

# MUNICIPAL News



December 2011

WATER, WASTEWATER, TRANSPORTATION AND MUNICIPAL SPECIALISTS



*An economical and sustainable way to resurface roads*

## RECYCLING PAVEMENT

*Communities have seen the value that recycling pavement brings to their Municipal and County Road Projects.*

### ROADWAY REHABILITATION USING RECYCLED PAVEMENT

When using a typical mill, patch, and overlay approach to resurfacing streets, this method can lead to extensive and costly patching in some cases. Using recycled pavement eliminates the need for pavement surface patching which can reduce project costs and prolong the life of the pavement.

### ROADWAY RECONSTRUCTION USING RECYCLED PAVEMENT

Instead of removing the existing roadway pavement to an off-site location the pavement is pulverized in place and the recycled material stays on the project site and is graded and shaped into an acceptable aggregate subgrade to support the new roadway. This process reduces the pavement removal cost and eliminates the need to import virgin aggregate to the site. The compacted recycled material can also add to the structural integrity of the new roadway.

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## ARTICLES

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## Case Study

Belvidere, IL

**Baxter & Woodman**  
Consulting Engineers

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# Web-Based GIS

MAKE YOUR GEOGRAPHIC INFORMATION SYSTEM (GIS) WORK HARDER FOR YOU

## WEB-BASED GIS APPLICATION

*Looking to make the most of your GIS?* Create a one-stop shop for valuable information? Allow more people to access current data? Then a web-based GIS may be right for you!

*B&W now offers GIS web site development and hosting capabilities allowing communities to save thousands of dollars!*

Make your GIS information available to authorized users through a web browser by publishing your data on a GIS webpage. Web GIS development moves your GIS data from your desktop to the Internet allowing information to be easily shared with others.

### CREATE A CENTRALIZED LOCATION FOR INFORMATION SUCH AS:

- Critical Infrastructure (Water Mains, Sanitary and Storm Sewers)
- Parcel Boundaries, Street Centerlines, Street Addresses, Corporate Limits
- Zoning Boundaries/Classifications
- Subdivision Plats and Plans, Annexation Agreements
- Bid Documents
- Permits
- Aerial Photography
- Digital Photos

Baxter & Woodman has a strategic partnership with Latitude Geographics. Latitude's core product is a software designed around ESRI's ArcGIS server technology. This software features flexible out-of-the-box tools, processes, and features that will give your organization a powerful jumpstart when building and maintaining your web-based mapping and GIS applications.

### A B&W WEB-BASED GIS CAN INCLUDE:

- Ability to search and report.
- Ability to select features and view underlying data.
- Ability to create and print customized map layouts.
- Ability to link to multiple databases
- Ability for the public to view some information, while more proprietary information must be available via a username/password combination.



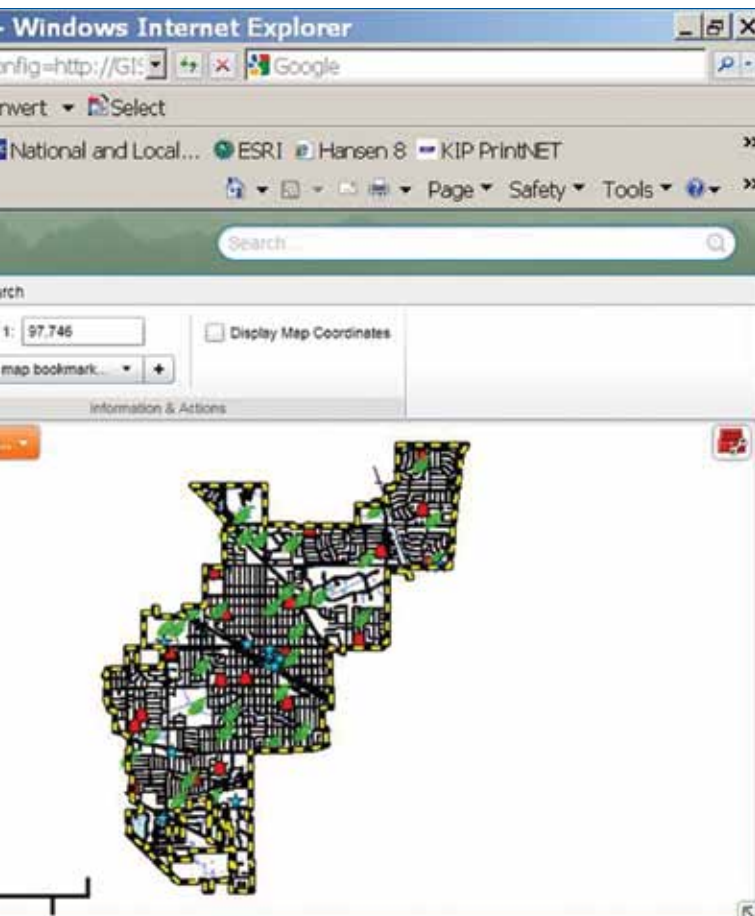


A web-based GIS is easy to use and will allow your community to operate more efficiently by centralizing important data. After a few short training sessions with B&W staff, your organization will be ready to use your web-based GIS to save your community money.

Why not make the most out of your geographic information by publishing it on a GIS web site?

To learn more contact Andy Zaletel at 262.763.7834 or email him at [azaletel@baxterwoodman.com](mailto:azaletel@baxterwoodman.com)

Sample Web-Based GIS Launchpage



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## RECYCLING PAVEMENT REDUCES CONSTRUCTION COSTS AND SAVES TIME

- Recycling pavement can minimize a Contractor's labor, material, and fuel costs which can be passed on as a savings to the Owner.
- Recycling pavement can be completed in an efficient manner, reducing the overall project completion timeframe.
- Recycling pavement allows the roadway to remain open to traffic at night, minimizing inconvenience to residents.

## RECYCLING PAVEMENT IS GOOD FOR THE ENVIRONMENT

- Recycling pavement eliminates the need to haul existing pavement off-site - saving truck diesel fuel.
- Using recycled pavement reduces waste build up in off-site stock piles/landfills.
- Using recycled pavement reduces the need for virgin aggregate that needs to be extracted from quarries and gravel pits which in turn need to be shipped to the project for use.
- When recycling pavement, project work can be accomplished quickly, minimizing traffic delays and congestion related to the construction and reducing unhealthy emissions.

Consider recycling pavement on your next road resurfacing project. Maximize the value of your roadway funds and be sustainable at the same time. Call us to discuss this approach and how it applies to your roadways. Contact Gary Vogel [gvoegel@baxterwoodman.com](mailto:gvoegel@baxterwoodman.com) at 262.763.7834 for information.

### B&W HAS HELPED THESE COMMUNITIES GO GREEN BY RECYCLING PAVEMENT

Village of Paddock Lake, WI  
City of Delavan, WI  
Town of Delavan, WI  
Village of Rochester, WI  
Town of Lyons, WI





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# THERE'S AN APP FOR THAT!



**S**mart phone use is on the rise. Smart phone users can send and receive emails, link to a company network to access data and download and use a variety of applications (apps). Apps help users perform specific tasks. Is there an app out there to help you do your job better, faster, and more efficiently? Maybe! Here are some useful apps for those in the municipal services/public works field. (Most are FREE! or cost less than \$5.00 to download from the iTunes App Store or the Android Market)

**EVERNOTE** makes it easy to share text between your computer, phone, and the web.

**THEODOLITE** is a multi-function app that serves as a compass, GPS, map, zoom camera, and more. (iPhone only)

**DROPBOX** makes it easy to share files between your computer, phone and web – Like a virtual USB drive!

Visit <http://bit.ly/viq9C4> to watch short video clips of Chris Sosnowski, General Manager of BWCSI, review

**RADAR NOW!** is an easy-to-use weather app. (Android only)



these apps and give you some tips on just how useful these apps can be.

CITY OF BELVIDERE, IL

# WASTEWATER TREATMENT PLANT AERATION SYSTEM IMPROVEMENTS

## BACKGROUND

According to the Consortium for Energy Efficiency (2007), water and wastewater facilities account for up to 35 percent of municipal energy usage. Aeration systems are notorious for their high energy costs due to the large equipment size and inherent inefficiencies of the process. Typical rule-of-thumb estimates of power consumed at municipal WWTPs place the portion of power spent in activated sludge aeration systems at about half the total treatment plant power bill. With increasing costs of energy, improvements to the energy efficiency of aeration systems are showing shorter payback periods.

A courtesy power monitoring audit performed by Baxter & Woodman at Belvidere's Wastewater Treatment Plant indicated activated sludge energy consumption rates much higher than what is considered typical at 76% of the total facility energy consumption or the equivalent of over 2,000 kilowatt-hours per million gallons of flow treated.

## CHALLENGE

As a result of the power audit, the City learned of the significant potential to reduce energy consumption at the Belvidere Wastewater Treatment Facility. After analysis of the power monitoring data and estimating potential savings from past projects, the City determined that aeration system improvements would be highly cost

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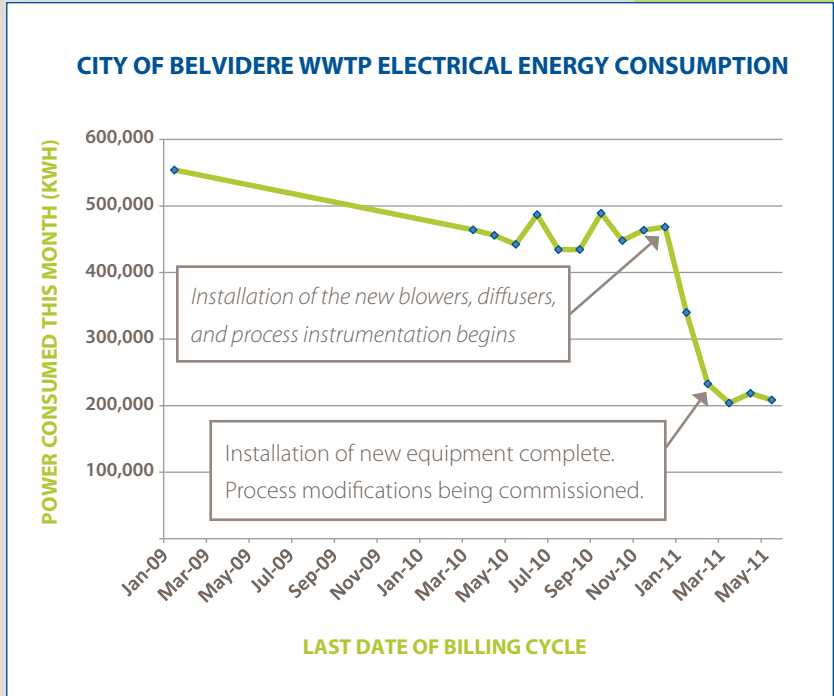


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effective, with paybacks under five years for improvements focused on maximizing efficiency and minimizing energy usage costs.

**SOLUTION**

Baxter & Woodman was hired to design an aeration system retrofit for a 5.8 MGD activated sludge aeration system at Belvidere that was last upgraded in 1987. A comprehensive aeration system improvement project was selected, essentially updating all of its components from the decades-old centrifugal blowers to the worn-out coarse-bubble diffusers and everything between. Improvements included incorporation of a modified-Ludzack process, in which the upstream aeration tanks are intentionally under-aerated in order to achieve nitrogen removal. A two-tier aeration control system was installed in which dedicated motorized operating valves on the air header to each tank are controlled by Dissolved Oxygen and/or Oxidation Reduction Potential probes, and dedicated airflow meters on the air header to each tank are used to control the blower run speed.



**RESULTS**

The improvements at the City of Belvidere’s WWTP are complete. With the installation of new diffusers and turbo blowers with air bearings alone, the activated sludge energy consumption was reduced by 66% for an overall facility energy reduction of approximately 50%.

Once the controls system and process modifications have been incorporated, the activated sludge energy consumption is expected to drop by 80%, as compared with the consumption prior to the improvements.

The improvements place the City of Belvidere’s aeration system on par with some of the most efficient in the State and have resulted in projected energy savings of over \$227,000. The City is also expecting to receive funding through the Illinois Department of Commerce and Economic Opportunity for the equivalent of a year and a half’s energy savings, or \$340,000.