



PW/Utilities

Connection



March 2004

Utilities Data from Feb. 2004

City of Melbourne Public Works & Utilities Department

Testing of deep well getting underway in late March

A 24-inch well located at the Grant Street Wastewater Treatment Plant, which is located just south of Crane Creek, injects up to six million gallons of treated wastewater daily into limestone formations more than 2,000 feet underground.

Every five years, the Florida Department of Environmental Protection (FDEP) requires tests to ensure the effluent is confined in the well casing throughout its journey deep underground. The current testing will begin March 22 and take about a week to complete.

Since the deep well was put into service in 1988, two of these mechanical integrity tests have been completed and were deemed by the FDEP as acceptable.

The complex testing involves three separate portions. For the first test, 50,000 gallons of potable water are injected into the well and then a submersible television camera is lowered to the bottom of the well so the casing can be observed.

For the second portion of the test, a radioactive material is injected into the well and a Geiger counter is used to determine if there is any leakage outside of the well casing.

The third portion is a well casing pressure test. Salt is added to the well to hold the water down at the bottom that is trying to push its way back up due to artesian pressure. Then a brush is lowered to the bottom of the casing some 2,000 feet down and the bottom is cleaned. Next, an inflatable plug is lowered and the top of the well is closed. A pressure gauge is monitored for one hour to detect if any air is leaking.

"If we pass all these tests, we're good for another five years," said Wastewater Treatment Superintendent Eric



Hector Nazario, operations supervisor at the Grant Street plant stands next the injection well that will be undergoing mechanical integrity testing.

Blankman.

During the week-long testing period which will be performed by the City's engineering consultants, the effluent flow that would normally be injected down the well has to be diverted to Crane Creek. According to Blankman, the effluent will be treated to secondary standards and extra treatment will be provided to remove nutrients and to add dissolved oxygen. The water will be disinfected by the addition of chlorination, followed by a process to remove the chlorine before it enters Crane Creek.

"The water we will put out to the creek will not degrade the surface water," Blankman said. "Our water will be clearer than the brackish water in Crane Creek that has a natural brownish color."

Blankman said an effort will be made to minimize the amount of effluent released into the creek

through an increase in production of reclaimed water for irrigation and through the use of storage tanks.

Showerhead exchange planned

To celebrate National Drinking Water Week, the City of Melbourne is holding its second annual Showerhead Exchange on Thursday, May 6 at Melbourne Square Mall. The exchange will be held from 10 a.m. to 9 p.m. in the center court area near the men's Dillard's department store.

Melbourne water customers can bring their old water-guzzling showerheads (pre-1994) to be replaced for free with new water conserving showerheads that flow at two gallons per minute.

PW/Utilities Connection - March 2004

www.melbourneflorida.org

Public Works/Utilities Data from Feb. 2004

Monthly Water Usage and Raw/Finished Water Quality Statistics

Water Usage

- ◆ Water pumped to service: 392,843,000 gallons or 13.546 MGD average
- ◆ Maximum finished water pumped to service: 14.545 MGD on Feb. 22, 2004
- ◆ Water billed: 399,654,300 gallons
- ◆ Fire hydrant flushing: 15,849,490 gallons
- ◆ Fire Department water usage: 37,750 gallons
- ◆ Brevard County water usage – sewer flushing: 5,300 gallons
- ◆ Flushing and testing new water mains: 10,986 gallons
- ◆ Committed capacity: 1.3064 MGD
- ◆ Capacity available for development: 10.6461 MGD (Based on 12-month average daily flow)

- ◆ pH: 7.2
- ◆ Alkalinity: 60 mg/L
- ◆ Total hardness: 127 mg/L
- ◆ Chlorides: 92 mg/L
- ◆ Color: 168
- ◆ Total dissolved solids (TDS): 240 mg/L

Well water quality

- ◆ pH: 7.4
- ◆ Alkalinity: 117 mg/L
- ◆ Total hardness: 628 mg/L
- ◆ Chlorides: 758 mg/L
- ◆ Color: 6
- ◆ TDS: 1,550 mg/L

Finished water quality - pumped to service

- ◆ pH: 8.1
- ◆ Alkalinity: 35 mg/L
- ◆ Total hardness: 104 mg/L
- ◆ Chlorides: 84 mg/L
- ◆ Color: 3
- ◆ Total dissolved solids (TDS): 228 mg/L

Water Quality Statistics

Lake water quality

Easy Locators use ground penetrating radar for accuracy

Locating underground water and wastewater pipes for contractors, engineers and developers is a state-mandated law that all public utilities are required to provide. The Utilities Operations Division has four employees who perform an average of 1,350 locates every month. The process has become increasingly difficult as roads are widened and lines that were once under soil and sod are now under pavement.

In these cases, locators have only been able to determine an approximate location. The depth, size and material of the pipe can only be determined if the locator digs down to it, but this is impractical when the lines are under pavement.

The division has begun putting two recently-purchased "Easy Locator" units into operation that have been



Robert Bray, of the Water Distribution Division, tries out one of the newly-purchased "Easy Locators."

shown to be very accurate and easy to use. These portable, lightweight units use a ground penetrating radar (GPR) system to show the exact location, size, depth and material of the pipe displayed on an on-board LCD screen. This information can then be downloaded onto a computer.

Two of the "Easy Locators" have been purchased for \$8,500 and were put into use in mid March. One of the units will be used for water line locates and the other for wastewater.

"Until recently, such equipment was cumbersome and expensive," explained Tom Hogeland, Superintendent of Utilities Operations. "Within the last year, this portable, lightweight GPR

device has been developed and placed on the market. The cost for this new and innovative equipment is approximately 50% less than what had previously been available on the market."

PW/Utilities Connection - March 2003

www.melbourneflorida.org

Public Works/Utilities Data from Feb. 2004

Wastewater Treatment Operational Summary and Reuse Statistics

D.B. Lee WWTP

- ◆ Treated this month: 113.95 MG
 - ◆ Treated daily: 3.93 MGD
 - ◆ Reuse distribution — total month flow: 33.41 MG
 - ◆ Reuse average daily flow: 1.15 MGD
 - ◆ Reuse number of days run: 29
 - ◆ Plant efficiency, BOD removal: 98.59%
 - ◆ Committed capacity: 0.6811 MGD
 - ◆ Capacity available for development: 1.1649 MGD
- (Based on 12-month average daily flow)*

Grant St. WWTP

- ◆ Treated this month: 77.87 MG
 - ◆ Treated daily: 2.69 MGD
 - ◆ Reuse distribution — total month flow: 1.87 MG
 - ◆ Reuse average daily flow: 0.06 MGD
 - ◆ Reuse number of days run: 7
 - ◆ Plant efficiency, BOD removal: 98.14%
 - ◆ Committed capacity: 0.4344 MGD
 - ◆ Capacity available for development: 2.0289 MGD
- (Based on 12-month average daily flow)*

Innovative methods being tested for lift station odor control

Many of us are familiar with hydrogen peroxide as a useful antiseptic and bleach. It can be used to prevent ear infections, clean wounds, make your teeth whiter, and for many other household purposes. The City is using this chemical at a much greater concentration for another purpose many can appreciate — odor control at wastewater lift stations.

“The City has 10 primary lift stations that are fed by the other smaller ones,” said Utilities Operations Superintendent Tom Hogeland. “The raw sewage has more time in the lines to decay and is at a higher volume by the time it gets to the primary lift stations, which creates hydrogen sulfide and the ‘rotten egg’ odor.”

Ozone had been used for odor control but, according to Hogeland, the upkeep of the equipment is maintenance intensive and costly. In addition, the ozone is corrosive and cannot be stored but must be used immediately once it is generated.

Three pilot projects are underway that will continue through mid-summer — two to test different methods of delivery of the newest hydrogen peroxide odor control technology, and one to test a biological process. The



The on-site delivery system is set up for testing.

tests will allow the City to determine which system is the most cost effective and beneficial.

In the first test, a tank that holds the hydrogen peroxide is located a half mile away from the lift station. This distance allows time for the solution that is injected into the sewer main to react with the hydrogen sulfide in the line.

In the second test, the hydrogen peroxide is mixed with an additive and injected at the lift station where the odor is occurring, thus eliminating the need for a satellite injection system. The additive allows the hydrogen peroxide to work instantaneously on site.

The third test, which has not been put into operation but is expected within the next month, is based on biological treatment. “Designer” bacteria are injected into the raw sewage which “eat” the hydrogen sulfide and eliminate the odor. This system is advertised to reduce operating costs at the wastewater treatment plant by reducing their biosolids.

“The initial results seem very positive for both of the first two applications,” Hogeland said. “Once we select the best system for our needs we will require it for all new lift stations and will retrofit all the existing primary lift stations.”

Streets and Stormwater Management Monthly Summary

- ◆ Daytime street sweeper — hours run: 807
Cubic yards of material removed: 288
- ◆ Nighttime street sweeper — hours run: 165
Cubic yards of material removed: 120
- ◆ Asphalt repairs made: 18
- ◆ Tons of asphalt used: 50.5
- ◆ Feet of canals cleaned mechanically: 8,750
- ◆ Feet of storm drain pipe repaired: 300
- ◆ Concrete repairs: 16
- ◆ Cubic yards of concrete used: 84

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February Highlights

The level of Lake Washington increased slightly during February. At the end of the month, the lake level was 14.02 feet above sea level. That compares to the end of January reading of 13.75 feet above sea level. Water quality remains good.

The D.B. Lee Wastewater Treatment Plant recorded 3.25 inches of rain during five days in February. The Grant Street Wastewater Treatment Plant received 2.65 inches of rain over five days during the month.

A total of 35.28 million gallons of reclaimed water was used for irrigation during February. This represents 18 percent of total plant flows for the month.

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

Water Projects

Recently Completed:

- ◆ U.S. 1 utility relocations associated with U.S. 1 widening — Post Road north to Pineda Causeway, \$940,000
- ◆ U.S. 1 utility relocations associated with U.S. 1 widening — Post Road south to Aurora Road, \$1,060,000

Under Construction:

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

Under Design or in Bid Process:

- ◆ Phase II surface water treatment plant improvements
- ◆ Utility relocation in association with NASA Boulevard realignment at Wickham Road
- ◆ Waterline upgrade, Olde Eau Gallie

- ◆ 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

Wastewater Projects

Recently Completed:

- ◆ Lift Station 80 replacement— East Bay Plantation, \$62,300

Under Construction:

- ◆ Sewer line cleaning, \$120,000
- ◆ Sewer manhole rehabilitation, \$14,500
- ◆ Large (36") diameter sewer rehabilitation, \$669,465
- ◆ Mechanical Integrity Testing at Grant Street WWTF, \$65,837

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

Under Construction:

- ◆ Rio Lindo canal dredging, \$457,289
- ◆ Street milling and resurfacing of various streets, \$794,000

Under Design or in Bid Process:

- ◆ Lime Drive cul de sac driveway inputs
- ◆ 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 widening
- ◆ 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