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Uranium rush: Sparks fly over mining near the Grand Canyon

By Bill Coates

The forces of nature that blessed Arizona with the Grand Canyon also provided high-grade uranium, trapped in nearby layers of rock.

Whether the uranium is a blessing or a curse depends on whose side you take.

Mining companies have taken a renewed interest in the uranium deposits peppering public lands north and south of Grand Canyon National Park. Canadian-based Denison Mines is taking three old and inactive mines out of mothballs. Other companies are buying up existing claims with an eye toward future profits.

The incentive has been the rising price of uranium ore, processed for use as fuel in nuclear power plants. The ore hit a high of $90 a pound in 2007, up from $10 in 2002. Now it has settled to more than $40 a pound, but that hasn't slowed plans to dig it up.

There's a lot to dig out from around the Grand Canyon, says Ron Hochstein, president and chief operating officer of Denison. "These are some of highest-grade mines in the United States," Hochstein says.

What is a blessing for mining companies doesn't inspire the same reaction from everyone concerned with the Grand Canyon's future.

Environmental groups see the mining - if the not the uranium itself - as a curse. They argue the mining operations could contaminate large aquifers situated below the ore bodies. And water from the contaminated aquifers could end up in springs that feed into the Grand Canyon itself, and the Colorado River.

Uranium-enriched water could spell trouble for endangered species that inhabitant the canyon, environmentalists say.

A Sierra Club officer says it could harm another highly regarded, if hardly endangered, species.

"There is the whole issue of millions of people, including those of us in the Phoenix area, who get some of our drinking water from the Colorado," says Sandy Bahr, director the Sierra Club's Grand Canyon Chapter.

Bahr then points to the issue of location.

"It's not just anyplace that we're talking about," Bahr says. "We're talking about the Grand Canyon."

Excess water runs off at a site undergoing uranium exploration.

The environmental groups are not alone in their opposition. Northern Arizona Indian tribes are lining up against mining near Grand Canyon National Park, off limits to mining itself.

The mining companies have supporters as well, including the Republican-controlled Arizona Legislature. This past session, lawmakers passed a resolution (HCM2006) asking the federal government to refrain from passing any new mining limits on lands administered by the Forest Service and Bureau of Land Management.

Battle begins

As the two sides and their allies square off, the fight over mining is taking place on scales large and small. On the large scale, U.S. Rep. Raul Grijalva, a Tucson Democrat, has introduced legislation to stop new mining claims covering a

million acres of federal land flanking the Grand Canyon. It roughly mirrors a July order by Interior Secretary Ken Salazar to withdraw these lands from new mining claims pending the outcome of a two-year environmental review.

On the small scale, at least one lawsuit is in the works. It centers on Denison Mines' plans to start mining at a site known as Arizona 1. The mine was built by another company in the early 1990s, but drilling stopped due to slumping uranium prices. Denison later acquired Arizona 1 along with another nearby mine, the Pinenut.

Both lie north of the Grand Canyon on BLM land in an isolated area of the state known as the Arizona Strip. The Kanab Creek flows just to the east. Arizona 1, if it goes into service, could signal a revival for uranium mining. For now, Arizona has no working uranium mines.

A lawsuit threatened by three environmental groups aims to keep it that way. The Sierra Club, the Center for Biological Diversity and the Grand Canyon Trust notified BLM on Sept. 8 they intend to sue the agency for failing to conduct a new review of the potential environmental hazards posed by Arizona 1.

"The BLM is relying on federal approval for these mines that date back to 1988," says Taylor McKinnon, public lands director of the Center for Biological Diversity.

The 1988 approval stemmed from an environmental assessment. The standard now, however, is an environmental impact statement, a more thorough review.

BLM officials say the environmental assessment still stands. Mining, as planned, wouldn't have harmed the environment then, and it won't now, says BLM spokeswoman Deborah Stevens.

"We haven't found anything that would give any indication that the impact has changed," Stevens says.

But a lot has changed since 1988, McKinnon says. For one, new animals have been added to the endangered species list, including the spotted owl and the Southwest willow flycatcher.

"Additionally, the California condor has been introduced to that area," McKinnon says.

Other endangered species include native fish that inhabit the canyon springs as well as the Colorado River. Environmental groups fear uranium and other metals could get into the water, because of mining activity.

Both sides agree on one thing. Large aquifers lie beneath the ore bodies. But they differ on how mining will affect them.

Karen Wenrich, a geologist, minimized the risk when speaking to a congressional panel at a March 2008 field hearing in Flagstaff. She said the aquifer, which lies 500 to 1,000 feet below the ore body, is protected by an impermeable lawyer of sandstone.

"The water table is deep, well below the level of mining," Wenrich wrote in a paper presented to the panel.

She is retired from the U.S. Geological Survey and worked as a senior uranium geologist for the International Atomic Energy Agency.

Environmental groups, however, say new studies suggest otherwise. For instance, smaller bodies of water known as perched aquifers lie at a shallower level. Contaminated water from them could make their way to the main aquifers through faults and fissures in the rocks, they wrote in their notice of intent to sue.

According to the notice, there is a "potential for reaching groundwater at much lower levels than assumed by the 1988 EA (environmental assessment)."

Aside from groundwater contamination, environmentalists say, flash floods threaten above-ground waste and ore pilings. It's happened before, McKinnon says.

"In 1984, a flash flood swept four tons of high-grade ore down the Kanab Creek into the Colorado River," he says.

If the BLM doesn't respond within 60 days, McKinnon says the groups will file suit in U.S. District Court in Phoenix.

Uranium from odd formations

The uranium can wait. It's been there a long-time, taking hundreds of thousands, perhaps millions, of years to accumulate in odd geological formations known as breccia pipes.

The process is a bit more complicated than Geology 101. Visitors hiking the Grand Canyon might not see the breccia pipes, but they'll certainly notice the different layers of sediment deposited there. Those same layers exist in the plateaus that rim the canyon.

Somewhere deep down, groundwater dissolved part of the limestone layer until it collapsed. The layers above fell with it, forming porous columns of broken rock known as breccia pipe. Over the years, groundwater leached naturally occurring uranium out of the surrounding rocks into the pipe, where the uranium met with more water flowing in from the surface. A chemical reaction helped to precipitate concentrated uranium oxide.

Breccia pipes occur worldwide. But the Arizona pipes are particularly rich with uranium, says state geologist Lee Allison. And there are hundreds of them, perhaps more. They have already yielded an estimated 23 million pounds of uranium oxide, he adds.

On the surface, the breccia pipe shows up as a large circular formation, as much as 300 feet in diameter.

Mining geologists spotted them on helicopter flyovers, Denison Mines President Hochstein says.

“They were looking for these breccia, a fleet of helicopters flying over looking for circular features in the topography,” Hochstein says.

Denison didn’t need a flyover for Arizona 1, an established mine. The only thing between Denison and production is the threat of the lawsuit. As far as the federal and state governments are concerned, Arizona 1 is good to go.

Two other mines, however, are waiting in the wings - that is, the nearby Pinenut Mine and the Canyon Mine, south of the Grand Canyon in the Tusayan Ranger District of the Kaibab National Forest.

The wait was longer than Denison anticipated, as it fought to get aquifer protection permits (APPs) required by the Arizona Department of Environmental Quality (ADEQ). As it happens, Arizona has one of the strongest aquifer-protection laws in the country. The permits are meant to ensure mining operations don’t contaminate groundwater.

Permitting process frustrations

Denison officials chafed at what they regarded as unfair delays by ADEQ officials last year when the agency denied permits for the Pinenut and Canyon mines. Arizona 1 was allowed to operate under a previously granted aquifer permit.

Regarding the other two mines, Denison had applied for what is known as a general permit, instead of the kind of permit granted to Arizona 1, an individual permit.

Among other things, general permits require less paperwork. They can be applied to more than one mine. They’re regarded as permits on a “fast track.” They require containment of contaminated water in areas where trucks and other equipment are washed down, where mining waste rock is stored and where ore is stocked until it’s hauled.

The sites must be lined to prevent water from seeping into the ground.

The permits were denied April 24 in a letter signed by Joan Card, then-ADEQ director of the Water Quality Division.

Denison officials found nothing fast about the agency’s general-permit process, as it took more than a year just to receive the denial. They complained to a joint House-Senate environmental panel in November. The state-level committee was taking testimony during ADEQ’s sunset review hearing, where the Legislature determines whether to extend the life of an agency.

Near the end of a seven-hour session, Harold Roberts stepped up to the microphone. Roberts is executive vice president of Denison USA, based in Denver. In an archived video of the Nov. 12 hearing, then-ADEQ Director Steve Owens is seen sitting behind Roberts, just off to the side.

Roberts did not hold back. He told the panel: “My experience with ADEQ has been one of the most frustrating and disappointing of my career. ADEQ management has been generally uncooperative and, at times, downright disrespectful.”

Owens can be seen shaking his head in disagreement. He later faced the panel and defended the agency’s handling of the permits. He said no other metal mining operations in Arizona, including copper mines, had ever received a general permit. They all operated on the more stringent individual permits.

“Every metal mine facility in the state of Arizona has an individual (permit). The copper mines do, the other mines do. They don’t want to get one for Denison,” Owens said. “We think that under the law, they not entitled to a general (permit), and we’ve made that clear.”

Lawmakers on the committee, however, asked why agency officials allowed the permit process to drag on for so long, if Denison had applied for the wrong kind of permit in the first place.

Card, the Water Quality Division

director, told the committee Denison's permit applications failed to meet a number of technical requirements.

New governor, new leadership

But in the end, Denison got its aquifer permits - some eight months after Owens left the agency, just as then-Gov. Janet Napolitano left for Washington to head the U.S. Department of Homeland Security. Secretary of State Jan Brewer had succeeded her as governor.

Brewer selected Benjamin Grumbles, her environmental policy adviser, to head ADEQ in June. Card has been replaced by Henry Darwin, listed as acting director of water quality.

The agency's turnabout in granting the permits doesn't surprise Bahr of the Sierra Club.

"Under Napolitano they denied them the general permits, and under Brewer they just granted them," Bahr says. "It's pretty clear. It's pretty clear they wanted to get these permits out and there was political pressure to do so."

Environmental Quality officials, however, cite a different reason. Denison reapplied for the general permits. Only this time, the company went beyond the usual requirements, says Patrick Cunningham, ADEQ deputy director.

"We added to those permits three big conditions that come from the individual permits programs," Cunningham says.

Cunningham served as deputy director under Owens as well, in addition filling in as interim director until Owens' replacement was named.

The conditions include testing groundwater for contamination from uranium and other metals, having the finances to close the mine when operations end and holding public hearings on the application.

Bahr says only one hearing was held in Fredonia, near the Utah border.

In any case, Brewer's administration marked a new direction, Hochstein says.

"When Mr. Owens left, that's what really pushed the change at DEQ," he says. "The permits were denied for no apparent reason before, and after that, we were able to work with DEQ."

The new applications required only slight modifications, he says.

"Really, they were no different than the ones that were denied," he says.

Neither Owens nor Card could be reached for comment.

The last piece fell into place for the Arizona 1 mine on Sept. 1, when ADEQ granted an air-quality permit, required for dust control.

If the price of uranium holds steady, Arizona 1 could be the first of many, says Roger Clark, air and energy director for the Grand Canyon Trust in Flagstaff. It's not something he's excited about.

"More than 10,000 claims now exist around the Grand Canyon for uranium," Clark says. "That number increased substantially last year when the price of uranium shot up."

Sorting through claims

Whether these claims will hold up in light of Interior Secretary Salazar's decision remains unsettled. In what's know as a segregation order, Salazar banned mining on any new claims, pending an environmental impact statement on more than 600,000 acres of BLM land, in addition to some 360,000 acres in Kaibab Forest's Tusayan District.

What makes a claim legitimate hinges on phrases such as "valid existing rights." The definition is not easily pinned down, but roughly refers to whether a site has proven mineral of value.

There's something under the ground and it's worth going after. When it comes to uranium near the Grand Canyon, mining companies already are convinced. Some now are buying up existing claims, including the London-based exploratory company VANE Minerals.

The company has proposed exploratory drilling for uranium on 24 sites in the Kaibab Forest, says Jackie Banks, a Kaibab National Forest spokeswoman.

On its Web site, VANE announced the purchase of 370 uranium claims on the Arizona Strip, including 75 "breccia targets."

Environmental groups, however, say these claims are outdated. A claim made in the 1980s, they say, doesn't mean it was valid at the time of the Salazar segregation.

"You still have to validate those claims," Bahr says. "You still have to indicate that you have a mineral of value."

Denison officials say their claims are valid. They've been paying an annual fee on them.

Public-land agencies will be

weighing in the matter, Banks says.

"Our Forest Service mineral examiners are going to want to examine those claims," she says.

That will be done in tandem with the two-year workup for the environmental impact statement. It will look at mining's impact on the environment, cultural resources - including sites significant to Native Americans - as well as the local economy. If mining is deemed harmful, the interior secretary can withdraw the area from new claims for as many as 20 years.

Congressman Grijalva is seeking to go Salazar one better. He has introduced a bill that would withdraw the land from additional mining, existing claims excepted. In addition, the legislation could not be overturned by a new administration, only an act of Congress.

"An area like the Grand Canyon, it's recognized around the world. To come and spoil that beauty with any kind of mining activity is unacceptable," says Natalie Luna-Rose, a Grijalva spokeswoman.

The bill has cleared the public lands subcommittee, chaired by Grijalva himself. It's now headed for the full House Committee on Natural Resources. A similar bill failed last year. Even if it clears the House this time around, it could face rough going in the Senate.

Sen. John McCain, for one, opposes the Grijalva bill. Through a spokeswoman, McCain says he prefers a balanced approached, "managing our public lands for multiple uses." He calls Grijalva's bill heavy-handed. While he doesn't question Salazar's authority to withdraw the lands temporarily, he says the secretary should consider data that "reflects 30 years of productive and environmentally responsible underground uranium mining occurring outside the Park's boundaries."

While McCain supports mining from his Washington office, state Sen. Sylvia Allen has added her voice to the debate here in Arizona. The District 5 Republican from Snowflake points to the need for domestic production of uranium, increased state revenue and more jobs.

"Arizona definitely needs all the revenue it can get, and I can't tell you the figure of amount of money of the severance taxes and the paychecks, but it's in the millions of dollars," she says.

The paychecks, she says, will reflect good-paying jobs. The three proposed Denison mines would employ as many as 100 people, including 20 to 25 at Arizona 1. These include jobs for miners, truck drivers and some supervisors.

Allen says nearby Indian tribes could benefit. Their opposition to the mines goes against their own self-interest, Allen adds.

"I don't understand it, because it would bring jobs," she says. "The tribes are very much dependent on economic benefits off reservation."

Tribal opposition

But one state representative says his own tribe's experience with uranium mining outweighs new jobs. Rep. Christopher Deschene, a District 2 Democrat from Window Rock, says this experience has led the Navajo Nation to ban uranium mining within its own borders.

Many Navajo uranium miners died of lung cancer. In addition, large piles of uranium waste became Superfund sites, Deschene says.

"There are a number of Superfund sites within the tribal community. They had to clean those up. Out of Tuba City, there was a community that was adjacent to a uranium mine," Deschene says. "They had to move and relocate the entire community."

As for jobs, he adds: "It's shortsighted to say that one industry is going to save the tribal economy."

Donnita Selana, a member of the Hualapai Tribal Council, also opposes uranium mining.

"That is what they come out with is the employment opportunity as well as the revenue," she says. "But in the end, we're just as concerned about the tributaries and the runoff and springs going into the main Colorado River."

The Hualapai reservation's main village, Peach Springs, sits near the south rim of the Grand Canyon, though the Colorado River defines its northern boundary. Nearby, also deep in the canyon, live the Havasupai Indians. Their reservation is home to the blue-green Havasupai Falls, a large tourist draw.

Like the Hualapai, the Havasupai oppose uranium mining. The tribe sponsored a protest rally against it in July.

In a tribal news release, Tribal Vice Chairman Matthew Putesoy notes, "The Havasupai Tribe, who have inhabited the Grand Canyon region for many centuries, fear that contamination from uranium mining could harm the animals, air, water and people."

Representatives from environmental groups recently met with tribal leaders in Supai Village. Stacey Hamburg, a Sierra Club official in Flagstaff, says the meeting was largely to update tribal officials on the status of mining. For them, the issue often boils down a matter of sovereignty.

"Havasupai tribal members will frequently refer to the fight for their land," Hamburg says.

Denison officials, however, are frustrated by the tribal opposition.

"We're 20 miles from the canyon. It's the way people perceive it. I get a bit frustrated. You've got Native American groups and others saying this is right beside the canyon," Hochstein says.

Besides that, he says, an underground uranium mine leaves a small footprint.

"You know what's the total surface disturbance of our mine is? Twenty acres," Hochstein says. "A Wal-Mart parking lot is 10 times bigger than that."

As for safety, Hochstein says mining operations are much more regulated than they were in the 1950s and 1960s, when uranium mining was in full swing on the Navajo reservation. Miners were exposed to radon and its byproducts as the uranium decayed. Nowadays, though, the radon is vented out to reduce exposure.

The ore itself, Hochstein says, gives off no more radiation than a building with a granite face, he adds.

"Actually, the miners face more of a hazard by driving to work every day than they do working in the mines," Hochstein says.

Yet one more tribe has come out against the mining. That's the Kaibab Paiute, where the reservation borders Utah. It's also bisected by Arizona Highway 389, the road Denison's trucks will take to Blanding, Utah, where the ore will be processed into a concentrated form known as yellowcake.

The Paiute cannot stop the trucks, but they still don't want them passing through.

Denison officials say the ore will be covered and contained. The radiation hazard will be negligible, Hochstein says.

"You get more radiation from the banana you ate in the morning than you get from standing beside that ore truck," he says.

Selana - the Hualapai tribal councilwoman and opponent of uranium mining - looks at the bigger picture.

"It's just one Earth," she says.