



The algae wheel system after five-months. Water quality tests at the Whitestown pilot study started in May 2004.

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## **Algae-Based Wastewater Treatment Plant Planned for Lake County**

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An Indiana company is planning to build a facility in Cedar Lake that uses algae to treat municipal wastewater. The process creates a sludge that byproduct that can be utilized to produce electricity, heat and biofuel. Indianapolis-based Algaewheel, Inc. President Chris Limcaco says the system uses about half the energy of a conventional wastewater treatment plant. He says a pilot system has been in place in Whitestown since 2004. It has confirmed energy savings in electrical costs and the treatment of the water is as good or better than a traditional facility. Limcaco says a groundbreaking on the Cedar Lake project should take place this year. It would be the first municipal wastewater treatment plant to use the company's algae technology.

### Press Release

CROWN POINT, INDIANA, Jun. 11 - Algaewheel, Inc. announced today that they will be submitting a proposal to build a facility in Cedar Lake, Indiana that uses algae to treat municipal wastewater and uses the sludge byproduct to produce electricity, heat, and biofuel. Christopher Limcaco, President of Algaewheel, announced that Algaewheel has partnered with Thieneman Construction to develop and design the proposal. Algaewheel President Christopher Limcaco praised town officials for their forward-thinking and responsible leadership, stating "Cedar Lake officials are demonstrating both fiscal and environmental awareness by soliciting the proposal, and Algaewheel is excited about the opportunity."

The continued growth of Cedar Lake has necessitated the construction of a new wastewater treatment facility. The new facility will be capable of treating an estimated 2.25 million gallons of wastewater per day, and will serve the residents on the west side of Cedar Lake. Algaewheel's bid will be submitted by July 7th, 2008, and the successful bidder should be identified by September 7th, 2008. Construction of the new facility should begin this year and be completed by the end of 2009.

The ground-breaking facility would include a patented type of algae production. Invented by Algaewheel's President, Christopher Limcaco, the process uses specially designed wheels that maximize algae production and automatically harvest the algae. The wheel, which has been in development for 13 years, quadruples the surface area available for algae production as compared to a stationary algae tank, which significantly reduces the footprint of the facility.

The algae are a component of the system that treats and filters the wastewater by removing certain contaminants, such as phosphorous, and breaking down solids. According to Limcaco, "the system is basically an algae farm using the wastewater as fertilizer". The resulting sludge is a mixture of wastewater solids and algae. This mixture is then thermally treated using a process similar to gasification, a technology that has been around for years. During the thermal process, oils are removed from the sludge mixture in stage one, and the remaining solids are gasified to produce electricity and high grade fertilizer in stage two.

The system has numerous environmental and cost benefits. First, the carbon dioxide emissions generated by the thermal process are looped back into the Algaewheel system where the algae thrive on the gas, which gives the system a negative carbon footprint, and potential carbon credits. Second, the use of algae

in the filtration and treatment process also reduces the need for some chemical-based treatments. Third, the energy produced by the system is used in the operation of the facility in the form of heat and electricity, and depending on the size of the facility, it is possible to generate excess energy that could be sold to the electric grid. Fourth, oils extracted from the wastewater sludge and algae mixture can be used to produce bio-fuel. Lastly, the solid byproducts are 95% less than a traditional system because the only byproduct of the process will be a small amount of solids which can be used as high grade fertilizer. The fertilizer is safe to transport and easy to dispose as compared to the traditional handling of wastewater sludge byproduct, which often involves transporting and dumping hundreds of tons of sludge on farm fields or in a landfill.

The combination of reduced chemical usage, self-contained energy production, and minimal byproducts delivers a remarkably environmentally friendly and cost efficient system. In fact, the operating and maintenance expenses of this type of facility are less and tend to be much more stable over the facility's useful life because part of the energy costs and the treatment costs are not subject to the price fluctuations of energy and chemicals. According to Limcaco, the operating and maintenance cost of an Algaewheel plant can be up to 30 percent less than a similarly-sized traditional facility. To top it all off, the useful life of the facility is estimated at 30 years, which is about 30% greater than traditional facilities.

Cedar Lake and the surrounding area is a fast-growing community of about 35,000 residents and lies a few miles south of Crown Point, Indiana. It is the home of one of Indiana's largest natural lakes, which made the town a hugely popular vacation destination in the early 1900's. However, as travelers became more mobile and able to reach more distant destinations, the town's resort status waned. Recently the town has experienced a surge in development as people have sought out more appealing real estate and good school districts.

Thieneman Construction is a privately-held company based in Crown Point, Indiana. The company is a multi-disciplinary contractor that specializes in the construction of wastewater treatment and ancillary facilities. It is one of the largest specialty wastewater construction companies in the Midwest. See [www.thienemanconstruction.com](http://www.thienemanconstruction.com).

Algaewheel is a privately-held company based in Indianapolis, Indiana. The company specializes in delivering cutting-edge algae-based solutions for wastewater treatment, renewable energy, carbon dioxide capture, and aquatic life. See [www.algaewheel.com](http://www.algaewheel.com). Algaewheel's on-site wastewater treatment solutions are distributed by Oldcastle, Inc. See [www.oldcastleprecast.com](http://www.oldcastleprecast.com).