PW/Utilities Connection

April 2004

Utilities Data from March 2004 City of Melbourne Public Works & Utilities Department

Modern technology keeps Grant Street plant running efficiently

Imagine having a 13-year old computer at your desktop and trying to keep it running efficiently — if it breaks down and needs new components they would be next to impossible to find, even upgrading it to today's standards would be near to an insurmountable challenge. However, that is the very situation operators have been facing at the Grant Street Wastewater Treatment Plant with their two influent pump variable frequency drives (VFD).

Ed Dobos programs one of new VFDs.

"We depend on the VFDs to control the influent pumps," said Wastewater Treatment Superintendent Eric Blankman. "This pump station's continuous operation is vital to protect the public health and safety in the south half of the City since it is the only means of conveying the raw sewage into the treatment trains."

The VFDs that needed to be replaced were put into service in 1991. They are used to increase or decrease the speed of the pumps as necessary to maintain a constant level in the pump wet well. Running the pumps on VFDs provides a dual benefit of relatively constant flow to the treatment basins, while reducing the stress of starting and stopping on the pumps, motors and valves.

According to Maintenance Supervisor Lee Cheary the new VFDs are half the size of the old and are built into a compact, modular unit.

Cheary said staff dismantled the old units and installed the new in mid-March. Wastewater Treatment Electronic Technicians Ed Dobos, Brad Smith and David Weimer performed the dismantling and installation.

"I was amazed at how these three worked together and had it done in two days," Cheary said. "They started on a Sunday when the flows are down and had everything online by Monday. They did an outstanding job. By performing this work in-house we saved money and did not have to have the down time that would otherwise have occurred."

The new VFDs will save electricity, require less maintenance, and reduce operating costs at the plant.

New flow meter to give precise, real-time figures for plant

New flow meter is located in the center of the 24-inch effluent line.

Obtaining plant flow data at the Grant Street Wastewater Treatment Plant will no longer require cumbersome mathematical calculations, and at times, even guess work. In a joint effort with wastewater treatment plant mechanics, along with crews from water distribution and wastewater collection, a new state-of-the-art magnetic flow meter has been installed on the 24-inch effluent line. Installation was performed late at night when plant flows were at their lowest.

The new flow meter replaces one that had been put into service in 1986 that was not functioning properly. The new meter will send precise flow information in real-time to the operators' control room.

"Measuring flow at a wastewater treatment plant is always a challenge," explained Wastewater Treatment Superintendent Eric Blankman. "New flow meter technology is always changing and improving. The new technology is better and more standardized."

Blankman said the new flow meter is critical to be able to provide accurate data to the Florida Department of Environmental Protection.

PW/Utilities Connection - April 2004

Monthly Water Usage and Raw/Finished Water Quality Statistics

Water Usage

- Water pumped to service: 469,978,000 gallons or 15.161 MGD average
- Maximum finished water pumped to service: 17.795 on March 19, 2004
- Water billed: 388,122,700 gallons
- Fire hydrant flushing: 15,592,310 gallons
- Fire Department water usage: 42,250 gallons
- Brevard County water usage – sewer flushing: 5,300 gallons
- Committed capacity: 1.4038 MGD
- Capacity available for development: 10.4038 MGD (Based on 12-month average daily flow)

Water Quality Statistics

Lake water quality

- pH: 7.1
- Alkalinity: 61 mg/L
- Total hardness: 127 mg/L
- Chlorides: 92 mg/L
- Color: 170
- Total dissolved solids (TDS): 248 mg/L

Well water quality

- pH: 7.4
- Alkalinity: 119 mg/L
- Total hardness: 632 mg/L
- Chlorides: 758 mg/L
- Color: 6
- TDS: 1,519 mg/L

Finished water quality - pumped to service

- pH: 8.2
- Alkalinity: 35 mg/L
- Total hardness: 101 mg/L
- Chlorides: 85 mg/L
- Color: 3
- Total dissolved solids (TDS): 193 mg/L

New backwash recycle pumps increase efficiency at water plant

Water Production Division staff recently completed a project to replace the backwash recycle pumps at a cost of $60,000. If the work had been contracted out, it would have cost approximately $100,000.

In addition to installing the recycle pumps, staff also performed underground piping, concrete work, welding and fabricating, along with installing a new flow meter.

Art Townly (left) and Steve Clemons work on installing new backwash recycle pumps at the surface water treatment plant.

"The existing pumps couldn't meet the demands of the new surface water plant," explained Assistant Water Production Superintendent Dave Phares. "There are also more stringent backwash recycling rule requirements by the EPA (Environmental Protection Agency) that we have to meet."

Phares explained that the water from cleaning the filters goes to the backwash pond and is allowed to settle for about one hour. Approximately 600,000 to one million gallons of water per day enters the pond. The water is then pumped back into the system through the raw water main so it is recycled back into the plant and reused.

The sludge that settles is pumped to the sludge thickener for further drying.

"With the new pumps, we can pump the pond out faster and can move the sludge to thicken it so we produce a lighter, dryer sludge," Phares said. "That makes the sludge easier to haul."

The project was completed in a month and was put in service in early April. Maintenance workers Art Townly and Steve Clemons performed the mechanical installation, with assistance by Robert Steele and Joe Dean. Major electrical work was performed by Ray Eldon and Richard Berry.

PW/Utilities Connection - April 2004

Wastewater Treatment Operational Summary and Reuse Statistics

D.B. Lee WWTP

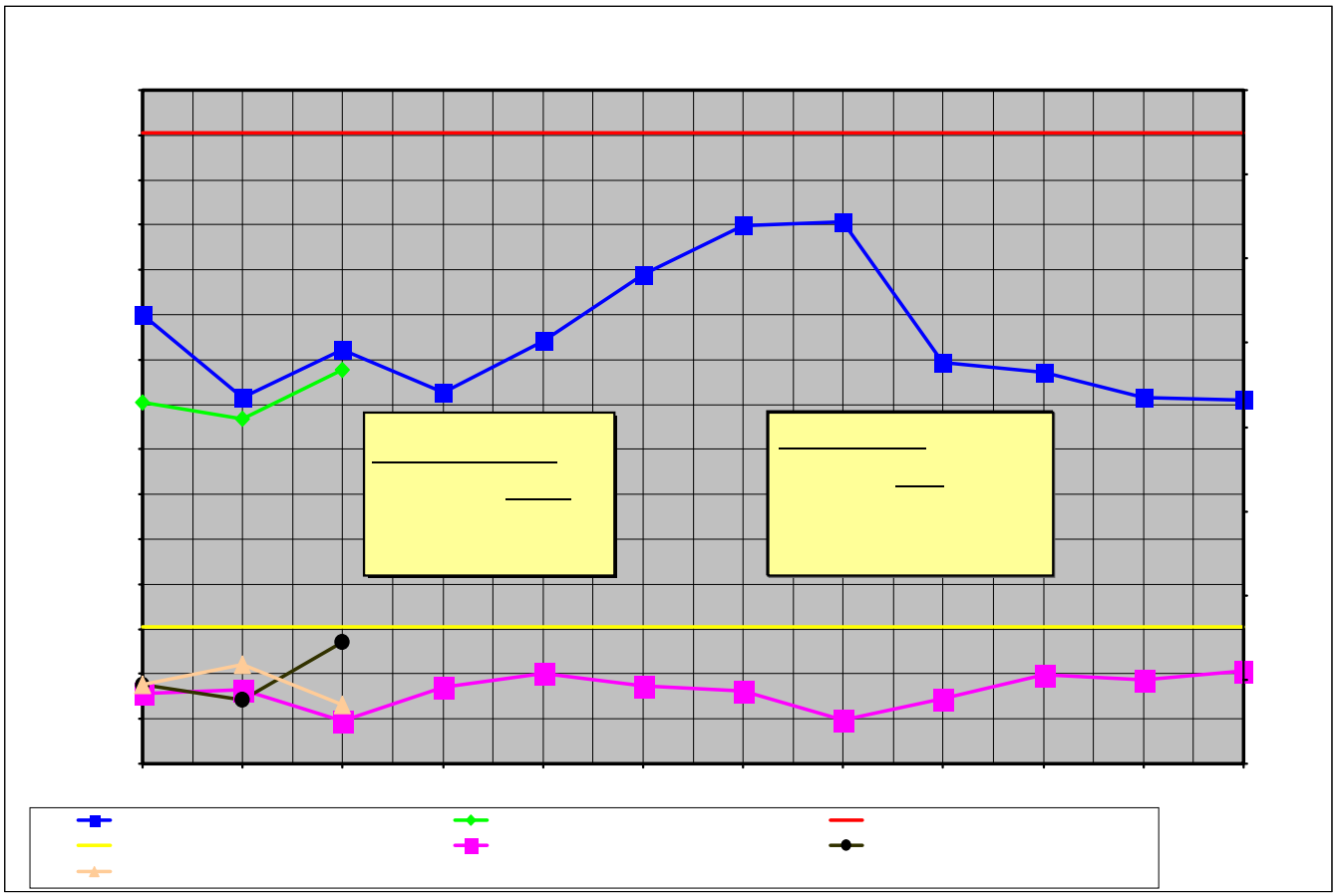
- Treated this month: 135.92 MG
- Treated daily: 4.38 MGD
- Reuse distribution — total month flow: 61.41 MG
- Reuse average daily flow: 1.98 MGD
- Reuse number of days run: 31
- Plant efficiency, BOD removal: 98.62%
- Committed capacity: 0.6915 MGD
- Capacity available for development: 1.1395 MGD

(Based on 12-month average daily flow)

Grant St. WWTP

- Treated this month: 83.22 MG
- Treated daily: 2.68 MGD
- Reuse distribution — total month flow: 6.25 MG
- Reuse average daily flow: 0.20 MGD
- Reuse number of days run: 30
- Plant efficiency, BOD removal: 97.75%
- Committed capacity: 0.4635 MGD
- Capacity available for development: 2.0456 MGD

(Based on 12-month average daily flow)



Streets and Stormwater Management Monthly Summary

- Daytime street sweeper — hours run: 667
  Cubic yards of material removed: 296
- Nighttime street sweeper — hours run: 140
  Cubic yards of material removed: 182
- Asphalt repairs made: 23
- Tons of asphalt used: 92
- Feet of canals cleaned mechanically: 6,750
- Feet of storm drain pipe repaired: 200
- Concrete repairs: 17
- Cubic yards of concrete used: 44

PW/Utilities Connection - April 2004

March Highlights

The level of Lake Washington decreased slightly during March. At the end of the month, the lake level was 13.46 feet above sea level. That compares to the end of February reading of 14.02 feet above sea level. Water quality remains good.

The D.B. Lee Wastewater Treatment Plant recorded 1.09 inches of rain during three days in March. The Grant Street Wastewater Treatment Plant received 2.39 inches of rain over five days during the month.

A total of 67.66 million gallons of reclaimed water was used for irrigation during March. This represents 31 percent of total plant flows for the month.

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

Water Projects

Recently Completed:

♦ Shut-off valves for elevated storage tanks, $159,777

Under Construction:

♦ Croton Road utility relocation associated with widening, $593,257

♦ Trailer Haven waterline upgrades, $195,905

♦ Wickham Road waterline replacement from SR 192 to Nasa Blvd., $1,257,000

♦ Sludge handling facility motor control center and belt filter press control cabinets, $175,685

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

Under Design or in Bid Process:

♦ Phase II surface water treatment plant improvements

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

♦ Painting various structures at Lake Washington Water Treatment Plant

♦ Chemical feed upgrades at Canova Beach Booster Station

♦ Hibiscus booster station electric shut-off valves

♦ Wickham Road ground storage tank and booster pump station

♦ Parkway Drive and Turtlemound water line extension

♦ Covered storage building at surface water treatment plant

♦ Fee Avenue waterline replacement under FEC

♦ Eau Gallie River sub-aquesous crossing

Wastewater Projects

Recently Completed:

♦ Mechanical Integrity Testing at Grant Street WWTF, $65,837

Under Construction:

♦ Sewer line cleaning, $120,000

♦ Sewer manhole rehabilitation, $14,500

♦ Large (36") diameter sewer rehabilitation, $669,465

Under Design or in Bid Process:

♦ Lift Station 24 replacement design

♦ New monitoring network for reuse system at DB Lee WWTP

♦ Demolition of old treatment units at D.B. Lee WWTF

Streets & Stormwater Projects

Recently Completed:

♦ Rio Lindo canal dredging, $457,289

Under Construction:

♦ Street milling and resurfacing of various streets, $794,000

Under Design or in Bid Process:

♦ Lime Drive cul de sac

♦ Hoag Avenue paving and drainage improvements

♦ Eber Road widening from Babcock Street to Dairy Road

♦ Sarno Road/Bell Street drainage improvements

♦ Upgrade of stormwater outfalls along Charles Dr./Almar Subdivision

♦ Upgrade of existing culvert crossing under Pirate Lane

♦ Swift Street stormwater improvements

♦ Babcock Street realignment

♦ Baffle box at Cliff Creek

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