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## Conservancy uses first self-contained water recycling system in U.S.

Julie Hullett Aug 8, 2019



The outer walls of the Western Reserve Land Conservancy are made of tulip poplar bark, a natural material that is environmentally friendly and engineered to last hundreds of years, according to CEO Rich Cochran. The conservancy offices are located at 3850 Chagrin River Road in Moreland Hills.

Photo courtesy of Western Reserve Land Conservancy

The Western Reserve Land Conservancy does more than just conserve land. Although it recently hit a landmark for conserving more than 55,000 acres of land, the organization also made strides in sustainability at its headquarters in Moreland Hills. Along with other efforts to conserve energy and minimize waste, the Chagrin River Road facility uses a water recycling system, the first of its kind in the country.

Paul Rice, president of Tangent Company, LLC, said that this water recycling system is the first in the country to treat and purify all wastewater on site and recycle it into such a high quality that it can be used for cooking and drinking.

“We’re taking this facility that isn’t connected to the city water and city sewer and allowing them to recycle all of their water,” Mr. Rice said.

“This is the only one in the country that does direct potable reuse.”

He explained that there are two types of domestic wastewater, black water and gray water. Black water has organic components, including human waste and food waste. He said that gray water comes from rinsing objects, such as sinks and showers. According to Mr. Rice, most states would not allow the use of black water from an on-site facility for potable or non-potable uses.

He said that the passage of Ohio Senate Bill 179 in 2014 expanded the list of sources for private, on-site water systems to include recycled water. The Tangent system at the land conservancy is operating on a variance from the Ohio Department of Health.

He said that after the wastewater is treated for pollutants, it goes through three more purification treatments, namely reverse osmosis, UV light and chlorination. Mr. Rice described Tangent's water recycling system as "fail-safe."

According to Mr. Rice, this water recycling system is beneficial to the conservancy because it ensures that the facility has a sustainable water source, it does not discharge septic waste into the nearby stream and it demonstrates the success of a closed-loop, on-site water reuse system.

"This proves that under the watchful eye of regulatory authorities, a high standard of water purity can be constantly delivered," Mr. Rice said. The late Bill Prior founded Tangent Company and Kinetico, the Chardon-based water systems company.

Besides the water reuse system, Western Reserve Land Conservancy President and CEO Rich Cochran said that several major sustainability features were added when the offices moved from Chester to Moreland Hills. In 2007, an anonymous Geauga County resident approached the conservancy with an undisclosed donation for new office space. The conservancy bought an empty house on Chagrin River Road in 2010 and built the rest of their new campus in 2012.

One principle used when designing the new building, which accommodates nearly 25 employees, was to celebrate and emulate how nature builds things. Mr. Cochran gave the example of a bird's nest and said that the bird builds her nest using local materials.

The conservancy also decided to use local materials, such as recycled steel from Cleveland for the roof and black walnut trees from their grounds for the floor of a conference room, according to Kendrick

Chittock, development officer for the conservancy.

Instead of using a man-made material for the siding, the conservancy opted for tulip poplar bark, which Mr. Cochran said is naturally designed to last hundreds of years.

“That’s mother nature’s original siding material,” he said.

The conservancy also considered the law of nature stating that all living things are reflective of their environment. Mr. Cochran said that if the conservancy wanted its employees to be happy and energetic, they needed to build a beautiful office space with no toxic materials.

Another goal with this building was to make it environmentally friendly but economically viable. To keep costs down while using natural materials, the conservancy installed bamboo flooring in Harmony Hall, the room where board members meet. It is made of bamboo shoots compressed together and costs \$10 per square foot less than other flooring, Mr. Chittock said.

“Bamboo is 10 times stronger than the strongest hardwood, and it’s durable and affordable,” Mr. Cochran said.

Mr. Chittock said that the building has a south-facing roof, which could be used for solar panels. When the structure was built, it was too expensive to install solar panels, but the roof is wired for them if the opportunity comes up in the future, he added.

The walls of the structure are called SIPs, short for structural insulated panelized system, Mr. Cochran said. The walls are designed in a detailed drawing, which is then sent off to a manufacturer and the walls are built offsite in a factory, where the electrical and plumbing systems are built in. When they arrive at the site, the panels are easily linked together on a timber frame. He said that this saves labor costs and construction waste.

Mr. Cochran said that the foundation of the building is called an ICF, insulated concrete form, which is also made offsite. The concrete form was left in the ground to allow 55 degree heat from the ground to rise into the building. He said that the new features at the conservancy offices demonstrate their commitment to preservation and sustainability.

## Julie Hullett

Julie Hullett has been a reporter for the Chagrin Valley Times since August of 2018 and covers Gates Mills, Hunting Valley, Moreland Hills, Orange, Pepper Pike and Woodmere. She graduated from John Carroll University with a journalism degree in 2018.