and state monies—usually 84-percent federal and 16-percent state. The federal money comes from the Federal Highway User's Trust Fund, which is made up of revenue from the federal tax on tires, oil and new cars. The state's portion is provided by the Colorado Highway User's Tax Fund, which consists of revenues from the state gasoline tax, the ton-per-mile tax paid by the trucking industry and motor vehicle registrations."

With all this money coming in, it would seem that upgrading the road system should present no financial difficulty. Not so, says McGhghy, and points out that in fiscal year 1980, Colorado spent \$180 million statewide on improvements alone. An additional \$81 million was spent on work such as pot-hole patching, snow and ice removal, and spot resurfacing.

And building a road is not an inexpensive proposition. Because of shale country's rugged terrain, reconstructing a highway could average \$1-\$1.5 million per mile. For example, reconstructing State Highway 13 from Rifle to the Rio Blanco store at the head of the Piceance Creek Road—a distance of 17.3 miles—would cost more than \$22 million in 1980 dollars.

But the energy-impact funds currently available in Colorado are being used primarily to fund such community-development projects as schools, hospitals and water-treatment systems. Also, McGhghy reports that because of inflation,

maintenance and construction costs have been rising more than 12-15 percent per year, but highway-department revenues have not increased, partly because of energy conservation and more fuel-efficient cars. However, Colorado has recently raised its gasoline tax from 7 cents to 9 cents a gallon, which should help this situation somewhat.

On the road again...

Moving closer to the shale sites, most of the roads leading directly to the projects are county roads and have been experiencing more upgrading activity than the state system. For example, the Piceance Creek Road, which is about 13 miles away from Rio Blanco's federal tract C-a, was reconstructed using county funds and some money from the Oil Shale Trust Fund—it is maintained by the county. The Parachute Creek Road, which leads to the Union Oil site and the Colony Shale Oil Project (a joint operation of Exxon Corporation and The Oil Shale Corporation, a Tosco Corporation subsidiary), is also a county road. According to Gary Bates, mine superintendent, Colony Project, "The road, which is about 12 miles long, is basically being upgraded for our needs, so Colony and Union are paying for all the improvement costs on an equal-share basis. Technically, though, it is a county road and it will be maintained by the county."

As for other road projects in the area, Bates says, "Battlement Mesa, Inc. (a wholly owned subsidiary of Exxon Corporation) and Tosco Corp. are building all the necessary roads for the new community of Battlement Mesa, across the river from the town of Parachute. Eventually though, they'll be turned over to the county, or to Battlement Mesa, if the community decides to incorporate. There's also some talk about putting another bridge across the Colorado River, and we will probably help with that in some way, at least in the area of planning expertise."

A county road presently under construction is the Rifle bypass, which is being built with some county and some Oil Shale Trust Fund money. The bypass ran into difficulties, however, and construction halted when a \$589,000 shortfall occurred. Tom Ten Eyck, vice president of community, gov-

ernment and public affairs for Rio Blanco Shale Oil Co., reports, "Last June, five projects—Cathedral Bluffs (tract C-b), the Colony Shale Oil Project, Multi Mineral, Rio Blanco and Union Oil—agreed to make up the difference so the project could be completed."

Rolling over to Utah

Utah's shale country road situation is in a condition similar to Colorado's, with increasing costs and declining revenues eroding funds. (Utah's state gasoline tax has also just been raised—from 9 cents to 11 cents a gallon.)

Utah has an additional burden, though, since it does not yet receive any of the lease monies paid for federal tracts U-a and U-b (the White River Shale Oil Project). This money is being held in escrow because of litigation regarding U-a/U-b land-ownership rights. In 1977 the Utah legislature passed a bill requiring that the monies be deposited into a natural-resource-development account, and that it be loaned to the communities, counties, cities and towns impacted by oil shale development. Once the litigation is resolved, the funds will be released.

Still, although these funds are temporarily out of reach, activity has not ground to a stop. According to Ron Delis, transportation planning engineer for the Utah Dept. of Transportation, "We've been conducting various studies and coordinating with local officials. Our major need is new roads—right now there's only one in the area that's hard-surfaced. Near Vernal, there are about three or four main areas that will be experiencing energy development, and we're trying to tie them together. We would like to build a road from Vernal to Bonanza, bring it west to Ouray, then south again to connect it with the Geokinetics shale project, which is about 70 miles south of Vernal."

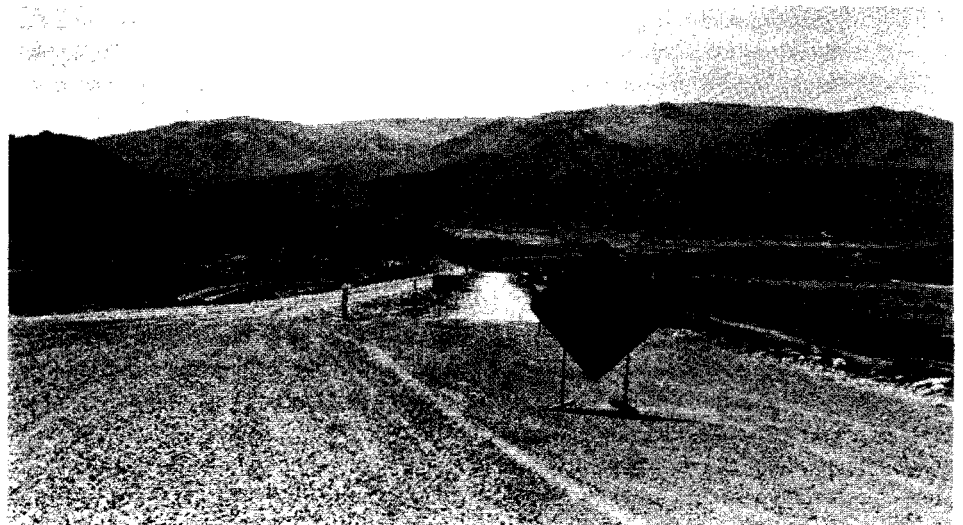
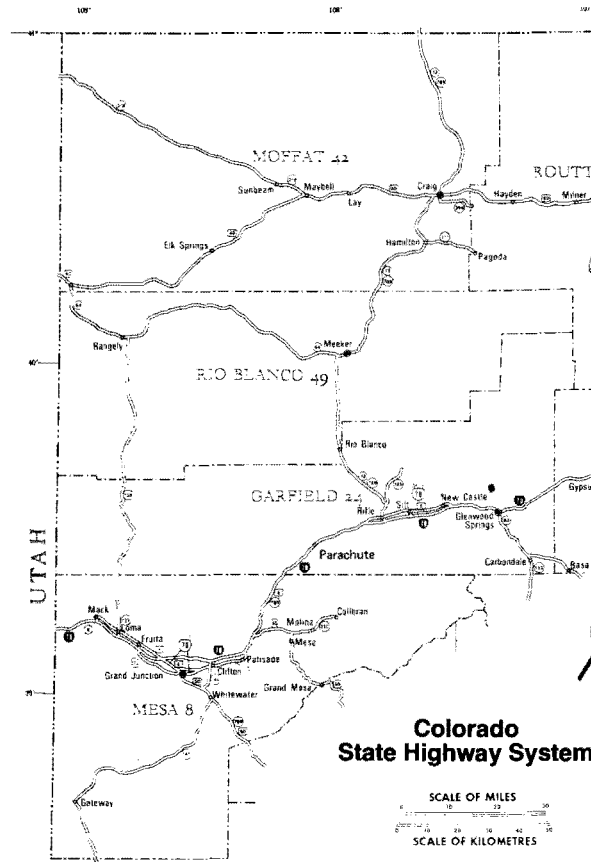
As for funding the new road, Delis says, "We were getting financing from the state legislature, but the Resource Development Act was recently repealed. The act allowed us to ask companies to pay their sales and use tax ahead of time and credit them, so repealing the law killed us. Then, too, under the Carter Administration, the Dept. of Energy (DOE) had some money allocated for transportation, but that's all changed now."

Thus, in order to build the new road,

Delis feels it will be necessary to go to private sources for funding, although this would mean scaling down the \$22-million project. "The road would have to fulfill state standards, of course," Delis notes, "but we would not be able to go for the width or the pavement thickness we really need."

It appears then, that both Utah and Col-

orado transportation officials are working under similar constraints, but they have not given up on solutions to road questions. As Colorado's McGhghy puts it, "We're encouraging energy companies to participate, of course, but we're also busy trying to find various alternative funding sources ourselves." K.C. □



Construction on the Parachute Creek Road.

Multi Mineral's Key to Oil Shale: Nahcolite and Dawsonite

Ben Weichman, the articulate president of Multi Mineral Corp., thinks his company has a key to the nation's short-term energy needs.

The key involves the pursuit of oil shale and two other minerals contained in the shale—nahcolite and dawsonite. Nahcolite is a naturally occurring sodium bicarbonate that can be used to scrub coal by removing sulfur oxides from stack gases in power plants, thus helping the plants meet Clean Air Act standards. Dawsonite is the source of alumina, yielding aluminum, as well as soda ash, which is used in glass and paper production.

Weichman, a persuasive yet low-key advocate of oil shale development, is a geological engineer who was born in Nebraska and spent most of his younger years in Casper, WY. He earned degrees at Casper College, Ohio University and the University of Wyoming. Today he finds his company challenges him in all disciplines.

Breaking the cost barrier

In an industry that includes several oil giants, Weichman has been persistent in pursuing his own unique vision of how oil shale can best be produced commercially. He sought to break what he calls the "classical economic barrier" to oil shale development—the fact that in the past it has always cost a few cents more than the mar-

ket price of conventional crude to produce a barrel of shale oil.

While working for Superior Oil Co. earlier in his career, Weichman developed the multi-mineral concept and was issued a patent, which he assigned to Superior. His idea was to use a surface technology that yielded four products rather than one—nahcolite, alumina, soda ash and shale oil. The process was tested by Superior and appeared economically attractive.

Superior's lands weren't consolidated, however, and the company sought a land exchange with the federal government. When the land exchange failed to materialize, Superior decided in 1977 to place its project on hold, and Weichman, then the head of Superior's oil shale division, found, "I'm not a very comfortable person in the hold position." In 1978, after 12 years with Superior, he resigned—on amicable terms.

Weichman then founded Multi Mineral Corp. and worked to develop a process technology that combined what he saw as "the best of both worlds": multiple-mineral recovery and the modified in-situ method of handling shale oil. The result: Multi Mineral's Integrated In Situ Process. Using the same chemistry that the Superior process would apply in a surface plant, Multi Mineral processes the minerals underground.

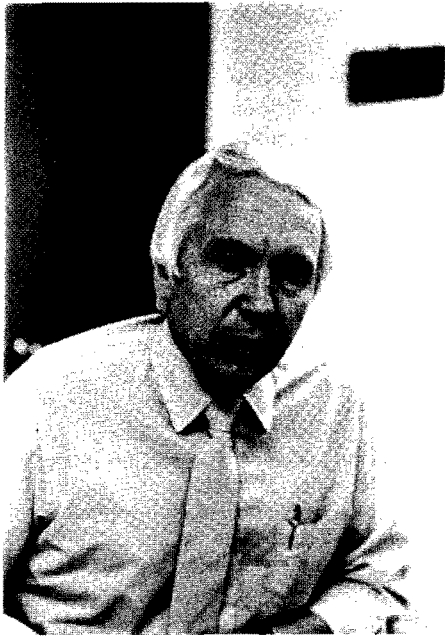
In mining for oil shale, Multi Mineral would tap yet another resource area in the Piceance Basin of Colorado. Most of the re-

search the development for oil shale has been in the uppermost Mahogany Zone, but in order to recover the nahcolite and dawsonite, Multi Mineral would reach deeper, into the Saline Zone, the storehouse of an estimated 300-plus billion barrels of shale oil, 30 billion tons of nahcolite and 20 billion tons of dawsonite. Unlike the Mahogany Zone, the Saline Zone has few joints or fractures, so the shale there is a solid, competent rock without water-flow problems.

Weichman's Integrated In Situ Process was so attractive to one potential investor, The Charter Co. of Jacksonville, FL, that Charter offered to purchase Multi Mineral. Charter and Multi Mineral were "a good mesh," says Weichman, because Charter owned no producing oil sources for its refineries. Therefore, Weichman agreed to the acquisition in September of 1978. (Charter's 1980 total assets of \$1.74 billion are based in the petroleum, insurance and communication industries, including "Ladies Home Journal" and "Redbook.")

Cleaning up coal

Since it was acquired, Multi Mineral has proceeded to research improved methods for mining oil shale, in order to obtain nahcolite and dawsonite, on a 2,330-acre Bureau of Mines tract 35 miles southwest of Meeker. An agreement signed in April of



Ben Weichman, inventor of the Multi Mineral process, says it combines economical and environmental advantages of other processes to yield four products: shale oil, nahcolite, alumina and soda ash.



Jim Meredith, manager of support operations, thinks communities and companies can hammer out solutions to growth concerns such as the Rifle Highway 13 bypass.

1979 by Multi Mineral and the bureau called for Multi Mineral to operate the research facility on this site, known as Horse Draw. The agreement was recently extended through April 1982.

Multi Mineral launched other research activities in October of 1979, which are aimed at proving the relatively low cost and effectiveness of using dry nahcolite to scrub sulfur oxides from coal-fired, steam electric-generating plants. The company entered into a joint agreement with the Electric Power Research Institute of Palo Alto, CA, and Public Service Co. of Colorado (PSCo) to test nahcolite at PSCo's Cameo Station east of Grand Junction. The research has shown various advantages of nahcolite over conventional scrubbers, including a potential capital-cost savings of approximately \$50 per plant kilowatt capacity, energy savings of up to 3 percent of the plant's output, and the absence of any water for processing. The process is also simple, and is more reliable and needs less maintenance than conventional scrubbers. Under similar operating conditions, less nahcolite than trona (a mineral traditionally used as a scrubbing agent) was required to remove equivalent amounts of sulfur dioxide from flue gas.

Encouraged by these results, Multi Mineral has been seeking to surmount its major obstacle: the need for oil shale land and an oil shale lease in the Piceance Basin. The

sequence of events in the company's attempts to clear this hurdle started in 1980, when, after a series of negotiations, the company was named the designated operator of an 8,354-acre sodium lease adjacent to the Horse Draw site.

Multi Mineral also owns 47 percent of a 5,100-acre sodium preference-right lease application in a joint venture at Yankee Gulch. In addition, Multi Mineral owns outright another 640 acres of land in the Piceance Basin. Weichman has proposed to the Dept. of the Interior (DOI) that Multi Mineral be allowed to pursue oil shale and multi-mineral development on its sodium lease.

Meanwhile, the company is developing the sodium lease near Horse Draw under the state's streamlined permitting process known as the Colorado Joint Review Process. A mining plan was submitted in January to the U.S. Geological Survey and has now been approved. Multi Mineral hopes that construction of the mine can start in September 1982, to be followed by full-scale production of 1 million tons of nahcolite in 1985 or 1986. The operation will be the only nahcolite mine in the world; indeed, the Piceance Basin contains the only known commercial deposit of nahcolite.

Oil shale, when?

When does oil shale enter the picture? That depends on when or if Multi Mineral is

granted an oil shale lease. Weichman points out that his company could shave 2 years off development time since it has already collected baseline data for the nahcolite mine's Environmental Assessment, as well as the environmental information required by the Federal Prototype Leasing Program. Shale oil production could start in 1988, he estimates, at 20,000-barrels-a-day plant capacity. Eventually 50,000 barrels a day or more could be produced.

While the bulk of Multi Mineral's efforts has been aimed at the long-term goal of mining three minerals, the sodium venture itself is economical, according to Jim Meredith, manager of support operations. "We will be able to recover our capital investment, even without the carrot of oil shale," he says. "But we think the Saline Zone offers the best oil shale resource, the most environmentally sound, and it should be developed as a part of the nation's overall energy program. Yet this great resource has been ignored to date and it should be part of any oil shale leasing program."

Convinced that the federal government will ultimately recognize the unique economic and environmental lure of the Multi Mineral process, the company is doing additional research. A facility is being built near I-70 and 30 Road in Grand Junction to house business offices, a laboratory and an oil shale retort. The retort, 40 feet in process height and 8 feet in diameter, will be capa-

ble of testing 80-ton batches; Saline Zone oil shale will be utilized for the test program. Nahcolite scrubbing of oil products will also be tested for the first time.

Although the plant is in an industrial-zoned area, local residents have expressed concern about the proximity of the plant to their homes. Meredith has responded that the retort will be housed inside the building and that it will be a clean and

odorless process, with little impact.

Multi Mineral still faces its one hindrance: the right to develop oil shale on federal lands. However, recent occurrences at the Dept. of Interior and in Congress indicate that those bodies recognize the attractiveness of multi-mineral development.

Watching and waiting for federal developments, Weichman says he has the courage to go forward because he thinks federal

policymakers will recognize this imperative: The nation must "give all of the valid technologies an opportunity to be demonstrated." Weichman sees his company as the leader in multi-mineral development, and asserts that it is "inevitable that a lease to allow us to produce shale oil, nahcolite and dawsonite is going to be available to us at some time. I believe it is going to be soon." C.E. □

Small Company Seeks Big Picture— How to Aid Local Communities

Multi Mineral is still a small, developing company, and even its full-scale production plans for nahcolite call for only 440 workers. Still, the company has taken a keen interest in mitigating impacts on local communities.

Some 60 employees are now headquartered in Grand Junction. Jim Meredith, a biologist who had worked 4½ years for Superior Oil Co. before joining Multi Mineral, came on board as the company's fifth employee in 1979.

Another 20 persons are employed at a research facility in Grand Junction, and operations at Horse Draw have 20 employees and another 26 contract workers. Administrative headquarters in Houston, where president Ben Weichman has his offices, employs 25 persons.

At the 8,000-acre Multi Mineral sodium-lease tract, a handful of workers are engaged in resource evaluation and minor construction activity. By the end of 1982, that number should climb to 112 workers. At its peak, employment will be 440 persons—a relatively small number compared to oil shale, since sodium operations consist primarily of mining, rather than mining and processing.

In Grand Junction, senior vice president of operations is Hal Aronson. Community impact analyst is Dave LeMoine, a Rifle resident and former school teacher. Drawing up a comprehensive socioeconomic impact-mitigation plan is manager of community affairs, Bob Demos, the former director of the Colorado West Area Council of Governments.

The plan is to be submitted in October as part of Multi Mineral's application for a special-use permit from Rio Blanco County. "Joint corporate/community solutions" to growth problems are being sought by Multi Mineral, Meredith says. LeMoine has spent 2 weeks interviewing local officials in each of the three communities likely to feel the greatest impact from Multi Mineral's operations: Meeker (45 miles from the sodium

tract), Rifle (50 miles) and Rangely (80 miles). His interviews with community leaders have resulted in lists of mitigation alternatives for housing, health care, education, recreation, law enforcement, fire protection, human services, the elderly, local government and transportation.

Examples of community concerns from Meeker as quoted in worksheets include:

—"Seniors would move to smaller quarters, if they were available, (thus) freeing up larger homes for younger newcomers."

—"My rent has doubled in 5 years."

—"What we need immediately is a trailer park."

Among the solutions:

—Energy companies should explore options such as company ownership with a lease/purchase plan for housing employees who stay with the company a given period of time.

—Some secondary workforce housing (for police, teachers, service workers...) should be subsidized, perhaps on a 3-year rotational basis. Then workers would need to find their own housing... No more than 20-25 percent of total housing available should be mobile homes.

These worksheets will form the backbone of Demos' mitigation plan, which will be submitted to the county. Meredith says he'd like the result to be "a compromise of everyone's needs and concerns and the mitigation

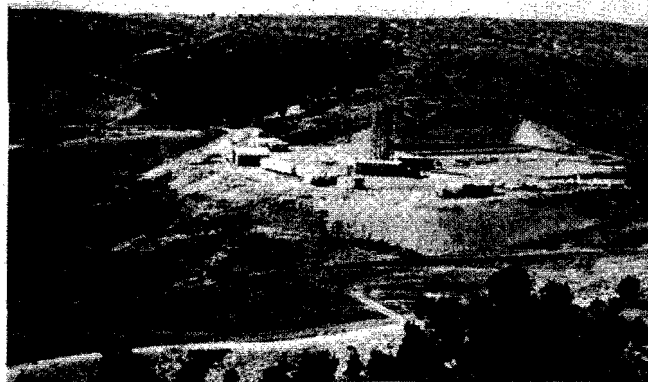
of our impacts." He hopes, in fact, that impact mitigation will follow the pattern established in providing for the Rifle bypass. Funding for the bypass has come about through a series of complex negotiations leading to a solution that incorporates an idea originally suggested by Multi Mineral. The result of the negotiations is that five oil shale projects—Cathedral Bluffs, Colony Shale Oil Project, Multi Mineral Corp., Rio Blanco Oil Shale Co. and Union Oil—will cover the \$589,000 shortfall in funds. (See related article on p. 2.)

While Multi Mineral is helping to solve transportation problems—including a \$200,000 commitment to the Rifle bypass and a \$15,000 contribution for maintenance of the Piceance Creek Road—local citizens have said that transportation problems are still plentiful. Again, quoting from the Multi Mineral interviews with local officials, "Concerning the Piceance Creek Road, we have 1,000 cars per day traveling a road whose width can only safely carry 650 cars per day."

A final comment from the interviews might sum up general community and corporate concerns:

"Hopefully, we won't lose or give up all the cheap and effective informal methods in which people watch out for themselves and each other." □

Multi Mineral's research facility on a 2,330-acre tract known as Horse Draw, 35 miles from Meeker.



Vignette



Oregon Trail Vigor Spurs on Commissioner

Gauging impact—Mesa County commissioner Maxine Albers says state, federal government and industry have consistently underestimated significance of secondary energy impact.

"Secondary impact. . . ." Those two words come frequently from the lips of Mesa County commissioner Maxine Albers.

She is talking about the new public services required of the shale region's most populated county (81,000 in the 1980 census), where airport and hospital, schools and roads are rapidly being expanded. The impact is termed "secondary" because energy development is actually occurring in neighboring counties, not Mesa. But Commissioner Albers contends the term "secondary" is misleading, since, "We in Mesa County are feeling the impact first. We're gearing up to serve the people and businesses that are moving into the region."

Documenting the fiscal impact of this growth has been a Herculean task, and Albers has spent her 7 years in public office looking for the right scales with which to measure it. Says Pat Gormley, president of Mesa Federal Savings and Loan in Grand Junction and member of numerous community boards, "We've tried time and again to identify secondary impact and to quantify it. Maxine literally drags you kicking and screaming back to our problem. She says you can walk down the street and see it but you can't hand it to (anyone) in a package."

Helping tackle the problem has been a "kitchen cabinet" of people who Albers called upon because they "make things happen" in Mesa County. This group has advised all three county commissioners on specific approaches to growth problems. For instance, they helped select a planning firm to investigate impact in Mesa County; Gary Energy is providing a \$50,000 grant, to be matched by \$100,000 from government and private industry. The group is charged with unearthing these matching funds.

Western Colorado pioneer

Albers has lived most of her life in rural Colorado. Born in Carthage, MO, she moved with her parents at the age of 3 to Denver, and 1 year later to Moffat County where her parents homesteaded. She later married Ted Albers, a native of Western Colorado, and there the Alberses have lived since 1964, except for a 2-year absence.

Since her appointment to fill a county commission vacancy in 1974, Albers' claim to office has been hard-fought. She won a six-candidate primary in the general election to fill the unexpired term of the previous commissioner, then ran in 1976 for a 4-year term. In 1980, she faced both primary and general election challenges, and won by comfortable margins after waging vigorous campaigns.

Recognized statewide, Albers has served as chairman of the Regional Council of Governments and is in line to assume the presidency next January of Colorado Counties, Inc., representing commissioners in 62 of the state's 63 counties.

While she uses the words "secondary impact" most frequently, her favorite theme is "cooperation." She says, "We don't have a lot of clout unless we find innovative ways of working together with each county, with industry and with government."

She has sought to hammer out an agreement with neighboring Garfield County whereby special use permits granted to Union Oil Co. and other major energy projects that affect Mesa County will include impact mitigation help for Mesa, even though the projects are located in Garfield. Albers says the Garfield County commissioners have been most cooperative—they face a similar position from oil shale proj-

ects located in Rio Blanco County.

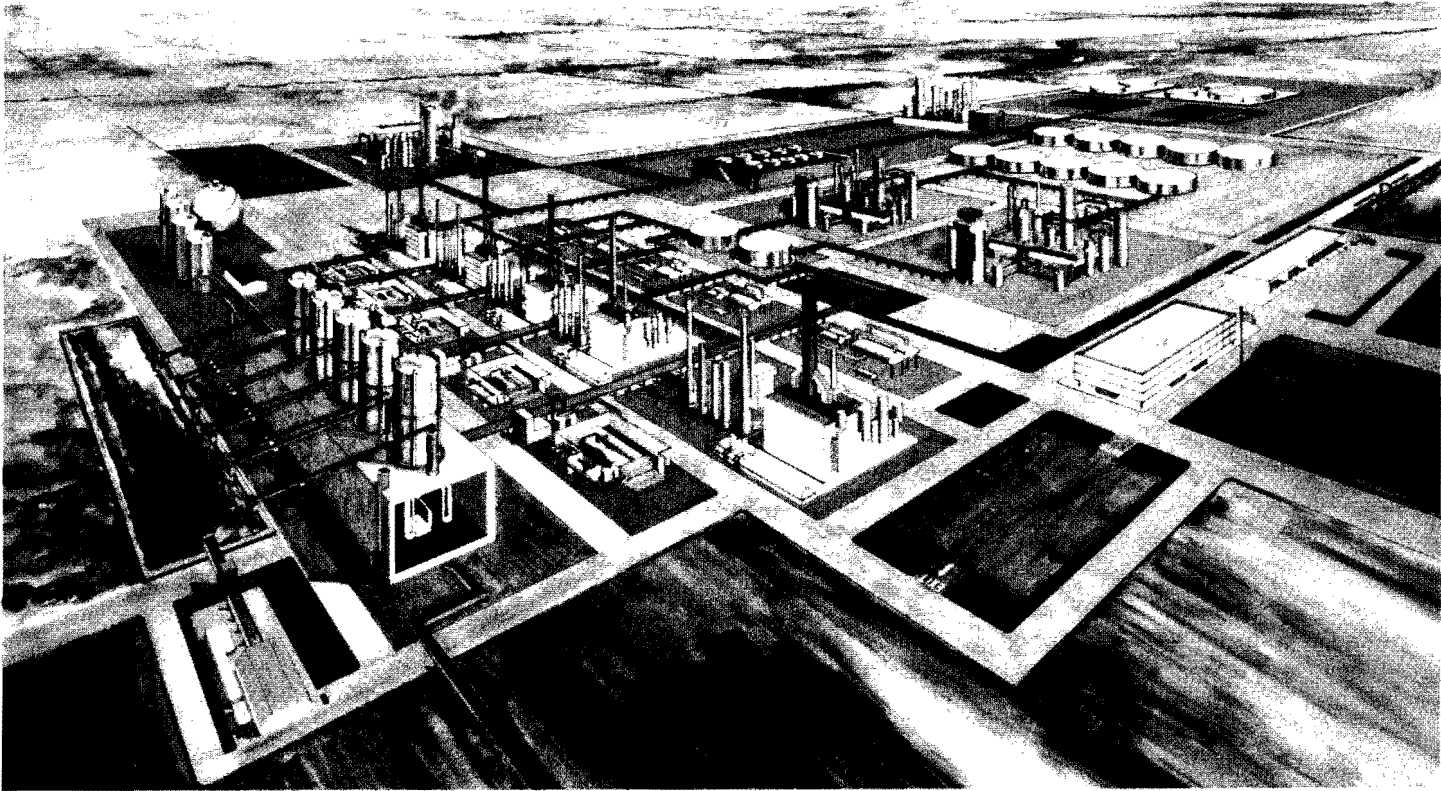
Supplying services

Major services that Mesa County provides for the energy-growth areas include housing and transportation facilities for oil shale workers and office headquarters for energy companies. The Walker Field Airport in Grand Junction shuttles energy employees throughout the area; the airport authority received \$3.96 million last year from the state's Oil Shale Trust Fund for expansion—an appropriation crusade spearheaded by Albers.

One route to local cooperation that Albers and her kitchen cabinet have fostered is an informal organization known as AIM, Action in Mesa County. Representatives from the three largest taxing entities in Mesa—the county, city and school district—coordinate their plans. A major AIM project has been a park at Chatfield Elementary School, located in a high-growth neighborhood; the county contributed \$90,000 to provide water, a sewer system, a sprinkling system and a lawn, and the city is to operate recreational activities at the park, located on school district land.

Albers says the long days in public office—often starting with a breakfast meeting at 7:30 a.m. and continuing through an evening meeting ending at 9 or 10 p.m.—have been rewarding. She relishes "the privilege of being in a position where you learn so much."

Observing her rigid work schedule and her tenacity in public office, Gormley says Albers' strength is "almost a pioneer character. . . the kind of determination it must have taken to shove those covered wagons across the Oregon Trail." C.E. □



Artist's concept of a commercial HYTORT plant for converting Eastern shale to oil.

A Look At

Rising Star in the East:

Today, with the spotlight shining on shale development in the Western part of the country, many people aren't aware of another shale source that's waiting in the wings. Eastern oil shale, formed during the Devonian and Mississippian geologic periods, is the older sister of the younger Eocene-period shale found here in Western shale country, and some experts believe that it is time for her to make an entrance onto the energy-development stage.

Eastern shale—unlike shale found in the Green River formation in Colorado, Wyoming and Utah, which is actually marlstone—is a true shale. The shale is siltstone, which is a textural term that indicates the rock is composed of very small particles and has a high quartz content. Some deposits contain recoverable crude, while other, deeper deposits contain tightly bound natural gas. And although it may be referred to by many names—New Albany, Ohio, Sunbury—it's all the same rock. The label used simply indicates the area where the shale was first located in a particular region.

Shales formed during the Devonian and Mississippian ages are marine shales created from debris collected beneath an oxygen-starved sea. Because of the lack of oxygen, normal decay of the organic deposits did not take place, so the resulting shales are black in color.

Although Western and Eastern shales contain approximately the same amount of carbon—some 13 percent—their hydrogen content is very different. Because Eastern shale has less hydrogen than her Western sister, it is more difficult to extract crude oil from the rock using conventional recovery methods. However, several factors make up for this.

Shale, shale everywhere

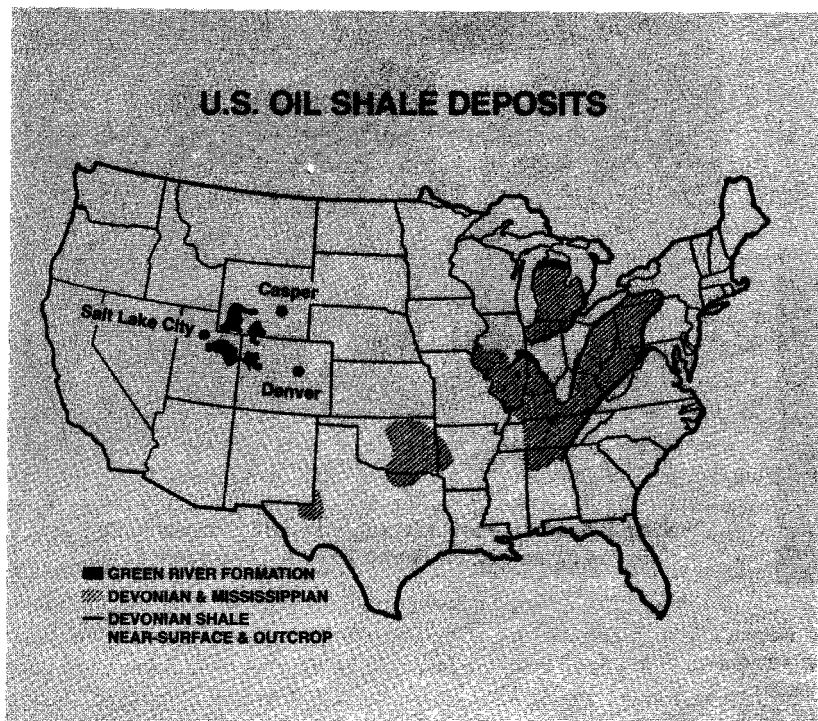
Current surveys indicate that a large section of the Eastern United States is underlain with Devonian and Mississippian shale. Furthermore, a great deal of the resource is located in outcrop areas—areas near the surface and easily accessible to mining. Much of this outcrop is in Ohio, Pennsylvania, Indiana, Tennessee and Illinois, and the

most promising areas for development are Kentucky, Southern Indiana and Southern Ohio. According to Don Pollock, a geologist with the Institute for Mining and Minerals Research at the University of Kentucky in Lexington, "The outcrop in Kentucky is particularly close to the surface, which makes it a choice area for mining activities."

Not only will mining be easier in the East than it is here in the West, but the water for processing is also more plentiful, and transportation to refining centers is less of a problem. So, with all of these advantages, why has the development of the shale resources in the West upstaged development in the East?

Economics and . . .

"In the 1860s," says Pollock, "people were beginning to use shale for fuel in Lewis County, KY. However, when liquid crude was discovered in Pennsylvania, the rush was on to develop that resource, which was economical to extract and process. Attention was diverted from shale, and up until 2



Closeup of an eastern oil shale outcrop.

Devonian Oil Shale

years ago, shale was only used as fill for road beds. Because of this lack of interest, very little research has been done."

In fact, no one can say for certain just how much shale there is in the Eastern part of the country. The U. S. Geological Survey estimates that there may be between 400 billion and 1 trillion barrels of oil that can be extracted from Devonian shale, but Pollock says it will take 2 years just to complete a resource/reserve assessment in Kentucky.

"As I see it now, development is several years down the road, and there is still a lot of preliminary work to be done. Surveys need to be completed, and mining plans have to be worked up with the Dept. of Energy. Also, the retorting technology has to be further explored. Considering all of these factors, I think development of the shale industry in Kentucky may occur in 2-5 years," says Pollock.

HY hopes

While the geologists are discovering the extent of the resource, others are hard at work on the technology. Phillips Petroleum

Co. and the Institute for Gas Technology in Chicago, IL, have been looking at ways to process the shale, and have some ideas.

Fred Storer, production methods director of oil shale for Phillips, says, "There is a tremendous amount of surface minable resource, so the amount is not a problem. Right now, the price of recovery is high and the technology is limited. However, we think the HYTORT process may be part of the answer."

HYTORT, according to Storer, is a variation of the retorting methods currently being considered for use on Eocene shales. All shales must be retorted, which consists of crushing and heating to extract crude shale oil from the rock. Because Eastern shale contains less hydrogen than Western shale, considerably less crude is recoverable if conventional retorting methods are used. However, the HYTORT process heats the crushed rock in a hydrogen atmosphere, which boosts the amount of crude that can be extracted. In fact, when the process is used, the Devonian shales yield as much crude as Eocene shales—about 25

gallons/ton rather than the 10-12 gallons/ton produced by other methods.

The commercial use of the HYTORT process, however, will not take place for several years. "We expect to start construction of a demonstration plant in 3 years," says Storer, "because you can't scale up to a large operation without an intermediate testing step. The demonstration plant will process 1,000 tons of shale/hour, and will allow us the opportunity to do further development."

Although there is still a degree of risk involved in Devonian shale development, Storer believes the resource holds a tremendous potential. And even though the costs of processing and the extent of the resource are still uncertain, Storer is optimistic. "We think an investment in the development of Devonian shale is worth the risk. The price and supply of crude oil will ultimately determine the timing of development," he says.

So, the career prospects for Eastern oil shale may be getting brighter all the time. People are again taking an interest in her, and that's a start. A.W. □



Waiting in line for the pool to open . . . More recreational facilities are planned by the East Rio Blanco Parks and Recreation Comm.



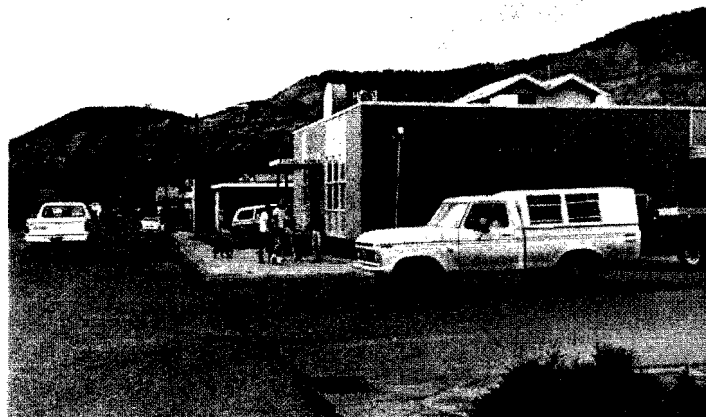
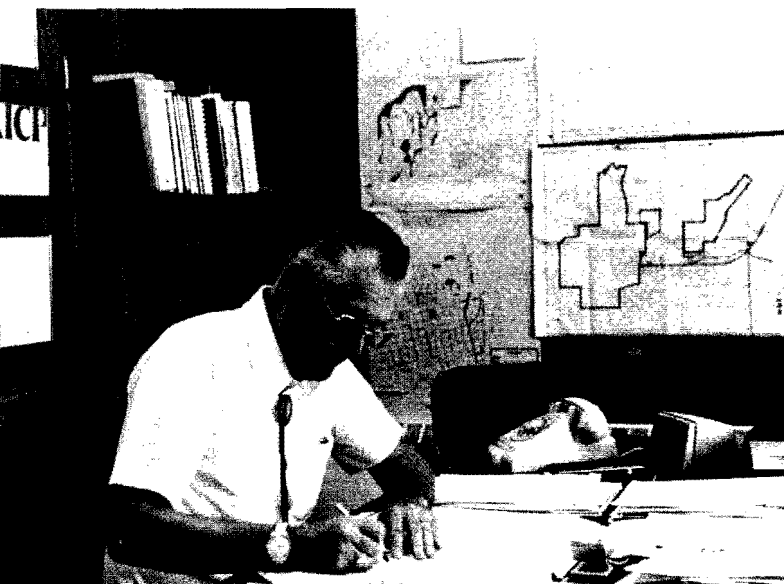
In the heart of Meeker (top), houses are expensive, yet some residents feel that townhouses and condominiums destroy their single-family neighborhoods; the Fairfield Center (left) houses a library and meeting space for 500 persons, as well as the chamber of commerce; town manager Frank Freeman (bottom), touts the Western, small-scale character of downtown Meeker.

Community Profile

Meeker's Growth Plans Proceed with Caution

By Carol Edmonds

Meeker will be "big time," according to one resident, when it gets its first stoplight, possibly at this intersection, known as Kilowatt Corner.



The town of Meeker has no stoplight, no supermarket, no theater, no interstate highway and no McDonald's. But, the town's 2,700 residents can enjoy rainbow trout from the White River, elk and deer in the White River National Forest, cattle and sheep on the green plateaus, and guest ranches on the Sleepy Cat Trail and other nearby hideaways.

The town itself offers spacious, wide streets, a city park on the White River, merchants who are proud that their stores are under separate roofs rather than a sprawling mall, and a Western character that is well portrayed in the log-cabin White River museum, once an army garrison.

One of the best times in Meeker comes each July 4th when the town hosts the oldest annual rodeo in the state (held each year since 1885) and re-enacts the "Meeker Massacre," the battle between the unpopular Indian agent Nathan Meeker and the Utes. After that bloody event in 1879, the Utes were driven from Colorado and the town established itself as a cattle and ranching area.

It is a pastoral setting just 20 miles west of the Flat Tops Wilderness Area. Ranchers still run sheep down Colorado 13 on the perimeter of Meeker. The town's wide streets and wholesome, established look sometimes seem made for a scene from "The Music Man," but in fact Meeker is anything but a sleepy, bucolic town.

Housing hindrances

Northeast of shale country, Meeker is close to Cathedral Bluffs Shale Oil Project (federally leased tract C-b), Rio Blanco Oil Shale Co. (tract C-a), Multi Mineral Corp.'s land and Northern Coal Co. operations. Town population grew at the rate of 9 percent between the 1977 and 1980 census, but further growth has been hamstrung by the cost of housing. Yet Mayor Claude Shults is sure the boom is coming and that Meeker isn't building fast enough, in contrast to Colorado shale country towns such as Rifle, Parachute and De Beque. He states, "Here we are in the heart of it (shale country). We should be going the fastest and we're going the slowest."

The mayor knows oil shale fortunes wax and wane; he recalls 1928 when he used to spend summer vacations "with other high-school kids digging oil shale assessments on the rimrocks above Grand Valley." But oil shale offered him no long-term job. Instead, Shults worked in a car garage, a tourist business and as an oil-field contractor; his first love was his ranch below Meeker. Shortly after he sold his ranch 8 years ago, "I got into this mayor business." He hadn't planned to run for office, but he left town for a fishing trip and when he returned, "I was on the ticket." Since then, he's been elected twice as mayor, and he's done less fishing and more "mayor business," for which he is paid \$70 a month.

Heeding Shults' concern that the town isn't ready for an oil shale boom, town manager Frank Freeman, hired 1 year ago, has encouraged the town council to adopt new growth-management ordinances and employ adequate technical and professional personnel to manage future growth and development. To house additional staff, an \$11,300 remodeling project is scheduled for city hall.

Typical of the town's growth pains has been an antiquated billing machine, coupled with a large volume of new water accounts. A few months ago Freeman had to decide between billing water customers or paying the town's creditors on schedule, since there wasn't time for the machine to handle both tasks. He chose to collect first and pay later, and the town is currently considering buying a \$40,000 mini-computer for modern financial management.

Water has been a major town concern. After retaining water counsel Lee Leavenworth of Glenwood Springs, the town adopted an ordinance requiring new housing developments to either replenish any water they will need or to pay \$300 per single-family dwelling unit, so that the town can purchase sufficient water rights.

Also recently hired by the town are a professional planning consultant, Vince Porecca; a full-time parks and recreation director, Bill Mecham, via a Dept. of Energy grant; an engineer, Gordon Bruckner, of ARIX Engineers in Grand Junction; and a community-development technician,

Gerald Wilson. With this "growth-management team," Freeman has been advising the council on how to gear up and plan for future growth and development.

'Almost too big'

To house this growth, several subdivisions have been proposed. The largest is Meeker Terrace, a planned-unit development for 16,000 persons, more than five times the town's current population. Says Mayor Schults, "It's big—almost too big—an outfit for a little town to comprehend."

The town is annexing the development's 1,400 acres, northeast of Meeker and next to the airport on both sides of Colorado 13. The developer, Bar 70 Enterprises, a Colorado corporation, plans to begin construction next spring, according to Phil Ray, executive vice president. Single family homes, condominiums, townhouses, apartments and a few mobile homes are planned; 40 percent of the development will be open space. And Rio Blanco Oil Shale Co. has also purchased 107 acres adjacent to Meeker Terrace to provide housing for the shale company's workers.

Looking to the needs of "local people who could be pushed out by energy economics," the Meeker Housing Authority is planning a 36-unit project, according to its chairman Emma Lou Frisby. Located in three different areas of town, the project will provide federally subsidized housing for 18 senior-citizen units, 15 townhouses and 3 single-family units. Construction won't start until interest rates decline, she says, and once built, "It will alleviate today's needs, but tomorrow it will be a drop in the bucket."

Holding back on hospitals

While Meeker leaders plan for tomorrow's boom, they all acknowledge the delicacy of deciding when to break ground for any capital improvement, public or private. The 17-bed Pioneer Hospital, with its 25-bed nursing wing, is characteristic of the planning quandry. Hospital administrator John Osse says the hospital is "a good facility for a town of 3,000," but he thinks the need could jump from 17 beds to 90 beds

by the year 1995. One proposal is an intermediate-sized hospital of 40 beds, which may be located at a new site. Osse also talks enthusiastically about adding other hospital services, including industrial-health programs for the burgeoning mining community. Unlike many small towns, Meeker hasn't had to scrounge for the services of a physician, since there are two doctors in town.

When, how much and where to build are also questions that merchants are asking themselves, according to Meeker Chamber of Commerce president Jim Calhoun. He says downtown businesses have added some new fronts and made other minor improvements, but most of the downtown has changed little during the past 5 years. Both he and city manager Freeman talk about preserving the Western character of the downtown area—its spacious, uncluttered streets, the attractive sandstone of the courthouse. While Calhoun dislikes the homogenous shopping mall of big cities, he points to a current problem that helps stimulate malls; crowded parking in the downtown.

While brick and mortar for private and public development are the most visible needs, just as pressing is how to gauge and answer human-service needs. Laurel Kubin, chairman of the county's Human Resource Council, reports staff shortages in such areas as mental health, law enforcement and public health. To marshal community resources to meet these and other requirements, she has started a monthly "community update luncheon."

Meeting at "Kilowatt Corner" in the White River Electric Assn. building, community service groups from Boy Scouts to Lions Club, developers, merchants, government representatives and what Kubin calls other "nitty-gritty organizations" report on their needs and programs. She says the exchange of information plants the seeds for solutions, and it helps each entity to realize that "Nobody's problem is bigger than anybody else's."

So, although perplexed by an uncertain growth rate, Meeker officials nonetheless seem to be trying, in the mayor's words, "to get off center." He advises his fellow townfolk, "I've seen oil shale start and stop. This time, there's no stopping." □

Yo-Yo Projections Upend School Plans

The grade school, intermediate school, junior high, high school and unique two-teacher Rock School in Meeker District RE-1 are a microcosm of the planning quagmires facing potential boomtowns. With one hand, Bob King, superintendent of the school district, must scrounge for every dollar available for the projected growth, but with the other hand he must figure why district enrollment hasn't skyrocketed according to earlier projections.

The district had anticipated an enrollment surge this fall—from last year's 900 students to 1,467 students. Now King is predicting enrollment will be closer to 1,100 students. Why? Would-be Meeker residents can't afford housing, particularly home ownership, and energy projects just haven't grown as fast as company officials thought they would. King says, "I'm sure not going to stake my life on any of these projections." Still, the school board has begun planning for what it sees as inevitable expansion needs—based on projections indicating enrollment is likely to quadruple in the next 5 years.

King reports that the school board has tentatively decided that no one school's enrollment should exceed 500 students. Another board decision, a very firm one, is to seek capital funds from the Oil Shale Trust Fund and other sources unrelated to the property tax.

The school district is also participating in a project to build a new city/county/fire-district complex in a two-square-block area where the courthouse and grade school now stand. The grade school, which is in a heavy-traffic location, would be vacated to make room for the government complex. First phase of the project will produce detailed plans, estimated to cost \$376,300. Budgeted costs for the 4-year project amount to an additional \$6.18 million, all from the state's Oil Shale Trust Fund. Potential sites for the new grade school were spotted in the

northern part of town, but growth in the northwest has stimulated some citizens to push for a school there.

As for additional school construction financing, one energy company has asked King for an estimate of capital outlay cost per student. Then the company may seek to prepay taxes or otherwise mitigate the capital costs imposed by new students moving in with oil shale workers.

King also is encouraging energy companies to provide a percentage of the housing costs for teachers and other local infrastructure required by the energy growth. He points to the crunch teachers in the district already are facing when they try to buy housing. Meeker schools have low staff turnover, but some teachers who have been offered jobs have declined because of expensive housing.

Meanwhile, King must cope with more immediate problems—such as crowded bus routes as students are transported over long distances on narrow country roads and state highways. As energy developments increase traffic on the Piceance Creek Road, some bus drivers have quit their jobs rather than face motorists' erratic driving on the winding road.

Perhaps one of the most interesting results of growth in the school district will be the impact on Rock School, located 2 miles from federal tract C-b on the Piceance Creek Road. The two small buildings that are Rock School serve some 25 students in grades kindergarten through 8—somewhat akin to an old-fashioned country school.

Meanwhile, King continues to wrestle with yo-yo planning figures in what he points out has always been a stable, established community ("I've been here 20 years and I still don't feel like a native," he grins). And, he adds, "I'm glad we haven't been able to afford to 'get ready' according to the projections of the past." □

Birds Gotta Fly, Fish Gotta Swim

By Jonijane Paxton

Can you name a single soul who wants to see the end of the American bald eagle? It is, after all, our nation's symbol, signifying freedom with dignity.

But the humpback chub? Who cares about the humpback chub?

In actuality, lots of people care about the humpback chub, as well as the other endangered species that occur in the shale areas of Colorado and Utah. And people should care, because, through no fault of their own (as far as can be determined), these several species are being endangered as a result of manmade events. Thus, the state and federal governments have made laws and regulations to protect these species, and woe be unto the person or company that flouts these rules.

Generally speaking, shale development does not singly have an impact on the endangered species found in the area. However, it must be considered in concert with other forms of development that are occurring, as well as the effects of population increases. Thus, this article will discuss the species themselves, the laws that govern their protection and the steps being taken to protect the species. Additionally, the focus is on the endangered animal species, although plant species can also be designated as threatened or endangered.

Named to the list

Listing an animal as endangered is done by the Secretary of the Interior, following research by the U.S. Fish and Wildlife Service.

By definition, an endangered species is "Any species which is in danger of extinction throughout all or a portion of its range." In contrast, a threatened species is "Any species which is likely to become an endangered species within the foreseeable future throughout all or a portion of its range." Creatures designated as either threatened or endangered are afforded protection under the law, and it is incumbent upon the Fish and Wildlife Service to monitor the threatened species in order to determine whether, or when, they should also be placed on the endangered list. (This article concentrates primarily on the endangered species, since they could more immediately affect development plans.)

One federal list covers the entire country, but the determination must be made state by state as to whether a particular species is present there. A state may also keep its own list of endangered species (although some states classify such species as "rare" or "sensitive") and this will generally include all the federally listed species, plus any others that meet the criteria established by state law. According to Tom Lytle, wildlife biologist for nongame and endangered species, Colorado Dept. of Wildlife, "A federal classification of a species as endangered encompasses its distribution throughout the United States. The tool for the management and administration of the species is the federal law, in this case, the Endangered Species Act of 1973. Then, each state has its own system for manage-

ment of the species—its laws and regulations. These are generally at least as stringent as the federal law. However," he adds, "there is usually a cooperative effort between the state and the federal government on managing the species, and it usually falls to the state to manage it."

Federally listed endangered species found in Colorado include: the bald eagle, the peregrine falcon, the Colorado squawfish, the humpback chub (fish), and possibly the bonytail chub, although Lytle points out that no one is sure whether there are any of the latter chub left in the state. He says, "We have been conducting work for several years studying these species and no bonytail chub have been seen in Colorado. This does not mean that they have become extinct; rather, the term is 'extirpated,' which means 'locally removed.'" Lytle notes that there have also been unsubstantiated reports of sightings of blackfooted ferrets, which are federally listed. The whooping crane is also classified as endangered in Colorado, although the bird only uses the state as a "resting place" in its migratory pattern, on its way from its nesting ground in Idaho to its wintering ground in New Mexico.

The Colorado state listing includes all the above species plus the razorback sucker (fish), the Colorado River cutthroat trout and the greater sandhill crane. Lytle says that the state also recognizes the wolverine as endangered, and it is suspected to be present since there have been reports of sightings. Again, though, these reports are unverified.

In Utah, according to Fred Bolwahn, wildlife biologist with the U.S. Fish and Wildlife Service, federally listed species found in the state include all those found in Colorado, plus the Utah prairie dog, the wound fin and Lahonton (fish), and the desert tortoise. He adds, "We don't know of any active nests for the bald eagle or the peregrine falcon, although there may be some nesting activity."

Going, going . . .

Harking back to the law, a species is considered endangered if it is losing its habitat, or according to Bolwahn, it may also become endangered as a result of over-harvesting or any one of a number of human-caused activities. This does not necessarily mean the species is down to a very few in number, although this is true in some cases, such as the whooping crane. Rather, the creature is basically being pushed out of house and home—its breeding ground is being spoiled or encroached upon; its feeding areas are being lost; its normal patterns are being disrupted; and thus, its existence is in danger. The result is, of course, dwindling numbers, even though there may still be plenty of the animals around.

A species is determined to be endangered through research. "For example," says Lytle, "a biologist within a state will have a fair idea of a critter's presence and its distribution, and probably an idea of its population status; and, in most cases, whether its

habitat is being threatened with destruction. Take the bald eagle. It enjoys widespread distribution throughout Alaska, Canada and the lower 48 (states). But Congress had declared it an endangered species in most of the lower 48. This designation hinges on the results of research that studies whether the bird has stable nesting populations and a viable reproductive system.

"In Colorado," he continues, "we play host to a winter population of 600 to 800 birds, but the species is classified as endangered in the state because there are very few nesting pairs—probably only three or four successful pairs in the whole state. Thus, the birds are endangered here, and they are protected from being taken as game or for purposes of interstate commerce. In fact, they are totally protected from anything that might disturb them, and the actual list of prohibited acts is very long."

Through their years of baseline monitoring of environmental conditions on the various sites the oil shale developers in Colorado and Utah have so far found no endangered species directly using the sites as "critical habitat." (Critical habitat is an area on which a species lives, feeds and/or breeds.) According to Jim Morris, also a wildlife biologist with the Colorado Dept. of Wildlife, "We probably won't find any endangered species on the oil shale sites, although there has been an occasional sighting. There is some potential for peregrine falcon nesting up Parachute Creek, where Union and Colony are located, but so far

there has been no nesting activity on these tracts that we are aware of."

The endangered fish species, however, pose a different sort of problem for shale developers, as well as other types of activity. As discussed in the last issue of SHALE COUNTRY, demands for withdrawals of water from the Colorado River are planned by shale (and other) developers, and these increased water demands "increase the chances of impact on the fish," says Morris. He adds, "We're not sure yet, though, whether there will be negative impacts on the fish. We're still doing a lot of survey work and gathering information on the fish."

Lytle goes on to point out that, in Colorado, "Thus far, we are unable to positively identify negative impacts from any single project in Colorado. But if fairly substantial withdrawals from the river occur, we don't know what the cumulative effects will be. I feel the evidence points to negative impacts on the fish, if their habitat is taken away. But," he, too, emphasizes, "we're still in the process of gathering and examining the data on fish, trying to determine what their needs are, mainly for reproduction."

If it turns out that, in a few years, the fishes' habitat is being altered to a dangerous point, could oil shale (and other) development be stopped? There is no answer to that question, since possibly mitigating steps could be taken that would have a less drastic effect on development. The point is, however, that such steps would have to re-



A gallery of endangered fish: the Colorado squawfish . . .



the humpback chub . . .

sult in less drastic effects on the fish, too.

In Utah, as reported last issue, the endangered fish species are having a somewhat more direct effect on shale development, because they have been found in the White River at a point where a new dam has been proposed. The dam would help supply the water needs for federal lease tracts U-a and U-b, as well as other projects in the area. At present, the dam is on hold until at least 1982 while more studies are being done on the fish. According to Bolwahn, in Utah, "A study team has been doing work on the fish to determine more precisely what their habitat needs are. The field work is expected to be done at the end of summer, and the results reported at the first of next year. So we can't say what will happen with the dam until we see the results. When the studies are completed, we will review the data and determine the effects on the fish and what may be done to provide protection for the species.

"If it turns out that the dam site is critical habitat, then its construction depends on whether steps can be taken to replace the habitat or provide protection for the fish. For example, if the lost section of the river is considered to be critical to feeding, rearing or spawning, perhaps the habitat can be replaced upstream or downstream by creating new habitat—by regulating flows, temperature, turbidity . . . or the operation of the dam may be modified to alleviate the changes downriver. In other words, if the habitat can be duplicated or maintained,

then the occurrence of the fish in the river shouldn't have a serious impact on the dam construction," he concludes.

Worth it, or not?

There is, of course, a philosophical question connected with the protection of endangered species, and that is: Why save them at all? After all, if they're going, why not let them go?

Tom Lytle answers: "First of all, we're charged by law to protect these species. I consider myself a professional biologist and I couldn't in good conscience see a critter go down the tube. We're all organisms, and there is a role for each of us.

"But there's another point, and that is that the only reason they're going is because of man. Nothing points to the demise of the creature in nature. Man is the only creature that is not dependent on his habitat, and we simply adjust our habitat to fit our needs. Other creatures can't do that. Over time, they are allowed to adjust, but they do it slowly. When their habitat changes too rapidly, they have no chance."

Bolwahn says: "A lot of people ask that question. My answer is that the species is a part of the natural ecosystem, and I don't feel it is right to lose any particular species, whether it appears to be beneficial to man or not. Somehow, it does play a part in the overall ecosystem. For example, I feel the Colorado squawfish could be a decent gamefish. It was used as food by early settlers, and is reported to be a fairly good

fighter. In fact, settlers referred to it as a salmon. So, even though the species may not appear significant to man, it may prove to have some benefit that we may lose. And if we lost a species, this may be telling us something—we may be losing the habitat for lots of creatures."

There is also the aesthetic question, raised at the beginning of this article. It's much easier to be sympathetic to a handsome bird than to a homely fish, but by law, they all deserve—and receive—the same degree of protection.

Somewhat ironically, the endangered species in shale country, and throughout the United States, are being protected by the same species—human beings—that is imperiling them. While, at the present, the existence of endangered species in the Utah and Colorado shale areas does not appear to be greatly affecting oil shale development, it is a certainty that these animals will be closely monitored as development continues. And it is just as certain that steps will be taken to protect their habitats from the potential ill effects caused by man. □

As this issue of SHALE COUNTRY was going to press, a Denver federal judge had ruled that the declaration designating the Colorado squawfish and the humpback chub as endangered is unenforceable. The reason cited was that the Interior Dept. did not follow the procedures required by law in arriving at its decision.



the razorback sucker . . .



and the Colorado River cutthroat trout.



Darrell Knuffke, executive director, and Pam Oldham, associate director, the Committee on Oil Shale.



Potpourri

Committee on Oil Shale Expresses Industry's Views

Was the oil shale industry for or against the recently passed Colorado bill that OK'd plans to distribute all of the Oil Shale Trust Fund money to Western Slope communities during 1981? Is there any one place to find out how many workers will be hired by the industry during the next few months? And, just who are the sponsors of SHALE COUNTRY, and why are they paying a publishing company to write a magazine?

The answers to these and other questions come from an association of oil shale companies known simply as the Committee on Oil Shale. It was formed in 1963 by the Rocky Mountain Oil and Gas Assn. (RMOGA), a trade group representing interests of the oil and gas industry in the Western states of Colorado, Utah, Wyoming, Nebraska, North and South Dakota, Idaho and Montana. RMOGA's mission, according to its bylaws, is "to promote the discovery, development, production, transportation, refining, conservation and marketing of oil and gas in the . . . region;" to furnish opportunities for open discussion, lawful interchange of information and education concerning all facets of the petroleum industry . . . and generally to foster the best interests of the public and the industry. The Committee on Oil Shale, as a part of RMOGA, shares those goals, but its focus is on oil shale.

Unique industry, unique concerns

Although RMOGA has several committees, the Committee on Oil Shale is unique because it is almost totally independent of the older association. It continues to share office space with RMOGA in downtown Denver's Petroleum Bldg., but the committee has a separate staff and funding.

One reason the committee evolved away from RMOGA is because oil shale doesn't fit the typical oil and gas picture, explains Ted Neptune, a Rio Blanco Oil Shale Co. executive and chairman of the committee's public affairs subcommittee. "The mining aspect of oil shale technology and the fact that most activity is concentrated in a relatively small area—about 16,000 square miles in Northwestern Colorado, Southwestern Wyoming and Northeastern Utah—make our concerns quite different from the oil and gas industry as a whole," he says.

Currently, the Committee on Oil Shale is composed of 29 member companies, ranging in size from a one-man consulting firm to Exxon Company, U.S.A. Nineteen of these companies are "Class A" members—generally, the larger companies that are more heavily committed to oil shale development. Class A members pay full dues and have one vote per company. Class B members pay a lesser amount, and Class C

members contribute nominal dues. The committee has six people on the payroll—executive director Darrell Knuffke, associate director Pam Oldham, two part-time staff members, Jess Cooper in Washington, DC, and Jim Peacock in Salt Lake City, and two secretaries.

Neptune's work for the Committee on Oil Shale, however, is unpaid. He is one of nine subcommittee chairmen who are employed by various oil shale companies and volunteer their time to the committee. In addition to Neptune's public affairs subcommittee, there are subcommittees on, for instance, the environment, state legislation—in both Colorado and Utah—and community affairs.

As an example of a subcommittee's activities, the community affairs subcommittee meets once a month on the Western Slope. The meetings have two purposes, explains Bill McDermott of Occidental Oil Shale, Inc., and chairman of the subcommittee: (1) for members to discuss specific issues concerning communities affected by oil shale development; and (2) to provide a forum for groups that wish to express their views and needs to industry. The West Garfield County Recreation District has made a presentation to the subcommittee, says McDermott, as has Grand Junction's St. Mary's Hospital. He reports he frequently

receives calls from "people who want to get the ear of industry."

In the legislative corner . . .

Another area of activity for RMOGA's Committee on Oil Shale concerns testifying and lobbying for certain pieces of legislation. However, the fact that all the committee members are interested in shale development does not necessarily mean they will agree on all legislative issues. A case in point: The committee will probably not have a consensus on Congressional proposals involving additional leases and size of leases, says Neptune. Individual companies might testify for or against the legislation or suggest revisions, but they would do so independent of the committee. On many other issues, however, the committee has reached a consensus. Among its positions:

—In favor of federal legislation to give the Interior Secretary authority to lease additional off-site public lands for surface use in connection with the federal tracts. This particular piece of legislation, notes Neptune, is also supported by a Colorado state legislative resolution.

—In agreement with the recently passed Colorado bill that allows complete distribution of Colorado's share of the Oil Shale Trust Fund money during 1981; this bill was also lobbied for by local governments in affected areas.

—In favor of Colorado state legislation passed in May that amended the existing law on prepayments of severance taxes. Under terms of the bill, local governments and the companies may enter into voluntary agreements that allow the companies to receive a credit for prepaying severance taxes. "We think this should help in the long run, to get front-end money to the communities. There's a gap between the time they need money for expansion projects and the time when taxes from industry will supply enough revenue to take care of the ongoing costs of energy development," notes Dan Johnson, a Chevron employee and chairman of the state legislative subcommittee.

—In agreement with a Colorado state bill, which puts a cap on the amount of federal mineral-leasing royalties that go back to the state and makes 50 percent of the excess available to affected communities. Johnson says that Colorado Counties, Inc., an asso-

ciation of county commissioners, has reported that this approach should add \$18 million to communities for energy-impact assistance over the next 5 years.

—In support of legislation that will protect the habitat of threatened and endangered fish species in the Colorado River and yet allow developers to withdraw water from the river.

Reports, studies, projections

RMOGA's Committee on Oil Shale also prepares a number of reports useful to shale country residents, all of which are distributed free of charge to interested persons. It issues "A Quarterly Workforce Projection," which is based on employment trends anticipated by oil shale project managers. The reports are intended to serve as planning tools for local governments wrestling with shale-related growth. The most recent report, for example, predicts that more than 900 jobs will be created on Colorado's Western Slope by the end of this year. Most of these jobs, however, will be filled by local residents.

In addition, the committee prepares a "Shale Oil Status Report." Updated twice yearly, the publication summarizes the history and technology of the shale projects and includes a brief report from participating companies.

A committee-sponsored study that has received a great deal of attention on the Western Slope is "The Oil Shale Tax Study," prepared by the accounting firm of Peat, Marwick, Mitchell & Co. in 1980. This study presented scenarios of the future and made general revenue and capital needs projections. However, the report met with opposition, most notably from Colorado's Western Area Council of Governments, which felt the study erred by not adequately consulting with local governments for their opinions on the revenue/capital needs situation. In reply, Johnson at the Committee on Oil Shale notes: "The study attempted to look generically at the oil shale projects to get a better idea of the revenues they might generate. We think the direction of the study provides some helpful information, and we are now re-examining it to try to address the concerns voiced by local government officials." Knuffke, executive director,

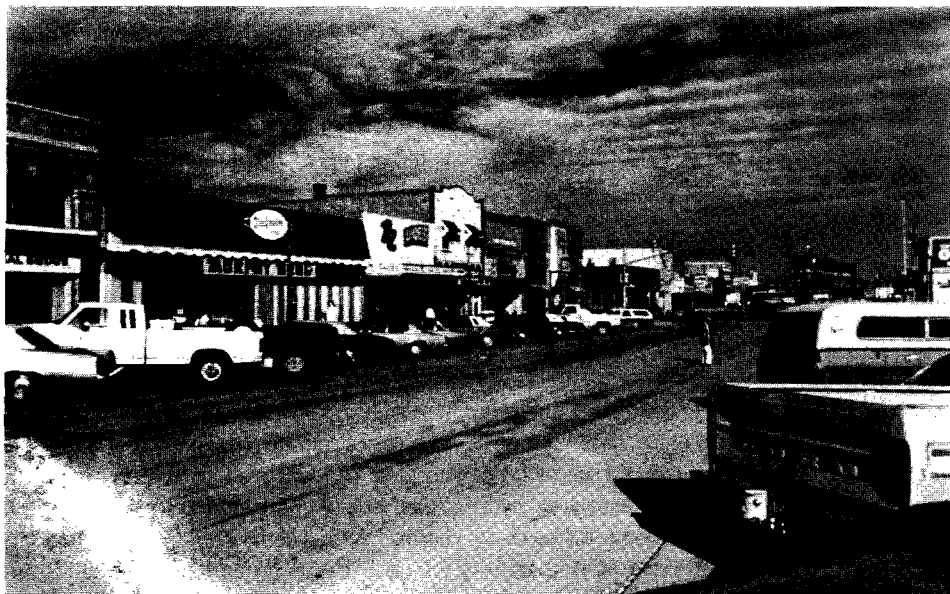
agrees with Johnson's assessment of the study's merits. "We want to answer people's objections to the study, while salvaging the valid information it contains."

Knuffke, a native of Craig, CO, provides a non-oil-industry perspective to his present job. After a number of years in the newspaper business, including stints in the mountain communities of Idaho Springs, Breckenridge and Gunnison, Knuffke went to Washington, DC, first as press secretary to former U.S. Sen. Floyd Haskell and later as an Interior Dept. employee. Commenting on his current position, Knuffke says: "One of my major goals is to help bridge the needs of industry and the legitimate concerns of shale country communities. As a product of small Colorado towns—I grew up in Brighton and newspapered in other small towns—I think I have a good idea of what local governments want and expect for their communities. In fact, I share their views. And I'm enthusiastic about my job because I see the oil shale companies committed to the same kinds of goals."

Knuffke points to SHALE COUNTRY magazine as a major industry effort to bridge gaps in perceptions and information. SHALE COUNTRY is sponsored by the 11 committee members most active in shale development at present. The magazine is researched, written and published by Mountain Empire Publishing in Denver. Commenting on SHALE COUNTRY, Neptune of Rio Blanco says, "We hope it will serve as a clearinghouse for information on oil shale issues in a factual, non-emotional way. It's for everyone who wants to know, from the U.S. senator to the Parachute resident.

"The committee also feels that having an outside publishing house write the magazine makes it more objective. We do have an advisory board to the magazine's editors, but we try to limit our review to technical accuracy and not make editorial changes." As another source of information, Knuffke adds, "People are welcome to call Pam Oldham or me with any questions about the industry (303-534-8261). If we don't know the answer, we'll try to find it. As an employee of the committee, I know I must serve the members, but I also know it is the members' wish that we be responsive to the concerns of shale-area citizens." C.K. □

A Boomtown Revisited



Downtown Gillette has been rejuvenated with growth from energy development.

Gillette, WY, is a town on the move—it has a new hospital and water system, a rejuvenated downtown, a young and increasing population—advantages that should make it the envy of many other communities suffering from lack of economic growth. But Gillette does have an image problem: a reputation as a hodgepodge boomtown featuring transients sleeping on the streets and feuds between local ranchers and coal companies. Such a reputation, residents, government representatives and industry officials say, is just not true.

"I've lived in a lot of different towns," explains Joe Hamner, president of The Carter Mining Company (a division of Exxon Coal U.S.A.), "but my family and I have never enjoyed living in a place as much as we do Gillette. In the first place, it's a young community (the average age is 26-1/2), and it's such an exciting place to live. What are mundane things in another community, such as our new water system, are exciting to us, because we've never had them before."

Balancing the scales

Although most people will admit Gillette is far from perfect, it does show how industry, residents and government can work together to maintain and improve living standards in a community that has experienced

rapid growth. In the 1960s, when oil and gas were drawing energy development, Gillette's population jumped from 3,800 to 7,200. It then increased moderately until coal mines began making an appearance in the mid-1970s. Gillette now boasts a population of 13,000 according to the latest census (which is being disputed as too low by local officials), and Campbell County surrounding the town holds 26,000 residents—up from 13,100 in 1970.

Although coal, and not oil shale, is the largest factor in Gillette's growth, the increasing population and demand for services are similar to the experiences that shale country is beginning to undergo. In both cases, energy development has brought outsiders into communities that have primarily been ranching and agricultural areas. The strain of the old, established pace of life contrasting with the influx of strangers and industry has jarred local residents and governments.

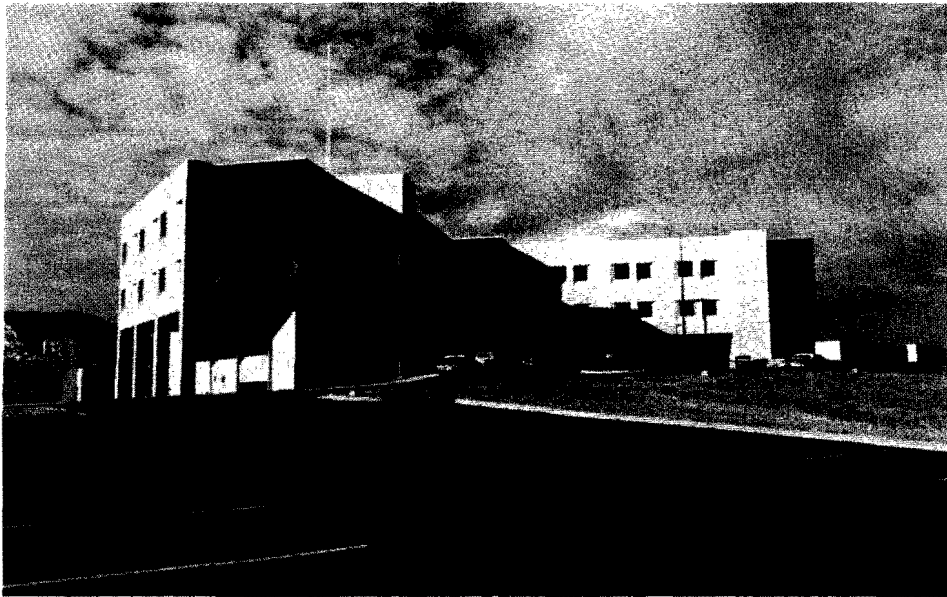
"More is not necessarily better," believes LeRoy Noecker, a longtime resident, businessman and rancher in Gillette. "Before the energy companies came, we were as happy as if we had good sense." But Noecker also emphasizes he is not opposed to the growth he has seen in the county. "We've made a lot of good friends—there've been a lot of wonderful people who have moved into the community." On

the plus side, Noecker has had to invest in a new \$500,000 store, increase inventory and add more employees at his The Boot and Saddle Shop in Gillette. On the negative side, he's seen his independence decrease with the new responsibilities of a growing business. "Sure it means more money," he adds, "and a lot of people are in favor of that. It just depends on what you want."

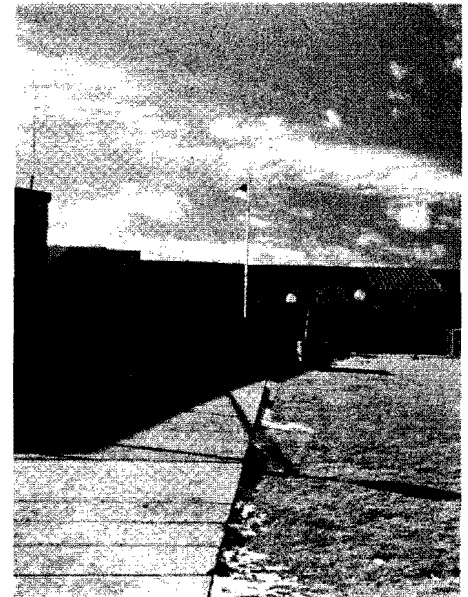
Closing the gap

What many residents and officials do want is a coordinated integration of the older way of life with the increased prosperity that energy development has brought to their region. And despite some rough starts and stops, many residents feel that integration has been made, or at least progress is evident. "When the boom first started, there was a large gap between the local residents and the employees industry brought into town," says Noecker. "They criticized us and we criticized them. But now, we've started changing our attitude, and things are running much more smoothly. We are all trying to work together for a better community."

Adds Joye Bujol, executive vice president of the Gillette Chamber of Commerce, "Sure there was a time when we had people camping on the streets and a lot of needs weren't being met, but this is now a very progressive area. The community is working



Gillette's new hospital provides improved health care for Campbell County.



Campbell County's Recreation Center offers many activities.

well together and we have a lot of things going for us."

In fact, the increased tax base caused by energy growth has brought benefits for both the city of Gillette and Campbell County. The tax revenues have provided a solid base for the school district, allowing it to build an almost completely new school system with a dozen elementary schools, two junior highs and a senior high. Tax revenues have also been used to improve roads and provide other facilities ranging from an enlarged airport to an expanded library.

But the recreation facilities, paved streets, improved drainage system and theaters did not happen quickly, nor did they happen by themselves. It took cooperation, and a lot of it, to get industry, government and residents working together to keep Gillette a pleasant place to live. A recent example is the construction of a railroad overpass that will prevent the tracks from splitting the town. Burlington Northern Railway, the state, Campbell County and Gillette are each paying one-fourth the cost.

The cooperative effort began in 1974 when coal companies joined with the chamber of commerce to form an industry committee. Today, the committee consists of representatives from 12 companies, including most of the coal companies, who help coordinate improvements and services with community leaders in Campbell

County. The committee's efforts involved assisting the city with various drainage projects and supplying manpower and equipment for the improvements. The companies have also loaned planning and engineering expertise to the county and city at no charge. Besides tangible improvements, the committee also sponsors studies of everything from housing to employment to socioeconomic factors. The results of the studies are used to determine needs and project growth, and as a basis to apply for grants and loans.

The first study paid for by the committee is expected to be completed by Oct. 1, 1981. It is a socioeconomic monitoring system that will review annually sources of revenues, employment figures, population growth, housing availability and trends, and just about anything else affecting the quality of life in Campbell County. "We have a lot of hope this program will be successful and will help individual companies and local government entities decide how to respond to needs," says Hamner.

A matter of attitude

But the coordination is not limited to the business and government community. It takes the interest and willingness of area residents to make any community united. The key, Gillette residents say, is to work on developing an attitude of doing as much as

possible for everyone in the area. But people aren't going to be interested in cooperation if they don't have adequate housing or public facilities. "You have to cooperate to get the essentials done, such as housing, streets and drainage, police and fire protection," Hamner says. "If you don't get past that point, it's hard to move along."

Gillette residents do have some suggestions for shale country towns, counties and individuals on how to cope with a rapid increase in growth. "I strongly encourage shale country residents to establish a system of planning and communication early," Hamner says. "It's extremely important to helping industry and local governments determine what the impacts will be and how to deal with them."

Noecker adds, "You need to try and understand the problems of everyone involved and work toward a solution. We all think our own problems are more important than anyone else's, but if you respect everyone's rights, you can solve a lot."

"My advice is as much for the energy companies as for the people," says Gillette Mayor Mike Enzi. "Help encourage your employees to recognize the good qualities of the town they live in. If the newcomers have a good attitude, they will integrate really well. If they don't, then they won't contribute to the community and you won't solve many problems." S.L.P. □

If You'll Permit Me . . .

PERMIT ACTIVITY	
Mesa County (Value of Permits)	Vernal (Number of Permits)
January-May 1980	
\$30,763,575	81
January-May 1981	
\$52,303,555	168

While economists are evaluating the Consumer Price Index, the gross national product and the inflation rate to assess the economy at the national level, if you want a snapshot of local economy, you can look at building-permit activity. Although permit figures indicate either the number of permits issued or the valuation of the proposed construction, they can also relay more information to the astute observer. For instance, building permits provide clues as to the status of the construction industry; employment in building trades; mortgage-loan activity; and the availability of money for construction loans.

Around the nation, building activity is experiencing a slump as a result of record interest rates and tight money. But the situation is dramatically different in the shale-development region of Colorado and Utah. Here, building activity is up in both states; and the type of construction occurring indicates the keen interest in the shale area.

Commercial in Colorado

Mesa County, CO, is experiencing a boom in commercial building, according to chief building inspector Richard Hollinger. "As far as building activity is concerned, we're much higher than the national average. I'd say that Mesa County is among the hot spots in the country. For instance, from January to May in 1980, we issued permits valued at \$30,763,575. In that same period in 1981, permit values were \$52,303,555—an increase of more than 70 percent."

This increase is attributable to increased commercial and industrial development in the county. Energy companies are building

in the area, and related business developments are taking shape. Office buildings are being built to accommodate more staff, and retail facilities are also in the works.

But, while commercial development is up, single-family housing construction is down. "Right now, large developers still have the ability to raise money," says Hollinger. "However, funds are a bit tighter for smaller projects. If money loosens up, we'll see a big increase in residential activity, but presently the funds are hard to get."

Shale development is playing a large role in Mesa County's growth. "The shale industry is having a tremendous impact," Hollinger notes. "Large firms are buying property, and people are moving into the area in search of employment.

"However, all types of energy-related firms are contributing to the boom," he continues. "Oil and gas wells and coal operations are also growing. There is even some talk about a new power plant northwest of the town of Mack. Also, I hear rumors of a new town that will be built west of Grand Junction to house one company's expected workforce. If the economic growth continues, I can foresee tremendous activity in the next 5 to 10 years. Things look pretty promising right now."

Build me a home . . .

Things are just as busy in Vernal, UT, but the character of building activity is a bit different. Because of previous and proposed commercial development, Vernal is now experiencing a boom in the residential housing market.

"Although some of the permits are for

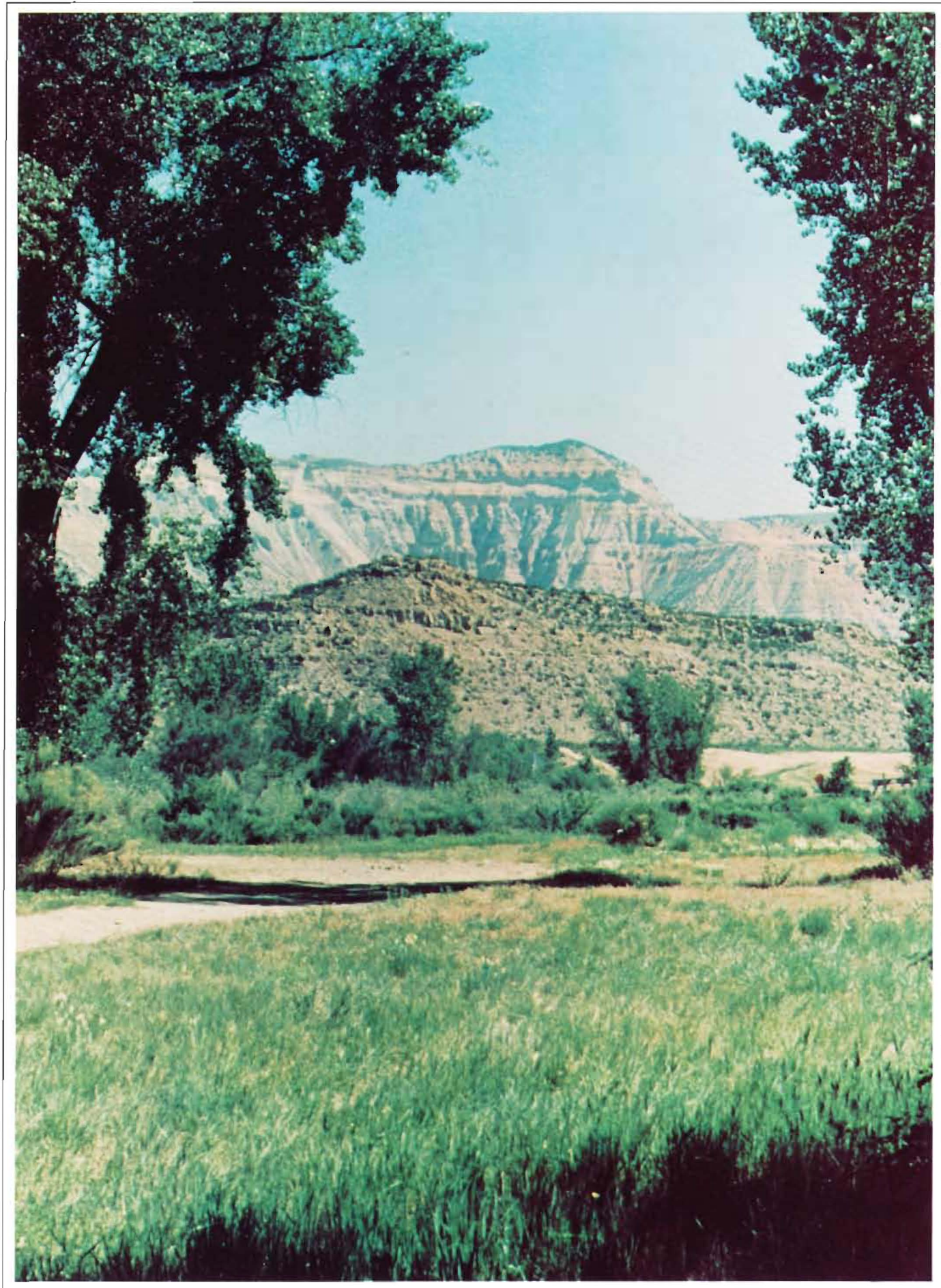
energy-related and commercial construction, most of the permits are issued for housing," says Edna Call of Vernal's building inspector's office. "It seems that at every monthly meeting of the planning commission, a new residential subdivision or mobile-home park is approved."

The extent of the building activity is clearly reflected in the number of permits being issued. For example, from January to May of 1980, 81 building permits were issued. From January to May of 1981, more than double that number—168—were approved.

The primary reason for increased residential construction is that Vernal now has a housing shortage. "When a house goes up for sale, it doesn't stay on the market very long," says Call. "People are continuing to move into the area to find employment, so more housing is going to be needed this year."

However, not all of the building activity is residential. Call reports that all categories of permits showed an increase, and there is a potential for more industrial and energy-related growth in the future. The Moon Lake power plant will be under construction soon, and even more housing will be required to accommodate the workforce.

So, while building activity has its ups and downs around the nation, it is definitely experiencing healthy growth in shale country. Although not all of the activity can be directly attributed to energy development, those industries play a significant role. Observers in the area anticipate continued increases in building activity, and that's good news for area residents. A.W. □



Driving along the road between Grand Junction and Parachute, CO..



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