

# SUCCESS

REGIONS 1 & 4, STATE AND PRIVATE FORESTRY

OCTOBER 2011



## North Dakota Recreation Facility Heated with Wood Waste

*“King Coal Furnace Corporation and their representative, John Docktor were standing behind their product and with us every day in the early days of the system’s operation.”*

*John made sure the boiler system was working the way we wanted it to.”*

*Kevin Klipfel,  
Bismarck Aquatic and  
Wellness Center*

### **Local Commitment and Local Manufacturer Help Make Bismarck Community Aquatic Center a Biomass Fueled Success**



The Bismarck State College Aquatic and Wellness Center, located on a hillside on the college campus overlooking the Missouri River is part of the growing hub of community activities on the campus.

Run by the Bismarck Parks and Recreation District, the city’s first indoor public swimming pool features a heating and water filtration system powered by wood biomass from the municipal landfill.

Randy Bina, Executive Director of the Parks and Recreation District, knew interest in establishing an indoor public swimming pool in Bismarck (the site of notoriously cold winters) had shown up in surveys of residents for over 30 years. Developing an indoor community pool

took a step forward when the president of the college, Dr. Larry Skogen, offered a site on the campus for an aquatic facility.

Randy—as a member of the city’s citizen forestry advisory council—knew the city had a “Fuels for Schools” project at the city landfill. That project used a King Coal boiler system fueled by wood biomass to heat the buildings at the landfill. Randy and Parks and Recreation District staff started investigating the potential for using wood biomass to heat the aquatic center.

Bismarck Parks and Recreation District and the North Dakota Forest Service entered into a two-part grant from State and Private Forestry.

The first phase involved a feasibility study conducted by a local engineering firm to examine whether using wood biomass to heat the aquatic center was economically viable. The consulting firm surveyed the potential supply of biomass in the area and determined the Bismarck city landfill could easily supply the volume necessary for an aquatic center.

### Contact

**Angela Farr**  
US Forest Service  
State and Private Forestry  
Biomass Utilization  
Missoula, Montana  
Office: (406) 329-3521  
afarr@fs.fed.us



The feasibility study also showed using biomass as a fuel source would greatly reduce heating costs at such a facility.

Once economic viability was established, Phase II of the \$400,000 “Fuels for Schools” grant went to the construction of the boiler, the boiler/fuel storage building, and associated heat transfer equipment.

The boiler system that heats the aquatic center and its water is manufactured by King Coal Furnace Corporation, a Bismarck-based business.

Aquatic center manager Kevin Klipfel explains, “King Coal Furnace and their representative, John Docktor were standing behind their product and with us every day in the early days of

the system’s operation. John made sure the boiler system was working the way we wanted it to.”

The boiler system is overseen by one person, Ryan Geerdes, building and grounds specialist at the aquatic center. Problems encountered in the early days of operation indicated chip quality and chip size are important to smooth operations; oversized chips needed to be reground.

Ryan found that wood chips from whole logs and shipping pallets work best in the system. Metal nails, staples, and other foreign materials are pulled from the fuel by a magnet and then recycled.

The wood biomass used to heat the aquatic center came initially from a hazardous fuels reduction project that cleared debris from access roads and fuel breaks near Bismarck.

Today, the facility’s fuel source comes principally from municipal wood waste. A new chip loader was purchased by the aquatic center and stationed at the landfill.

Ryan loads chips and then hauls them to the center, with about 4.5 tons of chipped biomass hauled per trip. At the aquatic center, a hopper holds a 4 to 5 day supply of chips. During the summer, the center uses about 1 ½ to 1 ¾ tons of chips a day; in winter fuel use increases to 3 to 5 tons of chips a day.

Due to the foresight and interest of Bismarck Parks and Recreation staff, the center meets the needs of Bismarck residents while efficiently making use of their community’s wood waste.