



PW/Utilities Connection



November 2005

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

Department deals with Hurricane Wilma issues in aftermath

Stormwater pipe caves in under Croton Road

While Melbourne was spared the worst of Hurricane Wilma that hit October 24, the City is dealing with a number of infrastructure issues that were brought on due to the storm.

A section of stormwater pipe failed on the south end of Croton Road at the mosquito ditch, which is just north of the National Weather Service station.

"We got a call from the EOC (emergency operations center) in the early afternoon during the storm about a hole in the road," said Assistant Streets and Stormwater Superintendent Mike Giorgio. "We got out there 15 minutes later and it was about 20 feet wide."

By Tuesday, the hole had gotten even larger, growing to about 40 feet. Not only had the road collapsed above the stormwater pipe, but there was also a sewer line hanging precariously above that pipe. A pole was placed across the hole and chains and straps were used to hold up the sewer pipe. As the hole grew, a larger 40-foot pole was needed to replace the smaller one.

The 72-inch stormwater pipe that failed was made of corrugated metal and had corroded due to soils and water flowing through it over the years.

"The problem was when the large volume of water was pushing through, it started leaking out of the joints and caused the line to cave in from the bottom," Giorgio said.

"The City is currently getting quotes from contractors to replace the 160-foot run of pipe," said Superintendent Bill Williams. "The work should be completed in approximately 60 days, depending on the availability of pipe and when the contractor can get in."



At the south end of Croton Road, crews from Wastewater Collections and Streets & Stormwater attach sewer pipe to a pole. Gator Hembree and Matt Simon are on top of pole, while Larry Blumenburg, Butch Burke and Josh Baker assist.

Wastewater pipe collapses

In the south end of the City, another pipe failure occurred thanks to Hurricane Wilma. This break was in a wastewater line underneath Leonard Weaver Boulevard just north of Reddick Street. The road started sinking in due to the excessive weight of the water that ran through the ground from the large drainage canal which is adjacent to the line.

A section of the clay pipe, which is about 50 years old, had been scheduled to be lined this fiscal year but instead is now being replaced.

The City has contracted with Derrico Construction to dig some 25 feet under the ground to get to the damaged 27-inch pipe.

It will be replaced with approximately 100 feet of 30-inch PVC pipe.

"This pipe didn't break from corrosion, but had cracked from age and stress," explained Utilities Operations Superintendent Tom Hogeland.

The pipe replacement will

take approximately two weeks to complete, which will be followed by restoration work.



Superintendent Tom Hogeland (l) discusses the sewer line replacement project with Bruce Robinson, foreman for Derrico Construction.

Hurricane Wilma, Cont. on Page 2

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Monthly Water Usage and Raw/Finished Water Quality Statistics

Water Usage

- ◆ Water pumped to service: 468,359,000 gallons or 15.108 MGD average
- ◆ Maximum finished water pumped to service: 16.127 MGD on Oct. 22, 2005
- ◆ Water billed: 387,068,100 gallons
- ◆ Fire hydrant flushing: 20,618,070 gallons
- ◆ Committed capacity: 2.8849 MGD
- ◆ Capacity available for development: 8.1183 MGD (Based on 12-month average daily flow)

Water Quality Statistics

Lake water quality

- ◆ pH: 7.7
- ◆ Alkalinity: 56 mg/L
- ◆ Total hardness: 84 mg/L

- ◆ Chlorides: 46 mg/L
- ◆ Color: 188
- ◆ Total dissolved solids (TDS): 169 mg/L

Well water quality

- ◆ pH: 7.7
- ◆ Alkalinity: 120 mg/L
- ◆ Total hardness: 638 mg/L
- ◆ Chlorides: 757 mg/L
- ◆ Color: 7
- ◆ TDS: 1,653 mg/L

Finished water quality - pumped to service

- ◆ pH: 8.2
- ◆ Alkalinity: 31 mg/L
- ◆ Total hardness: 61 mg/L
- ◆ Chlorides: 47 mg/L
- ◆ Color: 2
- ◆ Total dissolved solids (TDS): 194 mg/L

City deals with Hurricane Wilma ... *continued from page 2*

Overflow on County Club

In the picture below, straps are attached to a log placed across Crane Creek just north of Ruffner Road to hold up a six-inch water line and an eight-inch wastewater line. The hurricane caused the canal to overflow, washing large debris against the lines and weakening the supports. The lines will be soon placed under the creek, by way of horizontal directional drilling, to prevent further damage.



Sandbag production

To help residents prevent possible flooding from Hurricane Wilma, the City gave out 7,000 sandbags the Sunday before the hurricane struck. The sandbags were filled at the City's Public Works Complex and brought by flatbed truck to the dog track parking area. In addition to the pre-filled bags, residents were able to fill their own bags with piles of sand and empty bags that were also available. Using 156 tons of sand, staff from Streets, Parks, and Water and Wastewater Operations worked together to fill the bags manually and with two sandbagging machines.

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Wastewater Treatment Operational Summary and Reuse Statistics

D.B. Lee WWTP

- ◆ Treated this month: 177.09 MG
- ◆ Treated daily: 5.71 MGD
- ◆ Reuse production — total month flow: 35.03 MG
- ◆ Reuse average daily flow: 1.13 MGD
- ◆ Reuse number of days run: 23
- ◆ Plant efficiency, BOD removal: 97.7%
- ◆ Committed capacity: 1.3672 MGD
- ◆ Capacity available for development: 0.04864 MGD

(Based on 12-month average daily flow)

Grant St. WWTP

- ◆ Treated this month: 185.4 MG
- ◆ Treated daily: 5.98 MGD
- ◆ Reuse production — total month flow: 2.83 MG
- ◆ Reuse average daily flow: 0.09 MGD
- ◆ Reuse number of days run: 31
- ◆ Plant efficiency, BOD removal: 97.7%
- ◆ Committed capacity: 1.0190 MGD
- ◆ Capacity available for development: 0.8885 MGD

(Based on 12-month average daily flow)

Recent infrastructure repairs prompt upcoming projects

In recent months, two large water and wastewater line repairs have been made as a result of breaks. These repairs have made evident the urgent need for projects to prevent other similar occurrences.

The wastewater line break was found after a sinkhole formed on the grounds of Florida Tech. The water line expansion joint break was found when water spewed out of the line on the section of pipe that crosses the U.S. 1 bridge over Crane Creek.

While the ruptures were different, both were a result of material the elements had stressed to, literally, the breaking point.

The wastewater line at Florida Tech occurred at the end of a run of approximately 6,000 feet of sewer line installed in the early 1980s. The coating of the pipe had deteriorated, allowing sewer gases to attack the pipe's raw iron.

Even though the pipe was only about 20 years old, the belief is that during the manufacturing process, the coating that was applied had voids that eventually



Manny Parker of the Streets and Stormwater Division works on new dumpster enclosure at Florida Tech. The previous enclosure was demolished during the wastewater line repairs.

allowed the sewer gases to corrode it.

"All the remaining pipe is in basically the same shape but it hasn't caved in yet," said Utilities Operations Superintendent Tom Hogeland. "We plan to line all of it in four different sections to take care of the problem before there are any more breaks."

The water break didn't actually occur in the line, but in a rubber joint that allows for expansion and contraction of the pipe as it reacts to heat and cold. The line had been put in

15 years ago.

The split in the joint showed the need for a regular schedule of replacement. There are 12 aerial water line crossings in the water service area that have expansion joints. Hogeland said that all of the expansion joints will be replaced in the near future, and then again every 10 years.

"This older infrastructure was identified a few years ago as needing rehabilitation," Hogeland said. "It had been put on the schedule but broke or caved in before we could get to it."

Streets and Stormwater Management Monthly Summary

- ◆ Daytime street sweeper — hours run: 104
Cubic yards of material removed: 122
- ◆ Nighttime street sweeper — hours run: 50
Cubic yards of material removed: 55
- ◆ Asphalt repairs made: 55
- ◆ Tons of asphalt used: 38.6
- ◆ Feet of canals cleaned mechanically: 6,120
- ◆ Acres treated through aquatic spraying: 21
- ◆ Concrete repairs: 7
- ◆ Cubic yards of concrete used: 15.75

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October Highlights

The level of Lake Washington rose significantly during the last month. At the end of October, the lake level was 17.88 feet above sea level. This compares to the lake level at the end of September, when it was 14.98 feet above sea level.

The D.B. Lee Wastewater Treatment Plant recorded 12.8 inches of rain during 14 days in October. The Grant Street Wastewater Treatment Plant received 12.6 inches of rain over 17 days during October. A total of 37.86 million gallons of reclaimed water was produced during October. This represents 10% percent of total plant flows for October.

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

Water Projects

Recently Completed:

- ◆ Turtlemound North waterline extension, \$471,200

Under Construction:

- ◆ Aurora elevated water tank rehabilitation, \$82,000
- ◆ Eau Gallie River sub-aqueous crossing, \$124,535
- ◆ Phase II surface water treatment plant improvements, \$11,322,000
- ◆ Chlorine scrubber at Avenue B booster station, \$102,000

Under Design or in Bid

Process:

- ◆ Wickham Road ground storage tank and booster pump station
- ◆ Miscellaneous two-inch to six-inch waterline upgrades
- ◆ Automatic transfer switch and generator enclosure at the surface water treatment plant's belt press building
- ◆ A1A water main interconnect
- ◆ Pineda Causeway 16" water main
- ◆ Babcock Street water line relocation between Fee Avenue and Melbourne Avenue

Wastewater Projects

Recently Completed:

- ◆ Demolition of old treatment units at D.B. Lee WWTF, \$624,700
- ◆ New monitoring network for reuse system at DB Lee WWTP

Under Design or in Bid

Process:

- ◆ Reuse master plan
- ◆ Water & Wastewater Operations maintenance 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 and Grant Street WWTPs
- ◆ D.B. Lee WWTP administration building
- ◆ Lift Station #43 (Front Street) upgrade
- ◆ Garage doors at Grant Street WWTP
- ◆ Bell Street sewer aerial crossing
- ◆ Reuse interconnect

Streets & Stormwater Projects

Under Construction:

- ◆ Sherwood Park drainage improvements, \$358,285
- ◆ Eber Road widening from Babcock Street to Dairy Road, \$3,840,879
- ◆ Paradise Cay CIPP, \$325,835
- ◆ Laurie Road drainage improvements, \$363,510

- ◆ Fabri-Form at Nicklaus ditch

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
- ◆ Misc. CIPP lining projects

General Public Works:

Under Construction:

- ◆ Public Works & Utilities Administration Building, \$512,391

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