Centre Regional Recreation Authority

LEED Certification and the

Sustainable Construction of the

Spring Creek Education Building

at Millbrook Marsh Nature Center

SELF-GUIDED TOUR BROCHURE

Centre Region Parks & Recreation

www.crpr.org ***814-231-3071***

Welcome

Welcome! This is a guide to the Spring Creek Education Building and the green construction practices that were used during construction to achieve the LEED Silver certification of the building. LEED stands for "Leadership in Energy and Environmental Design" and is administered through the US Green Building Council. LEED certifications measure key areas such as sustainable sites, water efficiency, energy & atmosphere, materials & resources, indoor environmental quality, awareness & education, innovation in design and regional priority.

Outside the Building

Building location

- The building has been located near the existing barn and parking on a previously disturbed area of land and in part to minimize the impact on the marsh. This keeps as much of the land undisturbed as possible.
- As an additional measure, an archaeologist verified the site of the new Education Building did not contain any artifacts which merited preserving.

Construction

- Close to 100% (118 tons out of 120 tons) of the materials resulting from construction were diverted from the landfill. These materials include cardboard packing boxes, paint cans, leftover pipe pieces, etc. They were either recycled or reused.
- The earth disturbance during construction was limited to immediately adjacent to the building. Trucks and other equipment weren't permitted to drive, park or otherwise disturb the land around the building. This served to protect the natural habitat of the marsh.

Landscape

- Native flowers and shrubs have been planted to blend with the natural setting of the marsh and to reduce the need for supplemental irrigation or watering. This is called 'xeriscaping'.
- Roof water drainage is directed by the shaping and forming of the land into a bio-retention area located near the northeast corner of the building. A bio-retention area is a landscaped depression or shallow basin which has been formed to catch the water and allow it to naturally filter into the soil, rocks and plants. By doing this the rainwater is returned naturally back into the ground and doesn't have to be piped away and treated.
- Impermeable groundcover area is minimized in the parking area by the use of gravel instead of paving, which allows the water to infiltrate back into the land.
- The light color of the roof was chosen for its high Solar Reflectance Index, or 'SRI', which means light and heat from the sun is reflected, rather than absorbed, avoiding the 'heat island effect', in which dark materials absorb heat and contribute to the warming of the Earth.

Front Porch

Materials

The building exterior/envelope, including the walls roof and windows, is well insulated to minimize the impact of the exterior air temperature on the inside of the building.

Many of the materials used to construct the building are made using recycled materials. Some examples are:

- The **metal roof** is 35% Post-Consumer and 55% Pre-Consumer Recycled content.
- The **floor tile** and **wall tile** in bathrooms is 40% Pre-Consumer Recycled content.
- The **carpet** is 29% Post-Consumer and 35% Pre-Consumer Recycled content.
- W**heat board** has been used for all cabinets. Wheat board is a 90% post-industrial recycled material. It is a rapidly renewable raw material. Wheat straw does not take long to grow; it is grown in a yearly harvest cycle.

Products specified are low-emitting materials to reduce contaminants and improve the indoor air quality. These include low to no VOC paint and adhesives; no urea formaldehyde.

Also where practical locally harvested and manufactured building materials have been selected. This reduces the amount of energy used in transport, resulting in reduced environmental impact.

Foyer

Restrooms

- Hand dryers are used, no need for paper towels
- Plumbing fixtures such as toilets and sinks are low water use, the water needed to operate these fixtures is half that of the average fixture. The men's urinal uses no water at all.
- The **partitions** in the bathrooms are 100% recycled content.

Upper Level Classroom

Lighting

- Large windows admit natural daylight minimizing the need for artificial light during the day. Some windows are also operable, providing natural ventilation. The windows also provide panoramic views of the surrounding marsh; a connection with the outside environment is proven to enhance the well-being of those occupying a building.
- High efficiency lights have been installed. Dimmers on the lights inside the building allow adjustable light levels. Automated controls adjust the lighting level based on time of day, and how the building is being used, so energy is not wasted.
- Exterior lights are controlled by a time clock, so they can be set to turn on and off automatically.
- Sensors have been installed to turn off lights when nobody is in the space.

Lower Level Classroom

Heating and Cooling

The building is heated and cooled using a highly efficient geothermal ground source heat pump. Deep underground the earth is not affected by the air temperature above, so the temperature is relatively constant. The geothermal or ground source heat pump system uses the earth's relatively constant temperature to aid in providing heating, cooling, and hot water for homes and commercial buildings. The Spring Creek Educational Building has 5 pipes loops that run 200 feet down into the ground located on the east side of the building (outside the window near the interior stairway). The earth temperature will transfer through the pipes to the fluid in the pipes and is brought up through the pipes and used in the building heating and cooling system. This means the relatively warmer temperature from the earth can be used to help provide heat in the winter and the cooler earth temperature for cooling in the summer. This reduces the amount of energy needed to heat and cool the building.

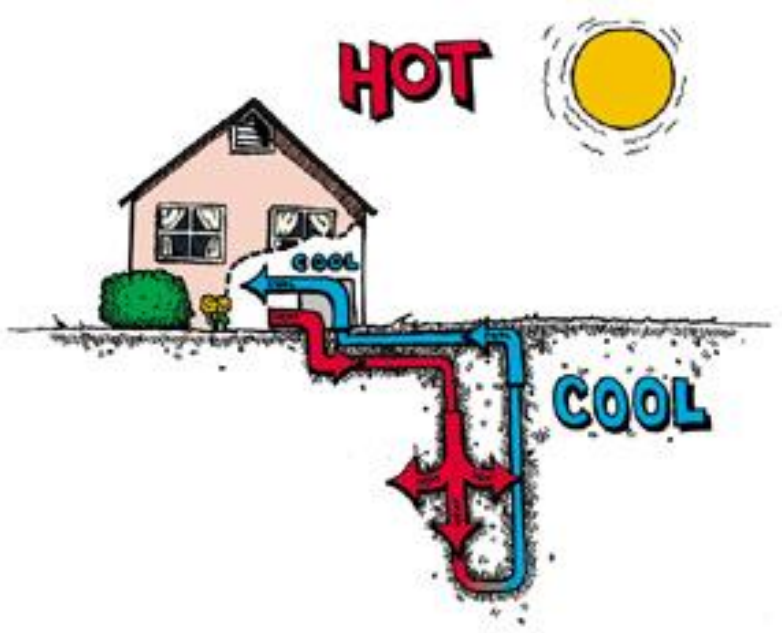

ILLUSTRATION OF HEAT PUMP PIPING - SUMMER CONDITION

Source: igshpa.okstate.edu

THANK YOU for visiting today!

Please enjoy the walking trails and other facilities at the nature center during your visit. If you have additional questions, our staff will be happy to answer them or you can contact us at 814-231-3071 or crpr@crcog.net.

www.crpr.org or www.MyMillbrookMarsh.org

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About Millbrook Marsh Nature Center

The Millbrook Marsh Nature Center, located in Central Pennsylvania, is operated by the Centre Region Parks & Recreation, an agency of the Centre Region Council of Governments. The nature center includes 62 acres of preserved wetland area that offers recreational, environmental and educational uses for the community. On site is this newly constructed classroom building, called the Spring Creek Education Building, and also a restored bank barn, a wetland laboratory, a picnic pavilion, and boardwalk walking trails.

The Spring Creek Education Building was constructed with private contributions, municipal contributions and a $200,000 grant from the PA Department of Conservation & Natural Resources – Bureau of Recreation and Conservation.

The nature center hosts over 10,000 participants annually to organized programs and events, not counting the recreational day users who enjoy bird watching, dog walking, hiking, picnicking and more.

The nature center also offers educational programs for school groups, rental facilities for community activities, community events, children's birthday parties, and more!

For more information about the nature center and programs, please visit our website or ask a staff person for more details.

Trail maps are available upon request or from the website.

www.crpr.org or www.MyMillbrookMarsh.org