

Geothermal Resources of Wyoming

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Map produced by the National Geophysical Data Center National Oceanic and Atmospheric Administration for the Geothermal and Hydropower Technologies Division United States Department of Energy



Explanation

This map is a product of the statewide inventory and evaluation of Wyoming geothermal resources conducted by the Department of Geology and Geophysics at the University of Wyoming under the sponsorship of the U.S. Department of Energy. The study has been accomplished through the analysis of required temperature gradients, heat flow, geologic structure, hydrology, and gas well bottom-hole temperatures, existing thermal spring data (see 4), and newly completed thermal spring and well data. Results indicate that geothermal resources outside Yellowstone National Park are primarily low- and moderate-temperature (less than 150°C). Portions of the deeper sedimentary basins in Wyoming are shaded light gray to indicate the possible presence of thermal waters at depth. Delineation of these areas is based primarily on depth to the Tensley Sandstone. The Tensley Sandstone is a productive aquifer in many of the basins of the state, and there is much structural and thermal information for this unit. In all basins, there are also aquifers both above and below the Tensley Sandstone that may contain thermal waters. Away from basin margins the aquifers are generally not well defined geographically, and therefore geothermal resources outside Yellowstone National Park are primarily low- and moderate-temperature (less than 150°C). However, they are represented by many small and scattered wells in these areas. Both unconsolidated and producing oil and gas wells may provide access to this significant geothermal resource.

Measured Temperature Gradients

County	Code	No.	Lat.	Long.	Depth	BHT	Code	No.	Lat.	Long.	Depth	BHT	Code	No.	Lat.	Long.	Depth	BHT	Code	No.	Lat.	Long.	Depth	BHT							
ALBANY	A1	1	41.0	105.0	200	100.0	1	41.0	105.0	200	100.0	1	41.0	105.0	200	100.0	1	41.0	105.0	200	100.0	1	41.0	105.0	200	100.0	1	41.0	105.0	200	100.0

Geothermal Potential Index

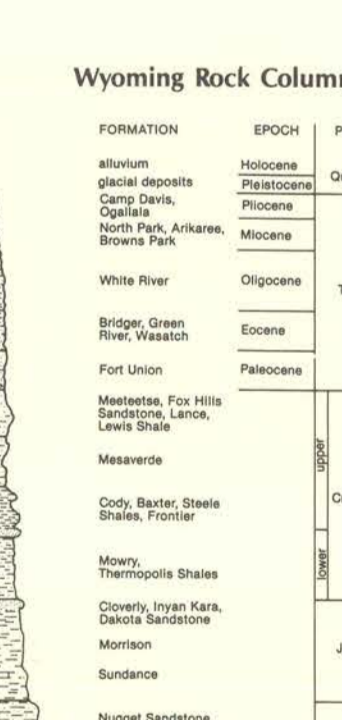
County	Code	Number	Latitude	Longitude	Depth	Index
ALBANY	A1	1	41.0	105.0	200	100.0

Thermal Springs (Except Yellowstone Area)

Code	Lat	Long	Name	Temp	Flow	Flow	Flow
T1	41.0	105.0	Albany Hot Springs	150	100	100	100

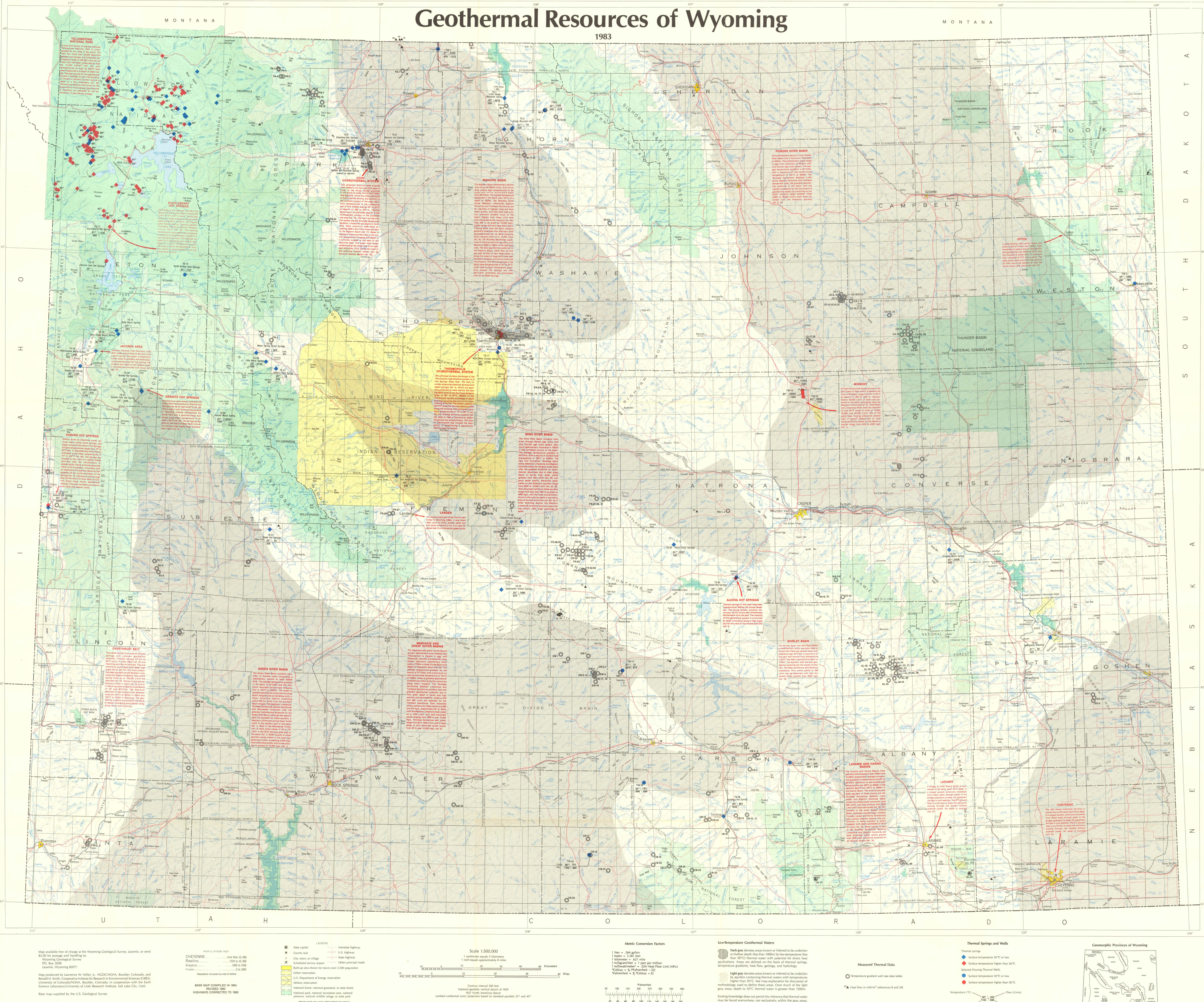
Selected Thermal Wells

Code	Lat	Long	Name	Depth	Flow	Flow	Flow
W1	41.0	105.0	Albany Hot Springs	150	100	100	100



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Scale 1:500,000

1 centimeter equals 5 kilometers
1 inch equals approximately 16 miles

Metric Conversion Factors

1 liter = 1.057 quarts
1 meter = 3.281 feet
1 kilometer = 0.621 miles
1 milligram = 1 part per million
1 hectometer = 0.264 miles (1/4)

Legend

- State capital
- County seat
- City, town, or village
- Scheduled service airport
- Other principal roads
- Index
- Indian reservation
- U.S. Department of Energy reservation
- National forest
- National park, national monument, or state land
- National park, national monument, or state land
- National park, national monument, or state land
- National park, national monument, or state land
- National park, national monument, or state land

Map Symbols

- Temperature gradient
- Thermal spring
- Geothermal potential index
- Geographic Provinces of Wyoming

Low-Temperature Geothermal Waters

Dark gray areas are known or inferred to be underlain by shallow depth (less than 1000m) by low-temperature (less than 150°C) thermal water with potential for direct heat applications. Arrows are defined on the basis of thermal spring, temperature gradient, heat flow, geology, and hydrology.

Light gray areas are known or inferred to be underlain by aquifers containing thermal waters with temperatures higher than 150°C. See map explanation for discussion of methodology used to define these areas. Over much of the light gray areas, depth to 150°C thermal water is greater than 1000m. Existing knowledge does not permit the inference that thermal water may be found everywhere, nor exclusively within the gray areas, nor do the boundaries represent certain knowledge of the exact extent of geothermal systems or aquifers.

Thermal Springs and Wells

- Blue diamond: Thermal spring
- Blue circle: Surface temperature 50°C or less
- Red circle: Surface temperature higher than 50°C
- Red triangle: Selected flowing thermal wells
- Red square: Surface temperature higher than 50°C

Measured Thermal Well Data

Circle with number: Measured thermal well data

Star: Heat flow (mW/m²) reference R and 28

Geographic Provinces of Wyoming

Map showing the geographic provinces of Wyoming: Wind River, Snake River, Basin and Range, and Colorado Plateau.