Case Study: Watauga Ready Mix Corporation

Location:	Boone, NC (Watauga County)
Industry:	Concrete Manufacture (SIC 3200)
Pollution Prevention Application:	Concrete Recovery and Reuse
Annual Savings:	$30,650
Payback Period:	3 Years
PPP Challenge Grant Award:	$15,000
Contact:	G. Perry Greene, Jr., Plant Manager (704 264-2611

Background

Watauga Ready Mix manufactures and distributes ready mix concrete in mixing trucks. Disposal of mix left over in these trucks has historically been a problem in this industry. Although the company attempted to reuse this waste stream by giving it to employees, making soil stabilization blocks, etc., a large percentage was dumped in private local landfills. In an effort to reduce this waste stream and make use of valuable materials, Watauga studied several concrete reclaiming techniques.

Waste Reduction Activities

After a year of review, Watauga determined that Recycle System III, manufactured by J & H Systems, was the best for its operation because of its low capital cost and maintenance, small land area requirement, and the efficiency in cleaning and separating coarse and fine aggregate.

This system comprises two distinct mechanism: a reclaiming process and settlement basin. The reclaimer is equipped with a hopper to collect wash water and concrete from the mixing trucks. This material is rinsed as it is transferred by screw conveyer up an incline. Aggregate particles, stone and sand, are separated from cement, fly ash, and very fine sand as they move up the conveyor (the other components and excess water are pumped to the settling basins). A punched stainless steel plate filters the fine aggregate into a second screw conveyor while the coarse aggregate is deposited out the top of the first conveyor. The fine aggregate continues to be rinsed as it moves up the second screw conveyor until it is deposited out the top.

The aggregate collected from this procedure is of a quality comparable to purchased materials and is reused in the manufacture of concrete. The settlement basin employs five divided compartments, the first of which receives the overflow from the reclaimer. The purpose of these divided compartments is to allow water reuse by settling materials from the water.

	The first few compartments are accessed by a front end loader for recovering the cement/fines mixture, which is used for fill material, stabilization of gravel roads, and landfill cover. The final compartment contains several pumps for collecting water for concrete mixing, truck cleaning, and aggregate cleaning. The water reused for concrete mixing produces a stronger quality concrete than does tap water.
Waste Reduction	Watauga estimates a recovery of over 5.1 million pounds per year of aggregate, and 650,000 gallons per year of water is reused for plant operations. Part of the water recovered in the basin is collected from area runoff, not from only the reclaimer.
Annual Savings/ Payback Period	Reclaimed aggregate saves approximately $25,000 per year in purchasing and $7,750 per year in dumping costs. Water savings are $3,000 annually. With the cost of cleaning out the basins, maintenance, and electricity at $5,100, total savings are $30,650 annually. The cost of the project was $92,000, giving an estimated payback period of 3 years.