

Memorandum



Date: July 24, 2012

To: Honorable Chairman Joe A. Martinez and Members,
Board of County Commissioners

From: Carlos A. Gimenez
Mayor

A handwritten signature in black ink, appearing to read "Carlos A. Gimenez", written over the name in the "From:" field.

Subject: Miami-Dade Water and Sewer Department: Report on the Water and Sewer
Infrastructure

The attached report is in response to Resolution No. 170-12 which directs the Miami-Dade Water and Sewer Department (WASD) to prepare a report addressing the most deteriorated and vulnerable sections of the water and sewer infrastructure, with estimates to repair and/or replace the identified sections of the system, whether pipes, treatment plants and/or pump stations and provide recommendations on whether to repair or replace the identified structure including funding sources. The following is a summary of the report findings.

Water System

Improvements in the total amount of approximately \$364,168,000 are proposed for the County's water system. A summary of the most deteriorated and vulnerable sections of the water system are noted below.

- 1) To ensure the continued reliability of the transmission and distribution systems, additional transmission pipelines, storage tanks and pump stations must be constructed. For the most part, the County's distribution system was designed with transmission water mains in a looped configuration. Nevertheless, there are some areas where the looping of the very large transmission system mains has not kept pace, and redundancy is critical.
- 2) In the past 2 years, as a result of several large concrete pipe failures, WASD has initiated assessment of all large diameter (36-inches and greater) pre-stressed concrete cylinder pipe, with the first priority being pre-stressed concrete cylinder pipe manufactured by the Interpace Company in the late 1970's. The wire reinforcement inside these pipes has manufacturing flaws which make them more vulnerable to failure. Only recently has the technology become available to measure the number of breaks in the wire reinforcement per section of the pipe to determine which pipe sections are most likely to fail.
- 3) WASD owns and operates three regional water treatment plants each with a different treatment capacity; 165 million gallons per day John E. Preston Water Treatment Plant, 214.7 million gallons per day Alexander Orr, Jr. Water Treatment Plant, and 80 million gallons per day Hialeah Water Treatment Plant. All three plants supply more than 90% of the potable water consumed in Miami Dade County. These plants are experiencing the effects of advancing age; they are 45, 56 and 87 years old, respectively. While they have been maintained and partially upgraded over the years, there are numerous issues of structural deficiencies as well as outdated electrical and mechanical equipment.

In addition, the most recent water line breaks have been included in this report highlighting the 36-inch water main break on NE 76th Street and 3rd Place in Miami, 54-inch water main break on Red Road in Hialeah and the 48-inch water main break on Miller Road and 127th Avenue.

Wastewater System

Improvements in the total amount of approximately \$736,086,000 are proposed for the County's wastewater system. A summary of the most deteriorated and vulnerable sections of the wastewater system are noted below.

- 1) An increasing number of these sewage pipeline breaks are the result of deteriorated and failing pipes. Failure modes vary according to pipe material, location and operational conditions. The Department's top priority listing of sewage pipeline renewals/replacements needed in the wastewater collection and transmission system to avoid more sewage pipe failures and regulatory penalties are listed in the attached report.
- 2) The combination of an extensive urban area and the flat topography that characterizes Miami Dade County requires the use of a large number of pump stations to convey sewage from homes and businesses to the three regional wastewater treatment plants that serve this community. With over 1,000 pump stations, WASD owns and operates one of the largest wastewater pump station systems in the nation. The pump stations in the system range in size from small local stations to large regional stations as well as booster stations that handle the flows from multiple pump stations and serve large regions of the County. A listing of those pump stations that present the greatest risk of failure based on conditions and population served are documented in the report.
- 3) WASD's wastewater treatment and disposal system consists of three regional treatment plants including the 112.5 million gallons per day North District Wastewater Treatment Plant at Interama, the 143 million gallons per day Central District Wastewater Treatment Plant at Virginia Key, and the 112.5 million gallons per day South District Wastewater Treatment Plant at Black Point. All three treatment plants share common features and problems and each plant is discussed individually with the associated needed projects.

In addition, the most recent sewage line breaks have been included in this report, highlighting the 72-inch sewer force main break in which more than 20 million gallons of raw sewage discharged into the Biscayne Canal in June 2010.

Failure to address the needs of the County's wastewater system can serve to accelerate the rate of deterioration of its component parts and increase operating costs. Several of these projects are already in progress (such as the replacement of the sewer line from Miami Beach to the Central District Treatment Plant) and will be included in the Department's proposed Multi-Year Capital Plan as part of the FY 2012-13 Proposed Budget. The sewer projects cited in this report are also part of the on-going discussions with the Environmental Protection Agency through which the County's two existing consent decrees are expected to be successfully closed as a new consent decree focusing on infrastructure upgrades is proposed. The sequencing and timing of these sewer projects continue to be discussed, and those conclusions will determine the cash flow necessary to complete the projects according to the schedule. When the proposed consent decree agreement is considered by the Board, it may be necessary to make adjustments to the Department's capital plan to incorporate the scheduling of projects included in the consent agreement.

Going forward these critical needs will be addressed in a systematic way, maximizing the use of all

available federal and state grant and loan funds and supporting state and national efforts to establish a much-needed national infrastructure financing mechanism. While this list of projects is substantial, it represents a small percentage of all of the regional water and sewer system improvements that will be needed over the next 15 years to meet regulatory compliance and projected economic development goals. Conducting this work will support many jobs in the local economy while the systems upon which public health, protection of our natural resources, and the very viability of our economy are upgraded to operate more safely and reliably.

Moving forward with the project needs mentioned in this report, which totals \$1,100,254,000, and longer term projects such as eliminating the use of the ocean outfalls will require adequate staff oversight, contracted resources and accelerated procurement procedures similar to Ordinance 07-108. This will enable WASD to meet the timeframes associated with system replacement needs and regulatory deadlines that already exist or that may become part of a new consent order. Preliminary budget development includes funding necessary to proceed with this capital plan. Because the loan to the General Fund made in FY 2011-12 of \$25 million is non-recurring, a rate increase in FY 2012-13 is not necessary at this time. However, future rate increases will need to be considered to support the system needs. Safe and reliable water and sewer services are essential to the health, welfare, safety and economic well-being of the community.

The attached report consists of the most deteriorated water and sewer systems and the improvements proposed including estimated project costs using charts, tables and maps.

If you need additional information, please contact Miami-Dade Water and Sewer Department Director John Renfrow at 786-552-8086 or me directly at 305-375-1880.

Attachment

C: Alina T. Hudak, County Manager/Deputy Mayor
Ed Marquez, Deputy Mayor
John W. Renfrow, P.E., Director, Water and Sewer Department
Jennifer Moon, Director, Office of Management and Budget