Geothermal Research and Development 2014
for
Energy and Telecommunications Interim Committee

John Metesh, Montana Bureau of Mines and Geology

Background

HOUSE BILL 333 (61st Legislature)

An Act Allowing the Bureau of Mines and Geology to Conduct Geothermal Research

During the 2011 biennium the Montana Bureau of Mines and Geology shall conduct geothermal research that:

(a) characterizes the geothermal resource base in Montana;

(b) tests high-temperature and high-pressure drilling technologies benefiting geothermal well construction; and

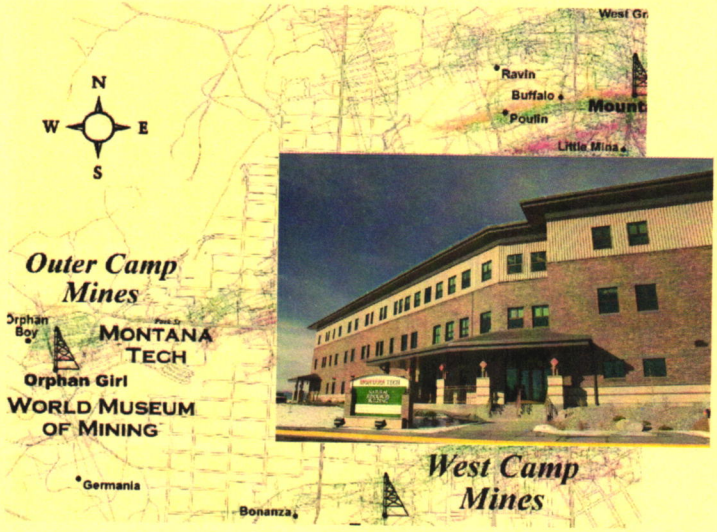
(c) determines reservoir characterization, monitoring, and modeling necessary for commercial application in Montana.

The MBMG shall submit a report to the Energy and Telecommunications Interim Committee. The report, based on research conducted, must include:

(a) a ranking of the top five locations in Montana that offer the best opportunity for near-term development of geothermal energy; and

(b) an estimate of the cost associated with development of each site.

Project 1: Heat Pump Demonstration using Mine Waters in Butte



20 ¾-inch HDPE parallel loops, each 600 feet long, were intalled into the Orphan Boy mine shaft

The background temperature of the water in the shaft is about 78°F

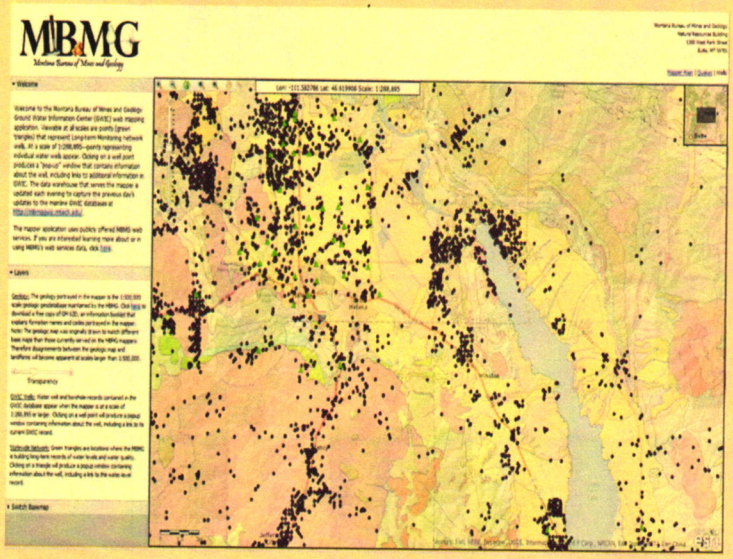
The ground loop pumps operate in conjunction with the existing pumps on the building side of the heat pump unit.

The system provides cooling when the outside temperature is higher than 65°F, and heating when the outside temperature is less than 60°F

For the 2013-14 period, the heat pump contributed about half of the heating needs during the extreme cold months and nearly the entire need in milder months.

The heat pump provided more than half of the cooling needs, and for two months the heat pump produced the entire cooling demand.

The heat pump is projected to save the NRB building approximately $9,380 per year.



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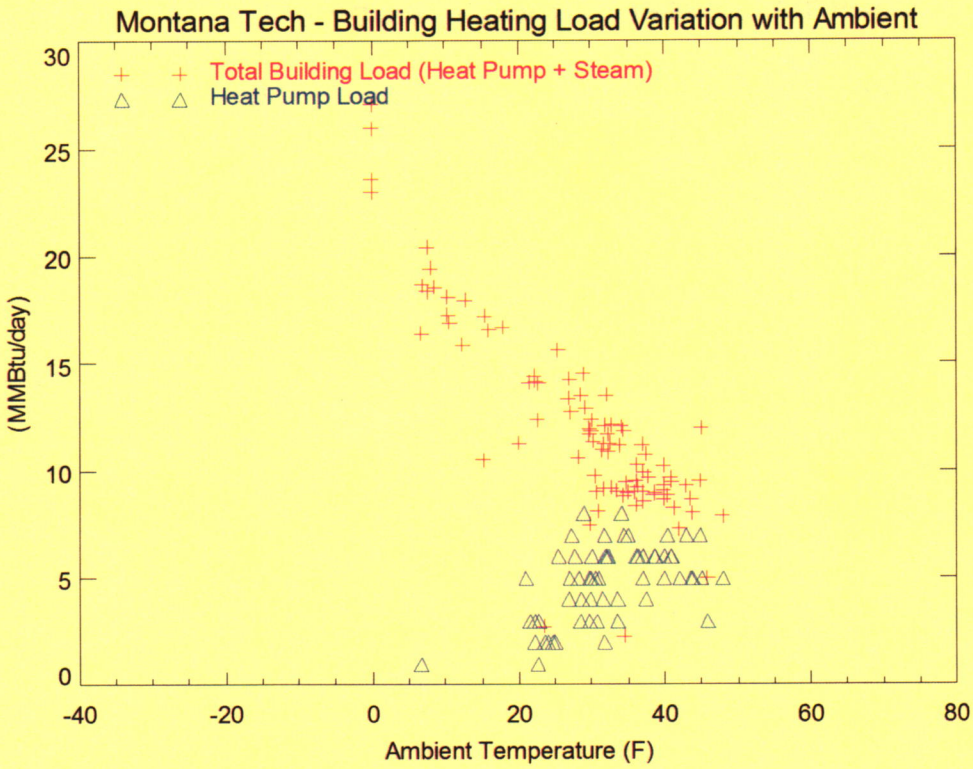
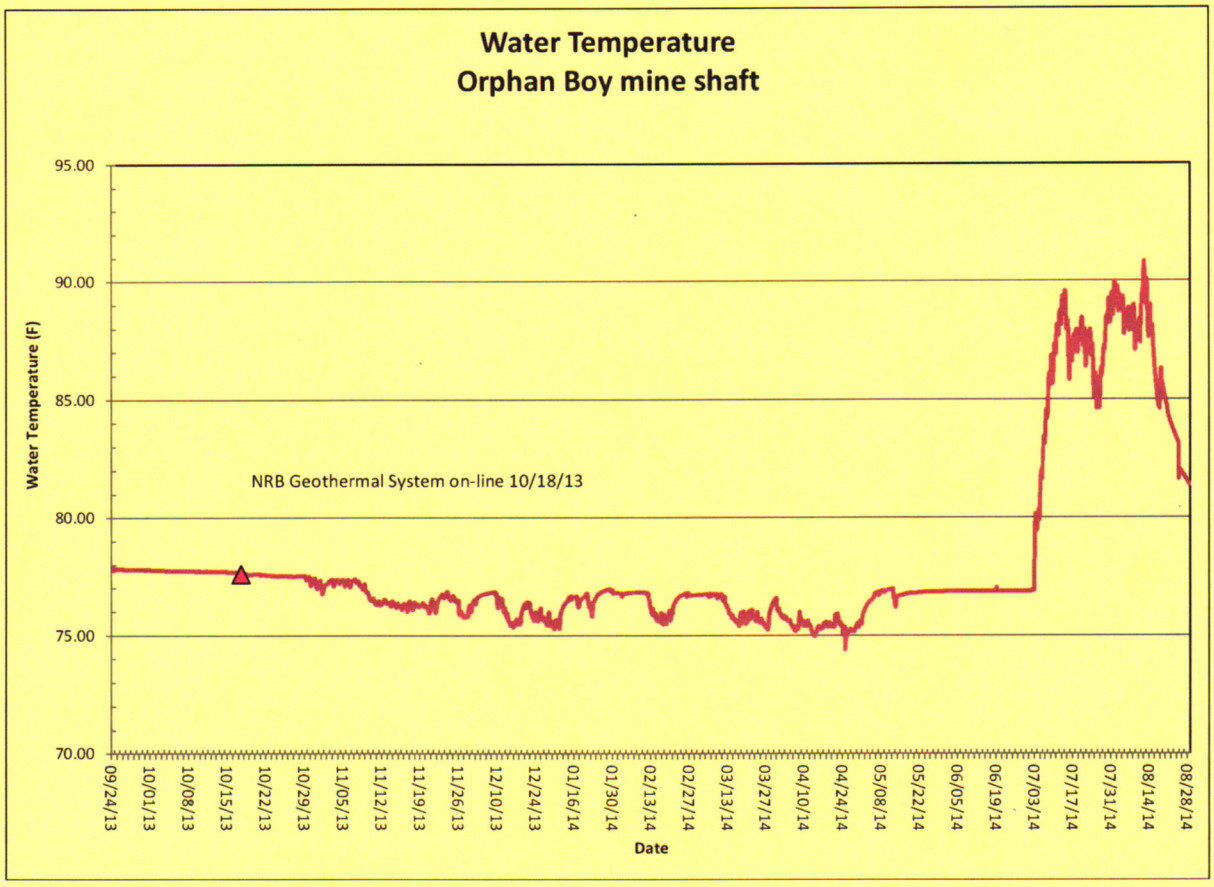
Project 2: State Geological Survey Contribution to the NGDS

AASG
Association of American State Geologists

Montana Bureau of Mines and Geology
Since 1919
Earth Science Information

NGDS
National Geothermal Data System



Winter 2013-14: The heat pump was observed to contribute a considerable heating when the ambient temperature was between 20°F and 40°F. That is, at temperatures above 20 degrees, the building was heated primarily with mine waters.