NSF picks Homestake for national lab site

South Dakota site is first among four finalists; scientists get $15 million to develop proposal

By Bill Harlan, Journal staff

The National Science Foundation has chosen Homestake gold mine in Lead as the site for a proposed national underground science laboratory, state officials announced today.

“This is great news for South Dakota and the region,” Gov. Mike Rounds said in a written statement.

The University of California at Berkeley is the lead research institution on the project.

A 22-member panel of “external experts,” reviewed four proposals – including proposals from Colorado, Washington and Minnesota – before voting unanimously for Homestake, according to the NSF announcement.

A new national laboratory at Homestake could attract experiments costing hundreds of millions of dollars – or even billions of dollars, over the course of decades.

However, construction of the so-called “Deep Underground Science and Engineering Laboratory,” or “DUSEL,” is not guaranteed. The decision announced today means that scientists supporting the Homestake proposal will get up to $15 million over the next three years to develop a full-fledged plan for a lab 7,400 feet underground.

A DUSEL at Homestake could cost $300 million to build, and it would require the approval of the National Science Foundation, the National Science Board, the White House and Congress. That could take years.

But science could begin sooner. Now the state of South Dakota will continue its plan to re-enter the mine, pump our water and start an “interim DUSEL” 4,850 feet underground. Experiments could begin in the interim lab as soon as next year.

The Homestake proposal was selected from among four finalist sites. The others were the working Henderson molybdenum mine in Colorado, an unused railroad tunnel Washington and the closed Soudan iron mine Minnesota, where a smaller underground lab already operates.

The Homestake and Henderson proposals each got $500,000 each to prepare250-page preliminary designs. (The Washington and Minnesota sites re-entered the process last year, after supporters of those proposals objected to their elimination.)

The state’s congressional delegation also reacted to Tuesday’s announcement.

“A project of this magnitude will bring the spotlight of discovery to Lead and the Northern Hills,” Republican Sen. John Thune said.

“Once again, South Dakota has proven what we can accomplish when we work together on behalf of the future of our state,” Democratic Rep. Stephanie Herseth Sandlin said.

Democratic Sen. Tim Johnson, still recovering from brain surgery in December, also issued a written statement: As a member of the Senate Appropriations Committee, I look forward to working with John and Stephanie to help secure the millions of dollars that will be necessary to build.”

The South Dakota Science and Technology Authority, which owns the closed gold mine, already is poised to re-enter the mine.

By September the science authority hopes to begin pumping out water, which has risen from the lowest level, 8,000 feet underground to a level just under 5,000 feet below the surface.

The NSF selection of Homestake today also triggers a $70 million donation from Sioux Falls philanthropist Denny Sanford to help develop a Homestake DUSEL, which will be named the Sanford Underground Science and Engineering Laboratory at Homestake.

Physicist Kevin Lesko of the University of California at Berkeley heads the so-called “Homestake collaboration” of scientists supporting Homestake. “The Sanford gift will greatly enhance the underground laboratory, particularly in creating the 4,850 feet level lab,” Lesko said. “This will establish the starting point for the NSF’s funded efforts reaching down to at least 8,000 feet below ground over the next 30 to 50 years.”

The Sanford donation also will be used for education programs at the lab.

In addition, the state of South Dakota also has committed another $46.5 million to develop the lab, including a $10 million federal grant that Sen. Johnson pushed through the Senate in 2001.

Scientists, especially physicists, use deep underground labs to shield sensitive experiments from cosmic radiation. The late Ray Davis, for example, won a Nobel Prize for an experiment at Homestake that detected subatomic particles called neutrinos.

Recent discoveries made in underground labs in Japan, Canada and Italy are changing the most fundamental theories of how the universe works – why stars shine, how the universe began and even how it might end. Blue ribbon panels of physicists have recommended that an underground lab as a national priority.

Such a lab also would be used to study earth sciences and extreme biological environments, and the lab could be used for homeland security research that required shielding from cosmic rays.

In September of 2000, within days of the announcement the Homestake gold mine would close, University of Pennsylvania physicist Ken Lande proposed converting the gold mine into a lab.

Ever since, state officials have been working with an ever-changing consortium of

scientists to develop the proposal.

Other groups of scientists supported the other sites, and Gov. Rounds invited them to join the Homestake collaboration. “My hope is that the tremendous talent and wealth of ideas proposed by all of the scientists will come together for the advancement of science,” the governor said.

Homestake owner Barrick Gold Corp. of Toronto donated the closed gold mine for use as a lab, under a complicated agreement that protects the company from liability.

“We must all extend our deep appreciation to Barrick Gold Corporation and Homestake Mining Company for generously donating the mine, surface buildings and inventory,” Rounds said. “Without this donation, none of this would be possible.”

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(**For a timeline of the Homestake mine's journey from gold discovery to the NSF announcement as the site for a national deep underground science lab, click here.**

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