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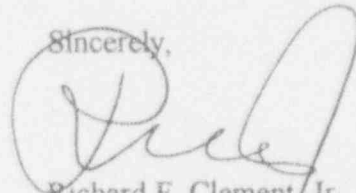
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Dear Mr. Hall:

For your information, please find attached the following news articles from The Gallup Independent.

- December 10, 1993, Company Withdraws Mining Application
- December 23, 1993, Company Will Replace Two Wells
- January 6, 1994, In-Situ Mining (Part I)
- January 7, 1994, In-Situ Mining (Part II)
- January 8, 1994, In-Situ Mining (Part III)

Sincerely,



Richard F. Clement, Jr.
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Company withdraws mining application

By Tori Adams
Staff Writer

Hydro Resources Inc. has withdrawn its application to mine uranium at one of its sites west of Crownpoint.

Mark Pelizza, HRI environmental manager, said the Crownpoint permit application withdrawal does not affect the environmental impact statement being prepared now for HRI's proposed uranium solution mining at its site in Church Rock.

HRI's application to the Environmental Protection Agency was withdrawn after representatives of the San Francisco Region 9 office told HRI the underground injection control permit could not be issued because they believed the mining could cause groundwater problems, he added.

Pelizza said he thinks the San

Francisco office did not have the technical expertise to understand the very complex issue of extracting uranium from an underground ore body in a domestic water aquifer.

NRC plans meeting

LAKESWOOD, Colo. — The Nuclear Regulatory Commission will meet here Thursday with the company requesting a uranium mining permit in Church Rock.

Joel Grimm of the Nuclear Regulatory Commission said the meeting with Texas-based Hydro Resources Inc. is being held to make sure the NRC has all of HRI's data correctly reported in the draft environmental impact statement now being prepared for the project.

The meeting is open to the public,

but public comments will not be taken then and the topic will be highly technical, he noted.

See Mine, Page 2

Grimm said the draft environmental statement on the Church Rock portion of HRI's planned uranium mining is due out early next year and it will be the subject of public hearings about two months after it has been issued.

The meeting will be held at NRC offices, 730 Simms St., Suite 100, Lakewood, Colo. NRC representatives can be reached at (303) 231-5806.

Mine...

Crownpoint's drinking water supply. Uranium ore bodies are commonly located in present or former aquifers because it takes water to concentrate the ore, he explained.

The oxygen added to the water will force the uranium to leave the rock and enter the water and the uranium-enriched water will be pumped to the surface, he said.

The uranium will be extracted from the water with filtration and in a process much like that used to make distilled water. The uranium will be concentrated and shipped to nuclear fuel processing plants and the cleaned water will be reused in the injection and extraction process, he added.

In the past, Pelizza said the Dallas Region 6 EPA office has issued permits for virtually identical processes the company runs in Texas and Wyoming without any mention of problems or additional conditions to protect the groundwater, he added.

Pelizza said the Crownpoint operation is the only such solution-mining operation the San Francisco EPA office would have under its authority, so he thinks the office lacks the expertise to deal with the issue now.

"My experience has been that when it gets a good solid technical review by knowledgeable people, it will

pass the test," he added.

He said the application will be resubmitted after the draft environmental impact statement for the Church Rock project has been issued. It is due out early next year and public hearings will be held within 60 days of its issuance.

Once the EIS is issued by the Nuclear Regulatory Commission, the Bureau of Land Management and the Bureau of Indian Affairs on the Church Rock mining site, it will provide the San Francisco EPA office with the technical data needed to evaluate the Crownpoint project, he added.

Joel Grimm, an NRC official overseeing the EIS, said the EIS should be issued without any hitches and without any serious questions for the Church Rock site.

He could not speak for the EPA, but said his office has not yet found that HRI's solution-mining proposal would create any groundwater problems in Church Rock.

Pelizza said the Crownpoint project also has been delayed by a state-tribal dispute over who has jurisdiction over environmental matters there.

The Navajo Tribe has contested New Mexico's claim of jurisdiction over the mining site and a resolution is now being attempted by an administrative process.

The state claims it has environmental oversight over land belonging to individual Indian allottees and should issue underground injection control permits.

But, he explained, the tribe wants the EPA to deal with the permits and claims it is Indian land in the legal sense because tribal members own the land.

Pelizza said HRI's official position is that the company will be happy to work with all entities and will comply with the environmental regulations of whichever agency is determined to have jurisdiction over the area.

Right now the company is feeling a bit like a doll being torn in half in a fight. It would be easier to deal with federal regulations simply because they are uniform nationwide and the company has dealt with them before, he noted.

"All we want to do is produce uranium. There are no environmental or technical problems that have been pointed out to us. All this involves is jurisdictional issues," he added.

He fears this jurisdictional dispute will end up in court because so many similar issues have gone all the way up to the U.S. Supreme Court to be resolved.

Company will replace two water wells

DENVER — Hydro Resources Inc. will have to replace two water wells in order to drill for uranium near Crownpoint.

Joel Grimm of the Nuclear Regulatory Commission here said the company will be required in its license to conduct its uranium extraction operations a certain distance away from the wells that supply the town's water. That exact distance hasn't yet been determined.

The company will have to make sure a Navajo Tribal Utility Authority well and an old Bureau of Indian Affairs well are not closer to its uranium extraction wells than its own ring of monitoring wells.

That will ensure that, in the unlikely event of any contamination of the water supply, the contaminants will be found first at the monitoring wells and the domestic water wells can be shut down until the problem can be corrected, he explained.

HRI agreed last summer to drill a

Water ...

new well to replace NTUA No. 1, which would be within less than a quarter-mile of one of its uranium extraction well fields west of Crownpoint.

Now the company also must work out an agreement to either replace or shut in and cap the old BIA well, he added.

It would be to the BIA's benefit to ask that its well be replaced because it is old and does not produce much water he noted.

In the case of the NTUA well, HRI officials said it would be easy to replace because the company essentially is in the business of drilling water wells.

The uranium extraction process involves causing the uranium to dissolve into the groundwater, pumping the water to the surface and using a chemical exchange and filtration process to extract the uranium from the water.



Bill Kearney, Power Resources' environmental manager, shows how monitor system works. Tori Adams/Independent

Operators say solution mine safe

Editor's note: Hydro Resources Inc. is planning to solution-mine uranium near Crownpoint and Church Rock. To assess the impacts of this type of mining, an independent reporter visited an active mine in Wyoming last week. First of three parts.

By Tori Adams
Eastern Bureau

DOUGLAS, Wyo. — A small herd of deer wandered over the grassland, apparently not bothered by the small brown boxes, tanks and sheds amidst the sagebrush.

This equipment and some warehouse-sized buildings a few miles west are the only visible evidence that uranium is being mined here.

Officials of Power Resources Inc., the company that is mining the Highlands Uranium Project, insist that solution-mining uranium is the only environmentally sound way of getting the mineral out of the ground — and evidence from their operation

supports that contention.

Bill Kearney, environmental manager for PRI, said, "It's too bad other minerals can't be mined this way. It's very effective and very environmentally pleasing."

He said deer like to graze in the area of the well fields and seek shelter from the nearly constant Wyoming wind behind the pumping sheds.

In the 30-mile trip north from Douglas, the only deer in evidence were concentrated in the mining area, where there were about 100 grazing and watching fearlessly as pickup trucks passed by.

PRI operates in a mineral-rich area that is considered very similar geologically to the Church Rock and Crownpoint areas where Hydro Resources Inc., which is not associated

See PRI, Page 2

Continued from Page One—

PRI ...

with PRI, is planning to extract uranium using the same solution-mining technique.

PRI Vice President Steve Morzenti said his company's wells are a little shallower than Hydro Resources', but the operations seem to be quite comparable.

The only major difference is that Hydro Resources will be extracting uranium from within the same aquifer that supplies Crownpoint's drinking water — in fact, the nearest domestic water well will be about half a mile from one of HRI's uranium extraction well fields.

PRI has been operating the Highland project north of Douglas since 1988 and is already in the process of restoring the first of its mined-out well fields. It has moved its mining to nearby fields on its 17,000-acre lease area.

The restoration is in its third year of the seven that will be needed to return the groundwater to its original conditions, Morzenti explained. In contrast, HRI's restoration is expected to take two to three years because the aquifer in which it is mining has more water than the aquifer in Wyoming.

PRI also is operating within a drinkable water supply and the company will have to restore it to that condition after mining, even though he said it is not being used in this remote and sparsely populated area of eastern Wyoming.

The nearest stock and domestic water wells are sealed off from the uranium-bearing formation by impermeable shales the same way other aquifers are at the projects in Crownpoint and Church Rock — the water in Church Rock also is not being used for domestic supply.

When asked about any problems that might be created by mining close to a domestic water supply, as Hydro Resources is seeking permits to do in New Mexico, Morzenti and Kearney said they could not think of any as long as the domestic wells are outside the ring of monitor wells surrounding the injection and uranium-producing wells.

In what Kearney called "a huge plumbing project," oxygenated water is injected into the uranium ore body

in the aquifer to force the uranium into solution in the water.

More uranium-enriched water is pumped out of the ground than the amount of water pumped in so the uranium solution stays in the area where it can easily be pumped out. When it moves beyond the injection area and registers at monitor wells, he said that is called an excursion.

PRI has had a few excursions of some indicator elements — although never of uranium — during restoration, but not during mining operations, Morzenti noted.

The excursions aren't presenting any problems and are being watched carefully. He said he thinks what seem to be excursions may actually be incoming salt-laden water from a nearby aquifer of poorer quality.

Chloride, a component of salt, is monitored as an indicator element because it ends up in the aquifer as part of the process used to strip the uranium out of the water after it has been pumped to the recovery plant, he explained.

The uranium content of water from each of PRI's 500 monitor wells is measured every two weeks along with its acidity and conductivity. Acidity and conductivity are indicators that are easy to use in the field for an instant assessment of whether any excursions might have taken place, Kearney said.

Excursions normally are corrected quite easily by simply increasing the amount of water being pumped out of the well. And if that's not enough, the injection of oxygenated water can be stopped while continuing to pump water out of the well until it comes clean, Morzenti added.

In the highly unlikely event that stopping injection is not enough, water can be pumped out of the well, treated by the same method used to make ultra-clean distilled water and reinjected to clean up the groundwater.

As a last resort, uranium-recovery companies like PRI and HRI also can inject chemical solutions into the ground that cause the uranium to bind tightly to the sandstone and stay there permanently, he noted.

Little similarity between two styles of mining

Editor's note: Hydro Resources Inc. is planning to solution-mine uranium near Crownpoint and Church Rock. To assess the impacts of this type of mining, an independent reporter visited an active mine in Wyoming last week. Second of three parts.

By Tori Adams
Eastern Bureau

h DOUGLAS, Wyo. — The contrast between a uranium strip mine and solution mining is so great it is hard to believe they both produce the same product.

Steve Morzenti, Power Resources Inc. vice president, said his company has operated the Highlands Uranium Project, located 30 miles north of Douglas, since 1988.

This is the same area that was mined for uranium using conventional underground and open pit techniques since 1971.

Now Power Resources, which is owned by a British nuclear power company, uses solution techniques to mine uranium by pumping water into the same ore formation and extracting the ore from the water in a small plant on the surface.

The two techniques have completely different impacts. A tour of the old conventional site and current PRI sites reveals solution mining appears far less damaging to the environment and workers than conventional mining.

During conventional mining about 400 feet of overburden was stripped off an area of many hundreds of

square acres to expose the uranium-bearing formation, which exists in a sandstone aquifer much like the ore body and the associated aquifer. Hydro Resources is seeking permits to mine near Church Rock and Crownpoint, N.M.

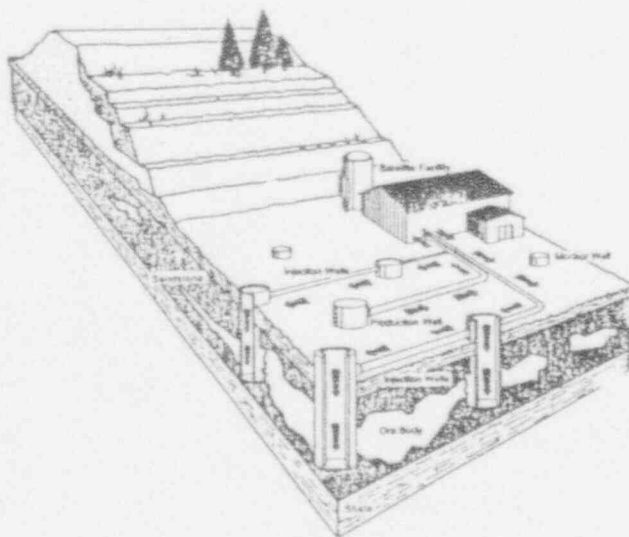
Bill Kearney, Power Resources' environmental manager, said the aquifer essentially was destroyed by removal in the area where conventional mining was done and what is left is a barren open pit.

Kearney said the only benefit left from the strip mining was the 200-acre lake left in the bottom of the pit, which has become a magnet for wildlife in this dry grassland environment.

While conventional mining was taking place, 650 people were employed, mostly in dangerous jobs, to strip the overburden and mine and mill the uranium into yellowcake, which is the same product the solution mine and its processing plant produces.

Workers were exposed to radon, a radioactive gas, and dust in both of the mines and the mill and to the acid leach used to extract the uranium from the rock in the mill. Workers often were injured by heavy equipment in both the mine and the mill.

Morzenti said the mill produced about 2,000 cubic yards per day of dangerously acidic and radioactive tailings — 94 million gallons of the



In situ mine

Courtesy: Power Resources

same kind of uranium mill tailings spilled into the Rio Puerco near Gallup about 10 years ago in the largest radioactive materials spill in the history of this country.

The tailings are currently being reclaimed and stabilization of the pit faces above the level of the lake is taking place, Morzenti explained.

liquid oxygen that is used to force the uranium into solution with the water underground.

When mining and groundwater restoration are completed, the equipment and buildings are removed and the grass reseeded, he noted.

Morzenti said the ore body being mined by both techniques is about one-tenth of 1 percent uranium, about 80 percent of which goes into solution in the water and is pumped to the surface with very few or no other contaminants.

In conventional mining, thousands of tons of rock were removed from the open pit to recover the uranium. That brought to the surface every other mineral present in the rock to be leached out by the acid process used in the mill and added to the tailings pile where it could contaminate the area, he said.

Kearney explained that radon is not a danger because solution mining uses closed systems, both while mining and in the processing plant.

In this formation, which is very much like the formation Hydro Resources will be mining in Crownpoint and Church Rock, there are no other minerals that will come into solution with the uranium and make it difficult to restore the groundwater, he added.

After the uranium is recovered from the water, a very small amount of contaminated material is left that

the Nuclear Regulatory Commission considers the equivalent of mill tailings without the acid.

Morzenti said PRI generates about 150 cubic yards, or one semi-trailer-load, of contaminated wastes per year and those are disposed of in uranium mill tailings piles that are being reclaimed.

During mining operations between 1971 and 1983, the mine produced 23 million pounds of yellowcake using conventional mining techniques.

In contrast, he said PRI was the largest uranium producer in this country in 1992. It has produced 5.5 million pounds of yellowcake since 1988.

PRI's safety record is exemplary. He noted the facility, which has 42 employees, has operated for 750,000 work hours without a lost-time accident.



Tori Adams/Independent

After a tour of Power Resources' Douglas, Wyo., uranium processing plant, Environmental Manager Bill Kearney, right, keeps an eye on radiation monitor readings as a visitor holds a hand scanner to his shoes.

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Uranium ...

Kearney said the last stage, the most dangerous part of the entire process, involves drying the yellowcake, which is now 92 percent uranium oxide, so it can be loaded into barrels and shipped to plant that can make it into nuclear fuel.

Worker must wear respirators and protective clothing when they work in the dryer area so they cannot inhale or ingest the uranium dust, he

added.

Uranium in the form of yellowcake produces only weak radioactivity, which can be stopped by water, the walls of a containment tank or even skin. But inhaled or ingested uranium particles can cause cancer and other problems because their radioactivity is no longer stopped by even a skin barrier, he explained.

Everyone who enters the plant

must run a hand scanner over themselves to check for alpha radioactivity when they leave and any contamination can be removed by showering and washing their clothes, Kearney said.

Workers, except for office personnel, are given monthly urine tests to make sure they have not been exposed to uranium dust, he added.

tricky part of the operation

Editor's note: Hydro Resources Inc. is planning to solution-mine uranium near Crownpoint and Church Rock. To assess the impact of this type of mining, an Independent reporter visited an active mine in Wyoming last week. Last of three parts.

By Tori Adams
Eastern Bureau

DOUGLAS, Wyo. — Processing uranium is the most complicated — and hazardous — part of a uranium mining operation.

Once the uranium-enriched water produced by solution mining has been pumped out of the ground, the ore must be removed from the water and concentrated enough to be shipped to plants that make it into fuel for nuclear power reactors.

The water also must be cleaned enough to be reused in the mining operation. And when the mining is done, the groundwater must be restored to its original condition.

Steve Morzenti, vice president of Power Resources Inc., which operates the largest uranium solution mine in the country, said the processing is done in two stages at its plant about 30 miles north of Douglas.

When the water is pumped out of the ore body, it contains uranium in a very weak solution. Only about 200 parts of uranium per million is present — in comparison, a proposed

federal standard would allow drinking water to contain up to 20 parts of uranium per billion.

The uranium-enriched water is pumped into huge tanks in a small recovery plant at the well field where the uranium is taken out using an ion exchange process similar to the way a water softener takes minerals out of household water to soften it.

Morzenti said the water from the wells is mixed with tiny resin beads that look like the very finest caviar. The resin is chemically designed to attract the uranium out of the water and onto itself.

The resins leave the water clean enough to be reused in the solution mining process, but more work will be needed to restore the water to its original condition, he added.

Bill Kearney, PRI's environmental manager, said the resin beads, which contain about 13 percent uranium by weight, are trucked about three miles to the main processing plant to be stripped of the ore.

The resin beads are carefully conserved in the process because they can be reused almost indefinitely. "They're treated like gold because they're so expensive...\$200 a pound," he added.

Morzenti said a solution of soda ash and salt is used to chemically

strip the uranium back into water in a far more concentrated solution that looks greenish, as if it were full of pond scum.

The salt — sodium chloride — used to strip the uranium off the resin beads is later replaced by more uranium when the resin is reused in the field.

The chloride goes into the uranium ore body, which enables PRI and many other companies to use chloride as a marker chemical to determine if the injection and pumping process is staying within the area it is supposed to be confined to, he explained.

In the processing plant, the uranium is concentrated to a slurry in open water tanks because, Kearney said, the radioactivity it gives off is almost entirely stopped by the water surrounding it and what escapes the water can be stopped by skin.

Morzenti explained that uranium is kept in wet solutions during all but the very last stage of the process because it is only really dangerous when it is dry and can be ingested in the form of dust.

The uranium is exposed to ammonia to make it settle out of the slurry in the second-to-last stage of the process.

See Uranium, Page 2