



PW/Utilities Connection



December 2006

Utilities Data from Nov. 2006

City of Melbourne Public Works & Utilities Department

New screening to remove matter from wastewater influent

A screening system is being installed at the Grant Street Wastewater Treatment Facility that will remove non-biodegradable solids and inorganic matter from the raw wastewater stream before entering the plant.

Hydro-Dyne Engineering, Inc was selected to design, manufacture, install, and test the continuously operating, self-cleaning mechanical screening system at the influent pump station wet well. They will also install a walkway and handrails for access, and will provide training for plant staff.

This firm was chosen for the work after a City selection committee reviewed the company, contacted references, and visited an installation where they had performed similar work. The project cost is \$275,000.

Wastewater Treatment Superintendent Eric Blankman explained that what has been used in the past for influent pump protection at the plant is far less efficient. Known as "channel monsters," these devices are placed in the influent channel to grind up any non-organic material before it enters the pump station. While this method provides some protection to the pumps, it does not remove the debris and is prone to high maintenance costs.

"Grinding is not the preferred method because the material is still in the system even though it's been ground up," Blankman said. "Removal, which the new system will provide, is much better. The grinder system is also prone to high maintenance costs."

The new screen, which is three-feet in width and

made of stainless steel, is similar to a chain-link fence but with very small openings. It will screen all the raw sewage entering the plant to remove plastics and any other non-biodegradable matter. This reduces the wet well maintenance and prevents this material from damaging pumps throughout the system.

After the material is removed, it is conveyed to ground level and deposited into a washing compactor for cleaning. Organic material is washed from the screenings and returned to the influent channel. The remaining material is dewatered, compacted and then conveyed to a dumpster.

Blankman has been representing the City of Melbourne on a consortium of public wastewater utilities from throughout Brevard County. The group is studying options

for disposal of domestic biosolids (sludge). The recommended County-wide long-range solution is to dry and pelletize the sludge.

"All the utilities will have to screen very well if we use this approach," Blankman said. "Our new screening will meet the criteria if this regional approach is undertaken."

Currently, the City's domestic biosolids are land applied on FDEP-approved sites in Osceola County. Besides biosolids, the end products of the wastewater treatment process are either converted to reclaimed water and used for irrigation, or treated to secondary effluent standards and disposed down a deep well.



Jay Conroy (right), President of Hydro-Dyne Engineering, discusses the new influent screen with Leonard Concepcion, Wastewater Treatment Mechanic. The unit is on-site at the Grant Street Wastewater Treatment Plant being readied for installation.

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Monthly Water Usage and Raw/Finished Water Quality Statistics

Water Usage

- ◆ Water pumped to service: 462,777,000 gallons or 15.426 MGD average
- ◆ Maximum finished water pumped to service: 16.271 MGD on Nov. 19, 2006
- ◆ Fire hydrant flushing: 16,602,035 gallons
- ◆ Committed capacity: 3.4081 MGD
- ◆ Capacity available for development: 7.3230 MGD (Based on 12-month average daily flow)

Water Quality Statistics

Lake water

- ◆ Level: 13.96 feet above MSL on Nov. 30, 2006 (Prior month comparison: 14.01 feet on Oct. 31)
- ◆ pH: 7.7
- ◆ Alkalinity: 67 mg/L

- ◆ Total hardness: 120 mg/L
- ◆ Chlorides: 70 mg/L
- ◆ Color: 259
- ◆ Total dissolved solids (TDS): 273 mg/L

Well water

- ◆ pH: 7.8
- ◆ Alkalinity: 121 mg/L
- ◆ Total hardness: 662 mg/L
- ◆ Chlorides: 805 mg/L
- ◆ Color: 6
- ◆ TDS: 1,711 mg/L

Finished water - pumped to service

- ◆ pH: 8.4
- ◆ Alkalinity: 35 mg/L
- ◆ Total hardness: 91 mg/L
- ◆ Chlorides: 70 mg/L
- ◆ Color: 3
- ◆ Total dissolved solids (TDS): 317 mg/L

Temporary bypass pump for raw water jumps into action

A leased portable 14-inch centrifugal pump was put into place temporarily as a backup and a few days after it was put into service, it already proved itself to be invaluable.

The pump was ordered to serve as an alternate for the pumps at the raw water pump station that is currently under construction as part of the Phase II surface water treatment plant improvement project.

Included in these improvements is the rehabilitation of three pumps that are in use at the existing raw water pump station.

To minimize operational impacts on the water treatment plant, each of the three pumps is being sent out individually to a manufacturing facility in California for refurbishment and testing, leaving two pumps operational at all times. These two pumps are each rated at 10 MGD. The backup pump tested at 11 MGD. The contractor estimates it will take a total 10 to 12 months



The temporary pump is the yellow unit, shown in the background.

time to service and install these pumps at the new pump station.

“This is a contingency plan to ensure that we can continue to treat water while each of the other pumps is away for refurbishment,” said Water Production Superintendent Fred Davis. “Without the backup pump, we would be down to only two pumps. This one is to be used in case one of the other ones fail.”

And failures do happen. Davis said that soon after the temporary pump was installed, they had a break

down of one of the two permanent pumps due to an electrical problem. A cooling fan failed causing motor control to shut down. The temporary unit was put into service for two days while repairs were made. Davis was pleased with how well the bypass pump worked.

MWI Pump Rental of Deerfield Beach supplied the pump and accessories under a 12-month lease costing \$67,420.

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Wastewater Treatment Operational Summary and Reuse Statistics

D.B. Lee WWTP

- ◆ Treated this month: 113.37 MG
- ◆ Treated daily: 3.78 MGD
- ◆ Reuse production — total month flow: 43.17 MG
- ◆ Reuse average daily flow: 1.44 MGD
- ◆ Reuse number of days run: 30
- ◆ Plant efficiency, BOD removal: 97.7%
- ◆ Committed capacity: 0.8977 MGD
- ◆ Capacity available for development: 1.6581 MGD
(Based on 12-month average daily flow)
- ◆ Rainfall: 5.30 inches over 9 days

Grant St. WWTP

- ◆ Treated this month: 88.37 MG
- ◆ Treated daily: 2.95 MGD
- ◆ Reuse production — total month flow: 5.96 MG
- ◆ Reuse average daily flow: 0.20 MGD
- ◆ Reuse number of days run: 30
- ◆ Plant efficiency, BOD removal: 98.76%
- ◆ Committed capacity: 1.7469 MGD
- ◆ Capacity available for development: 0.7814 MGD
(Based on 12-month average daily flow)
- ◆ Rainfall: 5.98 inches over 10 days

A total of 49.13 million gallons of reclaimed water was produced during November, representing 24.4% of total plant flows.

Changes to add more efficiency to wastewater treatment

More changes have recently taken place in the Wastewater Treatment Division that will increase efficiency and continue to allow for more emphasis on reclaimed water.

Following last month's promotion of Roger Mansfield to the newly-created reclaimed water coordinator position, the assistant superintendent position has been filled, the role of plant supervisor has been expanded, and a new operations supervisor has been selected, filling Mansfield's vacated position.

Jonathan Williams, an 18-year employee, who began in the division as an operator trainee and had been in supervisory roles for nine years, has been promoted to assistant superintendent. This job had been vacant for six years. The need had become apparent with



From left, Joe LaPan, Jonathan Williams, and Robert Barker.

the increasing emphasis on reclaimed water.

"I was able to delegate while allowing existing staff to develop their skills," said Superintendent Eric Blankman. "We remain true to promoting employees from within our organization whenever possible."

Williams had been plant supervisor at the D.B. Lee facility. With his promotion, Joe LaPan's position has been expanded to include operational responsibilities for both wastewater treatment plants.

"This is an evolution of what he had been doing," Blankman said.

Robert Barker, an "A" licensed operator, has been promoted to operations supervisor, the position that Mansfield held prior to becoming the new reclaimed water coordinator.

Streets and Stormwater Management Monthly Summary

- ◆ Daytime street sweeper — hours run: 121
Cubic yards of material removed: 180
- ◆ Nighttime street sweeper — hours run: 75
Cubic yards of material removed: 92
- ◆ Asphalt repairs made: 38
- ◆ Tons of asphalt used: 33.6
- ◆ Feet of canals cleaned mechanically: 3,120
- ◆ Acres treated through aquatic spraying: 21
- ◆ Feet of storm drain pipe repaired: 13
- ◆ Concrete repairs: 20
- ◆ Cubic yards of concrete used: 42.25

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Reclaimed water interconnect project moving forward

Work has begun in earnest to construct a 16-inch reclaimed water main between the Grant Street and D.B. Lee Wastewater Treatment Plants' reuse systems. The project also includes installation of a booster pump station at the Melbourne Municipal Golf Course.

Interconnecting the two systems will allow greater flexibility for distribution to reuse customers and give the City the ability to provide more reclaimed water to existing and new customers.

The new pipes are being installed along Airport Boulevard from the

Melbourne Municipal Golf Course at US 192 to the existing reuse main at Nasa Boulevard.

Maxwell Contracting, Inc. is installing the pipes at a project cost of \$1,370,000. The St. Johns River Water Management District has

granted the City \$75,000 toward the project cost through the Alternative

Water Supply Construction Cost-Sharing Program.



Pipe ready for installation along Airport Boulevard.

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

Water Projects

Under Construction:

- ◆ Phase II surface water treatment plant (SWTP) improvements, \$11,322,000
- ◆ Miscellaneous two-inch to six-inch waterline upgrades, \$874,857

Under Design or in Bid

Process:

- ◆ Automatic transfer switch and generator enclosure at the SWTP's belt press building
- ◆ Pineda Causeway 16" water main
- ◆ Wickham Road 8" water main
- ◆ 36" water main clearing, Phase II
- ◆ Waterlines in annexation areas — Deerwood and El Dorado
- ◆ Rehabilitation to RO wells #1, 2 & 3
- ◆ Backup well #4
- ◆ Unidirectional flushing program & Individual Distribution System Evaluation (IDSE) plan
- ◆ Water model update
- ◆ Harlock Rd water main extension
- ◆ Eau Gallie water line replacement, Phase I, Segments V & VI
- ◆ Eau Gallie, Phase II, Country Road annexation water line extension

Wastewater Projects

Under Construction:

- ◆ Various manhole rehabilitation projects
- ◆ Lift Station #43 (Front Street) upgrade, \$567,000
- ◆ Lift Station #55 upgrade
- ◆ St. Andrews lift station and subaqueous force main
- ◆ Reuse interconnect
- ◆ FY '06 CIPP pipe rehabilitation projects, \$1,200,000
- ◆ 'FY '07 CIPP rehabilitation projects, \$1,200,000

Under Design or in Bid

Process:

- ◆ Reuse master plan
- ◆ Water & Wastewater Operations maintenance building
- ◆ Electrical upgrade to the sludge belt press building at D.B. Lee and Grant Street WWTPs
- ◆ D.B. Lee WWTP administration building

- ◆ Lift Station #29 (Aurora & Marywood) and Lift Station #46 (BCC) renovations
- ◆ Grant Place I.s. and force main
- ◆ Crane Field reuse project

Streets & Stormwater

Projects

Under Construction:

- ◆ Eber Road widening from Babcock Street to Dairy Road, \$3,840,879
- ◆ FY '06 CIPP pipe rehabilitation projects, \$1,350,000
- ◆ FY '07 CIPP pipe rehabilitation projects, \$1,350,000

Under Design or in Bid

Process:

- ◆ Babcock and Hibiscus intersection improvements
- ◆ Gramling Park Road drainage improvements
- ◆ Melbourne Avenue drainage at Penwood Avenue

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