PW/Utilities Connection

February 2005

Utilities Data from Jan. 2005 City of Melbourne Public Works & Utilities Department

Membranes being replaced at reverse osmosis water plant

A major project is underway to replace 1,008 membranes at the reverse osmosis (RO) water treatment plant. The change will improve the efficiency of the RO process, and as a result, save the City money.

The method in which the project is being performed is also saving money. Staff is tackling the job in-house. According to Water Production Superintendent Fred Davis they felt they could do the project on their own at a significant cost savings. The City purchased and is installing the membranes without using an engineer or contractor.

The membranes that are being replaced are the original units that were put into service when the RO plant began producing potable water almost 10 years ago. At the time, the engineering consultant for the then new RO plant projected that replacement of the membranes would be needed in the fifth year of operation. Through proper cleaning and maintenance, and careful plant operations, the service life of the membranes was extended by five years.

Maintenance worker Steve Clemons (left) and mechanic Terry Johnson (left) work on removing the used membranes, as maintenance worker Danny Thompson assists. Other staff involved include Randy Riesdorph, Art Townley, William Michaels, Kevin Devine, Cody Wells and George Bell.

"Cleaning them improperly or too frequently can significantly reduce their service life," explained Davis. He said they have to be cleaned at proper intervals, and by following precise procedures. However, even with the care that has been taken to preserve the membranes, they eventually needed to be replaced due to fouling by hardness compounds in the well water the plant treats.

When the RO plant was originally completed in 1995, engineers had predicted the cost to replace the membranes would be $1 million. Since then, competition in the industry and improved technology has resulted in prices dropping. The City paid $471,612 for the membranes that are now being installed.

"We saved a lot by bidding the project out ourselves," Davis said. "We originally thought we would need to go with a firm that could provide a turnkey service, including bidding, installation and repairs, and testing. This would have cost us approximately $700,000. We decided to do it in-house as a cost-savings measure and because we believed we could do it ourselves, saving the City $200,000."

Davis said the project is expected to be completed by the middle of March.

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Monthly Water Usage and Raw/Finished Water Quality Statistics

Water Usage

- Water pumped to service: 479,295,000 gallons or 15.461 MGD average
- Maximum finished water pumped to service: 16.569 MGD on January 9, 2005
- Water billed: 414,393,000 gallons
- Fire hydrant flushing: 20,244,031 gallons
- Fire Department water usage: 32,250 gallons
- Brevard County water usage – sewer flushing: gallons
- Flushing and testing new water mains: 33,347 gallons
- Committed capacity: 2.4216 MGD
- Capacity available for development: 8.8075 MGD (Based on 12-month average daily flow)

Water Quality Statistics

Lake water quality

- pH: 7.8
- Alkalinity: 56 mg/L
- Total hardness: 102 mg/L
- Chlorides: 68 mg/L
- Color: 182
- Total dissolved solids (TDS): 210 mg/L

Well water quality

- pH: 7.8
- Alkalinity: 120 mg/L
- Total hardness: 628 mg/L
- Chlorides: 748 mg/L
- Color: 5
- TDS: 1,603 mg/L

Finished water quality - pumped to service

- pH: 8.3
- Alkalinity: 34 mg/L
- Total hardness: 90 mg/L
- Chlorides: 71 mg/L
- Color: 4
- Total dissolved solids (TDS): 244 mg/L

Upcoming environmental outreach events provide education

Two popular annual events will be held again in February and March.

At the Better Living Expo, to be held in the Melbourne Square Mall on February 26 and 27, mall visitors will be able to learn about the City's water and wastewater treatment processes, water conservation and recycling, along with Melbourne's street lighting program.

The City has participated in this annual event for many years. This year, however, the location of the City's display is changing. The new location will be in the center concourse north of the old Belk's department store. Visitors will be able to pick up information about services, along with devices to help them save water.

Staff from water production explain the treatment process to a mall visitor at last year's Better Living Expo.

The expo is held during normal mall hours on both Saturday and Sunday.

Almost 600 people attended last year's Florida Friendly Landscape Seminar

The fifth annual Florida Friendly Landscape Seminar will be held at Imperial's Hotel and Conference Center in Viera on March 26 from 8:30 a.m. to 12:30 p.m. This year's theme is "After the Hurricanes."

This free event will feature Sally Scalera, Brevard County Horticultural Extension Agent and Florida Today columnist who will be speaking about "Hurricane Lessons Learned." Teresa Watkins, with the UF Institute of Agricultural Sciences, will speak about proper turf managements. Finally, Dr. Ed Gilman, of the UF Horticulture Department, will speak about "Tree Care, Repair and Selection."

Seating is limited and pre-registration is mandatory. To register, call 953-6302.

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Wastewater Treatment Operational Summary and Reuse Statistics

D.B. Lee WWTP

- Treated this month: 136.20 MG
- Treated daily: 4.39 MGD
- Reuse production — total month flow: 42.20 MG
- Reuse average daily flow: 1.36 MGD
- Reuse number of days run: 28
- Plant efficiency, BOD removal: 98.81%
- Committed capacity: 0.8628 MGD
- Capacity available for development: 0.5822 MGD

(Based on 12-month average daily flow)

Grant St. WWTP

- Treated this month: 96.41 MG
- Treated daily: 3.11 MGD
- Reuse production — total month flow: 5.06 MG
- Reuse average daily flow: 0.16 MGD
- Reuse number of days run: 31
- Plant efficiency, BOD removal: 98.34%
- Committed capacity: 0.8730 MGD
- Capacity available for development: 1.5362 MGD

(Based on 12-month average daily flow)

Planning begins to expand City's reuse water distribution

The foundation will soon be put into place for interconnecting the north and south reclaimed water distribution systems. The City has contracted with an engineering firm for a reuse production and distribution study. An element of the scope of services is to construct a computer model of both the D.B. Lee and Grant Street reuse systems.

"This will tell us what amount of reuse we will need to supplement the D.B. Lee system from Grant Street," said Assistant Utilities Director Harold Nantz.

In addition to the modeling, other elements of the study include data collection and evaluation of the existing reuse system, identifying future users and demands, and proposed additions and improvements. A hydraulic model will be used to evaluate system interconnections, high service pumping modifications, transmission main sizing and storage requirements.

At the completion of the study, engineering design will begin for the interconnection.

The City has been awarded $75,000 in alternative water supply construction cost-share funding from the St. Johns River Water Management District for the project, which is expected to cost $750,000.

To create the reuse water link between the D.B. Lee and Grant Street systems, a reuse transmission main will be constructed between the reuse storage tanks at the Melbourne Municipal Golf Course and the existing 12-inch reuse main on Nasa Boulevard. In addition, associated pumping, controls and metering will be included in the project.

"In moving forward with this project we hope to make the reuse system more reliable and consistent for our existing customers," said Public Works & Utilities Director Bob Klaproth. "This will in turn reduce customer dependence on potable and well water to meet their irrigation needs, as well as help the City meet current permit requirements."

The project will also eventually allow the City to expand its service area to include new residential customers and large bulk customers in both the north and south areas of the City.

Streets and Stormwater Management Monthly Summary

- Daytime street sweeper — hours run: 146
  Cubic yards of material removed: 159
- Nighttime street sweeper — hours run: 119
  Cubic yards of material removed: 129
- Asphalt repairs made: 40
- Tons of asphalt used: 35.25
- Feet of canals cleaned mechanically: 2,540
- Acres treated through aquatic spraying: 0
- Feet of storm drain pipe repaired: 150
- Concrete repairs: 26
- Cubic yards of concrete used: 41

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January Highlights

The level of Lake Washington remained unchanged during the last month. At the end of January, the lake level was 14.53 feet above sea level. This was the same as the end of December, when it was also 14.53 feet above sea level. Water quality remains good.

The D.B. Lee Wastewater Treatment Plant recorded 1.85 inches of rain during three days in January. The Grant Street Wastewater Treatment Plant received 1.75 inches of rain over nine days during January. A total of 44.33 million gallons of reclaimed water was distributed during January. This represents 19% percent of total plant flows for January.

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

Water Projects

Under Construction:

♦ Parkway Drive and Turtle Mound water line extension, $657,000

♦ Hibiscus booster station electric shut-off valves, $75,777

♦ Waterline upgrade, Olde Eau Gallie, $347,409

♦ Replacement of RO membranes, $469,000

♦ Water Treatment Plant storage building, $98,000

♦ Wickham water tank demolition, $91,650

♦ Fee Avenue waterline replacement under FEC, $120,330 (on hold)

Under Design or in Bid Process:

♦ Phase II surface water treatment plant improvements

♦ Utility relocation in association with NASA Boulevard realignment at Wickham Road

♦ Chemical feed upgrades at Canova Beach Booster Station

♦ Wickham Road ground storage tank and booster pump station

♦ Eau Gallie River sub-aqueous crossing

♦ Miscellaneous two-inch to six-inch waterline upgrades

♦ Dairy Road, US 192 and Hibiscus Boulevard water line interconnection

♦ Hazelwood waterline extension

♦ Turtlemound north waterline extension

♦ Automatic transfer switch and generator enclosure at the surface water treatment plant's belt press building

Wastewater Projects

Under Construction:

♦ Lift Station 24 replacement, $451,440

♦ Demolition of old treatment units at D.B. Lee WWTF, $624,700

Under Design or in Bid Process:

♦ New monitoring network for reuse system at DB Lee WWTP

♦ Reuse master plan

♦ Water & Wastewater Operations building

♦ Lift station 55 upgrade

♦ Grant Street Wastewater Treatment Plant lighting upgrade

♦ Sarno Road force main upgrade

♦ Electrical upgrade to the sludge belt press building at D.B. Lee WWTP

♦ D.B. Lee WWTP administration building

Streets & Stormwater Projects

Recently Completed:

♦ Sarno Road/Bell Street drainage improvements, $257,911

Under Construction:

♦ Sherwood Park drainage improvements, $358,285

♦ Babcock Street realignment, $1,394,649

♦ Eber Road widening from Babcock Street to Dairy Road, $3,840,879

♦ Pineapple Avenue pedestrian bridge at Cliff Creek, $115,429

Under Design or in Bid Process:

♦ Hoag Avenue paving and drainage improvements

♦ Upgrade of stormwater system at Charles Dr./Almar Subdivision

♦ Upgrade of existing culvert crossing under Pirate Lane

♦ Laurie Road drainage improvements

For more information about this report, please contact the Melbourne PW/ Utilities Administration Department at (321) 674-5761 or send an e-mail to utilitiesadmin@melbourneflorida.org