

PW/Utilities Connection



January 2012

Utilities Data from Dec. 2011

City of Melbourne Public Works & Utilities Department

Value of reclaiming wastewater for irrigation increasing

The common-sense idea of cleaning dirty water and then reusing it for irrigation has been part of the way in which Melbourne handles wastewater for more than two decades.

As the City prepares for a major project to allow even more wastewater to be reclaimed at the D.B. Lee Water Reclamation Facility (WRF), those who best know the 'business' of reuse water say it can be challenging.

For instance, demand for reuse water soars along with irrigation activities during an extended dry spell. Wastewater flows may not be enough to keep up. Yet during rainy weather, the demand can quickly vanish. Still, millions of gallons of treated wastewater must go somewhere.

Then there is the reality that not everyone who might want reclaimed water can be served. While it makes perfect sense for reclaimed water lines to be installed in a new subdivision, it makes little sense in established neighborhoods due to the high cost and inconvenience of adding distribution lines.

On an average day, more than seven million gallons of wastewater arrive at the City's two reclamation plants for treatment and disposal. All of the wastewater is cleaned to meet regulatory standards. Then, about a third of the water is filtered and chlorinated to meet higher environmental requirements, becoming reclaimed water available for irrigation. The rest is sent down a well for disposal a half-mile underground in a confined zone of limestone rock.

The water that is reclaimed for irrigation goes to about 800 residential customers and nearly 90 commercial customers. The reclaimed water also is provided to two high schools, the City's two golf courses, as well as several recreation areas and roadway medians.

"While 60-70% reuse would be optimal, the City realistically is targeting goals exceeding 50%," says Eric Blankman, the City's Water Reclamation Superin-

tendent. "Our reclaimed water is now available for our customers 24/7 for 365 days a year."

Environmental regulators for the State of Florida have pushed local governments for decades to add or expand reclaimed water capabilities. Leigh Ann McDonald, the City's Reclaimed Water Coordinator, explains that originally the idea was that reclaiming

water provided a sensible way of disposing of the community's wastewater.

"Now, it's more about conserving our traditional sources of drinking water by using reclaimed water for irrigation instead of potable water," she says.

"The conservation of our potable water is an important benefit to all of our customers, even if the reuse water is not available to them," McDonald said.

The role of reclaiming wastewater to help ensure adequate drinking water is being emphasized by regional water managers. In issuing a consumptive

use permit to Melbourne, the St. Johns River Water Management District has set a goal that sees Melbourne recycling 40% of wastewater by 2014.

To accomplish this, major improvements at the Grant Street WRF were recently completed, increasing production capacity to two million gallons per day (MGD). This \$5.2 million project was designed to allow future expansions. The reclaimed water distribution system is being extended southward from the Grant Street facility.

Now underway is a \$4.6 million project that will upgrade the D.B. Lee WRF. Storage capacity for reclaimed water will be doubled and antiquated filtration equipment will be replaced to restore the facility to its full 4 MGD production capacity. The project is being funded with a low-interest loan from the State of Florida.



Blankman (left) and McDonald discuss improvements at the Grant Street WRF.

Story and photo by Mike Moore, Melbourne's Public Information Officer.

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Monthly Water Usage and Raw/Finished Water Quality Statistics

Water Usage

- ◆ Water pumped to service: 470,175,000 gallons or 15.167 MGD average
- ◆ Maximum finished water pumped to service: 16.527 MGD on Dec. 23, 2011
- ◆ Fire hydrant flushing: 11,308,305 gallons
- ◆ Committed capacity: 2.5753 MGD
- ◆ Capacity available for development: 6.744 MGD (Based on 12-month average daily flow)

Water Quality Statistics

Lake water

- ◆ Level: 14.67 feet above MSL on Dec. 31, 2011 (Prior month comparison: 15.79 feet on Nov. 30)
- ◆ pH: 7.4
- ◆ Alkalinity: 59 mg/L

- ◆ Total hardness: 104 mg/L
- ◆ Chlorides: 69 mg/L
- ◆ Color: 316
- ◆ Total dissolved solids (TDS): 249 mg/L

Well water

- ◆ pH: 7.4
- ◆ Alkalinity: 124 mg/L
- ◆ Total hardness: 60 mg/L
- ◆ Chlorides: 688 mg/L
- ◆ Color: 6
- ◆ Total dissolved solids (TDS): 1,498 mg/L

Finished water - pumped to service

- ◆ pH: 8.4
- ◆ Alkalinity: 53 mg/L
- ◆ Total hardness: 75 mg/L
- ◆ Chlorides: 62 mg/L
- ◆ Color: 1
- ◆ Total dissolved solids (TDS): 292 mg/L

New monitoring wells expected to protect investment

An analysis of the City's deep injection well at the Grant Street Water Reclamation Facility may lead to the City being able to avoid a high-costing capital project.

"Anomalous monitoring data from the sampling of the deep and shallow wells triggered the Florida Department of Environmental Protection (FDEP) to question the deep injection well system's confinement during the 2009 permit renewal cycle," said Assistant Public Works & Utilities Director Harold Nantz. He explained that more than four million gallons of treated wastewater from both water reclamation facilities is injected into the well daily. It was constructed and began operation in 1989.

As a result of the questioning from FDEP, the City entered into a continuing consultant contract for hydrogeologic services with CDM Smith and authorized them to perform a confinement analysis on the deep injection well.

Their detailed report concluded that the data FDEP was questioning was the result of problems with the



A mechanical integrity test of the deep injection well was performed last in 2009, mandated by FDEP to be conducted every five years. The test checks for potential impacts to the groundwater from the injection well. The monitoring wells that will be replaced are located to the south of this well, on the same pad. The new monitoring wells will be located farther away to get more representative data.

shallow and deep monitoring wells, not the injection well confinement system. The consultant's also developed a corrective action plan to resolve the situation. This report was submitted to FDEP last July and in August they approved the corrective action plan.

The corrective action plan includes the design and construction of two new monitoring wells – one deep and one shallow – and the abandonment of the two existing wells. The implementation of the FDEP-approved corrective action plan requires the assistance of the City's hydrogeologic continuing consultant. Their proposal, as a supplement to their continuing contract, was approved by City Council at their January 10 meeting at a project amount not to exceed

\$183,969. All work associated with the design and bidding phase is expected to be completed in 275 days of the notice to proceed. The construction phase should take another 300 days.

"By verifying the actual data, this has the potential to prevent us from having to replace the injection well which would be very costly," Nantz said.

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Wastewater Treatment Operational Summary and Reuse Statistics

D.B. Lee Water Reclamation Facility

- ◆ Treated this month: 120.10 MG
- ◆ Treated daily: 3.87 MGD
- ◆ Reuse production — total month flow: 37.31 MG
- ◆ Reuse average daily flow: 1.20 MGD
- ◆ Reuse number of days run: 31
- ◆ Plant efficiency, BOD removal: 99.58%
- ◆ Committed capacity: 0.6035 MGD
- ◆ Capacity available for development: 2.3998 MGD
(Based on 12-month average daily flow)
- ◆ Rainfall: 4 inches over 5 days

Grant St. Water Reclamation Facility

- ◆ Treated this month: 100.99 MG
- ◆ Treated daily: 3.26 MGD
- ◆ Reuse production — total month flow: 22.11 MG
- ◆ Reuse average daily flow: 0.71 MGD
- ◆ Reuse number of days run: 27
- ◆ Plant efficiency, BOD removal: 98.74%
- ◆ Committed capacity: 1.0101 MGD
- ◆ Capacity available for development: 1.4024 MGD
(Based on 12-month average daily flow)
- ◆ Rainfall: 3.91 inches over 8 days

A total of 59.42 million gallons of reclaimed water was produced during December, representing 27 % of total plant flows.

Toilet rebate program promotes water conservation

For the 13th year, the City is providing rebates to individual water customers who install toilets that conserve water.

Participation in Melbourne's toilet rebate program is on a first come, first served basis until funding for the current fiscal year is depleted.

Toilets being replaced must have been installed prior to 1994. One \$50 rebate is available per residential account.

Program rules are available online at melbourneflorida.org/watercon/retrofit.htm, along with the application form. The application packet can also be requested by calling 321-953-6302.

The completed application must include the original sales receipt, the UPC bar code label from the box with model information, and the WaterSense label from the box.

Only WaterSense-certified toilets are allowed in the



program. The certification is a program of the U.S. Environmental Protection Agency (EPA) as a federal initiative to rate water conserving fixtures, similar to the Energy Star rating for appliances. The City is a WaterSense partner, along with hundreds of other local governmental agencies and

utilities.

There are more than 880 toilet models that have earned the WaterSense label. The toilets perform as well as or better than their less efficient counterparts, are 20 percent more water efficient than average products in their category, and have achieved third-party certification.

The EPA estimates that the toilets will, on average, save more than \$90 per year for a family of four and \$2,000 over the life of the toilet.

Streets and Stormwater Management Monthly Summary

Street Sweeper

- ◆ Daytime street sweeper — hours run: 81
- ◆ Cubic yards of material removed: 357

Canal & Ditch Maintenance

- ◆ Feet of canals cleaned mechanically: 6,160

Aquatic Spraying

- ◆ Acres treated through aquatic spraying: 21

Inlet Maintenance

- ◆ Storm inlets cleaned: 5
- ◆ Storm inlets repaired: 10
- ◆ Cubic yards of material removed from drains: 1

Storm Drain Pipe Repair & Maintenance

- ◆ Feet of storm drain pipe repaired: 2
- ◆ Feet of storm drain pipe cleaned: 377
- ◆ Feet of storm drain pipe replaced: 75

Concrete Work

- ◆ Concrete repairs: 13
- ◆ Cubic yards of concrete used: 21

Asphalt Work

- ◆ Asphalt repairs made: 55
- ◆ Tons of asphalt used: 33

Water Usage

- ◆ Vac truck & yard usage (gallons): 19,360

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What's Done, What's Underway and What's Coming Up

Water Projects

Under Construction:

- Reverse osmosis wellfield rehabilitation, \$331,270
- Reverse osmosis byproduct (concentrate) pipeline extension, \$1,104,134

Under Design or in Bid Process:

- Apollo Boulevard extension utility relocation (anticipated bid date: 8/28/2013)
- Wickham Road reconstruction, 8" waterline (bid opening: 1/17/2012)

Wastewater Projects

Under Construction:

- Water Reclamation Facilities generator and fuel storage improvements, \$2,643,881
- Lift Station 55 to 23 replacement of sewer force main, \$1,607,188
- Rehabilitation of Lift Station 63
- 10" force main conversion to reclaimed main, \$150,000
- D.B. Lee Water Reclamation Facility reuse expansion, \$4,610,005

Under Design or in Bid Process:

- Lift Station 25 rehabilitation
- D.B. Lee WRF miscellaneous improvements
- Lift stations 12 rehabilitation

Streets & Stormwater Projects

Recently Completed:

- Stormwater pipe replacement on Knight Avenue
- Strawbridge Avenue drainage improvements, \$78,512

Under Construction:

- University Boulevard stormwater pipe replacement, \$241,030

Under Design or in Bid Process:

- South Sarno Road drainage improvements. Survey work for pond location com-

pleted. Design work to begin soon

- Babcock Street medians, Phase 3, Apollo Boulevard to Alma Drive
- D.B. Lee Water Reclamation Facility ditch restabilization. Design completed, permitting underway
- Shenandoah outfall drainage basin improvements. Design completed. Additional modeling completed for the Melwood water course
- Spain outfall drainage basin improvements phase II. Project design completed. Drainage easement acquisition is underway

Lab technician passes away recently

The Public Works & Utilities Department extends condolences to family, friends and co-workers of Greta Barner.

Barner, 53, served the City for more than 25 years, working as a laboratory technician first in the Water Production lab for 10 years and then transferring to the Water Reclamation Division at the D.B. Lee Water Reclamation Facility.



Barner on duty at the lab just five months ago.

She earned a bachelor of science degree from the University of Florida, majoring in microbiology. She was a valued employee noted for her attention to detail and the high quality of her work.

During her tenure with the City she also served on the City's Equal Opportunity Committee and was a mentor for many years to students at University Park Elementary School.

For more information about this report, please contact the Melbourne Environmental Community Outreach Division at (321) 953-6302 or send an e-mail to jwilster@melbourneflorida.org