

The Natatorium, the great pleasure and health resort.

Idaho State Historical Society, Boise.

Pioneer Geothermal Development in Boise, Idaho

Carol Lynn MacGregor

GEOTHERMAL WATER USE at Boise, Idaho, continues to be a great source of relatively inexpensive energy. Its use for over a hundred years inscribes a unique signature upon the city: Boise's pioneer geothermal development raised the hopes of its boosters when the railroad and the irrigation plans failed. As the nation's very first geothermal development, it provided a model for many other sites in the United States and foreign countries.

From 1892 until 1934, Boiseans enjoyed the Natatorium, a fabulous public center for healthy exercise and social entertainment. Geothermal energy still provides a clean, quiet, natural heating system for about 270 homes, many of which speak to the elegance of the Victorian period and stand on the National Register of Historic Places.

The history of this resource begins with human habitation in a unique environment. Between the sagebrush-

clad desert stretching across southern Idaho and the foothills that rise to mountains to the north lies a lower valley, emerging from a riverine canyon. The Boise River flows into this valley, which finds protection between the higher foothills and the shelf of desert. The river wends its way in serpentine fashion slowly westward to meet the Snake River, forming the boundary between Idaho and Oregon. At the apex of this valley, an open hot springs used to bubble in a draw just north of the canyon's surrender to the valley. A warm, marshy swamp lay just a few miles south.

This environment welcomed a Native population, who for centuries found the hot springs amenable, the river abundant with fish, and the relatively low altitude, about 2,800 feet above sea level, a very pleasant place to live. Early travelers, including the Astorians, found respite by the cottonwoods on the banks of this place that the Northern Shoshoni called "Cop-cop-pa-ala" —

“much cottonwood meeting place.”¹ Fur trappers gleaned handsome rewards from the beaver along this river, although they often met resistance or demise from invading the territory of Northern Shoshoni or Bannocks. Wagon trains on the Oregon Trail regularly stayed in the Boise valley, sometimes wintering over on their westward voyage. But it was not until the George Grimes party found gold in 1863 in the hills more than 20 miles east of the valley that settlers teemed to the Boise Basin to establish Idaho City. A few early settlers saw great opportunity in the Boise valley, making homes, planting orchards, and raising stock to supply the gold mines to the east.

When these white settlers came to Boise, they found the open-air “plunge” of hot water northwest of present-day Barber, on what is now privately owned land (the Harris Ranch). After cavalry tragically removed Native Americans from the valley in the winter of 1864, early settlers enjoyed bathing at the hot springs, only five miles east of town. One of its first proprietors, Isaac Bedell, advertised,

There is no place where people can recuperate their health more than to go and bathe in these springs. Once or twice a week should be the aim of every one, young or old, to visit these springs.²

A Helena, Montana, visitor stated,

no place between the Missouri and the Pacific deserves a boom more than Boise city. . . . Its climate is unequalled . . . the medical qualities of the hot springs alone should make it the largest and liveliest city in the mountains.³

In 1889, Judge Milton Kelly bought the plunge and bath houses, and the area was subsequently called “Kelly’s Hot Springs.” He hooked the site to the telephone line by 1891. The Victorian ideal for health could be accomplished by taking the “vapors.” Many Boiseans traveled those brief few miles to stay a week or two at the rustic accommodations with expectation of rest and recuperation.

In the 1880s, Boise’s commercial leaders sought to bring the main line of the railroad to their town and to make the desert bloom. In 1882, A. D. Foote (Mary Hallock’s less famous husband) came to establish an irrigation system, supported by New York financiers. Boise’s leading citizens held meetings, published editorials, entertained railroad magnates, bought right-of-way, and did whatever they could to entice railroads to bring a main line through the town, even after the Oregon Short Line bypassed Boise in 1883 to go through Nampa. Neither the irrigation system nor the railroad plan came to fruition as Boise leaders hoped. Nevertheless, growth in this little capital continued to outpace all other Idaho communities. Part of the reason it grew so quickly in the

next decade lay with the development of its unique geothermal springs.

By 1890, Boise had telephone, telegraph, an electric railway in town that would soon be extended to nearby settlements, and a railroad spur connection from the Oregon Short Line at Nampa. But it had no water system. Two rival companies sprang up simultaneously in 1890. The Eastman brothers began drilling in Hull’s Gulch, where they found a cold water artesian source. They called their new corporation the Artesian Water and Land Improvement Company. Then another group decided to act on the urgings of a well driller named Mr. Grumbling. He stated that the warm swamp near the 1870 territorial prison, under scenic Castle Rock and northwest of Kelly’s Hot Springs, did not freeze when other ground did. He also claimed that a cow had disappeared while walking at the site.⁴ So, in late 1890, a group of Boise businessmen of the Boise Water Works Corporation sank a well there. On Christmas Eve, they struck a flow of water at 92 degrees Fahrenheit. By the end of January, *The Statesman* newspaper reported that between three-quarters to a million gallons of water a day at 162 degrees were flowing from this artesian hot water stream.⁵ The capitalists sank another well 50 feet west of the first. The local paper reported that its flow was so strong that large pieces of flint and other rock-carrying pyrites shot to the surface of the second well.⁶ The next day the temperature of both wells was said to be 170 degrees.⁷ Each of the two wells produced a flow of about 800,000 gallons of water a day, or 555 gallons a minute.

How could these wells have produced such a flow? Fractures in subsurface rhyolite through basalt and clay allowed the hot water to ascend through high-angle faults from a geothermal aquifer. Boise’s early capitalists were able to reach the fault through which the artesian water came from the geothermal aquifer. Pragmatic scientific discovery and development combined with capital to bring about a useful application of Boise’s key natural resource.⁸

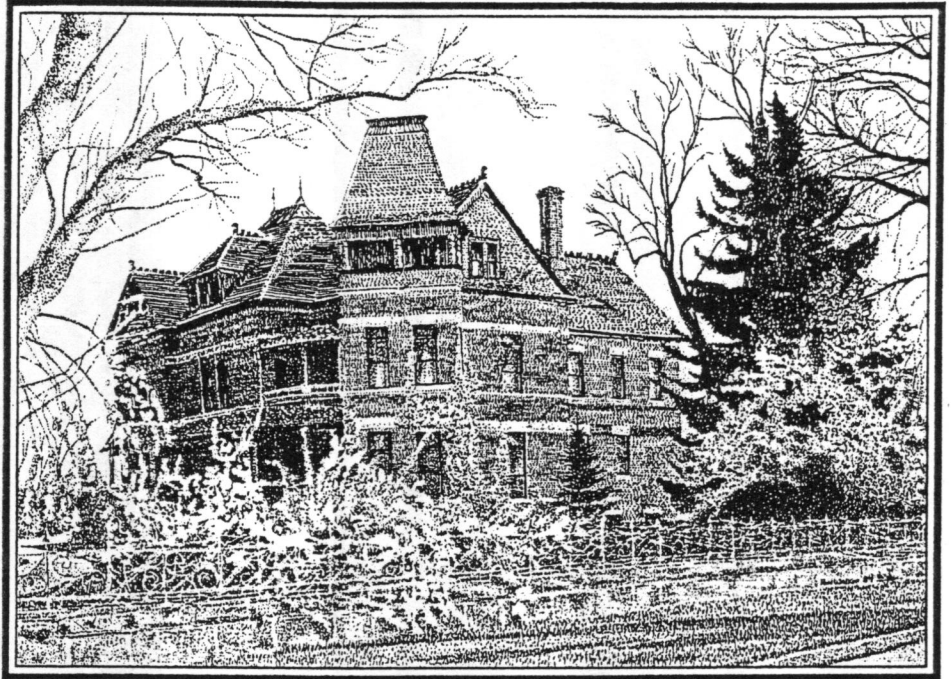
In 1891, the Eastman brothers of the Overland Hotel, C. W. Moore, president of the Idaho First National Bank, Timothy Regan, businessman, William Ridenbaugh of the Electric Light Company, Peter Sonna, a mercantilist and philanthropist, Frank Coffin of Coffin’s Hardware, Nathan Falk of Falk’s Department Store, and others ironed out their business wrinkles during three weeks of negotiation for a merger of the Boise Water Works and the Artesian Water and Land Improvement Company. C. W. Moore became president of the new company. Only five days prior to the merger, the real estate market section of the local paper announced that Porter D. Williams had deeded seven acres on Warm Springs road to C. W. Moore, representative of the Boise Water Works, for \$5,000. The company planned to erect “a commodious hotel and bath houses, thus utilizing their already famous hot water artesian wells.”⁹

In May, the paper announced that a freight train had brought two cars of wooden pipe. The developers of the new company thought that wood pipe would retain heat better than metal as the hot water was pumped from its wells down the street to its users. When delivery began later in 1892, private families and public concerns showed no hesitation in devising grandiose uses of this seemingly endless resource.

In the summer of 1891, *The Statesman* announced the biggest real estate coup yet known in the valley: Captain DeLamar of silver fame had purchased Moore's beautiful home and grounds on Grove Street for \$30,000. That home had been pictured in the *San Francisco Chronicle* as a paragon of modern design, complete with a Mansard roof. Later that summer, C. W. Moore revealed his own plans. He had purchased 600 feet of frontage on Warm Springs Road just before the sale to DeLamar. Moore planned to build a large home that would use geothermal heat and feature electric lights. Hosea Eastman's house became the second large Victorian showplace to use the new geothermal heating system. Many homes using hot water for heat as well as other domestic uses soon followed.

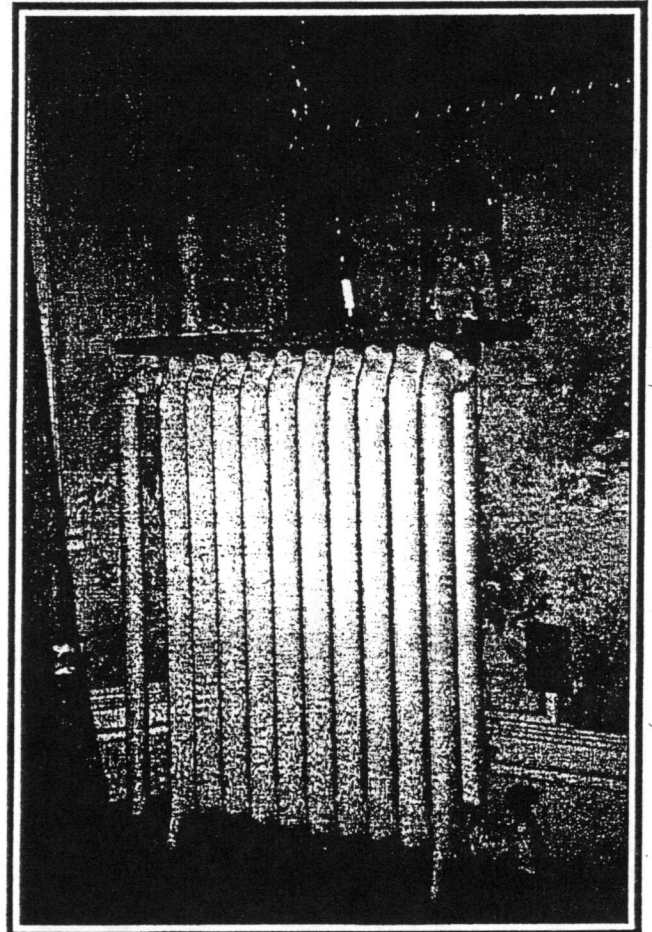
The "commodious hotel and bath houses" planned on Warm Springs Road, and secured by C. W. Moore's purchase for Boise Water Works just before the merger of the rival water companies, brought a new facility for public bathing called the Natatorium. A grandiose showpiece of the Northwest, it contained 15,000 square feet of space built around a hot indoor pool, 65 feet by 125 feet. Moorish towers punctuated the dramatic design, and Moorish arches spanned the area between the pool and adjoining rooms. A ballroom of immense size promised exciting social events. On the balcony, one found a roller skating space, billiards, and card rooms. There were Turkish baths, a grotto with overhanging vines, and a bar, the projected hours of which immediately caused controversy among clergy and their congregations. And, of course, the Natatorium housed a dining room and café.¹⁰ Within a year, the new electric trolley car whisked citizens from downtown to the Natatorium.

The synchronism of the new concepts of hygiene with the old concepts touting the salubrious effects of natural hot water, plus the pragmatic scientific applica-



C. W. Moore's house was the first to feature a geothermal heating system and was ready for use in February 1892.

Drawing by Ron Walker



A hot water radiator working 106 years on Warm Springs Road. The knob at the top releases air, creating a vacuum allowing water to flow. The bottom knob increases the flow (hotter) or decreases the flow (colder).

tion of this resource for heating, bathing, and transferring heat, changed the standard of living in Boise, Idaho, in 1892. Even though the spur railroad did not become a main line until 1926, Boise's geothermal development attracted numerous entrepreneurs and vacationers from far and near. Developers from Iceland visited the city within a decade to see how they might apply their vast geothermal resources to practical use in a much colder climate.

The hot water heating system in Boise worked on simple principles. Wooden pipes brought geothermal water cheaply to a growing number of homes. The water ran into a home and then through coiled iron radiators in each room, then out of the house to an orifice of discharge, which determined the amount of flow and pressure. One controlled the flow through the radiators by regulating the flow at the base of each unit, after making sure that unit was free of air by bleeding it from another knob on its top. Once free of air, the water vacuum assured constant flow through all units. A greater flow working against the pressure of the outflow assured the more rapid passage of hotter water through the radiators to increase heat in the room. This flow also provided enough pressure to boost the water to the second and third floors of the new, spacious homes. To cool a room, one could reduce the flow, not bleed the air from radiators, or simply open the windows. The managing company charged customers, and still does, according to the size of the orifice of discharge of water into the ditch below Warm Springs Road. That orifice determines the capacity of each individual heating system. The flow of the water continues at about 800,000 gallons per well per day, with the temperature ranging between 171 degrees and 174 degrees.

A number of modern applications have been added onto the private systems to enhance the use of the same amount of geothermal water. These include heat exchangers for swimming pools, hot pools growing talapia fish, greenhouses, and the heating of other buildings like garages, guest houses, or apartments.

There are few adverse environmental effects from the use of geothermal energy, and there are several positives. For example, there is no smoke in the air, no dust from forced air in the house, no drain on electric power facilities, and no gas leakage. But there have been, over time, effects on the surrounding geothermal areas as well as the rate of artesian flow. By 1918, Kelly's Hot Springs had dried up.

By 1973, General Water Corporation of Philadelphia, owner of the Natatorium Company, discontinued serving natural hot water to its customers because of the dilapidated condition of the pioneer system. In 1974, modern users formed a new Boise District and have managed it through elected board members. The energy crisis in the late 1970s, along with federal money, brought new interest in this clean, indigenous system. In 1982, a brand new line was laid with insulated pipe,

replacing the old cast iron main pipe installed in 1937, which had replaced the original wooden pipes of the pioneer system. It was then that citizens learned of the limits of the artesian flow of hot water. Another modern group of capitalists ambitiously planned to expand service by drilling new wells that tapped into the same aquifer. As a result, the artesian quality of the great geothermal aquifer declined, so the Idaho Water Resource Board placed a moratorium on further expansion of the hot water resource.

In the 1980s, the District also remodeled the old pump house following guidelines from the Idaho Historical Society. The Society wanted to retain the original old derrick legs made of long, laminated posts. These slanted legs form the shape of the pump house, reminding us that our two pumps hover over the original well sites. The derrick posts held the first drills that pierced through the marshy swamp in 1890-1891 to let loose the rich artesian flow of hot water. The slant on the original board and bat building has been replicated in the new pump house, outlining the angle of those original derrick posts.

Boise's history follows the development of its unique geothermal resource and gives it a singular signature. Especially during the years of the fabulous Natatorium, the city's reputation linked itself to hot water. This energy source still provides a clean, quiet, natural heating system for 270 homes, the State Capitol, numerous other government buildings, and various commercial structures. But it has been pushed to its limits. Each year the rate of artesian flow slightly diminishes, but not as much as a decade ago due to conservation measures recently employed. The city system and the Warm Springs District are planning a re-injection well, which will put spent water back into the aquifer in the hope that this will maintain the artesian pressure.

During the past decade, homeowners have suffered from the results of over-expansion. In the coldest days of winter, when Idaho inherits Arctic currents, the oldest, largest homes cool and echo like mausoleums, encouraging their owners to add other sources of less desirable heating like gas, oil, and electric, to burn their wood stoves and fireplaces, and to wonder just how long such discomfort might last.

Various studies show that the 1982 proposals for expansion stretched too far. Meanwhile, users dependent upon geothermal heat hope that the moratorium of the Idaho Water Resource Board will be sufficient to keep architectural treasures of the city warm enough on severely cold days. While homeowners continue to enjoy the pleasures of geothermal baths, heat that usually warms even the corners, and bills that allow the preservation of big, historic homes to be financially feasible, they worry about the future. The pioneer system worked very well for nearly one hundred years. Hopefully the moratorium and further conservation practices can assure its continuance.

NOTES

1. Annie Laurie Bird, *Boise, The Peace Valley* (Caldwell, ID: Caxton Printers, 1934), 27.
2. *Idaho Daily Statesman* (Apr. 15, 1888), 3.
3. *Ibid.* (Apr. 19, 1888), 3.
4. Kevin Rafferty, "A Century of Service; the Boise Warm Springs Water District System," *Geo Heat Center*, 14, 2 (Aug. 1992): 1.
5. *Idaho Daily Statesman* (Jan. 30, 1891), 8.
6. *Ibid.* (Mar. 13, 1891), 8.
7. *Ibid.* (Mar. 14, 1891), 4.
8. Spencer Wood and Willis Burnham, "Geologic Framework of the Boise Warm Springs Geothermal Area, Idaho," *Geological Society of America Centennial Field Guide - Rocky Mountain Section* (1987), 117.
9. *Idaho Daily Statesman* (Mar. 24, 1891), 8.
10. Dean Worbois, *Glad To Be in Hot Water: Geothermal Development in Boise, Idaho 1890-1983* (Boise, ID: Parker Plumbing Company, 1982); "This is the Story of the 'Hot Water Bottle Boulevard,'" *Idaho Daily Statesman* [date unknown], 1944.

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Carol Lynn MacGregor, an ABD student at the University of New Mexico, is writing a dissertation on "The Foundation of Community at Boise, Idaho, 1882-1914." Her edited work, *The Journals of Patrick Gass, Member of the Lewis and Clark Expedition*, was published in 1997 (Mountain Press). The second part of this two-book volume presents an account book for the years 1826-1837 and 1847-1848 that has never before been published. MacGregor won the Joel E. Ferris Award of the Cheney-Cowles Museum of Spokane in 1991 for the manuscript. Since 1970, MacGregor has served as adjunct professor at Boise State University teaching Spanish, political science, and history courses. MacGregor is deeply concerned with the environment, and involved practically with water, trees, and grassland that she manages on her Idaho ranches.



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