

# the benefits of Backwash Water

Each year, the Borman Park backwash water recycling and residual management facility will divert more than 100 million gal of backwash water to two 550,000-gal detention and clarifier basins.



By Stacy Hoffman

Indiana recycling facility  
cuts costs & boasts  
environmental benefits

## ARTICLE SUMMARY

**Challenge:** The Borman Park Water Treatment Facility in Gary, Ind., needed a green and cost-effective approach to constructing its new backwash water recycling and residual management facility.

**Solution:** American Water used a design-build approach to create a facility that diverts spent filter backwash water to two fully enclosed detention and clarifier basins, then pumps the decanted water back.

**Conclusion:** The new facility recycled more than 70 million gal of filter backwash water in its first 50 days in operation. It also provided many environmental benefits.

**T**ough economic times over the past few years have businesses and municipalities sharpening their pencils to spend dollars wisely. When a project or new facility can cut operation and maintenance costs and provide significant environmental benefits, it quickly becomes a priority.

Such was the impetus for a \$6-million backwash water recycling and residual management facility that was put into service in June 2012 at the Borman Park Water Treatment facility in Gary, Ind., less than four months after construction commenced.

In fact, Indiana American Water, a subsidiary of American Water, has constructed two other similar projects in the past few years in its northwest Indiana service area, the company's largest in the state, where approximately 250,000 people depend on the company for water service every day.

A similar Indiana American Water facility, a design-build collaboration with Bowen Eng. and Black & Veatch, was placed into service at the company's Ogden Dunes facility in 2009. This project allowed the company to eliminate its settling ponds at this location by constructing a facility that recycled 42 million gal of backwash water during a recent 12-month period.

### Design-Build Approach

Working with the design-build team of River City Construction and Hazen & Sawyer, American Water was able to design and construct the Borman Park recycling facility with minimal delays and within budget.

Annually, the facility will divert more than 100 million gal of filter backwash water, previously discharged to the Gary sanitary sewer system, to the head of the water treatment plant as recycled filter wash water. With high summer water use, demands and more filter backwashes, the new facility actually recycled more than 70 million gal of filter backwash water in its first 50 days of operation.

In addition to the savings realized in sewer discharge fees, the recycling project also is enhancing the environment by helping the city of Gary meet its sewer system management objectives.

### Simplicity & Efficiency

The project was fairly simple in its design, diverting spent filter backwash water to two new fully enclosed detention and clarifier basins. After allowing solids to settle, the decanted water is

pumped back to the head of the water treatment process via a connection to the treatment plant's raw water pump station discharge header.

The basins have a design capacity for multiple filter backwashes, holding up to 550,000 gal of water each, and are primarily sub-grade to allow backwash water to flow into them by gravity. The construction of the basins below grade required construction dewatering of 600,000 gal per day for five weeks until the base slab and side walls were complete. The footer for the structure was poured in a single day, involving almost 2,000 yd of concrete to create a 120-by-80-by-5-ft-thick slab. The facility also includes poured-in-place, 18-ft-tall, 18-in.-thick concrete walls with hollow-core, precast concrete roof panels.

A metered 16-in. connection with a backflow protection air gap from the recycle pump discharge header to a nearby existing sewer line was also installed in case of process emergencies or anomalies. The basins can hold approximately 3 ft of sediment before being cleaned out on an annual basis.

### Green Features

As a part of the backwash water recycling project, the company also constructed three infiltration trenches alongside its Borman Park Water Treatment facility that will retain storm water runoff on site and allow it to naturally percolate into the soil instead of discharging into the city's combined sewer system.

The infiltration trenches, basically a large French drain system, accept rainwater from more than 53,000 sq ft of roof surface area at the Borman Park Water Treatment facility located just across the street from the recycling facility. Rainwater from the new recycling facility's 10,700-sq-ft roof also is being routed to an infiltration trench.

True to its green nature, the recycling facility also utilizes LED lighting to keep operating costs as low as possible. [www.ledlighting.com](http://www.ledlighting.com)

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