



Case Study: New Castle Wastewater Treatment

New Castle, Colorado

By Cam Burns, CLEER



Fire department helps New Castle wastewater get electricity use back under control

The operators at the New Castle wastewater treatment plant recently came up with a creative solution for fixing a problem caused by plugged air pipes at the facility—they used fire trucks to blast them clean. With the material cleared from the lines and air bubbling smoothly again, operators have found the plant is running better is energy use is back under control.

In April, after a power outage at the New Castle wastewater treatment plant last summer, Utilities Supervisor Greg Colter and his colleagues noticed that two big blowers that push air into oxidation basins—where bacteria eat biological and chemical waste in the water—had shut down and were allowing dirty water to flow backwards through tiny holes in air pipes that would normally create fine air bubbles.

When the power came back on,

Lessons Learned

- Small adjustments in how machines operate can have impressive results
- Sometimes running a facility means making do and being creative



Utilities Supervisor Greg Colter holds a special attachment his staff added to the plant. It allowed the fire dept. to clean the fine bubble diffuser pipes. Photos by Cam Burns

the dirt in the 4-millimeter holes meant bubbles weren't forming properly in the many diffuser pipes that feed air into the oxidation basins. That could've been a serious problem as the plants bacteria need oxygen to break down waste material. As a result, the plant's staff had to crank up the pressure generated by the air blowers to achieve the correct level of oxidation. The plant used considerably more energy for several months. The plant had recently been highlighted in a national publication for achieving energy savings, but those savings

weren't occurring during the time the staff was working to solve this problem. CLEER's Mike Ogburn, roughly forecasted it could increase energy costs by as much as \$30,000 per year if allowed to continue that long.

The two \$14,000 air blowers were also running hot, which concerned Colter. He made various changes to the ventilation in the pumphouse housing the blowers, but overheating and increased wear and tear on the blowers remained a concern.

In late summer 2013, New Castle wastewater treatment plant staff

Above right: Greg Colter shows off one of the two air blowers at the New Castle wastewater treatment plant. Below right: Colter monitors energy use on a daily basis.

came up with a novel idea: blast the waste stuck in the pipes out with water. The fresh water line at the plant didn't have enough pressure so plant staff found the next best supply of high pressure water they could think of—they called Colorado River Fire Rescue. But before the fire department visited, wastewater treatment plant staff added special fittings that would allow the fire department's hoses to connect to the wastewater treatment plant's pipes.

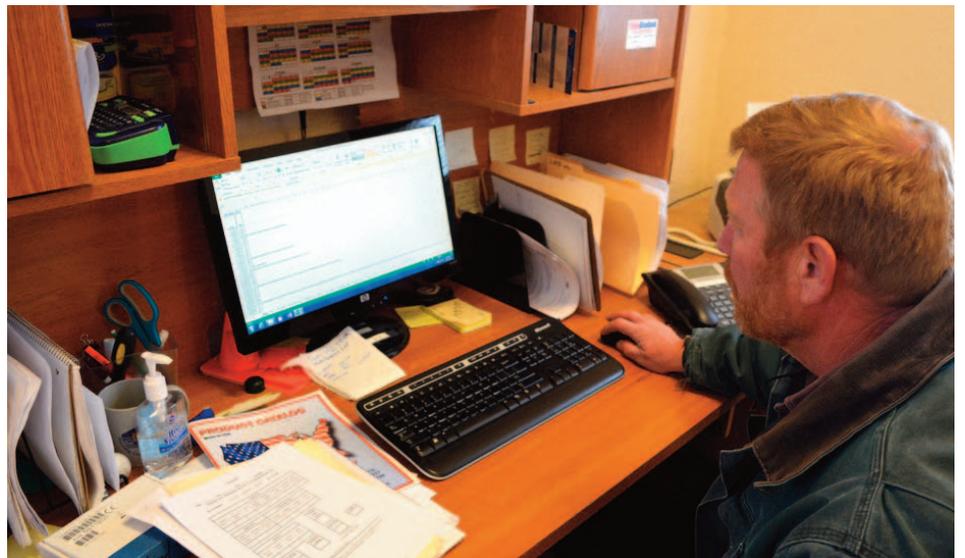
On September 25, the fire department arrived at the plant, hooked up its hose, and blasted hundreds of gallons of water at high pressure through the air pipes of the wastewater treatment plant, clearing the gunk that was plugging the tiny holes.

"With the fire department's pump truck we were able to pump 250 gallons per minute of water at 85 pounds per square inch and this cleared the holes," Colter said. "With the blockage cleared, the blower did not have to work as hard to deliver the required amount of air. In return the electricity cost went down, along with the blowers running cooler and more efficiently.

Colter doesn't know if he'll need to get the fire department out to re-blast the pipes in another several months, but for now, the plant is running well and using less energy.

The relationship between the two agencies is symbiotic, as both need and use huge amounts of water.

"We keep in close contact with



the fire department," Colter said. "When we lower the volume of water we store in the water tanks in the winter, we notify them so they know we have a lower reserve of water in case of a fire. And they call us if a fire should occur so we can transfer water to the zone that the fire is in and start the water plant up so that we can provide water if it is needed."

And, during the initial attempts to blast water using the hydrant at the wastewater plant, plant operators learned that the pressure in that line was less than adequate for fire protection. A properly pressurized hydrant is important if there's ever

a fire at the plant, Colter noted.

"That's one of the best energy-saving MacGyver stories I've heard in a long time," joked Ogburn. "The wastewater team at the Town of New Castle deserves a pat on the back for thinking out of the box and getting their plant running right and keeping costs down."

Garfield Clean Energy/CLEER
520 S. Third St., Ste. 17
Carbondale CO 81623
970-704-9200
info@cleanenergyeconomy.net
www.cleanenergyeconomy.net
www.garfieldcleanenergy.org